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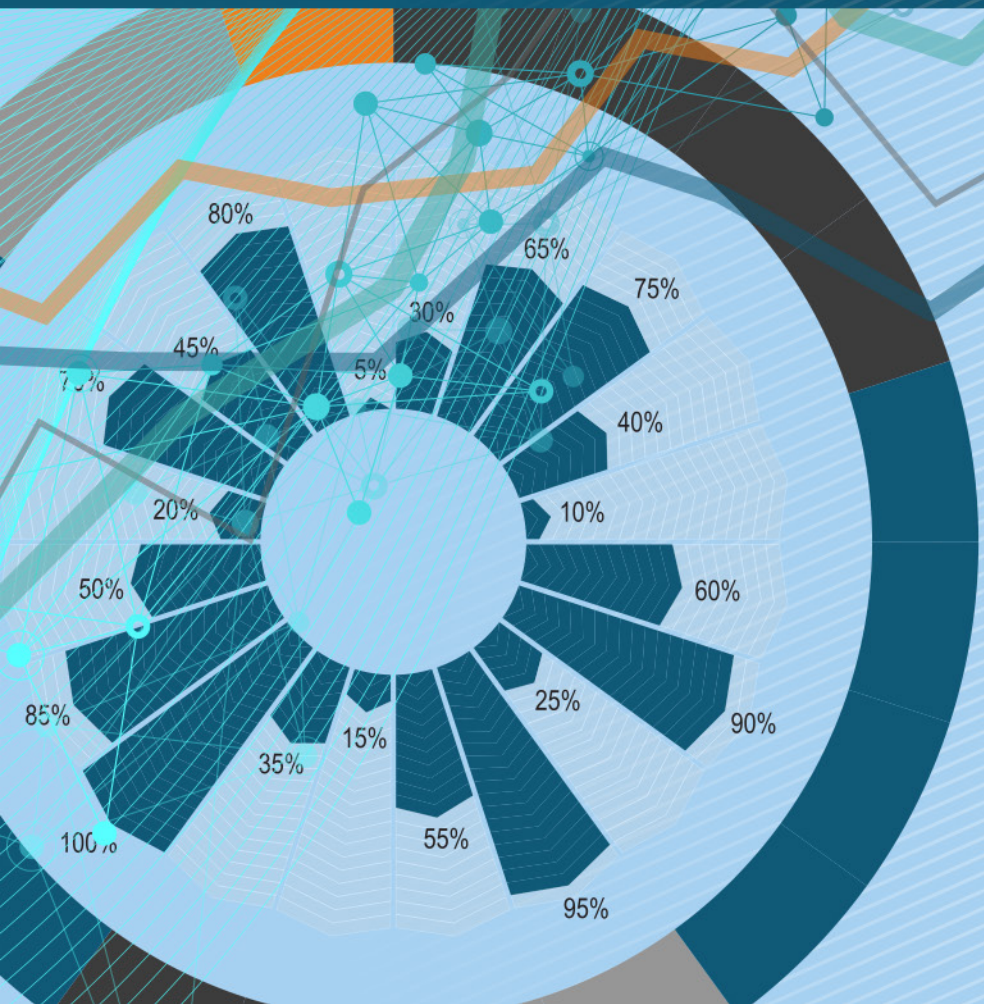

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Scientific and practical peer-reviewed journal

Journal of regional and international competitiveness — theoretical and practical journal dedicated to the issues of international and regional competitiveness.

The **mission** of the journal is to spread modern economic knowledge, publish the most interesting results of scientific research in the field of regional and international competitiveness, and to serve as a helpful forum for professional discussion of a broad spectrum of fundamental problems of socio-economic development, an important tool of communication among science, education, and business.

The Journal accepts for publication: original articles; translations of published articles from foreign journals (with the consent of the right holder for the translation and publication); reviews; essays; reports.

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E-mail:	jraic@edu.ystu.ru
Phone:	+7 (4852) 44-02-11
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Dear Reader!

Svetlana N. Rastvortseva

National Research University Higher School of Economics (HSE), Russia.
E-mail: srastvortseva@gmail.com

This is the first issue of the new Scientific and Practical Peer-Reviewed Journal "Journal of Regional and International Competitiveness".

"Journal of Regional and International Competitiveness" is a theoretical and practical journal dedicated to the issues of international and regional competitiveness. The mission of the journal is to spread modern economic knowledge, to publish the most interesting results of scientific research in the field of regional and international competitiveness and to serve as a forum for professional discussion of a broad spectrum of fundamental problems of socio-economic development. This is an important tool of communication between science, education and business.

The unique Focus and Scope of the magazine lets us combine theoretical and applied research, global and the regional scale of analysis of modern competitive problems.

Competitiveness in a global risk economy is one of the central topics of modern economic science.

Over the last three decades, the debate about competitiveness issues has changed significantly. There has been a leap from "pure" academic science to policy making.

The position of countries in many competitiveness rankings is now a target for socio-economic development strategies at both the national and regional levels.

This is very important at a time when it has become clear how fragile the world around us is.

We look forward to your input, among not only readers, but also the authors and reviewers of our journals.

We would like to express our gratitude for the creation of the journal to E.O. Stepanova, the Rector of Yaroslavl State Technical University (YSTU); to P.B. Razgovorov, the Head of the Science Development Department of YSTU, as well as to all departments and services of the University, without which the journal would not exist.

We want to wish you all a Happy New Year and a prosperous 2021!

Svetlana N. Rastvortseva
Chief Editor
Moscow

ANALYSIS OF PROBLEMS OF ENSURING NATIONAL COMPETITIVENESS THROUGH THE PRISM OF WELL-KNOWN MODELS OF ITS DEFINITION

Alexey V. Tebekin

Moscow State Institute of International Relations (University) of the Ministry of Foreign Affairs of Russia, Russia.
E-mail: tebekin@gmail.com

Abstract. The presented research is high on the agenda due to the unsolved complex of problems of ensuring the national competitiveness of the Russian Federation. The purpose of this study is to analyze the problems of ensuring national competitiveness based on known macroeconomic models for determining competitiveness, as well as models for determining competitiveness, initially formed for the meso - and microeconomic level, but suitable for assessing competitiveness at the macro-economic level (the level of national competitiveness). As a result, the paper proposes the potential ways of ensuring the national competitiveness of the Russian Federation and increasing its level.

Keywords: security problems; national competitiveness; models for determining competitiveness.

JEL codes: : A10

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Introduction

Competitiveness is crucial for subjects in any competitive environment.

It should be noted national competitiveness problems persist over a long period of time. This applies both to the recent history and the older Russian history.

Peter the Great said: «I anticipate that Russians will someday or, perhaps, during our lifetime, shame the most enlightened nations with their successes in science, tiredness in work, and majesties of hard and loud fame» (Brickner, 2004).

In the middle of the 20th century, I.V. Stalin wrote: «We are 50 to 100 years behind the advanced countries. We must make up this gap in ten years. Either we do it or they will crush us.» (Stalin, 1951).

Thus, the problem of national competitiveness has a centuries-old history.

To ensure national competitiveness in a pre-industrial and industrial era in an unsaturated and moderately saturated world market, where free market niches were still preserved, was quite easier. Nowadays, it is difficult to provide the national competitiveness level in conditions of saturated world market of the post-industrial era while international competition has become much more severe, with a sufficiently wide variety of fighting methods (Tebekin, 2015).

Therefore, further research with theoretical, methodological, scientific and practical perspectives on national competitiveness issues is a relevant scientific challenge predetermining the purpose of the study.

Research grounds

The methodological basis of the studies was the general research methods, as well as known applied models for assessing the economic systems competitiveness at the macro -, meso - and microeconomic levels.

The methodology of the study consisted of well-known studies on issues of ensuring national competitiveness by Bakanov D.V. (2010), Berikbolova U.D. (2016), Gelvanovsky M.I. (2006), Gurzhi A.V. (2016), Drobot E.V. (2012), Kvarchiya O.V. (2016), Kuzmin D.V. (2011), Martynenko A.G. (2016), Perskaya V.V. (2014), Shul M.I. (2012) and others.

Also, the methodological basis of the study included the original studies on competitiveness (Tebekin, Egorova, 2019; Tebekin, 2020; Tebekin, 2019; Tebekin, 2019; Tebekin, 2016; Tebekin, Petrov, Egorova, 2020).

Study contents

This study focuses on the sources of national competitiveness problems.

Considering competitiveness as the ability of the subject (in this case the national economy) to surpass competitors under certain conditions of activity, the paper discusses three main components defining these capabilities: source, process, and result.

The initial components of competitiveness are characterized by the competitive potential of the subject of environment.

The process components of competitiveness are characterized by the ability of the subject to act in competitive environment.

The resulting components of competitiveness are characterized by the ability of the subject to compete with other participants in the competitive environment for a long period of time.

By to national competitiveness, the initial, process and outcome elements are defined as follows:

- the level of development of country's production factors;
- the country's ability to achieve high (above the world average) rates of economic growth for a long period of time (medium and long term);
- the ability of country's companies (as a foundation according to K. Marx) to compete successfully with the foreign companies in the industry-specific international markets.

Indeed, these elements are traditionally mentioned in key documents for the strategic development of different countries. Russia is not an exception.

In the Decree of the President of the Russian Federation «On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024», the goals related to national competitiveness are highlighted.

In terms of the development of country's production factors (the starting points of national competitiveness), the following goal is formulated — «acceleration of Russian technological development, increase of the number of organizations providing technological innovations up to 50% of the total».

In terms of achieving high rates of economic growth (process components of national competitiveness), the purpose is «ensuring the rate of economic growth above the world standards while maintaining the macroeconomic stability». Moreover, as a medium-term final result (until 2024), the following goal is given — «become one of the five world largest economies» (of course, estimated in terms of purchasing parity — author's note).

Furthermore, that Decree sets the goal of national competitiveness as «creating a highly productive export-oriented sector in the basic branches of the economy creation, ultimately in manufacturing industry and agroindustrial complex».

It should be noted that the initial, process, and resulting components of national competitiveness have also been formulated in previous strategic documents on the development of the Russian economy.

For example, the Strategy 2020 highlights the following economic development targets.

First, in terms of creating an economy of leadership and innovation, Strategy 2020 noted that by 2020 a «competitive economy of knowledge and high technologies» will be created», which should allow Russia «to occupy a significant place (5 -10%) in the markets (of the world — author's note) of high-tech goods and intellectual services in 5 - 7 and more sectors».

Second, in terms of creating a global competitive economy, Strategy 2020 noted that «increasing the business environment competitiveness, new technologies and development of high-tech industries, activation of foreign economic policy» will ensure «the long-term sustainable growth of Russian economy with an average rate of about 106.4 - 106.5% per year».

And this goes on further.

If we compare the social and economic development main targets of the Russian Federation defined in the Strategy 2020 and in the Decree, it should be obvious that the issues of ensuring national competitiveness are the recurring theme (Table 1).

Table 1 – Main targets of the Russian Federation's social and economic development, according to the Strategy 2020 and the Decree of the President of the Russian Federation «On national goals and strategic objectives for the development of the Russian Federation for the period up to 2024» reflecting the importance of national competitiveness

Reference point name	Document title		
	The 1st step of Strategy 2020 (2008 - 2012)	The 2nd step of Strategy 2020 (2013 - 2020)	The Decree of the President of the Russian Federation № 204 of 7 May 2018
The increase in life expectancy	For 2.5 years	For 2 years	Until 78 years
GDP growth	137 – 138%	164 – 166%	Reach economic growth higher than world average while maintaining macroeconomic stability
Productivity growth	140 – 141%	171 – 178%	High-productivity export-oriented sector in the basic sectors of the economy formation, particularly manufacturing and agroindustries, based on modern technologies and well-trained personnel provided.
GDP energy consumption decrease	81 – 83%	70 – 75%	
Real income growth	153 – 154%	164 – 172%	Provide steady increase of real income of Russians, as well as raise the pensions level above the inflation level; 50% reduction of poverty rate in Russia
Fixed capital investment growth	180 – 185%	215 – 223%	
R&D expenditure (public and private)	1.4 - 1.6% GDP	3 % GDP	Russian technological development acceleration, increasing the quantity of organizations providing technological innovations up to 50% of their total amount
Expenditure on education (public and private)	5.5 - 5.7% GDP	6.5 – 7.0% GDP	Ensure global competitiveness of the Russian education. and join top 10 countries with the best general education
Health expenditure (public and private)	5.2 - 5.4% GDP	6.7 – 7.0% GDP	Reduction of mortality rates of the working-age population (down to 350 cases per 100,000 population), mortality from circulatory system diseases (down to 450 per 100,000 population) oncoma mortality,

Reference point name	Document title		
	The 1st step of Strategy 2020 (2008 - 2012)	The 2nd step of Strategy 2020 (2013 - 2020)	The Decree of the President of the Russian Federation № 204 of 7 May 2018
			including cancer (down to 185 per 100,000 population) infant mortality (down to 4.5 per 1,000 newborns)
Achievement of a level of economic and social development due to Russia's status as the leading world power of the 21st century in the forefront of global economic competition		In 2015-2020, Russia should be among the top 5 countries in terms of GDP at purchasing power parity.	Russia should be among the top 5 largest economies in the world

Source: composed by author

From the point of view of the practical implementation of the main objectives of the social and economic development of Russia, the problems of ensuring national competitiveness unfortunately remain unresolved.

At the same time, in accordance with the «traditions» of strategic development if the set goals are not achieved within the time frame, the stakeholders simply move the time frame.

The typical example of such actions is the statement of the Minister of Economic Development of the Russian Federation M. Oreshkin: «GDP growth of Russia up to 2036 will be just above 3% per year starting from the 2020s» (Oreshkin, 2020).

According to the minister, it is going to happen sometime later.

It should be noted, however, that in the base scenario of the six-year macroeconomic forecast of the country's development (until 2024), approved by the Russian Government in 2018 (Oreshkin, 2020), the average GDP growth rate (Table 2) does not correspond to the requirements of the Decree discussed previously (Table 1).

Table 2 - Rates of GDP growth of the Russian Federation according to the base scenario of the six-year macroeconomic forecast of the country's development (until 2024), approved by the Russian Government in 2018

Year	2018	2019	2020	2021	2022	2023-2024
Annual GDP growth rate	1.8%	1.3%	2.0%	3.1%	3.2%	3.3%
Average GDP growth over six years	2.45%					

Source: composed by author

Despite the fact that during the preparation of the base scenario of the six-year macroeconomic forecast of the country's development for 2018-2023, it was well known that in 2010-2017 the average rate of growth of world GDP was 3.8% (Bulletin on current trends in the world economy, March 2018).

Thus, the lag from the average rate of world economic growth was initially set in government documents. This approach certainly cannot ensure the achievement of national competitiveness growth, in accordance with the requirements of the same Decree.

There are numerous examples of adjusting the quantitative values of the objectives achieved (downward) if it is not possible to postpone the dates.

A theoretical analysis of known scientific sources shows that many factors are taken into account in

assessing national competitiveness, including:

- GDP;
- state expenditure on research and development;
- the human development investment;
- country's political and legal system stability;
- GDP at purchasing power parity per capita;
- citizens average life expectancy;
- natural resource use efficiency;
- export volumes;
- the inflation;
- natural resources quantity;
- environment;
- advantages of geographical location;
- companies with international competitiveness;
- labor market efficiency;
- country's financial sustainability with the national financial system flexibility;
- public debt level (both external and domestic);
- higher education and training;
- domestic market dynamism, reflected in the adequacy, speed and proportions of structural changes in the national economy in the technological order changing;
- international integration and cooperation level, the effectiveness of integrating national companies into international value chains;
- infrastructure development quality (industrial, social, transport, etc.);
- taxes, rates and tariffs;
- business culture;
- public administration quality;
- information support level (including the economy digitalization);
- others

Among the many existing approaches to national competitiveness, there is one called The Global Competitiveness Index consisting of more than 100 (113) variables characterizing the world's competitiveness in sufficient details, which are compiled in twelve benchmarks for national competitiveness (Figure 1) (WEF, 2020).

Despite the skepticism towards this kind of rating by followers of «great-power» of national competitiveness assessment (Gorgola, Monin, 2020), it should be recognized that many indicators used by the World Economic Forum in determining national competitiveness in terms of the Global Competitiveness Index (WEF, 2020) (Figure 1) are not subjective expert assessments. There are quite a lot of the objective indicators used to form the Global Competitiveness Index, which are based on comparative quantitative assessments of countries.

The World Population Growth Rate Rating, calculated as the «percentage of the relative increase (decrease) of population during a calendar year due to natural increase and international migration» is not only objective but also sufficiently competitive in terms of competitive position of the socio-economic conditions of world countries development. Russia is ranked 185th in the world out of 216 (The United Nations Department of Economic and Social Affairs: World Population Prospects, 2019.) in the rating so it can't be proud while there are three dozen countries in the world in a worse situation.

Also, it should be mentioned that national competitiveness assessment based on a multi-factor analysis, being labor-intensive, requires a significant effort to integrate these factors into qualitative indicators.

It would be useful to consider the national competitiveness problems in terms of classical approaches of the competitiveness initial components assessment.

Table 3 contains the results of classification of classical approaches reasonable for national competitiveness definition, taking into account the previous original studies (Tebekin, Egorova, 2019; Tebekin, 2020; Tebekin,

2019; Tebekin, 2019; Tebekin, 2016; Tebekin, Petrov, Egorova, 2020) for the assessment of the competitiveness initial components.

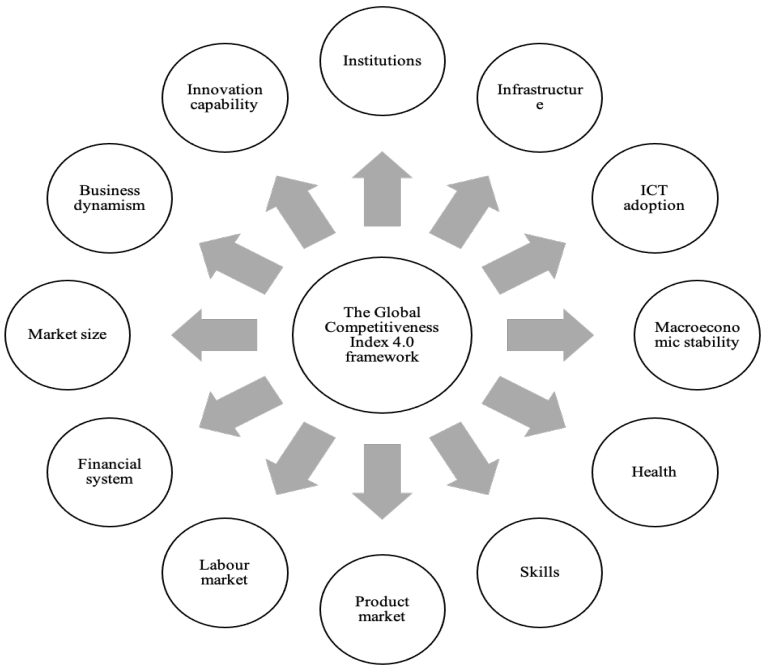

Figure 1. Group benchmarks for national competitiveness according to the Global Competitiveness Index
Source: The Global Competitiveness Report, 2019 (WEF, 2020)

Table 3 - Classification of classical approaches that can be used to determine national competitiveness

Approach name	Essential features
The Theory of Absolute Advantages of A. Smith	An advantage in the production of certain goods and services that one country has over all or most other countries because of climate, education, labor skills and other special factors of production.
D. Ricardo's Theory of Comparative Advantage	Trade benefits for both countries, even if neither has an absolute advantage in the production of specific products, based on the alternative price definition (working hours required for the production of one item of good, expressed through the working hours required for the production of another item of good).
Method based on economic equilibrium theory	It involves searching for a socially acceptable choice where limited productive resources (capital, land, labor) are used to produce different products and their distribution among the members of society is balanced. This balance means the achievement of total proportionality of: production and consumption; resource use; supply and demand; factors of production and their results (output); material and financial flows.
Method based on rating	This method proposes the comparison of economic systems (including government macroeconomic systems) with the large number of indicators characterizing the system in compare with the master economic system possessing the best results in terms of comparable indicators.
Product quality assessment method	It consists of a combination of measurement, calculation, organoleptic and registration methods, applied autonomously and jointly at different stages of the product life cycle.
Method based on evaluation of competitive status	It has a sectoral emphasis and is based on the model of M. Porter's five competitive forces, according to which, on the one hand, the competitive conditions in the different industrial markets are never the same, but, on the other hand, their competitive processes are the same.

Approach name	Essential features
	The competition state (intensity) is the result of the simultaneous action of five competitive forces: First, the intensity of competition between competing producers of the same product in the industry; Second, the intensity of competition between the producers of goods; Third, the probable confrontation of existing producers and their potential competitors that could emerge in the industry; Fourth, the market power and the means of influence of raw materials suppliers on manufacturers; Fifth, the market power and the means of influence of manufacturers on consumers.
Method based on the theory of effective competition	It assumes that the decision on the perspective for competitive development is made on the basis of marketing, management, organizational and other technologies assessments that ultimately reflect the economic technologies efficiency level of managed economic system. The calculation is made based on an algorithm for assessing the managed system economic technologies competitiveness (in our case it is the state), using the norms of consumer value for evaluating the competitiveness of indicators. The private competitiveness indices are calculated by dividing the sum of the product properties by the total need for this product.
Method based on the requirements profile	It assumes that the most competitive economies are (in our case national economies) with the best-performing services. At the same time, efficiency of each service in the economic system is affected by many factors, including the resources allocated to the service from the budget of the economic system (in our case from the budget of the state). The assessment of efficiency of the branch involves the analysis of effective using of its resources. The method is based on assessment of four group indicators or competitiveness criteria, including performance indicators for managing the production process: 1) the cost effectiveness indices, capital assets rational use, the improving of production technology, labour management; 2) current asset management indices: company self-sufficiency, pay off debts ability, sustainable development in the future; 3) indices reflect marketing and promotion management effectiveness through advertising and trade stimulation; 4) quality and price as competitiveness indices. Thus, the requirements profile has traditionally been characterized by the following criteria: market share, cost effectiveness, weighted average price, quality, lead time, Goodwill, advertising costs. It should be mentioned that all requirements profile features can be used to assess national competitiveness, including the advertising costs, although initially targeted at the microeconomic level (enterprise level) .
A competitive polygon method	Implies that the economic system is compared with immediate competitors by combination of factors. And the competitive polygons are graphical assessments of the economic system position (in our case, the position of the state) and the state-competitor's economic system presented as axial vectors in the most important areas of activity. It is possible to identify the strong and weak features of one of them relative to the other through applying a competitive polygon at the compared economies.
Method of the market share assessment	It is based on the analysis of the market state structure and the identification of economic systems market opportunities, which are characterized by the indices used to determine their competitive position based on the market shares and market dynamics assessment, including: Bane index; Lerner index; Tobin index; CR Market Concentration Index; Relative Market Concentration Index; Herfindal-Hirschmann Index; Market Entropy Coefficient;Coefficient of Variation of market shares; Hanna-Kei Index; Gini coefficient; Rank Index of Concentration (Hall-Tydmann index, Rosenbluth index); Rothschild index; Lindh index; Papandreou index, etc.
The Polar Profiles Method	The Polar Profiles Method is a decision-making method based on an assessment of an economic system based on a set of bipolar competitiveness scales in order to build up the development strategies. The poles of bipolar scales are represented by the antonyms of competitiveness (for

Approach name	Essential features
	example, strong - weak, etc.). This method evaluates the control object characteristics and concludes its future development perspectives.
SWOT analysis (or SWOT matrix)	It identifies four groups of factors of internal and external managed economic system environment: Strengths, Weaknesses, Opportunities (external), and Threats (external). Competitiveness can be assessed in a coordinate system: S-W, O-T.
SNW - analysis	It allows to assess the company competitiveness towards to the closest competitor by key parameters having three levels of assessment rate: Strength (stronger than the competitor), Neutral (at the level of the competitor) and Weakness (weaker than the competitor).

Source: composed by author

The following conclusions can be done by the well-known approaches acceptable for national competitiveness defining (Table 3).

First, it is obvious that the Russian Federation cannot expect to ensure the national competitiveness providing in terms of the theory of absolute advantages of A. Smith in modern saturated market (Tebekin, 2015) (see Block 1, table 3), and, like the majority of world's countries, is bound by D. Ricardo's comparative advantage theory (Block 2, Table 3).

However, it may be unpleasant for individual authors trying to eliminate the national competitiveness problem by removing the GDP components (Vymyatnina, 2017), it should be noted that the Russian Federation, according to the International Monetary Fund (IMF), is inferior to world leaders:

- by purchasing-power parity (PPP) GDP (IMF, 2019) - by almost 500%;
- By GDP by par (IMF, 2019) - by 1140%;
- By GDP by par per capita (IMF, 2019) - by 888% below the world average.

The results fully correspond to the traditional assessment according to the rating method (Block 4, Table 3).

Second, the national competitiveness problems are largely related to the lack of balance between the key factors determined by equilibrium (Block 3, Table 3), including such important indicator as main commodities export - import ratio. The corresponding ratios for 2019, calculated as percentage of export- import ratios based on the Federal Customs Service data, are as follows:

- machinery and equipment: 0.12;
- chemicals production: 0.33;
-food and raw materials: 0.40;
- metals and metal products: 1.27;
- fuel and energy products: 71.89 (FCS of Russia: import-export of the most important goods for January-June 2019).

As can be seen from the ratios, the Russian Federation export is determined more than ¾ by fuel and energy resources, metals and timber. Country continues to be a global supplier of raw materials. At the same time, Russia remains highly dependent on high-tech goods (about 85% of the country's imports) (FCS of Russia: import-export of the most important goods for January-June 2019).

Third, according to the product quality assessment method (Block 5, Table 3) Russia could improve its national competitiveness, but it is necessary to create and implement an appropriate national quality philosophy (similar, for example, to the Japanese quality philosophy of CFP - quality, functionality, proactiveness (Tebekin, 1999), which unfortunately is in direct contradiction with the establishment of monopolies and quasi monopolies in the domestic state economy (Tebekin, 2017). The non-competitiveness damages William Ashby's law of necessary diversity (Ashby, 1956) and discourages economic agents in the domestic market to compete for both product quality and product price - quality ratio.

Fourth, the modern passage from the fifth technological order to the sixth (Theoretical and methodological foundations of the study of technological structures of the economy, 2017) is, on the one hand, a very difficult period for national economic development (VEB assessed the impact of the coronavirus on the economy and incomes of Russians, 2020), and, on the other hand, in accordance with the technology

of the competitive status method (Block 6, Table 3), is a beneficial period for domestic economy development. However, the insufficient level of science expenditure in the Russian Federation in a competition (Fig. 2) indicates that this opportunity is also unlikely to be seized for national competitiveness providing.

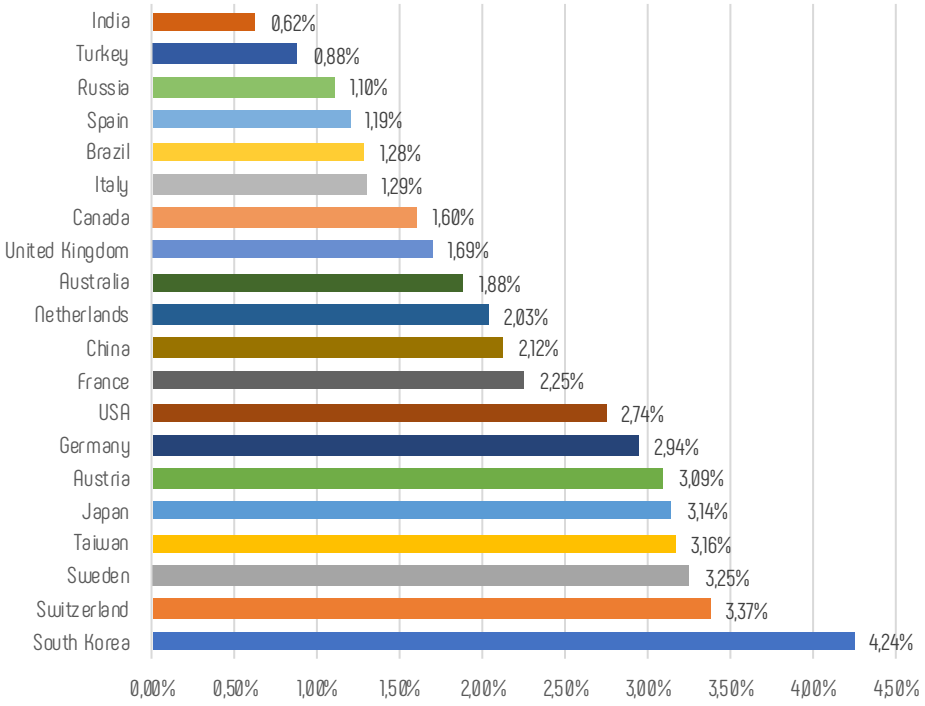

Figure 2. The world's leading countries R&D expenditure, % of GDP
Source: The World Bank Databank. URl: https://databank.worldbank.org/

It should be mentioned that Russia is far behind world leaders in terms of funding of R&D, not only as a percentage of GDP (Fig. 2), but also in terms of absolute R&D expenditure. It is interesting that the nominal funds allocated for R&D in China, for example, are equivalent to the entire annual budget of the Russian Federation (according to 2019 data) and the USA annual R&D expenditure is almost double the Russian Federation federal budget.

Also, non-competitiveness in domestic R&D activities and the resulting inefficient use of budgetary resources should be emphasized. A typical example of national development in this sphere is the Innovation Centre Skolkovo. For ten years of its existence almost entirely using budget funds (The Accounts Chamber: expenditures for Skolkovo are 95% covered by funds from the state budget, 2016), this institution is infamous for its:

- high wages (approximately 1280% higher than the average for the Russian economy (Golden Skolkovo: gigantic money was spent on a merchant's grand scale, 2016),
- substantial compensation payments and other expenses (The Accounts Chamber complained about Skolkovo to the Prosecutor General's Office, 2016),
- unused subsidy balances in tens of billions of rubles transferred to various affiliated structures, instead of returning unused funds to the budget (How much does Skolkovo cost us?, 2020),
- huge annual bonus payments, etc.

Skolkovo is also infamous for other scandals and investigations.

Unfortunately, for decade of its activity, Skolkovo has never been remembered by the innovations.

And it is not only that Skolkovo is not associated with any significant products, but also when being disconnected of the abundant budget financing (Table 4) (FCS of Russia: import-export of the most important goods for January-June 2019) it will not be able to exist independently, similar to a patient with coronavirus without artificial lung ventilation.

It seems that Skolkovo would be much more productive and efficient if it had the necessary competitive

environment.

A similar problem of national competitiveness is unfortunately concerned with the activities of quasi-monopolies and oligopolies in many fields of the domestic economy.

Table 4 - Basic parameters of the «Skolkovo» subprogram

Key activities	Funding levels per year, thousands of rubles							
	2013	2014	2015	2016	2017	2018	2019	2020
1. Creating and developing innovation environment	7,619,527.0	5,990,276.3	8,617,949.7	7,655,057.2	5,716,070.0	5,504,382.0	4,571,748.0	4,624,238.0
2. The establishment and development of Skolkovo Science and Technology Institute	4,876,800.0	4,750,984.2	3,419,382.5	4,750,000.0	5,400,000.0	5,700,000.0	6,000,000.0	6,300,000.0
3. Creation and management of Skolkovo physical infrastructure	11,823,673.0	16,061,239.5	10,319,094.6	1,592,202.8	350,686.0	257,848.0	254,272.0	259,926.0
Total:	24,320,000.0	26,802,500.0	22,356,426.8	13,997,260.0	11,466,756.0	11,462,230.0	10,826,020.0	11,184,164.0

Source: composed by author

It seems that Skolkovo would be much more productive and efficient if it had the necessary competitive environment.

A similar problem of national competitiveness is unfortunately concerned with the activities of quasi-monopolies and oligopolies in many fields of the domestic economy.

Fifth, the method based on the theory of effective competition (Block 7, Table 3) might well have increased Russia's national competitiveness. But, unfortunately, it depends on the low efficiency of economic management techniques (for example, Russia's rejection of the OPEC deal in March 2020 and making the same deal in a month, but already much less remunerable for our country). We can remember the country economy funds withdrawal in accordance with budget rule, which was criticized even by the Minister of Economic Development of the Russian Federation A. Ulukaev and by Adviser to the President of the Russian Federation S. Glazhev. That is why a method based on the effective competition theory is ultimately based on the relationship between the sum of the properties and the total need for it. It is obvious that it is not possible to ensure the proper marketing of domestic products without adequate stimulation of consumer demand. In terms of international economic competitiveness, it cannot be enhanced without an efficient process of increasing national import substitution.

Sixth, if the method based on the requirements profile (Block 8, Table 3) is used, it must be noted that when the domestic economy is dominated by quasi-monopolies and oligopolies, it is practically impossible to talk about the competitiveness of the key indicators considered:

- production costs economy,
- current assets management efficiency,
- management effectiveness through advertising and trade stimulation,
- competitiveness of products in terms of quality - price ratio.

If we consider the long-term huge budget funds that was spent on proclamations (primarily on TV) that neighboring countries have it even worse, we can certainly say that the domestic products quality definitely hasn't become better.

Seventh, analyzing the competitive polygon (Block 9, Table 3), the polar profiles (Block 11, Table 3) and the SNW analysis methods (Block 13, Table 3), comparative data of the immediate competitor should be used. When considering the strategic goal of Russia's PPP top five countries in terms of GDP (Table 1), Germany (5th place) can be seen as the Russian Federation's closest competitor (6th place according to IMF).

Rating of economic development correlation of the Russian Federation and Germany according to the Global Competitiveness Index (WEF, 2020) is presented in Table 5.

Table 5 - Rating of economic development correlation of the Russian Federation and Germany according to the Global Competitiveness Index

Rating	Russian Rating	Germany Rating	Lagging, position
GDP	11	4	7
Gross national income per capita	73	20	53
Economic freedom	98	24	74
Global competitiveness	43	7	36
Doing business	28	22	6
Property rights protection	96	13	83
International trade	105	10	95
Attraction of the foreign direct investment	31	3	28
Energy consumption	28	23	5
Food security	42	11	31

Source: composed by author

If consider the very convenient but unconstructive hypothesis that countries' economic development indices are wrong according to the Global Competitiveness Index (WEF, 2020) and the presented results are considered in terms of national competitiveness, it should be noted that the biggest lag between Russia and Germany is in the international trade ranking, which directly characterizes the international economic competitiveness of countries. It could be said that Russia's low international trade ranking is a consequence of the quasi-monopoly and oligopoly dominance, and their prosperity in the national economy is the result of corruption. There is too large a difference between the countries (Table 5) by property and economic protection ratings confirms as well as the shadow economy large scale of in Russia (Tebekin, Egorova, 2019).

Eighth, if the method of competitiveness rating based on the calculation of market share is used (Block 10, Table 3), we should remember that Russia's share even among the sixteen largest economies of the world does not reach 2 percent (Fig. 3). Obviously, we are talking about searching for (or creating) special sectoral market niches where Russia can increase its competitive advantage. Indeed, the comparative advantage theory of D. Ricardo (Blaug, 1994) states the same.

The same problem can be solved by the SWOT analysis method (Block 12, Table 3). Using this method (along with GAP-analysis tools, BCG matrices, Thompson and Strickland models, Mckinsey DPM models, PIMS-analysis models, RETS-analysis models, etc.) while determining the prospects for Russian Federation national competitiveness increasing (Tebekin, 2016) showed the great inertia of domestic economy (i.e., returning to the problem of the growth rate), both in the development of new markets (spatial diversification) and in the creation of new products (structural changes). The most effective cooperative motion (according to the GAP analysis model): «New product, but concerned with existing - new market, but concerned with existing».

Studies have shown that following classical approaches are useful for rating the initial components of national competitiveness: the theory of comparative advantage of D. Ricardo, method based on the theory of equilibrium, rating method, product quality method. Also, the methods based on: the evaluation of competitive status, the theory of effective competition, the profile of requirements, the method of competitive polygon, the method of assessing competitiveness based on the calculation of market share, the method of polar profiles, SWOT analysis method, SNW analysis method.

Results and conclusions

The following problems were identified by the well-known approaches acceptable for Russia's

competitiveness defining.

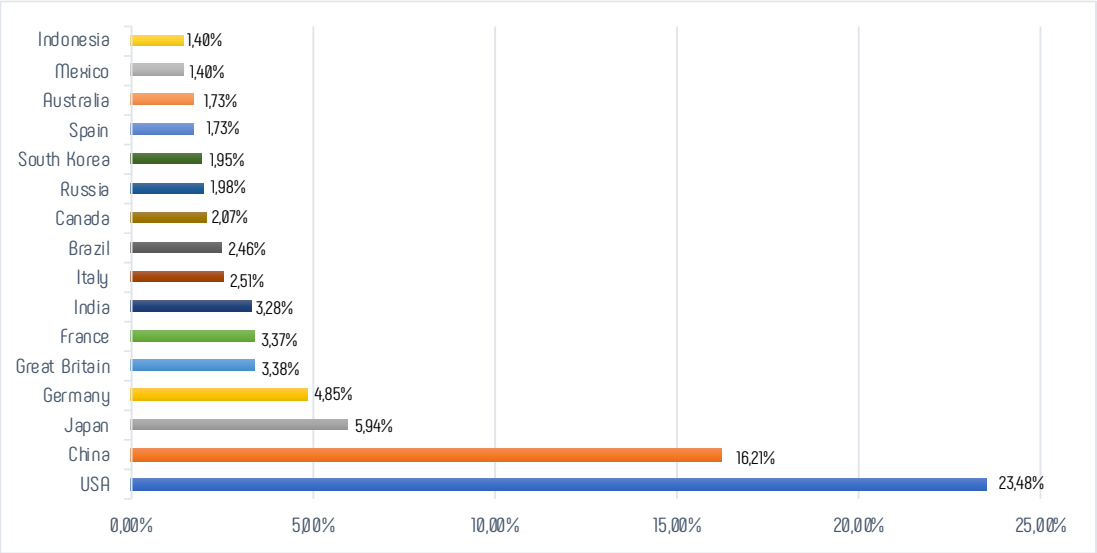

Figure 3. Shares of the world's sixteen largest economies in world GDP (by nominal parity)
Source: The World Bank Databank. URl: https://databank.worldbank.org/

First, the deficiency problem. In accordance with the theory of equilibrium, an appropriate balance and combination of proportionality: production and consumption; resources and their use; supply and demand; production factors and their use; material and financial flows.

Second, according to the product quality assessment method, the next problem is the lack of a national quality philosophy (similar, for example, to the Japanese quality philosophy of CFN), which, unfortunately, is in conflict with the policy of state, state monopolies and quasi-monopolies in the domestic economy (i.e., the lack of competitive environment).

Third, in accordance with the competitive status approach, there is a lack of expenditure on science, which, in the transition from the fifth to the sixth technological order, could be used effectively to develop breakthrough technologies of the sixth technological order in the domestic economy. Also, it should be mentioned that R&D funds are poorly spent.

Fourth, using the effective competition theory approach, the problem of increasing Russia's national competitiveness is related to the low level of economic management technologies efficiency. That is why a method based on the effective competition theory implementation is ultimately based on the relationship between the sum of the properties and the total need for it; it is obvious that without adequate stimulation of consumer demand it is not possible to ensure the proper marketing of domestic products. Thus, the international economic competitiveness cannot be enhanced without an efficient process of increasing national import substitution.

Fifth, according to the method based on the requirements profile, it must be noted that when the domestic economy is dominated by quasi-monopolies and oligopolies, it is practically impossible to talk about the competitiveness of the key indicators in terms of: production cost-effectiveness, working capital management efficiency, marketing and promotion management efficiency, competitiveness of goods according to quality - price ratio.

Sixth, analyzing national competitiveness in terms of the methods of the competitive polygon, polar profiles and SNW - analysis, it must be noted that Russia is inferior to direct competitors in the ranking of international trade, that directly characterizes international economic competitiveness. However, Russia's low ranking in international trade is a consequence of the quasi-monopolies and oligopolies dominance in the national economy, and their prosperity in the national economy is the result of corruption, which confirms the high gap with closest competitors in property and economic protection ratings along with the high RF shadow economy level.

Seventh, if the method of competitiveness rating based on the calculation of market share and SWAT-

analysis are used, the Russia's share even among the sixteen largest economies of the world does not reach 2 percent. It is obvious we should search for (or create) special sectoral market niches where Russia can increase its competitive advantage. Indeed, the comparative advantage theory of D. Ricardo states the same. But using of this method (along with GAP-analysis tools, BCG matrices, Thompson and Strickland models, Mckinsey DPM models, PIMS-analysis models, PEST-analysis models, etc.) while determining the prospects for raising the Russian Federation national competitiveness showed the great inertia of domestic economy (i.e., returning to the problem of the growth rate), both in the development of new markets (spatial diversification) and in the creation of new products (structural changes). The most effective cooperative motion (according to the GAP analysis model): «New product, but concerned with existing - new market, but concerned with existing»

In general, the results of the initial components of national competitiveness assessment make it possible to determine the subsequent national competitiveness process components.

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A MODEL FOR MEASURING THE IMPACT OF PRODUCTIVITY AND QUALITY OF LIFE ON NATIONAL COMPETITIVENESS

Sergei V. Shkiotov

Yaroslavl State Technical University, Russia.
E-mail: shkiotov@yandex.ru

Maksim I. Markin

Yaroslavl State Technical University, Russia.
E-mail: markinmi@yandex.ru

Abstract. There is a certain consensus in the economic literature about the problems of the competitiveness of countries in the global economy – factor productivity determines the country's competitiveness, its growth rates and the quality of life of the population. The purpose of this work is to create an economic-mathematical model, which describes the relationship between the level of national competitiveness, the labor productivity and the quality of life. At the first stage of investigation, based on the data taken from the World Economic Forum reports (2010-2018 period) we verified the hypothesis of the presence of a direct (statistically significant) relationship between the studied indicators, using the methods of economic and mathematical modeling. The second stage of the study involves the creation of a mathematical and economic model, which makes it possible to determine the direction of the dependence identified and the extent to which the factors studied have influenced national competitiveness.

Keywords: competitiveness, World Economic Forum, verification, quality of life, labor productivity, correlation and regression analysis.

JEL codes: C12; F20; O11

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Introduction

The theory of national competitiveness is pretty much formed at the moment. The essential is the M. Porter's concept containing a number of key aspects: 1) competitive companies form competitive sectors of a country's economy, ensuring national competitiveness; 2) national competitiveness is not inherited but created by national producers; 3) national competitiveness is directly determined by the level of labour productivity (factor productivity) which is largely determined by the pace of innovation; 4) the ultimate goal of national competitiveness increasing is to raise quality of life of population (Shkiotov, Markin, 2018).

This understanding of national competitiveness provides the following hypothesis: the labor productivity in economics determines the level of its competitiveness and affects the quality of life of the population directly.

It is important to understand that the views of M. Porter have become the theoretical basis of a number of generally recognized ratings of competitiveness of countries in global economics (annual studies conducted by the World Economic Forum, the International Institute for Management Development) which determine specifically the attractiveness of an economy for foreign investors.

Moreover, the "pure theory" moved to actual policy making based on the concept of national competitiveness. Thus, for example, the Lisbon strategy of the EU is based on accepting the need to increase the level of competitiveness, while achieving certain positions in the global competitiveness rating of the World Economic Forum becomes a part of socioeconomic development strategies of whole countries (for example, Kazakhstan, Russia) (Balkyte, Tvaronaviciene, 2010).

At the same time, the appearance of Porter theory made the academics react to it. Some - managerial

practitioners - criticized the national competitiveness theory for its unnecessary dedication to local, inner development factors, ignoring the possibilities and the risks of global economy; others - "pure economics" theorists - deny the existence of the concept itself.

Managerial practitioners tried to expand and overcome the weak spots of the Porter theory. Thus, in early 1990s the "double diamond" model of Rugman and D'Cruz (1993) was born, which allowed to account for the impact of making the economic activity transnational. The updated model described thus described the competitiveness of large, developed countries well, but could produce incorrect results for developing countries. In 1995, the "generalized double diamond" competitiveness model of Moon, Rugman, and Verbeke was born, which allowed to correct this downside. Later, in 2000, the nine-factor model was created by Dong-Sung Cho, who proposed to expand the "competitiveness diamond" of Porter by including the human factor.

The criticism of the Porter model by the "pure economics" theorists was much harsher. Waverman (1995), Davies and Ellis (2000), Bolto (1996) pointed in their work to the fact that there is no fundamental theory behind the Porter model, it has no predictive capabilities and leads to incorrect interpretation of the classic and the new trade theory. Moreover, the interdependence between the national prosperity, productivity, trade, exports and competitiveness shown in the Porter model is distorted (Smit, 2010).

A review of current publications on the topic of national competitiveness shows that economics is gradually moving away from creating "large theories" to studying particular cases of success or failure of the policy of increasing national competitiveness in a given country.

Thus, in the study conducted by S. O'Donnell and T. Blumentritt (1999), the contribution of foreign companies in the development of national competitiveness of the USA was researched; the work of G. Pisano and W. Shih (2009) is dedicated to the American Competitiveness Initiative (ACI) (2006); J. Nahm and E. Steinfeld (2014) analyzed a unique feature of Chinese economy - to create and commercialize manufacturing innovations; J. Ženka, J. Novotný and P. Csank (2014) show the possibilities and limitations in applying Porter competitiveness theory in Central Europe, taking into account specific geographical and institutional contexts.

The second trend of current studies of national competitiveness is the gradual abandonment of free trade/perfect competition model in global markets, recognizing the necessity of taking into account the real economic practice. The aforementioned work of D.-S. Cho, published in 1998, is noteworthy in this sense; M. Porter (2007) himself talks about the necessary harmonization of industrial and competitive policies of the state; S. Thore and R. Tarverdyan (2016) point to the possibility of environmental preservation and growth of public prosperity amid intense economic competition in the sustainable competitiveness model framework.

Another clear trend in current economic literature on the researched topic is the studz of the role of human capital in building national competitiveness. Thus, J. Sekuloska (2014) notes that it is impossible for national competitiveness to grow without constant development of human capital based on the improvement of education and professional retraining; H. Mihaela, C. Ogrean, L. Belascu (2011) study the connection between national competitiveness and culture and values of the society; T. Hemphill (2009) discusses the need for cooperation of corporate and government interests for the sake of increasing national competitiveness.

Research Data and Methods

The goal of this study if to verify the following hypothesis: there is a direct (statistically significant) connection between the competitiveness level of a country, productivity and quality of life of the population.

Currently there is a lot of annually published studies concerning the topic of inter-country comparative studies in some way, but there are only two universally accepted reports dedicated exclusively to the national competitiveness problem: Global Competitiveness Report of World Economic Forum (WEF) and World Competitiveness Yearbook of International Institute for Management Development (IMD).

To assess the dynamics of competitiveness of the developed economies in the long-time interval, the WEF report was chosen because:

- the report is published annually and has accumulated enormous evidence base over 35 years;
- the study, in contrast to its analog World Competitiveness Yearbook, can be freely accessed.

- it has internal logic, a wide range of the analyzed parameters (more than 100) and countries (135), takes into account the opinion of the local expert community (Shkiotov, Markin, 2016).

International statistics and comparative studies of the quality-of-life evaluation also has a rich history. In 1960, the UN working group has prepared a report on the principles of determining and measuring quality of life indicators at international level. Current researchers interpret the quality of life as a complex descriptor of socioeconomic, political, cultural, ideological, ecological factors and conditions of the existence of an individual, the position of the person in society (Nagimova, 2007). The two most important indicators in the evaluation of quality of life of the population in international statistics are: Human Development Index (HDI) and GDP per capita. HDI is a combined indicator of human development in countries and regions of the world. Each year the UNDP experts together with a group of independent international experts that use the statistical data of national institutions and international organizations along with analytical developments in their work publish the Human Development Report, the core of which is the HDI.

Of course, the labor productivity reflects the amount of product created by one employee per unit time. The labor productivity is a ratio of GDP (or GVA) to the number of people employed or the amount of time worked (in hours) (Zhdanov, Afanasyeva, 2011). Cross-country comparisons of labor productivity are conducted by a number of international organizations, research companies and institutes, economic departments of state structures such as Organization for Economic Co-operation and Development (OECD), The Conference Board, McKinsley Global Institute (MGI), the U.S. Bureau of Labor Statistics (BLS USA) etc.

Thus, it is possible to confirm or refute a number of statements of the Porter theory by determining the change in the level of national competitiveness for a group of developed and developing countries in a long-time interval and superimposing them on the dynamics of the quality of life and labor productivity indicators in these economies.

Methodological research basis

The study period is 10 years, long-term (the choice of time interval is due to two factors: research methodology of international organizations is constantly changing, it is necessary to ensure the comparability of the data used, which is possible in a medium and long-time interval; this period of time covers the development of the researched economies taking into account the effects of overcoming the global financial crisis).

Studied parameters:

- national competitiveness level – Global Competitiveness Index (GCI) (it is calculated annually by the World Economic Forum; the data are given in the Global Competitiveness Report);
- quality of life – Human Development Index (HDI) (it is calculated annually by UNDP; the data are given in the Human Development Report);
- labor productivity – productivity per one employed in prices of 2016 taking into account purchasing power parity of 2011 (the data on countries a taken from the statistical database The Conference Board, Total Economy Database).

Sample of countries: 30 countries of the world (1st,2nd-3rd,4th quartile of the WEF Global Competitiveness Report of 2017-18).

4. Research methods: to test the hypothesis, the correlation analysis is used. The Pearson correlation coefficient values are important for studies in which the value of the indicator is close to normal. It takes the value in the interval from -1 to +1. Negative values indicate an inverse correlation between the indicators, positive values indicate a direct correlation. When the value of the correlation coefficient is a zero, there is no correlation between the indicators. To classify the correlation according to the value of the linear correlation coefficient, the Chaddock scale is used (Table 1).

The presence or lack of correlation between the studies parameters can be found only after verifying the significance of the correlation coefficient. This is due to the fact that the reliability of the correlation coefficient depends on the sample size – the value of the correlation coefficient can be attributed entirely to random changes in the sample. The significance level was set at 5% during the study to verify the significance

of the correlation coefficient.

Table 1 – The Chaddock Scale fot correlation assessment [1]

Value	0 : 0.1	0.11 : 0.3	0.31 : 0.5	0.51 : 0.7	0.71 : 0.9	0.91 : 0.99	0.991 : 1
Correlation	missing	weak	moderate	noticeable	close	strong	functional

Source: from Shkiotov, Markin, 2018

5. To conduct the correlation analysis in the study, the "R-Studio" software product was used. Data for correlation analysis are presented in Table 2.

Table 2 – Data for correlation analysis

Country	Values \ Years	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Switzerland	Competitiveness level, score	5.61	5.60	5.63	5.74	5.72	5.67	5.70	5.76	5.81	5.86
	HDI, index	0.916	0.920	0.932	0.932	0.934	0.936	0.938	0.939	n/a	n/a
	Labor productivity, thous. USD per capita	102962	100204	102970	102110	101365	101955	102529	102241	102192	102408
USA	Competitiveness level, score	5.74	5.59	5.43	5.43	5.47	5.48	5.54	5.61	5.70	5.85
	HDI, index	0.907	0.907	0.910	0.913	0.915	0.916	0.918	0.920	n/a	n/a
	Labor productivity, thous. USD per capita	112998	114090	117663	118601	119376	120386	121672	123473	123502	124442
Singapore	Competitiveness level, score	5.53	5.55	5.48	5.63	5.67	5.61	5.65	5.68	5.72	5.71
	HDI, index	0.887	0.889	0.911	0.917	0.920	0.922	0.924	0.925	n/a	n/a
	Labor productivity, thous. USD per capita	121200	117252	130810	134001	134146	135444	135592	135715	137574	142823
Netherlands	Competitiveness level, score	5.41	5.32	5.33	5.41	5.50	5.42	5.45	5.50	5.57	5.66
	HDI, index	0.906	0.906	0.911	0.921	0.922	0.923	0.923	0.924	n/a	n/a
	Labor productivity, thous. USD per capita	95258	92458	94395	95142	94328	95270	96711	97977	99073	100126
Germany	Competitiveness level, score	5.46	5.37	5.39	5.41	5.48	5.51	5.49	5.53	5.57	5.65
	HDI, index	0.906	0.907	0.912	0.916	0.919	0.920	0.924	0.926	n/a	n/a
	Labor productivity, thous. USD per capita	91624	86455	89588	91673	91240	91223	92212	92738	93225	94162
Hong Kong	Competitiveness level, score	5.33	5.22	5.30	5.36	5.41	5.47	5.46	5.46	5.48	5.53
	HDI, index	0.892	0.894	0.898	0.905	0.907	0.913	0.916	0.917	n/a	n/a
	Labor productivity, thous. USD per capita	100705	99319	106036	108108	107613	108943	111285	112867	115004	117913
Sweden	Competitiveness level, score	5.53	5.51	5.56	5.61	5.53	5.48	5.41	5.43	5.53	5.52
	HDI, index	0.898	0.895	0.901	0.903	0.904	0.906	0.909	0.913	n/a	n/a
	Labor productivity, thous. USD per capita	95919	93200	97839	98349	97351	97623	98778	101742	103263	103596

Country	Values \ Years	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
UK	Competitiveness level, score	5.30	5.19	5.25	5.39	5.45	5.37	5.49	5.43	5.49	5.51
	HDI, index	0.895	0.895	0.902	0.898	0.899	0.904	0.908	0.910	n/a	n/a
	Labor productivity, thous. USD per capita	86728	84443	85660	86468	86801	87557	88147	88691	89146	89761
Japan	Competitiveness level, score	5.38	5.37	5.37	5.40	5.40	5.40	5.47	5.47	5.48	5.49
	HDI, index	0.881	0.879	0.884	0.889	0.894	0.899	0.902	0.903	n/a	n/a
	Japan	75511	72527	75981	76131	77768	79000	78922	79726	79778	80302
Finland	Competitiveness level, score	5.50	5.43	5.37	5.47	5.55	5.54	5.50	5.45	5.44	5.49
	HDI, index	0.878	0.874	0.878	0.884	0.887	0.890	0.893	0.895	n/a	n/a
		95238	89518	92835	94022	91874	91829	91689	91938	93665	96021
Jordan	Competitiveness level, score	4.37	4.30	4.21	4.19	4.23	4.20	4.25	4.23	4.29	4.30
	HDI, index	n/a	n/a	0.737	0.735	0.737	0.737	0.741	0.742	n/a	n/a
	Labor productivity, thous. USD per capita	46611	45890	45078	44683	43943	44153	43053	42816	43224	42816
Colombia	Competitiveness level, score	4.05	4.05	4.14	4.20	4.18	4.19	4.23	4.28	4.30	4.29
	HDI, index	n/a	n/a	0.700	0.707	0.712	0.720	0.724	0.727	n/a	n/a
	Labor productivity, thous. USD per capita	29810	28692	28600	29257	29445	30364	31027	31228	31640	31874
Georgia	Competitiveness level, score	3.86	3.81	3.86	3.95	4.07	4.15	4.22	4.22	4.32	4.28
	HDI, index	n/a	n/a	0.742	0.749	0.755	0.759	0.768	0.769	n/a	n/a
	Labor productivity, thous. USD per capita	17696	16495	17827	18701	19196	19986	20514	20690	21464	22412
Romania	Competitiveness level, score	4.10	4.11	4.16	4.08	4.07	4.13	4.30	4.32	4.30	4.28
	HDI, index	n/a	n/a	0.798	0.797	0.794	0.797	0.798	0.802	n/a	n/a
	Labor productivity, thous. USD per capita	44392	42610	41525	42712	45426	47447	48537	51111	54061	55454
Iran	Competitiveness level, score	n/a	n/a	4.14	4.26	4.22	4.07	4.03	4.09	4.12	4.27
	HDI, index	n/a	n/a	0.745	0.755	0.769	0.770	0.774	0.774	n/a	n/a
	Labor productivity, thous. USD per capita	63429	66247	68598	71364	65298	63581	66310	63321	67320	72212
Jamaica	Competitiveness level, score	3.89	3.81	3.85	3.76	3.84	3.86	3.98	3.97	4.13	4.25
	HDI, index	n/a	n/a	0.722	0.725	0.727	0.727	0.729	0.730	n/a	n/a
	Labor productivity, thous. USD per capita	22308	22354	22654	22893	22693	22617	22353	22344	21966	21924

Country	Values \ Years	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Morocco	Competitiveness level, score	4.08	4.03	4.08	4.16	4.15	4.11	4.21	4.17	4.20	4.24
	HDI, index	n/a	n/a	0.612	0.623	0.634	0.640	0.645	0.647	n/a	n/a
	Labor productivity, thous. USD per capita	20967	19648	20188	20193	20859	21571	21998	22925	22797	23333
Peru	Competitiveness level, score	3.95	4.01	4.11	4.21	4.28	4.25	4.24	4.21	4.23	4.22
	HDI, index	n/a	n/a	0.721	0.725	0.731	0.735	0.737	0.740	n/a	n/a
	Labor productivity, thous. USD per capita	19888	19690	20884	21915	22869	23985	24386	25143	25807	25987
Armenia	Competitiveness level, score	3.73	3.71	3.76	3.89	4.02	4.10	4.01	4.01	4.07	4.19
	HDI, index	n/a	n/a	0.729	0.732	0.736	0.739	0.741	0.743	n/a	n/a
	Labor productivity, thous. USD per capita	20127	17722	17868	18867	20247	21077	22415	24460	26138	27061
Croatia	Competitiveness level, score	4.22	4.03	4.04	4.08	4.04	4.13	4.13	4.07	4.15	4.19
	HDI, index	n/a	n/a	0.808	0.815	0.817	0.820	0.823	0.827	n/a	n/a
	Labor productivity, thous. USD per capita	59262	55300	56650	58727	59558	60774	59135	59779	61494	64614
Venezuela	Competitiveness level, score	3.56	3.48	3.48	3.51	3.46	3.35	3.32	3.30	3.27	3.23
	HDI, index	0.754	0.754	0.756	0.767	0.770	0.771	0.769	0.767	n/a	n/a
	Labor productivity, thous. USD per capita	47402	44925	43954	44932	46674	45976	42838	40127	33828	29335
Congo, Democratic Republic	Competitiveness level, score	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	3.29	3.27
	HDI, index	0.389	0.395	0.398	0.407	0.412	0.419	0.425	0.435	n/a	n/a
	Labor productivity, thous. USD per capita	1779	1771	1836	1900	1970	2069	2191	2267	2246	2259
Nigeria	Competitiveness level, score	3.81	3.65	3.38	3.45	3.67	3.57	3.44	3.46	3.39	3.30
	HDI, index	0.487	0.492	0.500	0.507	0.514	0.521	0.525	0.527	n/a	n/a
	Labor productivity, thous. USD per capita	15046	15892	17218	17946	18213	18655	19336	18810	17550	17203
Zimbabwe	Competitiveness level, score	2.88	2.77	3.03	3.33	3.34	3.44	3.54	3.45	3.41	3.32
	HDI, index	0.419	0.436	0.452	0.464	0.488	0.498	0.507	0.516	n/a	n/a
	Labor productivity, thous. USD per capita	2928	3091	3503	3988	4423	4539	4546	4494	4408	4334
Malawi	Competitiveness level, score	3.42	3.42	3.45	3.58	3.38	3.32	3.25	3.15	3.08	3.11
	HDI, index	0.415	0.430	0.444	0.454	0.459	0.466	0.473	0.476	n/a	n/a
	Labor productivity, thous. USD per capita	2813	2882	2897	2929	2871	2902	2968	2957	2928	2940

Country	Values \ Years	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Mali	Competitiveness level, score	3.43	3.22	3.28	3.39	3.43	3.33	3.43	3.44	3.46	3.33
	HDI, index	0.385	0.396	0.404	0.411	0.421	0.430	0.438	0.442	n/a	n/a
	Labor productivity, thous. USD per capita	6984	6772	6551	6337	5986	5839	5896	6155	6319	6428
Madagascar	Competitiveness level, score	3.38	3.42	3.46	3.36	3.38	3.42	3.41	3.32	3.33	3.40
	HDI, index	0.500	0.503	0.504	0.506	0.508	0.509	0.511	0.512	n/a	n/a
	Labor productivity, thous. USD per capita	3529	3247	3145	3048	2998	2989	3014	3049	3080	3111
Zambia	Competitiveness level, score	3.49	3.50	3.55	3.67	3.80	3.86	3.86	3.87	3.60	3.52
	HDI, index	0.518	0.533	0.543	0.554	0.565	0.570	0.576	0.579	n/a	n/a
	Labor productivity, thous. USD per capita	11767	12512	13370	13266	13578	13780	13932	13847	13846	13932
Mozambique	Competitiveness level, score	3.15	3.22	3.32	3.31	3.17	3.30	3.24	3.20	3.13	2.89
	HDI, index	0.382	0.390	0.397	0.400	0.405	0.409	0.414	0.418	n/a	n/a
	Labor productivity, thous. USD per capita	2664	2781	2917	3081	3264	3427	3671	3797	3818	3895
Yemen	Competitiveness level, score	n/a	n/a	n/a	3.06	2.97	2.98	2.96	n/a	2.74	2.87
	HDI, index	0.483	0.488	0.493	0.494	0.498	0.500	0.499	0.482	n/a	n/a
	Labor productivity, thous. USD per capita	23963	24137	26309	21968	22039	22533	21891	14939	13008	12431

Source: composed by authors from WEF, 2009-2018

Results

Visual analysis of the data is presented in Figures 1-6.

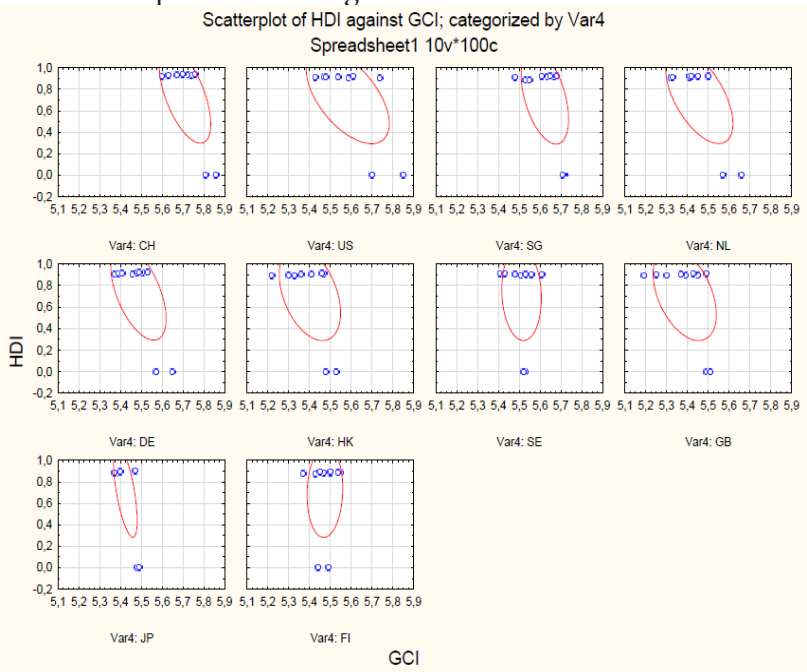

Figure 1. The scatter chart between the level of national competitiveness (GCI) and quality of life (HDI) (CH – Switzerland; DE – Germany; FI – Finland; GB – Great Britain; HK – Hong Kong; JP – Japan; NL – Netherlands; SE – Sweden; SG – Singapore; US - USA)

Source: composed by authors

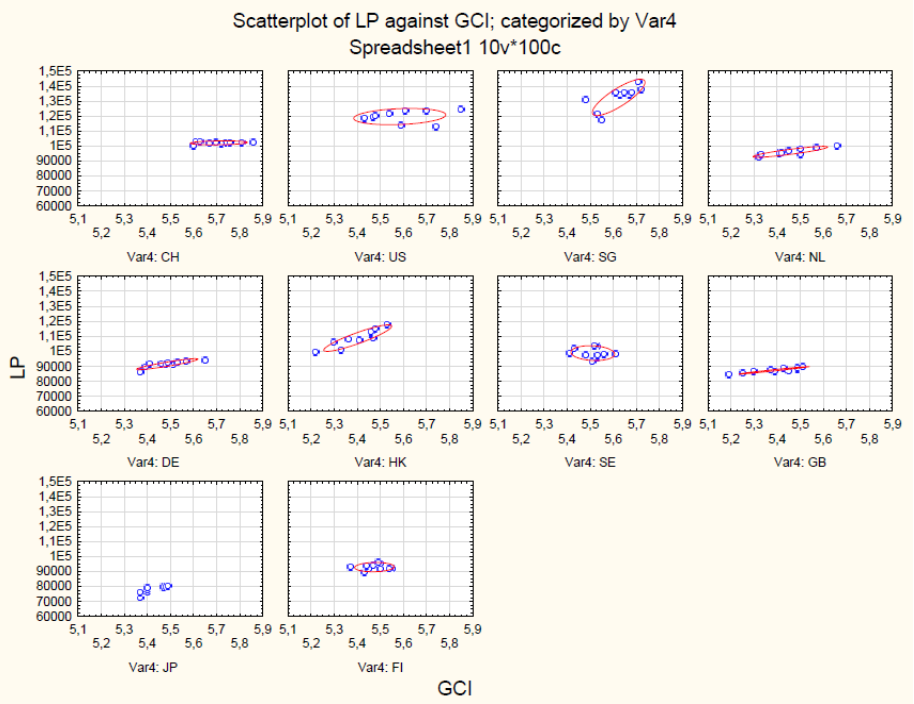

Figure 2. The scatter chart between the level of national competitiveness (GCI) and labor productivity (LP) (CH – Switzerland; DE – Germany; FI – Finland; GB – Great Britain; HK – Hong Kong; JP – Japan; NL – Netherlands; SE – Sweden; SG – Singapore; US - USA)

Source: composed by authors

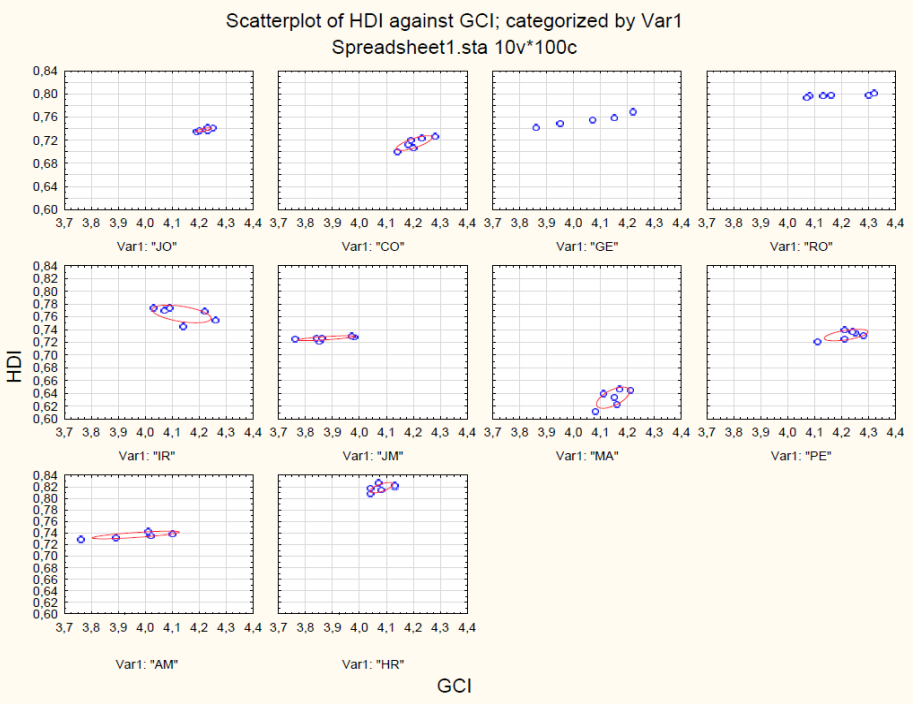

Figure 3. The scatter chart between the level of national competitiveness (GCI) and quality of life (HDI) (JO – Jordan; CO – Colombia; GE – Georgia; RO – Romania; IR – Iran; JM – Jamaica; MA – Morocco; PE – Peru; AM – Armenia; HR - Croatia)

Source: composed by authors

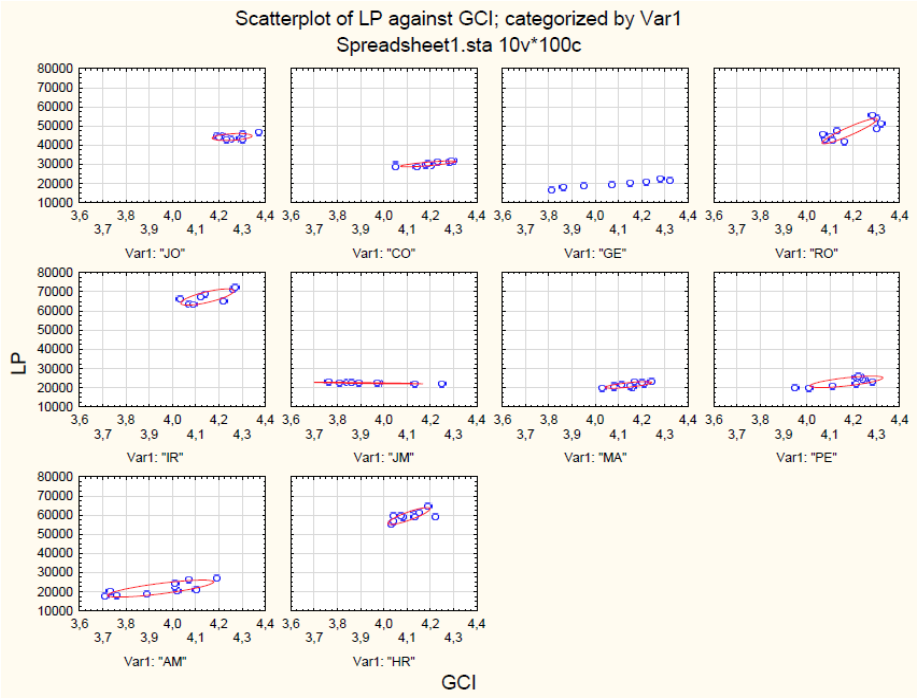

Figure 4. The scatter chart between the level of national competitiveness (GCI) and labor productivity (LP) (JO – Jordan; CO – Colombia; GE – Georgia; RO – Romania; IR – Iran; JM – Jamaica; MA – Morocco; PE – Peru; AM – Armenia; HR - Croatia)

Source: composed by authors

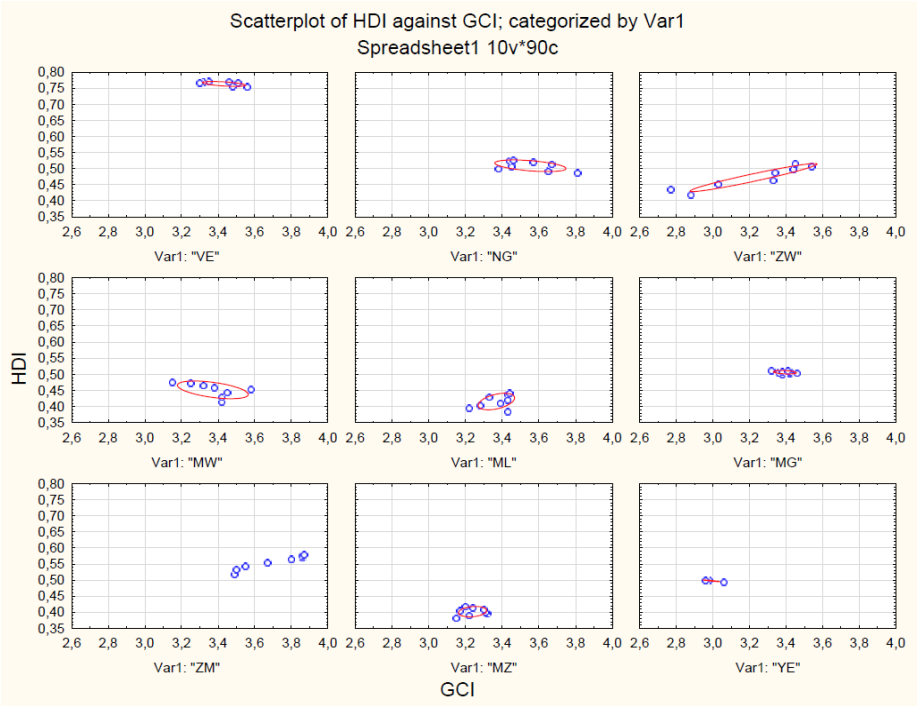

Figure 5. The scatter chart between the level of national competitiveness (GCI) and quality of life (HDI) (VE - Venezuela; NG - Nigeria; ZW - Zimbabwe; MW - Malawi; ML - Mali; MG - Madagascar; ZM - Zambia; MZ - Mozambique; YE - Yemen)

Source: composed by authors

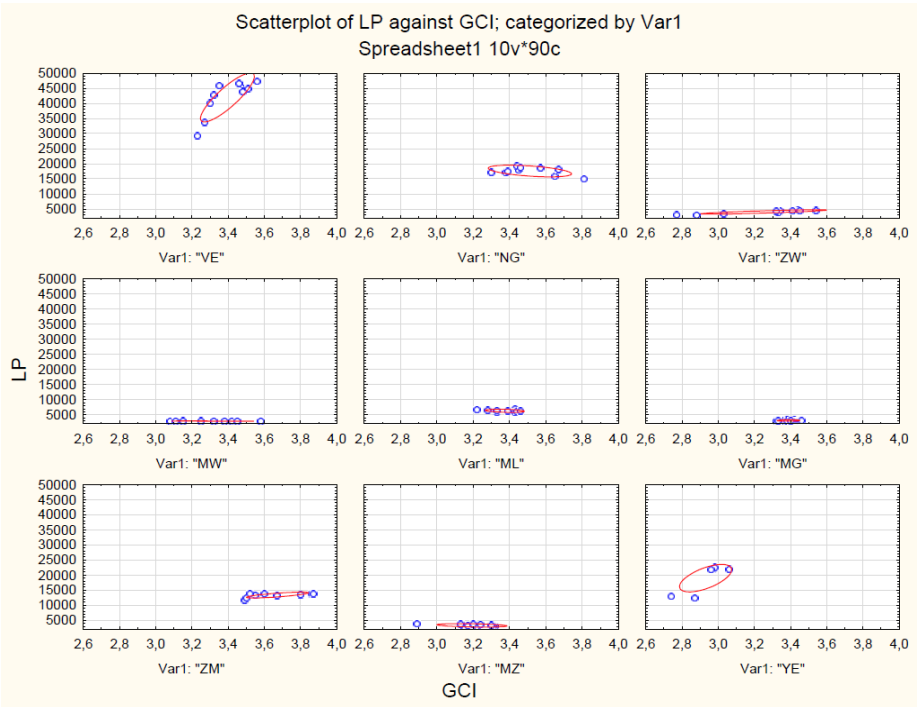

Figure 6. The scatter chart between the level of national competitiveness (GCI) and labor productivity (LP) (VE - Venezuela; NG - Nigeria; ZW - Zimbabwe; MW - Malawi; ML - Mali; MG - Madagascar; ZM - Zambia; MZ - Mozambique; YE - Yemen)

Source: composed by authors

Since the analysis of scatter charts didn't identify the presence of any correlation between the studied indicators, the next step of the research was to build a correlation matrix for the studied countries, the results of the analysis are presented in Table 3.

Table 3 – Results of correlation analysis

Country	Qualitative assessment of the correlation of national competitiveness and	
	labor productivity	quality of life population
Switzerland	Missing	Close (0.78)
USA	Missing	Missing
Singapore	Close (0.73)	Close (0.7)
Netherlands	Close (0.89)	Close (0.76)
Germany	Close (0.84)	Close (0.76)
Hong Kong	Missing	Strong (0.91)
Sweden	Missing	Missing
UK	Close (0.89)	Noticeable (0.63)
Japan	Close (0.84)	Close (0.87)
Finland	Missing	Missing
Jordan	Missing	Close (0.80)
Colombia	Close (0.81)	Close (0.86)
Georgia	Strong (0.97)	Strong (0.98)
Romania	Close (0.81)	Close (0.82)
Iran	Close (0.74)	Missing

Country	Qualitative assessment of the correlation of national competitiveness and	
	labor productivity	quality of life population
Jamaica	Close (0.89)	Missing
Morocco	Missing	Missing
Peru	Close (0.79)	Missing
Armenia	Close (0.80)	Close (0.82)
Croatia	Noticeable (0.68)	Missing
Venezuela	Close (0.81)	Noticeable (-0.65)
Congo, Democratic Republic of the Congo	Insufficient data	Insufficient data
Nigeria	Missing	Missing
Zimbabwe	Strong 0.9674648	Strong (0.93)
Malawi	Missing	Missing
Mali	Missing	Missing
Madagascar	Missing	Missing
Zambia	Noticeable (0.60)	Strong (0.97)
Mozambique	Missing	Missing
Yemen	Close (0.85)	Close (-0.91)

Source: calculated by the authors

The second stage of the study involves the creation of a mathematical and economic model, which makes it possible to determine the dependence identified and the extent to which the factors studied have influenced national competitiveness.

To test the hypothesis, an economic-mathematical model of «selection equation» is formed in the general form:

$$y = f(\beta_0, \beta_1 x_{i1}, ..., \beta_n x_{in}) + \varepsilon_i$$

in which $i = 1, \ldots, N$ – is the number of observations, Y – the indicator of a country's competitiveness expressed in points, f - functional dependence (for example, a simple linear, standard normal (or logistic) distribution function, etc.), β_i –coefficients of the model, $x_1,...x_n$ –regressions, ε – error.

As regressions, two regression blocks are included in the model according to the research hypothesis described above:

1) Quality of life of the population (HDI)

2) Labor productivity

In order to construct the model, we averaged the countries over the time span studied, thus smoothing out the fluctuations of the analysed indicators related to the negative effects of the period of the global economic crisis and emissions in a given year.

The study analyzes regression models because of the clarity of their interpretation.

The choice of the final regression model always implies a compromise between the precision of the prediction (the model that matches the data as well as possible) and the economy (the simple and reproducible model). The simplest of two models with the same predictive force is preferred. By constructing both linear and non-linear models and comparing them, we have come to the conclusion that on the basis of cost-effectiveness and reliability criteria, the most appropriate model, given the available data, would be linear multiple regression.

This model is as follows: $\hat{y}_t = b_0 + \sum_{j=1}^{k} b_j x_{tj}$, $t \in (1..n)$,

where t is the observation number in the sample and j is the factor number. b_j is a regression coefficient that determines how much the resulting attribute of y changes by a factor change x_{tj}.

The regression analysis results:

```
##
## Call:
## lm(formula = ALL_MEAN$GCI ~ ALL_MEAN$HDI + ALL_MEAN$LP)
##
## Residuals:
## Min 1Q Median 3Q Max
## -0.9988 -0.2164 0.1006 0.2551 0.3883
##
## Coefficients:
## Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.642e+00 3.786e-01 4.337 0.000193 ***
## ALL_MEAN$HDI 3.256e+00 6.386e-01 5.099 2.59e-05 ***
## ALL_MEAN$LP 6.356e-06 2.261e-06 2.811 0.009272 **
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.3596 on 26 degrees of freedom
## Multiple R-squared: 0.858, Adjusted R-squared: 0.8471
## F-statistic: 78.56 on 2 and 26 DF, p-value: 9.534e-12
```

$$\hat{y}=4,337+3,256x_1+0.00000636x_2$$

Testing the significance of this regression equation using F-statistics, as well as testing the significance of some of its coefficients with t-statistics, showed that in both cases the insignificance hypothesis was rejected at the level.α=0,05 In addition, the multiple coefficient of determination shows that regression equation describes more than 84% of the variation of the resulting feature by the indicators in the model, and the rest of the variation is due to the action of non-toned factors.

The first stage of the study led to the following conclusions:

1. Conclusions drawn on the developed countries:

1.1 The (statistically significant) correlation between the national competitiveness of the economy and labor productivity is observed in 5 out of 10 studied economies: Singapore, the Netherlands, Germany, the UK, Japan.

1.2 The (statistically significant) correlation between the national competitiveness of the economy and quality of life is observed in 7 out of 10 studied economies: Switzerland, Singapore, the Netherlands, Germany, Hong Kong, the UK, Japan.

1.3 Therefore, the hypothesis of a direct (statistically significant) correlation between indicators of national competitiveness, quality of life and labor productivity in the given sample of countries in the long-time interval was confirmed in most of the studied economies.

2. Conclusions drawn on the developing countries:

2.1 The (statistically significant) correlation between the national competitiveness of the economy and labor productivity is observed in 8 out of 10 studied economies, and the economy of Jamaica has the inverse correlation!

2.2 The (statistically significant) correlation between the national competitiveness of the economy and quality of life is observed in 5 out of 10 studied economies: Jordan, Colombia, Georgia, Romania and Armenia.

2.3 Therefore, the hypothesis of a direct (statistically significant) correlation between indicators of national competitiveness, quality of life and labor productivity in the given sample of countries in the long-time interval was not confirmed in most of the studied economies.

3. Conclusions on the group of least developed countries:

3.1 The (statistically significant) correlation between the national competitiveness of the economy and

labor productivity is observed in 4 out of 9 studied economies (data for the Democratic Republic of the Congo are insufficient for correlation analysis).

3.2 The (statistically significant) correlation between the national competitiveness of the economy and quality of life is observed in 4 out of 9 studied economies and the economy of Venezuela has the inverse correlation!

3.3 Therefore, the hypothesis of a direct (statistically significant) correlation between indicators of national competitiveness, quality of life and labor productivity in the given sample of countries in the long-time interval was not confirmed in most of the studied economies.

The result of the second stage of the research was an economic-mathematical model with the form: $y=4.337 \cdot 3{,}256x_1+0.00000636x_2$, where x_1 – the quality of life of the population (HDI); x_2– labor productivity, thous. USD per employee)

Conclusion

The obtained study results (conclusions 1-3), on the one hand, may be explained by the sample insufficiency to conduct correlation analysis (particularly for the group of least developed countries), and on the other hand, show the urgent need to rethink the category "national competitiveness" itself, as well as the further verification of the M. Porter's theory of national competitiveness on a wider range of countries.

2. Model predictions: an increase of 0.1 in the quality of life of the population (Human Development Index, HDI), with fixed values of x 2, results in an increase of 0.3256 in the national competitiveness index. Also, with an increase of labour productivity on $100,000 per employee per year, the increase in the national competitiveness index by 0.636 can be seen.

3. Recommendations for economies (general case): improving the quality of life of the population (HDI) will increase national competitiveness more than productivity.

4. Weaknesses of the model: insufficient sampling of data; insufficient number of investigated factors; insufficient interval of investigation. These weaknesses of the model will be solved in our further studies through the increasing the number of researched economies, macroeconomic indicators and the research time period up to 20 years).

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CONSISTENT MANAGEMENT OF THE NATIONAL INTELLECTUAL CAPITAL AS A FACTOR OF STATE COMPETITIVENESS

Anna A. Chub

Financial University under the Government of the Russian Federation, Russia.
E-mail: AACHub@fa.ru

Pavel Y. Makarov

The Russian Presidential Academy of National Economy and Public Administration, Russia.
E-mail: makarovpu@ya.ru

Abstract. The study focuses on the ways to manage the national intellectual capital and its structure to ensure economic growth in a digital economy. The main goal of the study is to identify a group of countries with efficient development of the national economy due to systemic management of the national intellectual capital by establishing the relationship between its elements and gross domestic product. The study uses the methods of correlation and cluster analysis. It also uses the systematic approach and the approach of Edvinsson, L. and Lin, K. to the structuring and assessment of national intellectual capital. According to their approach, the intellectual capital includes human, market, process, and renewable capital. Correlation analysis revealed a high positive correlation between the available national intellectual capital and the level of economic development for developed countries, and no correlation for developing countries. The identified pattern for developed countries can be explained by the inherent emergence of intellectual capital, which these countries exploit to manage all its structural elements which, in turn, consolidates and fuels the development of the national economy. The cluster analysis identified a group of developed countries (Denmark, Norway, USA, Finland, Switzerland, Sweden), with leading positions in GDP due to the systemic management of national intellectual capital and prioritization of its process and human components.

Keywords: national intellectual capital, economic development, systemic effect, correlation analysis, cluster analysis.

JEL codes: C21, E61, G34, M12, O21

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Introduction

The current stage of development of the world community is defined by many contradictory trends, the more interesting of which are:

- globalization, which has sped up even more due to digitalization and IT development of society, and, in turn, has deepened the international division of labor and tightened the competition in the world markets;
- an increased growth of inter-country differentiation, because social resources are distributed unevenly, and that entails the aggravation of international relations due to opposing geopolitical and economic interests of states and nations;
- transition to innovative development and formation of knowledge economy, in which the main source of competitive advantage is the dynamic capabilities, representing the ability to create, integrate, and reconfigure external and internal competencies in order to ensure a rapid response to dynamic changes in the business environment through the implementation and/or use of innovation (Teece, Pisano, Shuen, 1997).

Under these conditions, highly qualified labor resources become the main source of development of socio-economic systems of any level, while their most important part - intellectual capital (IC) becomes of paramount importance as the most valuable and much more significant factor for the state economy than natural resources or accumulated wealth.

Thus, current national IC is the most significant parameter of economic development of the majority of developed countries. It is the main component of added value. Due to this, these countries invest more

and more into education, science, social support and welfare. At the same time, the role of IC in it only increases over time. In 1980s, intangible assets of developed markets accounted for up to 38% of the market capitalization of companies. By the early 2000s, their share increased to 84% (Molnar, 2004). The situation is similar at the macroeconomic level: as of 2015, the contribution of IC to the gross domestic product (GDP) of developed countries ranged from 52% to 72% (Ståhle, Lin, 2015).

At the same time, despite Russia planning to «achieve the level of economic and social development suitable for Russia as a leading world power in the XXI century» and the efforts of state authorities during the last decade, according to a number of studies, the national IC contribution to GDP in Russia is 36% (Edvinsson, Yeh-Yun Lin, 2011), which is similar to developing countries, and most parts of IC in Russia have low level of development. Unfortunately, fuel and raw materials are still the cornerstones of Russian economy. The extremely weak competitive position of Russia in the global market of knowledge-intensive technologies, which are dominated by the G7 countries that control about 2/3 of the total turnover of these products, confirms that Russia has not yet created the necessary conditions for effective implementation of innovative projects aimed at the development and use of products that meet global standards.

The Russian authorities are aware that the control of IC at all levels of the national economy management is becoming increasingly important, and this is reflected in the management decisions of the country's leadership in recent years. This issue is therefore reflected in the 2018-2025 plans of Russia to develop scientifically and technologically. An additional Russian program regarding digital economy also addresses IC issues.

Russian scientists are also quite actively involved in solving the problems of managing the development of national IC. We have analyzed E-Library indexed (https://elibrary.ru) publications ranging from 2010 to 2018. The average number of studies devoted to the issues of IC development at the micro-, meso-, and macrolevels is about 330 (Fig. 1).

The data presented in Figure 1 shows that every two years, in the period from 2010 to 2016, the number of papers devoted to various aspects of development, management, and evaluation of IC grew by 20-40%. At the same time, the highest volume of such studies was in 2016 and declined in later years. We believe that this decline is not a decline in interest, but rather an increase in the quality and depth of these studies (including the need to match the level of publications to the expectations of international indexers), which is naturally reflected in their number.

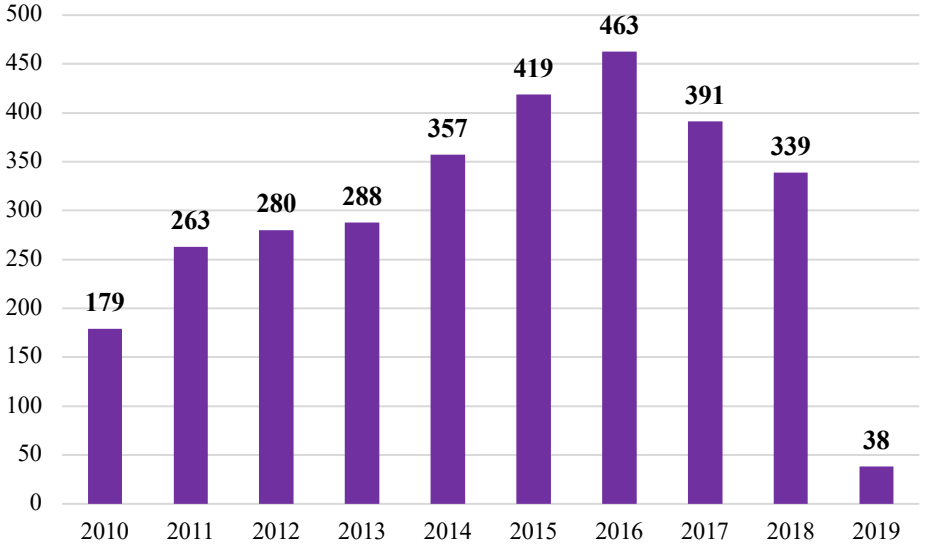

Figure 1. Dynamics of studies on intellectual capital indexed by E-Library

Source: composed by authors

We have analyzed the headlines of the mentioned papers (Fig. 2) and reviewed their contents and discovered that:

- there is a shift in emphasis of research topics from general theoretical issues of the concept and

structure of IC to practical issues of its assessment and improving the efficiency of management;

- the greatest number of studies presented on E-Library (48% avg.) is devoted to the issues of the concept, structure, and management of IC at the micro level, while the issues of IC management in the regional and sectoral aspect are studied the least actively (10% avg.);

- the share of studies on general issues of IC has decreased. Note that we have included papers with the titles such as: «The concept of intellectual capital: Prerequisites of formation and methodological specificity», «Knowledge and intellectual capital management», etc. A study of their contents, which are available on E-Library, showed that their authors discuss IC without considering one of the three levels of the economic system. It should also be pointed out that over time and probably due to the advances in establishing the main points of the intellectual capital theory in the Russian science, the authors began to identify the object of research more clearly, which is reflected in the titles of papers — the wording of the title allows to assign the study to the appropriate subject group without studying the content;

- there is a growing number of studies that assess the role of IC in the socio-economic development of the state. Thus, while in 2010 the number of articles on this topic was 15% of the total amount of work, in 2018 it increased to 22%. In our opinion, this is a response of academic community to modern economic environment and needs of society, when the issues of state management of national IC become one of the basic strategic goals of the country, which once again emphasizes the relevance of the research presented in this paper.

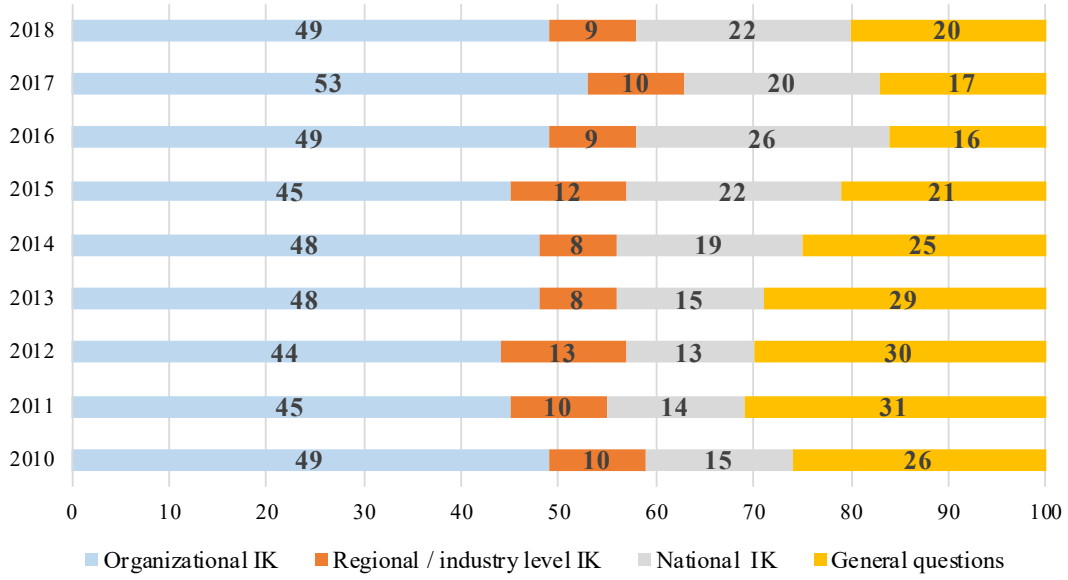

Figure 2. Structure of topics of papers on intellectual capital indexed by E-Library

Source: composed by authors

Based on the above, it seems relevant and appropriate to study the issues of intellectual capital management at the macroeconomic level. One of the key points in this case is the problem of consistent management of intellectual capital. It is the contradiction between its multi-component and multi-subject nature (Tatarkin, 2010) and the need to ensure the balanced development of all its structural elements.

This study builds on an idea that intellectual capital management is emergent and therefore should be consistent in nature in order to enhance the economic growth of the national economy.

Based on this idea, the study aims to identify a group of countries for which the systemic impact on national intellectual capital ensures the effective development of the national economy.

The following objectives have been set:

1. To select a methodology for assessing national IC that allows to analyze the relationship of economic

development of the state with IC and its structural components.

2. To conduct a correlation analysis to establish the relationship between components of IC and GDP as an indicator of growth of a national economy.

3. To conduct a cluster analysis to identify a group of countries that have experience of systemic management of national IC in order to assess the possibility of adaptation and further use of this management experience in Russia.

Study basis

To date, the concept of intellectual capital has become an important category in management and economy studies. At the same time, there are relatively few studies on stimulation of national IC. This leads us to believe that it is preferable to begin the formation of research methodology with clarification of the general approach to IC management. Let us analyze the views of leading experts on this issue (Table 1).

Table 1 — Examples of interpretations of «intellectual capital»

Emphasis on components	Emphasis on integrity
1. Intellectual capital is a combination of human and structural capital (Edvinsson, 2005)	1. Knowledge and information that act as a «collective brain» and combine into a single whole organizational structure, information networks, intellectual property, knowledge of employees, experience, image, and reputation of the enterprise (Inozemtsev, 1995)
2. All non-monetary and non-physical resources fully or partially controlled by the enterprise and contributing towards the creation of value (Roos, 2010)	2. The intellectual wealth of the enterprise which predetermines its creative potential to create and implement intellectual and innovative products (Seleznev, 2007)
3. The sum of everything everybody in a company knows that gives it a competitive edge in the marketplace. This is the intellectual material (knowledge, information, intellectual assets, experience) that can be used to create wealth. This is the knowledge of employees, research team of experts or manual workers who have developed thousand different ways to improve the company's efficiency. Intellectual capital is knowledge as a dynamic human process, transformed into something valuable for the company (Stewart, 1991)	3. The system of relations regarding the production of new or enriched (updated) knowledge and intellectual abilities of individuals, collectives, and society as a whole (Tatarkin, 2010)
4. People and the knowledge they possess, as well as their skills, connections and everything that helps to use them effectively (Kozyrev, 2006)	

Source: composed by authors

When comparing the definitions of intellectual capital, the collective nature of this term is clearly traced. This is evidenced by the fact that most authors define intellectual capital as a set of certain components. The opposite approach to the definition of IC is to understand it as a kind of integrity. It should be noted that the latter is less frequently represented in the literature.

Also, from the definitions given in Table 1, it can be seen that they can be applied to the concept of «intellectual capital» both at the macro- and microeconomic levels of the organization of the economy.

Thus, the concept of «national intellectual capital» should be interpreted as a certain system of intangible resources presented in the form of abilities, knowledge, databases, organizational structures, relationships, etc., which act as sources of national welfare and can be used in the activities of economic actors at the micro, meso and macro levels of the national economy.

It should be noted that in the process of determining the concept of the IC category, we sought to emphasize the thesis of its collective nature because such a position is most relevant to the studied issue. In

this case, we understand IC not only as a logical superstructure over a set of elements, but also as a system of relations reflecting the dynamics and synergy of their interaction. Thus, our position is consistent with most interpretations of IC (e.g., Tatarkin, 2010) and does not align with a number of studies questioning the existence of systemic effects of intellectual capital (Ståhle, 2008).

Methodology of intellectual capital assessment and empirical basis of research

The theoretical section did not provide the element-by-element composition of intellectual capital because while defining its structure, it is necessary to be expedient and emphasize the components that make its application useful for solving a specific research problem, provided that it does not contradict the established understanding of its essence (Ståhle, 2008).

To date, there is no generally accepted methodology for assessing national intellectual capital. At the same time, numerous existing tools give correlating results and are partially interchangeable (Makarov, 2016). Under these circumstances, the development of a new methodology seems justified only for conducting analysis that is not possible with the existing approaches.

To test the working hypothesis of this study, we have set the following requirements for the assessment tool:

- needs to be able to assess not only the intellectual capital of the country as a whole, but also its individual components;

- the resulting estimates, in turn, should be comparable both between the countries in question and over time.

Compliance with the specified conditions will let us reveal the structural differences of national intellectual capital of different countries and analyze the dynamics of their change within the study period.

To achieve the goal of this paper, it seems rational not to overload the existing methodological toolkit with new development, but to test the hypothesis on the already formed database. Among the methodologies that have yielded data that is internationally recognized and consistent with the research conditions outlined above are the following: three versions of the National Intellectual Capital Index (NICI) model developed by N. Bontis (2004), D. Vežek, L. (2007), Edvinsson and K. Lin (2011), and the model «The Intellectual Capital Monitor» created by A. Andriessen and K. Stam (2008).

There is no detailed comparison of these methodologies due to limited number of pages, but we note that the National Intellectual Capital Index (NICI) model, as interpreted by Edvinsson and Lin, is preferred for the following reasons:

- studies using this model are widely presented in international publications and, despite a number of critical comments, NICI is recognized as a reliable methodology for assessing national intellectual capital;

- the model provides the most extensive database with panel data for 40 countries over 12 years, while other techniques produce either spatial estimates for smaller samples of countries (10 Arab countries in the Bontis model, 25 European countries in the Vežek model) or panel data on a smaller scale (16 countries over two years in the Andriessen and Stam model).

The limitation of the chosen methodology is purely technical and related to the relevance of the time series: 1995-2007 data and 2008-2010 partial data are available to study, while a number of indicators used in the calculation are based on expert estimates, which prevents obtaining comparable data independently. However, in our opinion, this limitation does not hinder the goals of this study, since only the total length of the time series and the sample size are relevant for hypothesis testing.

After justifying the chosen method, let us briefly describe the indicators presented in it.

Intellectual capital is assessed by calculating four indices ranging from 0 (minimum) to 10 (maximum) and characterizing the level of development of its components. The element-by-element composition of each of the structural components used in the formation of the indices is presented below:

- Human Capital (HC): Skilled labor force*, Skill development of the working population*, Literacy rate, Population with higher education, Ratio of teachers to students, Number of internet users, Education costs;

- Process Capital (PC): Competitive environment*, Government efficiency*, Intellectual property

rights protection*, Access to capital*, Number of personal computers per capita, Conditions for starting new businesses*, Number of mobile phone users;

- Market Capital (MC): Tax rates*; International venture capital share*; Openness to a foreign culture*; Globalization*; Transparency for analysis*; Country image*; Export and import of services;

- Renewal Capital (RC): Private R&D expenditure; Fundamental studies*; R&D expenditure relative to GDP; Number of researchers*; University-business cooperation*; Science papers*; Number of patents per capita.

In addition to the structural elements listed above, the NICI includes a composite index of national IC formed by adding up the above components, and a Financial Capital (FC) index, which is an estimate of GDP per capita (at purchasing power parity) put into a comparable form with other indices (scores from 0 to 10).

To test the hypothesis of this study, we have used the experimental base obtained using this methodology, which consists of panel data of the five listed indices for 40 countries in 1995-2007. Descriptive statistics of the experimental base is shown in Table 2. To improve representativeness, the sample is divided into developed and developing countries according to UN and World Bank classification.

Study tools, procedure, and results

The study was conducted in two stages, and data analysis was performed using IBM SPSS Statistics.

At the first stage, we have used the correlation analysis to assess the correlation of both the SC as a whole and its components with GDP. Due to the fact that the original variables do not fall into the category of normally distributed (a necessary condition for using Pearson correlation factor), and do not represent any type of monotonic sequence (a necessary condition for using Kendall correlation factor τ), we have analyzed the data by calculating Spearman factor ρ.

As a result, we have found a strong correlation over the period under study for both the total IC indicator (Fig. 3), and its structural elements with GDP (Table 3) for the group of developed countries and weak for developing countries. The confidence level of the results obtained for developed countries is 0.000 - 0.003. This indicates that the identified patterns are not random and can be used for further analysis. In turn, the confidence of the calculated correlation for developing countries in all cases is above 0.05, which rejects the hypothesis that the estimates obtained are true and significant.

The data in Table 3 lets us draw the following conclusions regarding the relationship between IC and GDP for developed countries:

First, in our opinion, the fact that the average correlation of IC and FC is higher than similar values for individual components of IC indicates the structural elements of IC have a synergetic effect on the development of the national economy. It seems that this can be explained by the emergent nature of IC due to being a complex system. Thus, we can conclude that the management of the production and reproduction of national intellectual capital at the state level should be systemic and consistent. Second, the average correlation indicators show that among the structural elements of IC, process (PC) and human (HC) capitals have the strongest correlation with GDP (0.679 and 0.673, respectively).

Third, in our opinion, the component composition of process capital in the Edvinsson and Lin approach lets us interpret it as an institutional environment focused on creating institutions that overcome the spatial, functional, informational separation of management subjects and objects through an introduction of integrative processes aimed at defragmenting economic space by enhancing the coherence of objects, goals, knowledge, and actions (Kleiner, 2011). Thus, conditions («rules of the game») set and, what is especially important, actively supported are essential to utilize the economic potential of IC in developed countries by government agencies.

Table 2 — Descriptive statistics of the experimental base of the study

Parameter	All countries (40)				Developed (26)				Developing (14)			
	min	max	Avg	Deviation	min	max	Avg	Deviation	min	max	Avg	Deviation
HC	3.160	8.800	6.089	1.277	1.216	8.478	4.082	2.096	3.160	6.851	4.885	0.770

Para-meter	All countries (40)				Developed (26)				Developing (14)			
	min	max	Avg	Deviation	min	max	Avg	Deviation	min	max	Avg	Deviation
PC	1.575	8.436	5.333	1.611	2.666	8.436	6.239	1.116	1.575	5.617	3.656	0.868
MC	3.019	8.727	5.665	1.003	3.786	8.727	5.961	0.927	3.019	7.140	5.117	0.906
RC	0.949	8.478	3.731	2.024	1.449	8.478	4.773	1.758	0.949	3.387	1.802	0.470
FC	6.759	10.00	9.137	0.729	9.067	10.00	9.587	0.209	6.759	9.074	8.299	0.597

Source: calculated by the authors

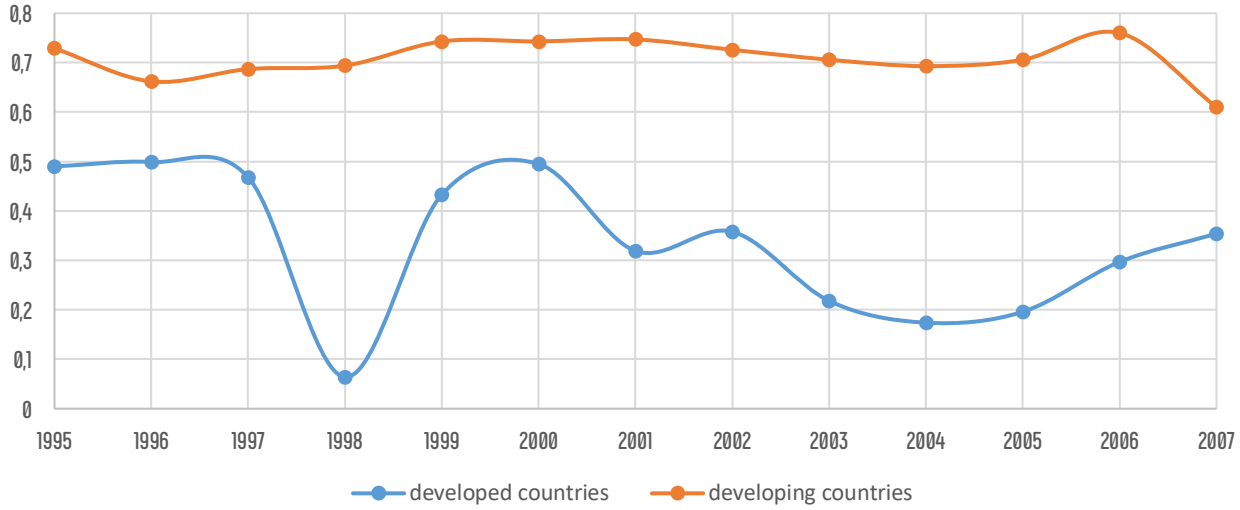

Figure 3. Dynamics of correlation indicators of IC and GDP for developed and developing countries
Source: composed by the authors

Table 3 — Correlation of IC index and its components with GDP over the years

Year	Developed countries					Developing countries				
	HC-FC	PC-FC	RC-FC	MC-FC	IC-FC	HC-FC	PC-FC	RC-FC	MC-FC	IC-FC
1995	0.537	0.596	0.614	0.359	0.729	0.736	0.051	-0.13	0.424	0.49
1996	0.522	0.601	0.575	0.316	0.662	0.657	0.371	-0.073	0.455	0.499
1997	0.558	0.595	0.599	0.314	0.687	0.503	0.411	0.007	0.437	0.468
1998	0.59	0.584	0.52	0.418	0.694	0.371	0.165	-0.095	0.156	0.064
1999	0.563	0.694	0.505	0.569	0.743	0.477	0.358	0.103	0.235	0.433
2000	0.631	0.671	0.521	0.666	0.743	0.363	0.336	0.231	0.191	0.495
2001	0.683	0.676	0.509	0.624	0.747	0.449	0.275	0.121	0.209	0.319
2002	0.698	0.71	0.549	0.574	0.726	0.67	0.226	0.354	0.086	0.358
2003	0.662	0.686	0.521	0.62	0.706	0.675	0.095	0.257	-0.191	0.218
2004	0.591	0.695	0.506	0.558	0.693	0.64	0.253	0.134	-0.02	0.174
2005	0.614	0.752	0.545	0.662	0.706	0.767	0.134	0.108	-0.099	0.196
2006	0.582	0.77	0.57	0.692	0.76	0.723	0.292	0.301	-0.152	0.297
2007	0.603	0.791	0.532	0.614	0.610	0.798	0.363	0.323	-0.288	0.354
Avg	0.603	0.679	0.544	0.537	0.708	0.602	0.256	0.126	0.111	0.336

Source: calculated by the authors

Fourth, the identified patterns of high importance of HC confirm the conclusions obtained earlier by other researchers (G. Becker, T. Schultz, M. Blaug, M. Kritsky). They stated that investment in education, professional development, etc. is one the most important factors of economic development of the state because

of digital development of innovative economy.

At the second stage, in order to deepen the findings and identify specific countries whose experience in the future can be applied to Russia to ensure an appropriate level of national IC development, we have used cluster analysis to identify a group of countries that have achieved the greatest success in using total IC (IC-FC clustering), and then used it to test the assumption that they have achieved leadership by prioritizing process and human capitals.

Figure 3 presents a grouping of countries obtained by hierarchical clustering according to IC-FC indicators in 1995 (Fig. 3a) and 2005 (Fig. 3b). The year data are taken as an example, the graphs obtained for the entire study period (1995-2007) look similar. Clustering the group of developed countries according to the structural elements of PC and HC also yielded similar results.

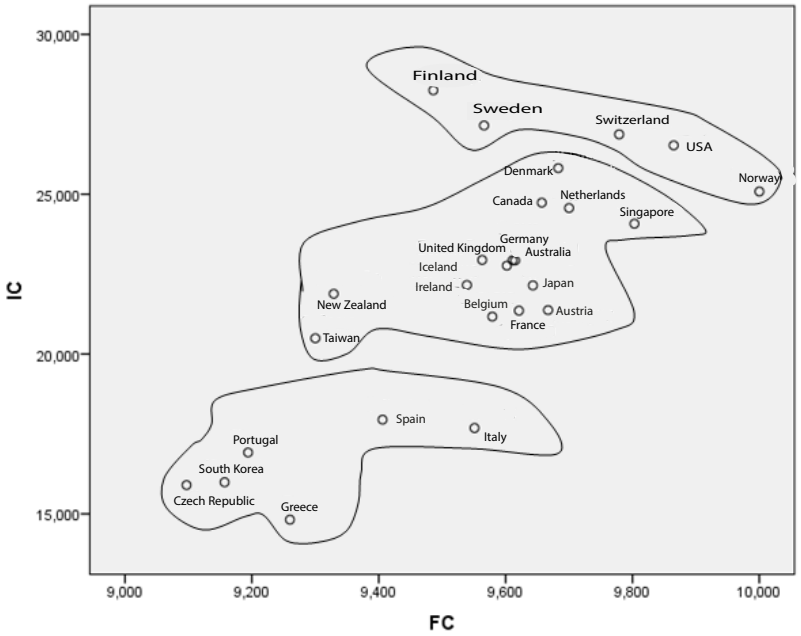

Figure 3a. Results of IC-FC cluster analysis of developed countries, 1995

Source: composed by the authors

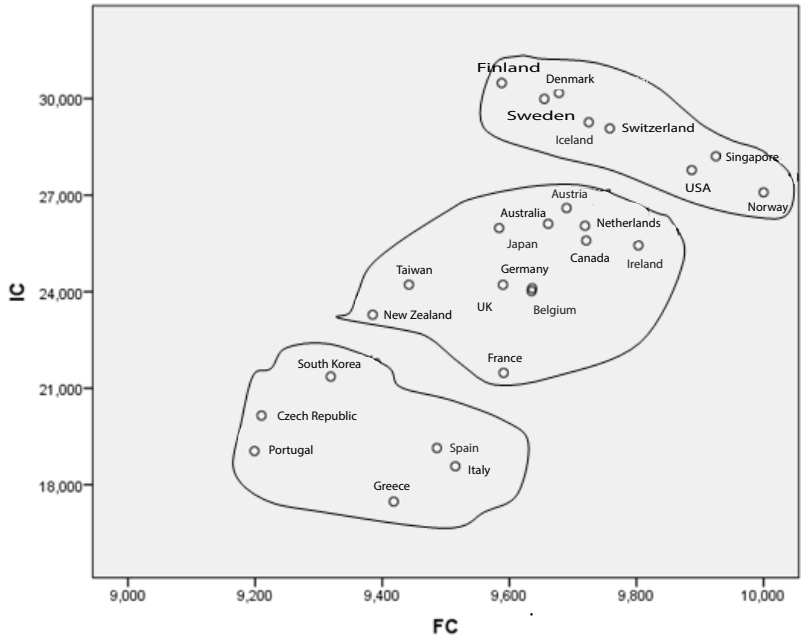

Figure 3b. Results of IC-FC cluster analysis of developed countries, 2005

Source: composed by the authors

Based on the results shown in Table 4, we have identified the countries whose experience supports the hypothesis of gaining leadership by prioritizing the development of process and human capital.

Table 4 — Leading countries in terms of IC and economic development

Country	1995			2005		
	IC Leader	PC Leader	HC Leader	IC Leader	PC Leader	HC Leader
Denmark	✓	✓	✓	✓	✓	✓
Norway	✓	✓	✓	✓	✓	✓
USA	✓	✓	✓	✓	✓	✓
Finland	✓	—	✓	✓	✓	—
Switzerland	✓	✓	—	✓	✓	✓
Sweden	✓	—	✓	✓	✓	✓
Singapore	—	✓	—	✓	✓	✓
Canada	—	—	✓	—	✓	✓
Iceland	—	—	—	✓	✓	✓
Australia	—	—	—	—	✓	—
England	—	—	—	—	✓	—
Netherlands	—	—	—	—	✓	—
Ireland	—	—	—	—	✓	✓
Austria	—	—	—	—	✓	—

Source: composed by the authors based on cluster analysis

Despite no significant correlation between the level of IC development and GDP for developing countries, the results of clustering are interesting both as an overall assessment of their progress in the development of national IC, and to identify specific country aspects, especially for Russia.

The most significant findings and patterns are presented below.

1. We have clustered both the total IR and its individual structural components. As a result, three clusters have formed in all cases - countries with high, medium, and low indicators of national IC or its structural elements and GDP.

2. When grouping countries according to FC-IC parameters, some countries such as Chile and Malaysia have been clustered with the best results. Since 1997, Hungary also joined this group, further steadily maintaining this position until the end of the survey period.

The bulk of countries except China, India, and the Philippines have been clustered in the group with average results. The results of most countries swing between better and worse over the study period, but they usually stay in this group. Russia occupies an average position in this cluster, lagging behind Mexico and Poland, and between 1995 and 2001, behind Argentina and Turkey.

The cluster of countries with the weakest performance in both GDP and IC included China, India and the Philippines. It should be noted that while at the beginning of the period under study China occupied an intermediate position and followed the leader of this group — the Philippines, by 2006-2007, it steadily overtook the leading position, rapidly approaching the results of the group with average GDP and IC.

3. In the FC-HC clustering between 1995 and 2002, Hungary was the unconditional and only member of the best performing group. In 2002, Poland and Malaysia also joined the cluster.

When clustering the remaining countries, we have obtained the same groups of countries as with the FC-IC clusters.

In some periods (1995, 1997, 2003-2005, 2007) Russia gets closer to the group of leaders, but still does not join it.

4. Clustering by FC-MC and FC-PC yielded the following results. The steady leaders are Malaysia, Chile, and Hungary. Constant outsiders are India, China, and the Philippines.

However, there are some particular aspects regarding the structure of the group of countries with average results.

A distinctive feature of FC-MS clustering is the fact that the list of countries has not changed relative to the list in the group with average indicators identified in the previous classifications, but the cluster is less dense (countries are more distant from each other and are «stretched» along the MS axis).

Russia was the worst performer in the group from 1995 to 1999, then somewhat improved its position from 2000 to 2007, moving ahead of Argentina and Poland.

The distinguishing feature of the change in the list of the average-performing countries in the FC-PC clustering is that since the beginning of the study period it represents a fairly dense and distinct cluster. Starting 2002, however, it begins to «stretch». The positions of South Africa and Thailand are gradually weakening, followed by Turkey and Poland. As a result, this cluster is actually divided into two sub-clusters in 2007: Argentina, Mexico, Brazil, and Russia; Poland, Turkey, Africa, and Thailand.

Here is what we can say about Russian position in this group: The country had a very weak position until 2000, then, starting 2001, there was a positive trend, and by 2007, overtaking Argentina, Mexico, and Brazil, Russia became one of the leaders of the group.

5. When clustering by FC-RC, no change was observed in the average- and low-performing groups compared to previous results. At the same time, throughout the study period, Russia has been a constant and almost the only leader of the group with the highest indicators. In 2004, Hungary joins the group, Malaysia follows suit in 2005.

Limitations and directions for further research

We believe that the following circumstances may be the limitations and debatable issues of this study:

The sample analyzed is limited to the period 1995-2007. In this regard, the issue of compliance with the identified patterns remains unresolved, considering the advances of crises in 2008 and 2015. To this end, the extrapolation of the obtained results by making regression or predictive models may become a further line of research.

An issue of the uneven distribution of data analyzed also remains unresolved. Given that the sample consists of 26 developed and 14 developing countries, it is possible that the smaller data set for the developing country group did not let us identify any patterns.

Many studies (D. North, O. Williamson, A. Auzan, V. Inozemtsev, etc.) have shown that the successful experiences of some countries do not always lead to similar results in others. In this regard, the tools and mechanisms for the development of national IC of the given group of developed countries should be considered by taking into account the need to adapt them to Russia.

Here is one example. The goal of the previously mentioned Russian development program states that «an effective system of balanced reproduction of scientific, engineering, and entrepreneurial staff and increasing their competitiveness at the world level must be formed» (Kleiner, 2011). This basically means that the concept of intellectual capital is narrowed down to the human capital of certain types of workers and contradicts the existing international meaning of this concept. Regarding other measures affecting the components of intellectual capital, the logical question is how balanced and consistent they are with each other.

Addressing such issues requires the development of an appropriate methodology which is beyond the scope of this study, but it can become a promising area for further research.

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INTERNATIONAL COMPETITIVENESS OF THE RUSSIAN FINANCIAL MARKET IN DIGITAL GLOBALIZATION

Aleksei V. Kuznetsov (corresponding author)

Financial University under the Government of the Russian Federation, Russia.
E-mail: kuznetsov0572@mail.ru

Marina V. Skripnikova

Financial University under the Government of the Russian Federation, Russia.
E-mail: marina-skr97@mail.ru

Abstract. The paper deals with the problems of interrelation and interdependence of the processes of globalization and development of the national segment of world financial market. The purpose of the paper is to consider the real position of Russia on the global market and identify factors improving international competitiveness in the world finance globalization. The paper discusses the problems hindering the total integration of the Russian financial market into the world financial system. It analyzes the position of Russia in the ranking of global financial centers along with the specifics of its interaction with international financial organizations. The study identifies the main reasons determining the cumulative lagging of Russia, primarily BRICS countries, in improving the model of financial markets. The features characterizing the specifics of the Russian financial market development are classified in the paper. Finally, the paper summarizes the measures taken by the Bank of Russia to address the shortcomings of the Russian financial market, including measures to stimulate innovation in the financial sector using digital technologies. The authors conclude that the international competitiveness of the Russian financial market in digital globalization directly depends on reducing costs and raw material dependence of the Russian economy by effectively using the existing scientific and innovative potential.

Keywords: Russian financial market, digital globalization, competitiveness, international financial centers, international financial organizations, digital technologies.

JEL codes: F3, G15, G2

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Introduction

The development of the global economy is influenced by digital globalization, which increases the interaction between countries and, in turn, leads to the erasure of borders and weakened protection of national industries. The global economy digitalization provides national companies and individuals with free access to various segments of the global financial market, which makes it necessary to constantly improve their international competitiveness.

Russia lacks the competitiveness in the global financial market. There is an objective need to identify areas of the economy that can raise its level with the fastest and most effective modernization. Various aspects of the international competitiveness of the Russian financial market were studied by S.A. Andryushin (2018), V.P. Bitkov, K.E. Manuilov (2018), E.A. Zvonova (2019), A.V. Navoi, I.A. Balyuk (2018), V.V. Maslennikov, M.A. Eskindarov (2020), M.A. Abramova, O.I. Lavrushin, V.Ya.Pishchik, B.B. Rubtsov, S.P. Solyannikova (2019).

Interdependence of globalization and national financial market

The global financial market acts as a kind of indicator of the current economic situation in the world. Its main purpose is to identify efficient industries to reallocate money flow, which would further generate profit or increase the reliability of the resources used. Banks, large companies, and other professional participants of foreign economic activity are sources of short-term cash capital, which works as «hot money» in various segments of the global financial market. The reasons for the transformation of capital into «hot money»

are economic and political instability, external imbalances, high inflation, exchange crises, interest rates development, and speculative trading (Dobrishina, Sidorova, 2018). This flow of «hot money» around the world was exacerbated by the crisis of the Bretton-Woods monetary system in the 1960-70s. Its fundamental flaws evolved into the functioning Jamaican monetary system which liberal principles contributed to the formation of the modern world financial market model (Dobrishina, Sidorova, 2018).

Thus, globalization is the organization of the states' financial systems, economies of which are at different stages of development and are characterized by different degrees of vulnerability (Impact of globalization to the formation of the Russian financial market, 2018). The consequences of globalization are: constant development of telecommunications and information technology, expansion of activities of various economic entities on the stock markets and international investments, consolidation of tax systems to create clear and transparent rules for all participants of foreign economic activity, improving the system of financial markets regulation to a uniform standard, and the establishment of appropriate international and national authorities (The global economy of the 21st century: the dialectic of ideals and the realities of confrontation, 2017).

So, on the one hand, the globalization of financial systems leads to a reduction of obstacles to the movement of capital between different countries, and, on the other hand, it increases the intensity of mutual interaction between financial market participants in terms of limited profit prospects, increasing the risks of destabilization of national financial markets (Garipova, Xiao Tini, 2018).

In terms of features of globalization described above, the issue of attracting investment and maintaining economic transparency to increase international competitiveness remains extremely relevant for Russia, even in the face of acute political confrontation with some countries, imposed economic sanctions, and COVID-19 restrictions.

It is important to highlight that the Russian financial market is relatively young. As of 2020, it is 29 years only (Main directions of Russian Federation financial market development during the period of 2019-2021, 2020). In this case, the development of the domestic stock market during its formation is influenced by many non-fundamental factors, such as, for example, dependence on the opinions of major Western institutions and organizations. In particular, the integration of shares into the payments of certain indices causes an increase of their value in the domestic stock market. This happened with Polymetal bonds, which became about 4% more expensive after being put on MSCI Russia index (Moscow exchange, 2020).

Another factor of dependence of the internal stock market of the Russian Federation on manipulations and decisions of foreign investors is the change of rating in major credit ratings, such as Fitch, Standart & Poor's and Moody's. It should be noted that downgrading a country always leads to a lower rating of companies operating in it. In 2015, Moody's reported that Russian sovereign rating had dropped from Baa3 to Ba1and the predictions are negative. As a consequence, the domestic stock market sharply declined. This, in turn, led to an 11% decline of Sberbank's stock value in March 2015 (Moscow exchange, 2020).

One specific aspect of globalization is the ability of commercial entities in Russia to raise funds for loans by placing equity on foreign platforms; the most important and prestigious is the London Stock Exchange (LSE). In addition, Russian companies can use various other exchanges, including the Pacific Exchange, the Boston Exchange, the Frankfurt Exchange, etc. (Loginov, Shkuta, 2017).

Russia as an international financial center

One of the most significant expressions of the world financial system globalization is the increasing role of the international financial centers. Among the most important characteristics of these centers are the infrastructure and the conditions for attracting international capital. Due to a very large potential capital in the world financial market (compared with national investment reserves) and the differences between the conditions and the patterns of capital attraction, it seems logical that commercial entities attracting financial resources through bonds and equities plan to expand their operations by improving their international competitiveness level (Global financial architecture reforming and the Russian financial market, 2016).

The Global Financial Centres Index (GFCI) is a key indicator for a country's competitiveness assessing in the global financial market. This index has been published since March 2007 twice a year, in March and

September by the British consulting company Z/Yen Group Limited. The first rankings covered 47 financial centers but 120 were included in March 2020 (The Global Financial Centres Index, 2020).

Methodically, this index is based on a factor assessment model that includes:

1. Tool factors are based on two types of data:

– statistical indicators provided by international organizations such as the UN Conference on Trade and Development (UNCTAD), the Bank for International Settlements (BIS), The World Bank, World Federation of Stock Exchanges, Organisation for Economic Co-operation and Development (OECD) and the International Network PricewaterhouseCoopers (PWC);

– evidence from other studies such as the Global Competitiveness Report (World Economic Forum), Ease of Doing Business Index (World Bank), Corruption Perception Index (Transparency International), Internet Index (World Wide Web Foundation), Index of Economic Freedom (Heritage Foundation), Global Cities Index (AT Kearney), Global City Competitiveness (The Economist). In the March report, 138 tool factors were used to rate financial centers.

2. An assessment factor based on interviews with over 5,000 professional financiers. Financial centers are added to the questionnaire only after receiving five or more entries in the online survey: «Name financial centers that could become significantly more important in the next 2-3 years.» The final rating includes only those financial centers that have received more than 50 reviews in the last 24 months.

Institutional factors are divided into five groups forming the final rating of financial centers competitiveness: business environment (34 factors), financial sector development (25 factors), infrastructure (31 factors), human capital (24 factors), reputation and common factors (24 factors). Each component has an equal weight in the final count and the maximum possible rating is 1,000 points. From the very beginning of publication, the rating is led by New York and London, which change places periodically. They are followed by Tokyo, Shanghai, Singapore, and Hong Kong.

In March 2020, Moscow rose to 71st (from 88th in March 2019), while St. Petersburg fell from 73rd to 97th. The capital of Russia scored 644 points and passed, for example, Mexico City (78th place, 637 points), Istanbul (79th place, 646 points), Budapest (84th place, 628 points) and ended up between Kazakhstan (72nd place, 643 points) and Riga (70th place, 645 points) (Fig. 1).

Growth is led by financial centers from Eastern Europe, Central Asia, the Middle East and Africa, primarily because of the low base of comparison and, consequently, the high potential for development. Among the financial centers of these regions, the financial centers of those countries that have chosen to liberalize their financial markets are the most dynamic. Among the cities of the former Soviet Union, Alma-Ata is at the highest 55th place in the ranking and it is close to financial centers such as Liechtenstein, Rome, Tallinn.

Russia in the system of international financial organizations

Russia's relationship with key international financial institutions is highly contradictory. The USSR was at the origin of the Bretton-Woods institutions — the IMF and the IBRD (Bretton Woods. Next 70 years, 2017), but never ratified their statutes. Since the collapse of the USSR and the entry of Russia into these international structures, significant changes in relations with them have taken place.

During the period of cooperation with the IMF, Russia has set aside loans totaling SDR 21.5 bn., of which SDR 11.3 bn. have been actually disbursed (International Monetary Fund, 2020). By 2005, Russia had fully paid its accrued expenditures to the Fund and was currently its net creditor of SDR 12.9 bn. (Special Drawing Rights) (IMF, 2020). Also, for the period up to 2020, Russia has provided $10 bn. to the Fund under the New Arrangements for Loans (IMF, 2020).

As a result of the IMF quota and governance reform, Russia has become one of the top 10 IMF states, holding 2.7 percent of all quotas and 2.6 percent of votes. However, the revision of the formula used in the quota process remains a matter of discussion for the Russian Federation and the BRICS partners. Many IMF member states were still expressing their dissatisfaction with the formula, which did not fully take into account the increased weight of developing countries in the world economy. There has been no progress yet.

The fifteenth General Review of Quotas was completed without quotas increasing. The sixteenth General Review of Quotas is to be completed no later than 15 December 2023. The revision of the formula is predicted to be a starting point for a new quota review in the future.

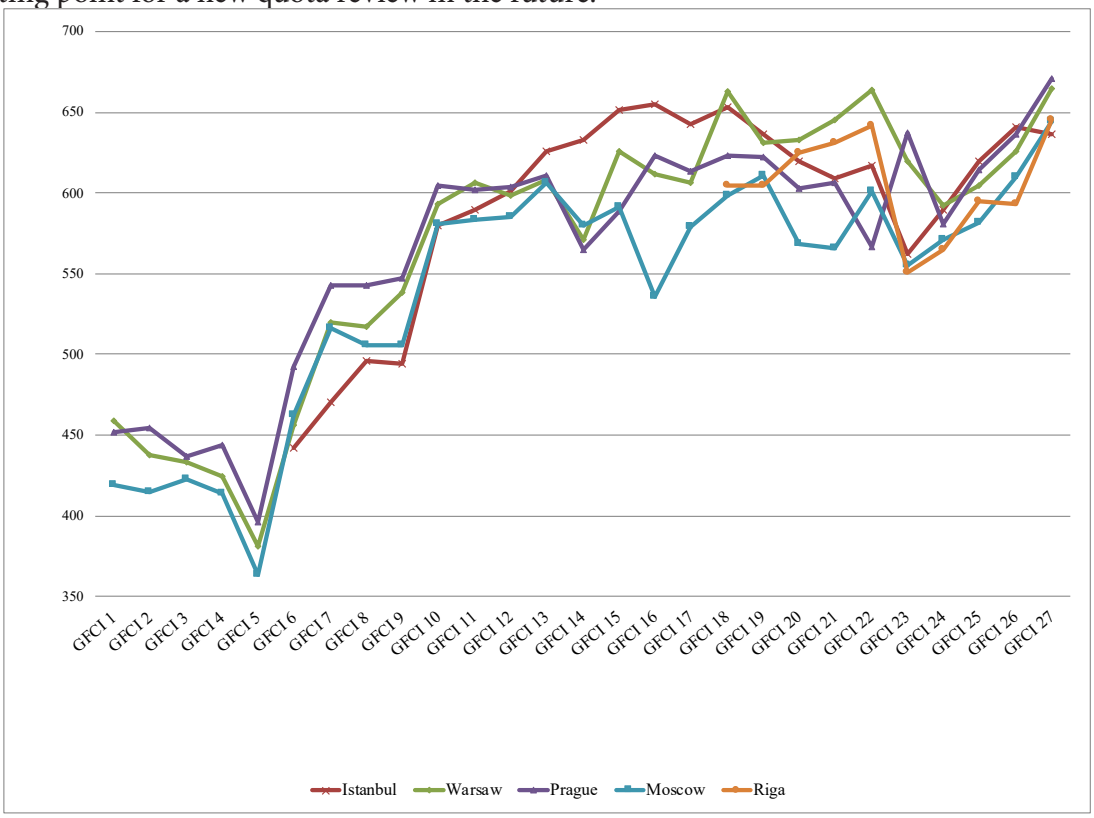

Figure 1. Comparison of Moscow rating with leading financial centers in Eastern Europe and Central Asia
Source: The Global Financial Centres Index (GFCI) / URL: https://www.longfinance.net/programmes/financial-centre-futures/global-financial-centres-index/gfci-publications/ (2020)

An important issue of cooperation of Russia with international financial organizations is the international status of the ruble. Even before the global financial crisis of 2008, high-ranking IMF official predicted that the ruble could become a world reserve currency (IMF says ruble could become reserve currency, 2008). Since then, however, IMF took no certain steps in this case. However, the inclusion of ruble in reserve currencies is not only a subjective position of IMF. The status of the world reserve currency objectively presupposes its active use in foreign economic settlements and world exchange, as well as its ability to satisfy the demand for international liquidity. Dealing with these kinds of international activity, the actual indicators do not support the ruble. Thus, according to the Triennial Central Bank Survey of foreign exchange and OTC derivatives markets, every three years provided by the Bank for International Settlements, the Russian ruble has been in the list of the world's most traded national currencies for seven years (2013-2019). It was ranked 17th in 2019 against 12th in 2013. The share of ruble in world transactions decreased by 0.5% — from 1.6% to 1.1% (Bank of International Settlements, 2020). The data concerning the use of the ruble in international payments are encouraging. According to SWIFT, in October 2020, the ruble ranked 17th with a share of 0.26% among the international currencies used for these purposes. In September 2018, it ranked 20 with a share of 0.19% (RMB Tracker. SWIFT, 2020).

According to Russian experts, in order to strengthen the international status of the ruble, it is necessary to ensure its currency stability, reduce the dollarization of the economy, and develop the national financial market (Trunin, Narkevich, 2013). At the same time, Russia should continue creating an integrated EAEU exchange market and increasing the share of the ruble in the mutual transactions of the EAEU and BRICS countries. It also needs to increase the volumes of ruble foreign trade loans and guarantees, move towards using ruble in energy supply transactions (Gavrilov, Prilepskiy, 2017). On the other hand, the use of ruble in international transactions depends directly on the growth rate of the Russian economy and its future place in

the global economy compared with the nearest competitors (Buklemishev, Danilov, 2018).

After joining IMF, Russia became a member of the International Bank for Reconstruction and Development (IBRD), the International Finance Corporation (IFC), the Multilateral Investment Guarantee Agency (MIGA) and the International Development Association (IDA). These entities are part of the World Bank. Their ultimate objective is to provide technical and financial assistance to developing countries (Smislov, 2020).

Since Russia joined IBRD, it has received 71 loans $14.4 bn in total. A joint activity of IFC and Russia is financing the businesses with investments and loans, as well as advisory assistance. Since 1993 IFC's long-term investments in Russia have amounted more than $10 bn. Including $3.5 bn granted as syndicated loans (World Bank Group, 2020). IFC resources were mainly used in financial services, manufacturing, infrastructure, oil and gas, telecommunications, retail, and health.

The process of mutual cooperation between Russia and MIGA consists in ensuring the participants of investment and credit markets against all kinds of political risks. At present, Russia ranks fourth among the organization's clients in terms of the amount of guarantee rights granted to it (Multilateral Investment Guarantee Agency, 2020). It should be mentioned that since the introduction and further expansion of anti-Russian sanctions, the cooperation of Russia with the organizations of the World Bank has almost ceased.

Development prospects of the Russian financial market

The competitive position of any state in the global market is determined by a large number of factors, which are influenced by a country's economy, investment policies, attraction of foreign capital, etc. The main factors determining the development of financial market include the extent it is involved in the global infrastructure; the development of legal and public institutions; the level of prosperity and quality of life of the population; economic diversification; key characteristics of the country's economic and social situation .

The BRICS countries (China, Brazil, India and South Africa) are the main competitors of Russia on the global financial market. At the inception of the BRICS group, each of these states occupied almost the same position on the world financial market. In recent years, however, Russian financial market has lagged far behind the other BRICS countries. Since 2011, Russia has been experiencing significant losses in the stock market (Fig. 2). Since 2014, this trend has been evident in other segments of the Russian financial market.

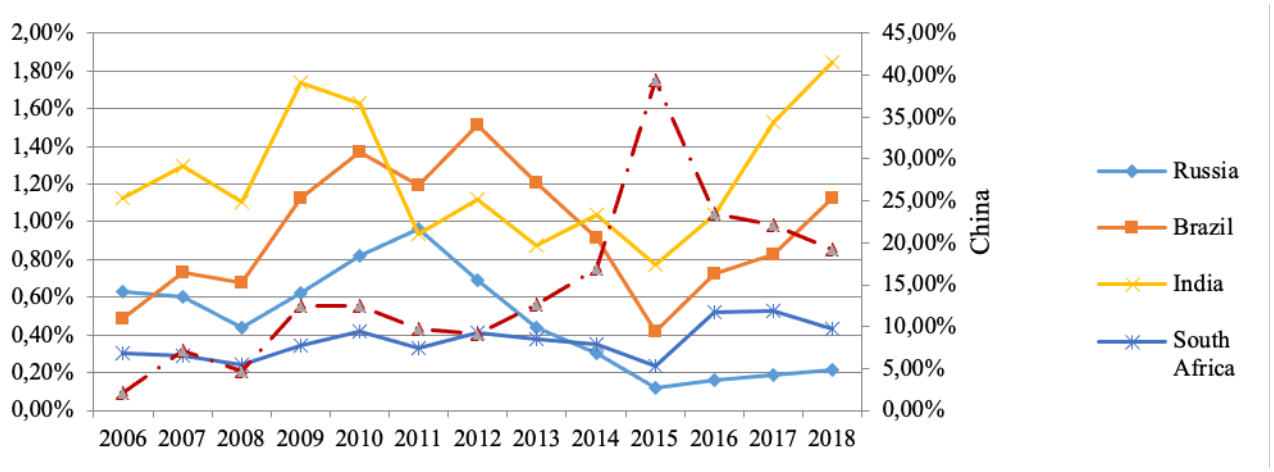

Figure 2. BRICS shares in world stock trade, %

Source: World Bank Group / URL: https://www.worldbank.org/ (2020)

Due to the world financial market being unstable since COVID-19 pandemic had started, the possible consequence of this lag could be the greater decline of the Russian financial market compared with the BRICS partners.

Among other reasons, Russia might not have a lot of long-term investors compared with other rapidly developing countries as well as have a large overhead of banking assets over non-banking assets. The main reason is the almost total lack of long-term investment at the domestic level. China has the best development index of the BRICS, followed by Brazil (Fig. 3).

The low level of long-term investment leads to significant restrictions during the placement of securities in the financial and primary equity markets. At present, the Russian share market is being distributed to a relatively small number of investors, and most of them are foreign. This limitation is a direct consequence of the decline in market liquidity.

The liquidity of the Russian financial market is negatively affected by the growing imbalance between the banking and non-banking sectors. If there were more large non-bank organizations on the market, they could have maintained their liquidity through the purchase or sale of securities on exchange markets without using banks. However, the liquidity providers are the banks, and they mostly provide liquidity through REPO transactions rather than directly. The number of such transactions in Russia exceeds 90% (Dudnikov, 2018). As a result, the trading of securities is under pressure, and the number of non-bank enterprises is declining.

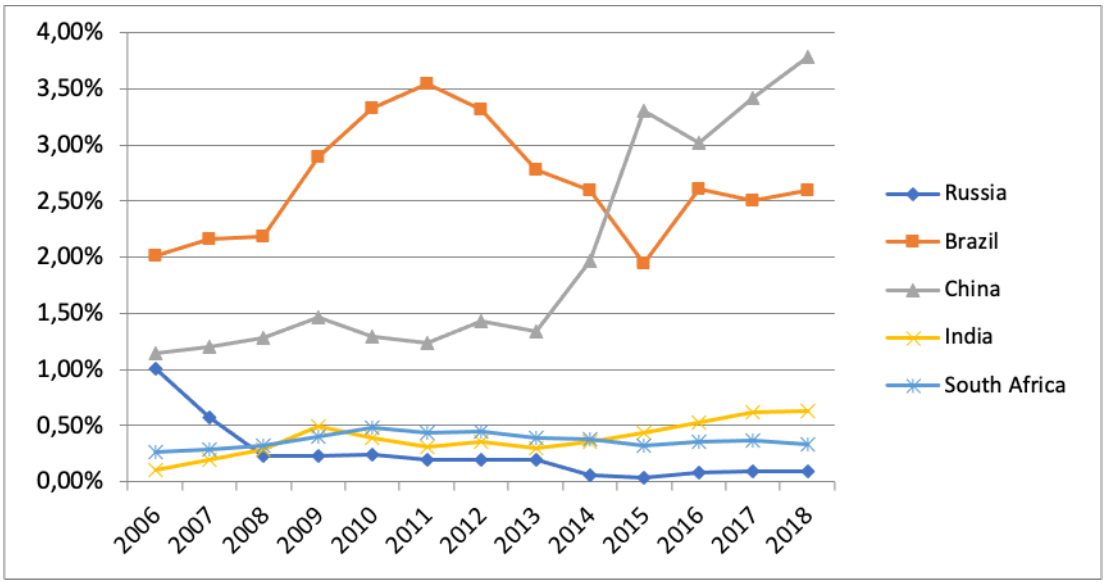

Figure 3. The BRICS countries' share of net assets in mutual funds, %
Source: Investment Company Institute. URL: https://www.ici.org/ (2020).

Thus, here are the specific aspects the development of the Russian financial market:

- the orientation of economic agents during investment transactions, mainly through own capital;
- banks over non-bank financial institutions predominance;
- high assets concentration. For example, the top five financial institutions of the banking sector account for about 60.4 per cent of the total assets of the entire economic sector;
- the key role of intercompany and budgetary channels in the redistribution of financial resources (Bitkov, Manuilov, 2018);
- lack of public vigor. Only a little part of the population (0.88 per cent) has the accounts with the brokers. Less than 0.06 per cent of these are active users of such accounts (carrying out operations at least once a month) (Moscow exchange, 2020). By comparison, in the United States, more than 50 per cent of the population are active clients of the financial market (Barclays Financial Market Outlook 2020, 2020);
- predominance of bank deposits in the structure of the population's savings. This is mostly due to the measures assumed by the Bank of Russia to strengthen the reliability and sustainability of the banking system. In addition, the public is less likely to trust to financial institutions than banks (fig. 4).

Financial market resilience cannot be enhanced without the removal of unprincipled participants undermining public confidence to the financial system as a whole. At present the level of trust to the activities of financial institutions is characterized by its heterogeneity. The main reasons are:

1. Insufficient financial knowledge of citizens (in terms of the level of financial literacy of the population, Russia ranked only 23 in the OECD ranking, based on an analysis of 26 countries in 2016) (OECD, 2020).

2. The low ethical level of the borrowers (38 per cent of citizens see nothing wrong with late repayment of loans, and 26 per cent believe that the loans should not be repaid at all).

The Bank of Russia is taking the following measures to remedy these deficiencies in the functioning of the financial market:

- development of proactive surveillance tools;
- stimulating the transformation of savings of individuals and entities into long-term investments;
- development of a competitive environment in the national financial market;
- implementation of a range of measures aimed at eliminating unfair behavior, improving the culture of financial transactions, increasing confidence in financial market operators and increasing the purity and transparency of market operations (Russian financial sector and financial instruments 2019 overview, 2020).

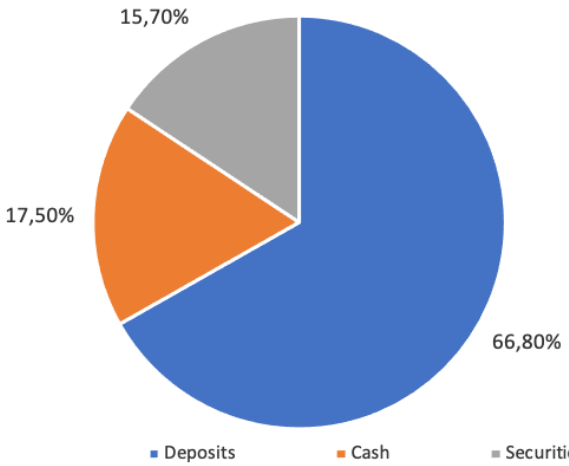

Figure 4. Individual savings distribution in the Russian Federation in 2019, %
Source: Compiled by the authors using the following data of CBR. URL: https://www.cbr.ru/ (2020)

The penetration of digital innovations into various segments of the financial market has been a key trend in their development over recent years. Today digitization is a powerful incentive for the development and improvement of the financial market. Due to digitization, the safer and more convenient services emerge. Using digital technologies implies a change in quality in the services provided in the financial market. Digital technology increases the speed and volume of transactions. The use of digital technologies stimulates innovation in the financial sector (Vanova, 2018).

The Bank of Russia is taking the following measures to develop digital technologies:

- the customer protection system development;
- innovative financial supervision technology SupTech development;
- development and implementation of cybersecurity standards;
- digital financial infrastructure foundation;
- friendly environment for active technology development (incl. RegTech).

One of the most obvious modern trends is the increasing concentration on key segments of the Russian financial market. The intention to solve this problem is evidenced by a Decree of the President of the Russian Federation «On the main directions of the state policy on the development of competition», as well as the subsequent approval of the plan of activities of the Government of the Russian Federation, encouraging competition among financial market players.

One of the priority objectives of the Bank of Russia is to achieve a situation when effective data processing will create a competitive advantage rather than easy access to data (On the main directions of the State policy for the development of competition, 2017). Also, it should be noted that the modern regulatory approaches are based on balancing the requirements of financial market participants. This contributes to the sustainability of the market and does not create new risks. Therefore, one of the main conditions for improving the competitiveness of financial market participants is to reduce the regulatory burden (Pereverzeva, 2019).

Conclusion

In order to obtain maximum benefits from digital globalization processes, Russia needs to reduce costs

and commodity dependence through the development of industries oriented towards the efficient use of scientific and innovative potential. As a result, priority investments should be made in services and industries generating demand for the development of productive infrastructure abroad and within the country and provide the intensive economic growth. It is obvious that the real digital transformations of Russian and world's financial market predetermine new challenges, goals, and prospects of the financial sector development.

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THE TRADE-OFF BETWEEN COMPETITION AND STABILITY IN THE BANKING SECTOR OF RUSSIA

Anna A. Kladova

Central Bank of the Russian Federation, Yaroslavl branch, Russia.
E-mail: kladova.aa@yandex.ru

Valeriy A. Gordeev

Yaroslavl State Technical University, Russia.
E-mail: vagordeev@rambler.ru

Abstract. The process of consolidation in banking until recently has been considered a sign of ineffectiveness of the market and thus a threat to its sustainability. The Global financial crisis has altered this view by causing significant structural shifts in banking worldwide with the levels of consolidation increasing in the banking markets of both the developed and emerging economies. The paper presents the results of a research of correlation between the consolidation process in the banking sector of Russia, strongly associated with the "comeback of the state", and the sector's sustainability.

Keywords: financial sector; bank competition; competition paradigm; consolidation; state regulation.

JEL codes: E58; G21; L12

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Introduction

In the decade since the Global Financial Crisis (the GFC), the matter of balance between sustainability of national financial sectors, on the one hand, and the competition in national and global financial markets, on the other, has caused a fresh wave of interest of scientists and policy makers. While the world has ridden a symbolical "roller-coaster" of the GFC's aftermath, Russia has had to endure extra turbulence due to the geopolitical processes. Therefore, it would not be an exaggeration to presume that during the last eleven years the financial sector of Russia has been facing two types of challenges: the global ones, typical for most of the similar national economies, and the specific challenges caused by the sanctions of the Western world. Naturally, these conditions are a source of extra systemic risk and thus a threat to the sector's sustainability.

The effect of competition in the financial sphere, especially in banking, on the economy is a matter of an ongoing discussion in the economic literature. Extensive research establishes both the economic costs of bank failures and the economic benefits of competitive, efficient banking systems (Jiang, 2018). The major findings in this sphere, usually associated with the wave of liberalization of finance, imply that the lack of competition in banking is detrimental to such matters as prices of financial products, access to finance for small business entities, the entire life-cycle dynamics of non-financial industries (Cetorelli, 2003; Cetorelli and Strahan, 2006) as well as economic growth in general (Bikker et al., 2012). At the same time, the specific nature of financial services is a source of a number of market failures. According to one point of view, "banking and financial markets display the full array of classical market failures. Externalities arise from coordination problems and contagion, asymmetric information often leads to excessive risk taking, and extreme market power is common" (Vives, 2010). These failures have played a major role in quite a few local and cross-national crises in the past and in the current century.

The GFC has placed the problem of competition regulation in banking on the agenda together with the problem of macroprudential measures. However, research has not yet established whether monetary authorities can trade competition and its economic benefits for greater bank stability (Jiang, 2018). It is especially relevant to the banking sector of Russia which has been undergoing serious changes in both of

these spheres since 2013, including a constantly rising level of consolidation. The banking sector of Russia consists of 846 registered credit organizations. Only 454 of them (approximately 54%) are actually considered operating at the moment while others' licenses have been either annulled or withdrawn by the Central Bank of the Russian Federation (the CBR). The quantity of credit organizations operating in Russia has been rapidly declining for the last fifteen years – from 1329 units in 2004 to 484 units by the beginning of 2019. This process of consolidation has coincided with the process of "a comeback of the state" (Vernikov, 2009) as the owner of the dominant market participants with a systematically growing market share.

We have discussed the matters of the evolution of bank competition in Russia in our previous articles (see, for example, Kladova, 2019). This paper adds to those works by presenting our views on the evolution of competition in the banking sector of Russia from the perspective of balance between competition and sustainability, the role of the state staying at the core of our interest.

Research Data and Methods

Data Sources

Our research is based on the aggregate statistic information about the characteristics of the banking sector of Russia derived from the official monthly, quarterly and annual reports of the CBR. We have also used the aggregate data and the bank rankings provided by the banki.ru website.

While performing the research we have reviewed a large number of recent works devoted to the matters of financial sectors' sustainability, consolidation processes in modern banking, the liberal and the macroprudential approaches to the regulation of financial intermediaries, competition in banking and the role of the state in these areas.

Methodological Approach

The assessment of the level of competition in the banking sector of Russia has been performed within the structural approach, i.e. with the help of CRk concentration ratios based on the market shares of the 5 (CR5) and the 200 (CR200) largest banks in terms of assets. An alternative measure of Herfindahl-Hirschman index has been used in order to assess the level of concentration of the banking market in Russia in general (also in terms of assets). The latter index's value has been stable throughout the last four years, slightly fluctuating in the moderate range of 0,107 - 0,111. The quarterly dynamics of the concentration ratios of the banking sector in 2017-2019 are presented in Figure 1.

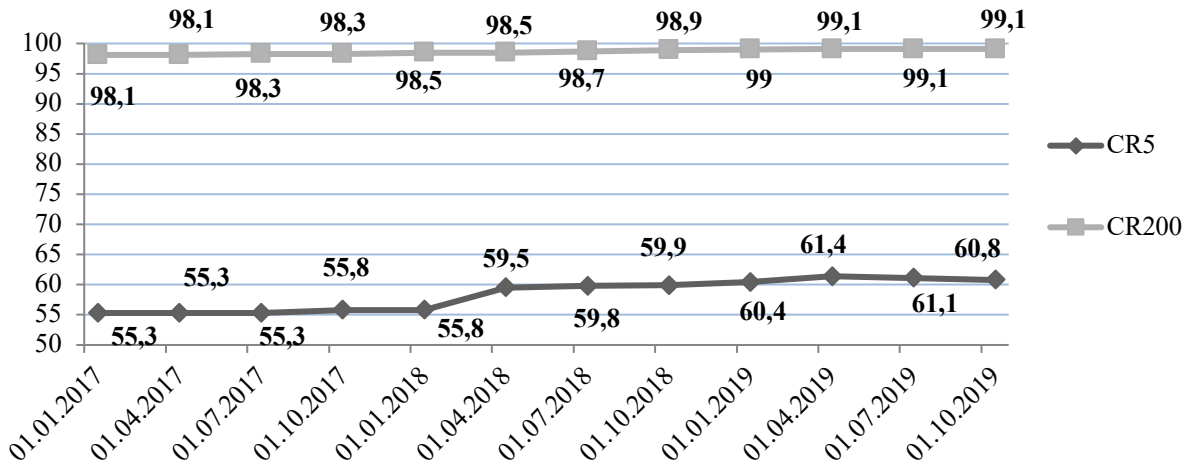

Figure 1. The dynamics of the CR5 and the CR200 concentration ratios of the banking sector of Russia in 2017-2019

Source: Central Bank of the Russian Federation, the authors' calculations

The link from market structure to degree of competition is not clear as highlighted by the long existing contestability literature (Owen, 2016). Although the economic literature and the global practice of

state regulation do not offer a unanimously accepted scale of interpretation of the concentration indexes in terms of the corresponding types of market structure, we have presented our view on such a scale for the banking sector of Russia in one of the earlier publications (Kladova, 2012). According to it, the current level of concentration of the sector can be considered moderate. It corresponds to the loose oligopoly as a market structure type. Considering that less than a half of the banks operating in Russia hold almost 100 percent of the sector's assets, the shift in CR200 during the last three years has been minimal. However, the CR5 has risen by 10% since the beginning of 2017, which is a clear indicator of another increase in the market power of the "state champions" (Vernikov, 2009).

According to the traditional point of view, such processes should have been detrimental to the development of the banking sector and to the access of the clients to the financial products. Besides, the extreme level of market power associated with the top-5 banks operating in the sector should have posed a threat to the system's stability and should have led to a rise in the level of systemic risk. In order to find out whether such a hypothesis was true for the banking sector of Russia, we have analyzed the dynamics of the macroprudential indicators of sustainability of the sector (specifically, the results of the stress tests performed by the CBR and the indicators of sensitivity of the banks to various types of risks).

Results

Our analysis has shown that, contrary to the liberal approach promoting the high levels of competition as a necessary prerequisite of the financial sector's development, the constantly decreasing level of competition in the banking sector of Russia is accompanied by an enhancement in the sector's sustainability. The values of the major macroprudential indicators of the sector's stability level are presented in Table 1.

Table 1 - The dynamics of the indicators of sustainability of the banking sector in Russia, %

Indicator	01.01.2017	01.01.2018	01.01.2019	01.10.2019
Capital requirements				
N1.0	13,1	12,1	12,2	12,5
N1.2	9,2	8,5	8,9	9,4
Credit risk				
N10.1	0,4	0,4	0,4	0,4
N7	219,6	226,1	204,7	188,7
Liquidity requirements				
N2	106,6	118,5	128,7	126,8
N3	144,9	167,4	166,4	204,8
N4	52,3	55,4	57,5	55,1
Market risk				
Interest rate risk	36,8	31,9	24,5	24,1
Equity risk	3,0	3,6	3,5	3,8
Currency risk	3,2	4,6	3,8	5,0
Commodity risk	0,9	2,5	6,1	2,6
Profitability				
Return on assets	1,2	1,0	1,5	1,9
Return on capital	10,3	8,3	13,8	17,4

Source: Central Bank of the Russian Federation

While the levels of returns on assets and capital of the banks have predictably risen (the latter almost doubling) during the current wave of market consolidation, the process has actually been beneficial to the sector's sustainability. After the major leap of the level of market consolidation in the sector which has occurred in the first quarter of 2018, the indicators of the capital requirements and the banks' credit risk has

shown a noticeable improvement.

An assessment of the correlation relationship between the dynamics of the level of consolidation of the banking sector of Russia and the dynamics of the macroprudential indicators presented in Table 1 has proven it to be statistically significant. A very high level of correlation of this kind exists between the consolidation level and the level of credit risk: the increase of the former leads to an appropriate decrease of the latter. A similarly high correlation level is characteristic of the relationship of the sector's consolidation degree and its sensitivity to the interest rate risk. The lowest, although still statistically significant, degree of correlation has been found between the level of consolidation of the sector and the sector's compliance with the capital requirements. For the N1 indicator the correlation is negative, for the N2 indicator it has proven to be positive.

In general, similar results have been received by the CBR after the annual stress-testing procedure of the banking sector of Russia. In its annual report on the development of the banking sector and bank supervision in 2018 the financial megaregulator specifically accentuates the positive correlation between the decreasing number of banks operating in the country and the sector's level of market risk.

Discussion

The process of consolidation of the banking sector of Russia, although very specific in some aspects, is actually rather typical for banking markets in many countries in the aftermath of the GFC, both in developed and emerging economies (Table 2).

Table 2 - The dynamics of consolidation processes in the banking markets of developed and emerging economies in the aftermath of the GFC

Territory	Number of banks		CR3, assets		CR5, assets	
	2006	2016	2006	2016	2006	2016
Euro area	5590	4385	34	44	43	48
United States	8680	5913	30	32	35	43
Japan	396	370	34	43	45	51
China	19797	4398	n/a	n/a	55	37
Brazil	133	134	43	57	60	82

Source: Buch 2018, the authors' calculations

According to the data presented in table 1, in the decade since 2006 the consolidation levels of banking markets in developed and emerging economies have increased. The process in some countries has been underway before the GFC (the Euro area, the United States and some others) and has been enhanced by the turbulence. The contrary result has been achieved in China, where the level of concentration in banking has actually decreased.

This is especially interesting considering the similarities between the market models of Russia and China pointed out in (Vernikov, 2015), namely a high level of stratification with the largest state-controlled banks owning the bigger share of the sectors' assets and the leading role of the public sector in banking. The opposing directions of the consolidation processes in the two markets in the aftermath of the GFC may be caused, according to (Vernikov, 2015), by the fact that in Russia, the system of state-owned specialized banks (spetsbanki) had collapsed in the preceding period, as opposed to China where that had not happened. Nonetheless, as we have shown previously, the increasing level of consolidation and the presence of the state in the banking market of Russia have not been detrimental to its sustainability.

The findings of our research indicate, in our opinion, the fact that the liberal approach to consolidation in Russian banking is not and never has been appropriate for the purpose of evaluation of the market's effectiveness. The gradually rebuilding share of the state in this market is a natural element of the spiral evolution of bank competition in our country. The interchanging leading roles of the private and the public sectors in Russian banking have been its attributes ever since the system's forming in the 1720s. As we have discussed earlier (Kladova, 2019), the initiator of creating and developing the banking sector of Russia has

historically been the state. Due to that its presence in the market has always been much more prominent and visible than in most of the national banking sectors of the world. The actions employed by the state have varied from creating a network of state-owned banks in the 18th century and systematically providing them with paternalistic support to non-limited "borrowing" of the resources of these banks later on in order to finance the deficit of the state budget. During the Soviet period, the state has moved from total elimination of the banking sector to its resurrection as a state monopoly which has allowed a consistent use of the sector's funds as the cheapest form of financial resources for almost seven decades. Naturally, the state has always aimed to keep and expand the financial benefits of its presence in the banking sphere and is continuing to do that at the moment.

The last decade has brought a shift of the competition paradigm in Russian banking, according to which the state is now actually a participant of the banking competition in Russia while simultaneously acting as the regulator of the market environment. The ongoing process of the sector's consolidation in Russia, just like the process of creating the sector itself a few centuries ago, is a part of the state policy. Being not only the framework creator and the supervisor of the sphere but also the prominent competitor in this market, the state undertakes measures to stabilize the playing field for itself. A sustainable banking market in Russia is not only the cornerstone of the financial system's stability but a certain guarantee of the state's financial success as the leading market actor in banking. In other words, by consolidating the sector the state has been creating a safer environment for its own further competitive actions.

Conclusion

The aim of the paper was to cover the existing relationship between the increasing level of market consolidation in Russian banking and the degree of the sector's sustainability. The research has shown that instead of destabilizing the sector and raising its sensitivity to various risks, the consolidation process has actually improved its stability, lessened its sensitivity to most risks and raised its profitability. The process has been and still is led by the state as the supervisor and the major competitor in the market simultaneously - a natural situation for the spirally evolving bank competition in Russia. Therefore, there is no trade-off between competition and sustainability in the market. Rather, sustainability as a result of consolidation is a necessary condition and, at the same time, a natural consequence of the state's competitive measures in the banking sphere.

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ASSESSMENT OF THE QUALITY OF THE RELATIONSHIP BETWEEN THE COMPONENTS OF THE TRIAD OF MANAGEMENT OF SOCIO-ECONOMIC SYSTEMS

Alexey V. Tebekin

Moscow State Institute of International Relations (University) of the Ministry of Foreign Affairs of Russia, Russia.
E-mail: tebekin@gmail.com

Abstract. The study deals with a system of components defining success of functioning of any controlled social and economic system goal-setting (including measurability of the purposes), survival, effectiveness, efficiency, productivity, implementation level — the actual achievement of the goals). Based on the transformation of the model of expectations of V. Vrum, we have formed a parameter for assessing the quality of the relationship between the components of the triad «goal-measurability-practical implementation» of the controlled socio-economic system. The study takes a closer look at the Russian programs of «Innovative development and modernization of the economy» and assesses the quality of the relationship between the components of the triad «goal-measurability-practical implementation».

Keywords: quality assessment, components relationship, management triad, socio-economic systems, goal, measurability, practical implementation.

JEL codes: C21, E61, G34, M12, O21

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Introduction

The Global Economic Crisis of 2020 was predicted a long time ago (Tebekin, 2006), as well as its origin (Konotov, Tebekin, 2007). Even so, it has caught both the world and the Russian economy by surprise (Sonin, 2020).

Due to the change of the fifth technological order to the sixth (Tebekin, 2018), as well as previous crises (Seryakov, Tebekin, 2018), the Global Crisis period of 2020s will be accompanied by large-scale socio-economic changes, starting with the property redistribution (Konotov, Tebekin, 2011) and structural changes in the economy (Seryakov, Tebekin, 2018) and ending with the management of socio-economic systems (Tebekin, 2018) and changes in the relationship between the staff and management of the organization (Tebekin, Vasilyuk, 2019).

With these conditions in mind, we find it interesting to study the relationship of the constituent triads «goal-setting-measurability-practical realization» in terms of the socio-economic systems quality management.

Research methodology

The methodological basis of the studies is the index method, which is an analytical tool for identifying the correlation of the quality components of socio-economic systems management.

Study contents

There are conspiracy theories assuming the COVID-19 post-pandemic period (World Health Organization, 2020) will divide the world into two largest historical periods — before and after.

People believe that these transformations will bring us to the new world order based on the three

cornerstones (redistribution and control of resources, a radical change in human behavior, and the creation of a new culture organization), which is a big question that should be discussed further. But there is no doubt the changes in social and economic governance systems at all levels will occur.

It should be noted that the following categories have traditionally been identified as determining the success of any controlled socio-economic system (Tebekin, 2016): goal-setting, survival, efficiency, effectiveness, productivity, practicability.

The goal-setting, as one of the first management phase, provides the objectives of a controlled socio-economic system in terms of its mission, strategic goals and fixed (or identifiable) functions. Considering the goal-setting as the result of a practical understanding of the activities to be done, the measurability of the level of goals achievement must be considered.

The survival, in general sense, is the object's probability to maintain the vitality properties at a certain time interval. Furthermore, in time dynamics, the survival rate of a certain class of analyzed objects is characterized by a survival curve. An increase of average survival is generally an important criterion of evolutionary progress and an improvement in self-regulation, which is very important for both living organisms and controlled socio-economic systems (organizations). Just as in evolution theory, along with average survival, there is widespread use of differential assessment of survival of different genotypes in the population as a natural selection characteristic (where survival is characterized by the probability of the genotype in question reaching a certain age and its participation in reproduction, i.e., the creation of the next generation with reproductive value), we can discuss differential assessment of the survival of different types of socio-economic systems.

Thus, in general, survival is the most important indicator of the adaptive value of the type of considered object.

In a market economy, survival is considered the first priority of any organization as a social and economic system, meaning that it can be maintained as market presence as long as possible (Tebekin, Kasaev, 2008). In order to survive and remain competitive in the marketplace, most organizations have to change their goals periodically, formulating them in a manner consistent with the changing environment of the outside world (Tebekin, 2016).

To be successful over a long period of time, in order not only to survive, but also to achieve its goals, an organization must be both effective and efficient (Tebekin, Kasaev, 2008).

This means that any controlled socio-economic system must combine both external efficiency, which measures the degree to which its goals are achieved, and internal efficiency, measuring the rational use of resources and the optimum use of organizational processes (Tebekin, 2020).

According to Peter Drucker, effectiveness begins with doing the right things, and efficiency is the consequence of it. Both are equally important for the development of a managed organization (Drucker, 1954).

Productivity as the relative efficiency rate of the organization is demonstrated by the units number ratio at the outlet to the number of units at the input in unit time (Tebekin, Kasaev, 2008).

But the total score of any controlled social and economic system quality is implementation, which demonstrates the degree to which the goals are actually achieved, i.e., how effective and efficient the decisions of the management are (Tebekin, 2017), which is largely related to the measurability of objectives for the dynamic understanding of the measure of their achievement.

If we consider the Russian Federal Law «On Strategic Planning in the Russian Federation», it should be noted that the 11th principle of strategic planning in it states: «the principle of measurable goals means that it must be possible to measure the achievement of social and economic development goals... using quantitative and (or) qualitative targets, criteria, and methods for their evaluation...».

It should be mentioned that the 12th principle is - the conformity of indicators to the objectives, «the indicators contained in strategic planning documents and further introduced when adjusting them and evaluating performance... should correspond the social-economic development goals...».

The Russian Federal Law «On Strategic Planning in the Russian Federation» stipulates that all principles are to be considered as a whole. This applies to the listed set of principles: «principle of the measurability of

goals» - «principle of the conformity of indicators to the goals».

However, if analyze the Russian Federation State programs, for example the «Innovative development and modernization of economy», it should be noted that at the phase of «measurability of goals — conformity of indicators to the goals» there is already a significant mismatch of the targets being formulated (usually in quantitative terms) presented in the model sections «Targets and Indicators of the Program», and indicators describing the expected results of the implementation of State programs presented in the model sections «Expected Results of the Implementation of the Program».

Table 1 presents the results of the comparative analysis of the Russian Federation's State programs in regards to «Innovative development and modernization of the economy» in sections «Targets and Indicators of the Program», and «Expected Results of the Implementation of the Program» to evaluate the existence of quantitative and qualitative target indicators.

Table 1 - Results of comparative analysis of the quantitative targets availability in the sections of the State programs of the Russian Federation in the field «Innovative development and modernization of the economy»

Program title and time frame	Section «Program Targets and Indicators»		Section «Expected Program Results»		Note
	Number of indicators	Percentage of quantitative target indicators	Number of indicators	Percentage of quantitative target indicators	
Science and technology development (2013-2020)	3	100%	5	0%	Target indicators are not specified
Industrial development and competitiveness increasing (2013-2020)	26	100%	18	0%	Target indicators are not specified
Electronic and radio industry development					Program in progress
Information society (2011-2020)	8	100%	12	25%	
Development of international economic activity (2013-2024)	5	100%	13	15.3%	
Integrated village development					Program in progress
Military industrial complex development					Program in progress
Pharmaceutical and medical industry development (2013-2020)	10	100%	8	87.5%	
Development of the transport system (2013-2020)	35	100%	15	100%	
Restoration and use of natural resources (2013-2020)	9	100%	11	9%	
Scientific and technological development of the Russian Federation (2019-2030)	12	100%	31	32.2%	
Development of the aviation industry (2013-2025)	10	100%	6	0%	

Program title and time frame	Section «Program Targets and Indicators»		Section «Expected Program Results»		Note
	Number of indicators	Percentage of quantitative target indicators	Number of indicators	Percentage of quantitative target indicators	
Russian outer space activities					Details of the program are confidential
State Program for Agricultural Development and Regulation of Agricultural Products, Raw Materials and Food Markets (2013-2020)	10	100%	13	92.3%	
Forestry development (2013-2020)	4	100%	9	100%	
Economic development and innovation economy (2013-2024)	12	100%	20	50%	The expected accomplishments of the program are divided into quantitative and qualitative indicators
Naval development and study of shelf deposits (2013-2030)	9	100%	14	57.1%	
Development of the nuclear power generation complex (2012-2027)	16	100%	13	53.8%	
Development of the fishing industry (2013-2024)	11	100%	4	100%	
Energy industry development (2013-2020)	7	100%	7	85.7%	

Source: composed by author

To assess the quality of the interconnection of the triad «goal-setting-measurability-practical implementation» based on the analysis of the Russian Federation's State Programs in the field of «Innovative development and modernization of the economy» in the part of the model sections «Program targets and indicators» and «Expected results of the program» for quantitative targets, we will use the V. Vrum's transformed expectation model.

The V. Vrum's initial expectation model demonstrates the level of motivation of staff according to perceptions of their abilities and performance in relation to the proposed remuneration (Vrum, 1964) and can be presented as (Tebekin, 2014):

$$I_0=I_{ож}\cdot I_с\cdot I_в, \quad (1)$$

I_0-an index for the integral evaluation of the expected effectiveness of human performance while doing a given task;

$I_{ож}$- a waiting index showing a person's understanding of their ability to accomplish a given task;

$I_с$- a contribution index showing the degree of confidence a person has in receiving the promised remuneration;

$I_в$- a valence index showing the degree of desirability (satisfaction) of the employee's remuneration.

Considering all indices in the model as standardized (within the limits 0 and 1), it can be said that the

maximum value will correspond to a combination of:

- an employee assesses his or her ability to complete the task by 100 percent;
- an employee has 100 percent confidence in receiving the remuneration promised by management;
- an employee is 100 percent interested in receiving the remuneration promised by management.

In fact, the V. Vrum's (1) expectation model is a kind of instruction for managers, who should understand that if at least one of the components of the indices comes close to zero, then the index for the integral evaluation of the expected effectiveness of human action in the fulfillment of the task (I_0) will tend to zero, too.

Transforming the model (1) for the task of assessing the quality of the correlation of the components of the triad «goal-setting-measurability-practical implementation» for the state programs, we will get a similar dependence of the type:

$$I_{кв}(i)=I_{нц}(i)\cdot I_{иц}(i)\cdot I_{ор}(i), \quad (2)$$

whereis $I_{кв}(i)$ integral assessing index for assessing the quality of the correlation of the components of the triad «goal-setting-measurability-practical implementation» for the i-th state program;

$I_{нц}(i)$- index demonstrating the active goal for the i-th state program;

$I_{иц}(i)$- index demonstrating the availability of the goal quantitative modification for the i-th state program;

$I_{ор}(i)$- index demonstrating the actual use of the indicators quantitative values in the formulation of the expected results for the i-th state program.

The quality assessment of the triad elements correlation «goal-setting-measurability-practical implementation» for the state programs in fields of «Innovative development and modernization of the economy» [10] was assessed using the model:

$$I_{кв.н}=\frac{\sum_{i=1}^{n} I_{кв}(i)}{n}, \quad (3)$$

where $I_{кв.н}(i)$ is integral assessing index for assessing the quality of the correlation of the components of the triad «goal-setting-measurability-practical implementation» for the i-th state program;

n — the number of programs assessed within the industry.

The quality assessment results of the triad elements correlation «goal-setting-measurability-practical implementation» for the state programs in fields of «Innovative development and modernization of the economy» (Table 2) show the index value $I_{кв.н}$ is 0.425.

Table 2 - The quality assessment results of the triad elements correlation «goal-setting-measurability-practical implementation» for the state programs in fields of «Innovative development and modernization of the economy»

Program No. (i)	Indices				
	$I_{нц}(i)$	$I_{иц}(i)$	$I_{ор}(i)$	$I_{кв}(i)$	$I_{кв.н}(i)$
1	1	1	0	0	
2	1	1	0	0	
3	0			0	
4	1	1	0.25	0.25	
5	1	1	0.153	0.153	0.425
6	0			0	
7	0			0	
8	1	1	0.875	0.875	
9	1	1	1	1	

Program No. (i)	Indices				
	$I_{нц}(i)$	$I_{ищ}(i)$	$I_{ор}(i)$	$I_{кв}(i)$	$I_{кв.н}(i)$
10	1	1	0.09	0.09	
11	1	1	0.322	0.322	
12	1	1	0	0	
13	no	no	no	no	
14	1	1	0.923	0.923	
15	1	1	1	1	
16	1	1	0.5	0.5	
17	1	1	0.571	0.571	
18	1	1	0.538	0.538	
19	1	1	1	1	
20	1	1	0.857	0.857	

Source: composed by author

Therefore, using the proposed models (2) and (3) the relationship of the components in the «goal-setting-measurability-practical implementation» triad quality assessment and based on the analyzed programs, the study shows that the quality level of these relations is less than 50% (42.5%).

Results and conclusions

The following conclusions can be drawn.

First, the following categories have traditionally been identified as determining the success of any controlled socio-economic system: goal-setting, survival, efficiency, effectiveness, productivity, practicability.

Second, as a result of the V. Vrum' s transformation of the expectations model in the work proposed a model for quality assessing of the triad elements correlation «goal-setting measurability -practical implementation» for controlled social — economic systems in which the index of integral quality assessment for quality assessing of the triad elements correlation «goal-setting-measurability-practical implementation» is a multiplicative function of index demonstrating the intended purpose for the managed system; an index demonstrating the availability of the quantitative target change to the managed system; an index showing the quantitative values of indicators actual use when formulating the expected results for the managed system.

Third, using the proposed model the relationship of the components in the «goal-measurability-practical implementation» triad quality assessment, we have analyzed the Russian Federation State programs of «Innovative development and modernization of the economy» and shown that the quality level of these relations is less than 50% (42.5%).

The relatively low result depends on the availability of quantitative measurability of all program targets and indicators:

A) for a number of programs, an index showing the actual use of the quantitative values of the indicators when formulating the expected results is less than one;

B) for a number of programs, an index showing the actual use of the quantitative values of the indicators when formulating the expected results is equal zero;

C) for individual programs goals were not formulated during assessing, so the index demonstrating the intended goal for these programs was rated as zero.

Overall, the fuzzy nature of measurability from goal-setting to implementation (in the example discussed from the section «Targets and Indicators of the Program» to the section «Expected Results of the Program» of «Innovative Development and Modernization of the Economy» of the State Programs of the Russian Federation) initially lowers the level of expected implementation.

It seems that the proposed general-purpose approach can be used to assess the quality of the relationship between the components of the triad «goal-setting-measurability-practical implementation» for any controlled

socio-economic systems.

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FEATURES OF SHAPING THE COMPANY'S COMPETITIVENESS IN THE GLOBAL AUTOMOTIVE MARKET

Svetlana N. Rastvortseva

National Research University Higher School of Economics (HSE), Russia.
E-mail: srastvortseva@gmail.com

Sofiya A. Shchitova

National Research University Higher School of Economics (HSE), Russia.
E-mail: sofiya.shchitova@mail.ru

Abstract. The dynamically changing conditions of doing business in the global market such as the economy reforming during a pandemic, the need to introduce high technologies in traditional industries, new promising players and development directions constantly demand a new level of the companies' competitiveness firmness. The comprehension of competitiveness factors formation and monitoring its changes dynamically allow companies promptly and successfully respond to emerging problems. The aim of this research is to offer a methodical approach to assessing the companies' competitiveness and testing it for Tesla in the global automobile market. To achieve this goal, (1) we have determined the theoretical foundations of the company's competitiveness, (2) classified assessment methods and proposed our own approach, (3) assessed the competitiveness of Tesla in the global automotive market, and (4) identified ways to increase the company's competitiveness in long-term perspective. The scientific novelty of the research lies in the proposed and practically tested methodological approach, including a financial and economic analysis of the company's activities with the sales assessment, assessment of the strengths and weaknesses, opportunities, and threats of the company, mapping of strategic groups of industry leaders, identifying the key factors of success and creating the profile of company competitiveness. In the course of the study, we applied methods of analysis of the financial and economic condition of the company, SWOT-analysis, mapping of strategic groups of companies and other methods. The experimental results of the author's methodical approach showed that it can be used to assess the components of the company's competitiveness in the market, identify significant external factors, determine the competitive position in the market, and lets us get full detailed information to make management decisions within the increasing competitiveness. This research not only contributes to the development of economic and management science, but can also be useful in the practical activities of companies.

Keywords: company competitiveness, company competitiveness analysis, competitive profile of a company, global automobile market, global electric vehicle market, Tesla Motors.

JEL codes: F23, L22, L62, M16

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Introduction

Over the past decades, the automotive industry has been facing global changes in production, introducing modernized technologies and evolving the business environment to a new level of innovation. Modern challenges such as climate change, instability in the global energy market, tougher competition are forcing manufacturers to take a fundamentally different approach to vehicle development, introduction and maintenance. It is in this industry that alternative energy technologies are most actively being introduced and new approaches in the production process are being developed.

The purpose of this study is to propose a methodological approach to assessing the competitiveness of the company and to test this approach for Tesla in the global automotive market.

The research structure is as follows. The theoretical foundations of the research and a bibliography on the company's competitiveness are presented in the first part. The second section of the article describes methodological approaches to assessment and presents the position of the authors. The results of the analysis of the competitiveness of Tesla are reflected in the third section. The results of the study, namely the proposed

directions for increasing the competitiveness of Tesla in the global automotive market, are shown in the fourth section of the article. The derivations and recommendations are given in conclusion.

Theoretical foundations of research and bibliography

Michael Porter viewed the competition of firms as the main success factor. It becomes possible to increase the efficiency of activities through innovation, productivity, corporate culture and the implementation of the chosen strategy in the course of the competition. The competition, in a broad way, is the ability of a certain object or subject to surpass the direct competitors under given conditions.

Also, the concept of competitiveness includes an object ability to withstand the onslaught of competition, perform competitive actions and develop a strategy for the company's sustainable development.

The company's competitiveness is formed as a result of its external and internal activities and the ability to adapt the changes of market conditions, operational efficiency and profitable sales of products on the market (Zavyalov, 2012). It must also have properties that give advantage for the subjects of economic competition (Zakharov, Zokin, 2004).

In the hierarchical structure of competitiveness according to G.L. Azoev, it is based on the competitiveness of the goods, and at the next level - the competitiveness of the enterprise.

He connects this property straight with its ability of effectively usage the available resources in a competitive environment. The levels of production development and the competitive products sales stand out as a compulsory condition for the enterprise's competitiveness. The enhancement of these characteristics is based on the permanent development of existing business processes and it leads to the emergence of competitive advantages in R&D, management, marketing, etc. According to the conclusions of G.L. Azoev, "the competitiveness of a company is the result of its competitive advantages across the entire spectrum of company management problems" (Azoev, 2012).

The company's competitiveness is strongly influenced by the industry and the type of market in which it actuates. The competitiveness formation factors can be divided into internal and external. The company's financial position, the efficiency of production and sales organization, promotion of goods on the market, and the products competitiveness we refer to internal ones. The economic development of the country, social sphere, political climate, legal restrictions and international relations are traditionally the External factors (Kanishcheva, Semchenko, 2015).

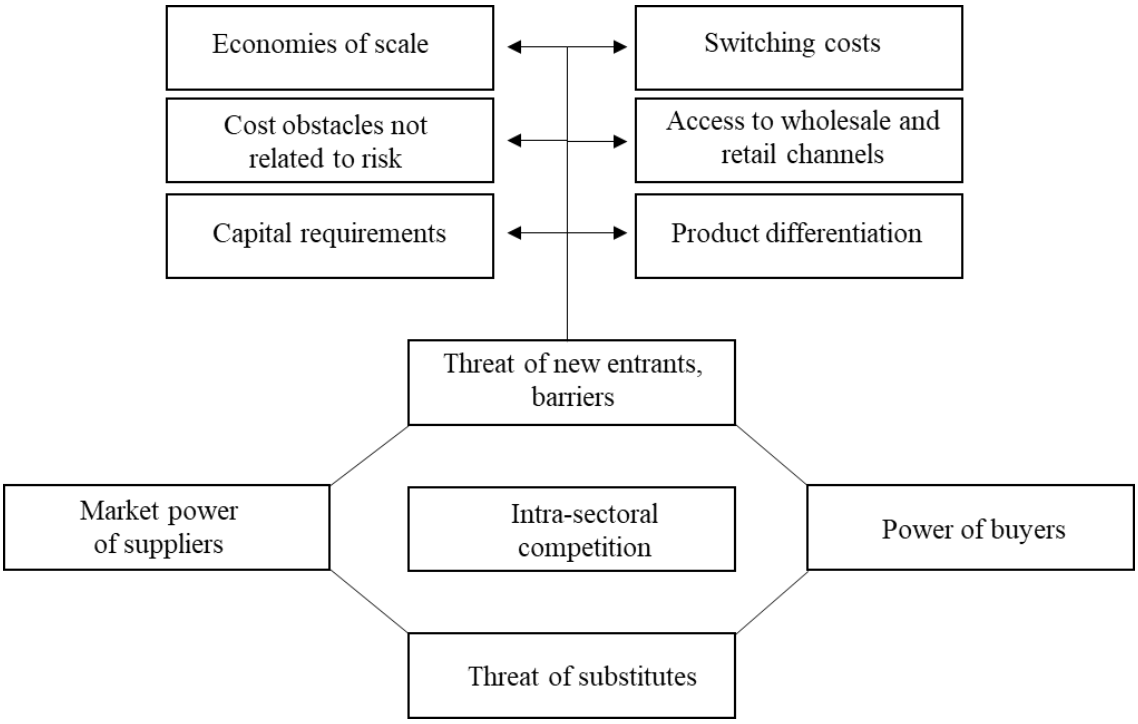

Figure 1. Competitive forces relevant to the global automotive market, by Porter

Source: compiled by the authors in Porter M. Competitive Strategy: A Competitive Industry Analysis Methodology. - Alpina Publisher, 2016

The traditional approach to determining a company's competitiveness can be called the allocation of five competitive forces by Michael Porter. This approach is considered to be unique, because it is acceptable for any business sector (Fig. 1).

Let us consider the competitive forces (according to Porter) in relation to the automotive industry. The first force is the threat of new players appearing. The barriers are high in the automotive industry and it means that new entrants should expect a response from established corporations, which reduces the possibility of successful business. Let us identify six main sources of barriers to entry into the industry. Economies of scale (1) are highly visible in the automotive industry. Companies often enter into trade and production agreements and organize strategic alliances to achieve economies of scale. Product differentiation (2) is typical for automobile companies, as each of them strives to produce a series of cars and constantly renews its "assortment" by developing new models. The need for capital (3) is relevant for the automotive industry due to the fact that the companies operating on the market can be classified as financially secured (both with their own and borrowed funds). Switching costs (4) are directly related to the product differentiation strategy. The development and production of vehicles with alternative fuel systems, for example, requires a significant investment. Access to wholesale and retail distribution channels (5) is better established in more experienced companies, which makes it much more difficult for new manufacturers to enter the market. Other cost barriers not related to scale (6), such as the availability of proprietary technologies, the favorable location of manufacturing enterprises, the accumulated experience of operating in the global market, are also more relevant to new players.

The market power of buyers is the second competitive force in the marketplace. This force is evident in the automotive business: from year to year, producers have perfected in the issue price and quality compliance, because the buyer can easily switch to a competitor brand product by the most "budget" and a quality car. Therefore, at this stage for automotive companies, it becomes important to develop car design, improve the quality of service and a high degree of loyalty to customers.

The third competitive force is the market power of suppliers. In the automotive industry, the market power of suppliers includes the fuel market. It does not have a direct, but an indirect impact on car consumers, encouraging them to make or refuse a purchase.

The fourth competitive force in the market is intra-industry competition. In the industry under consideration, there are a considerable number of automotive giants who have been fighting for the title of the best brand for decades.

The fifth competitive force in the market is the threat of the appearance of substitute goods. For cars running on gasoline, the substitute commodity is the electric car, despite the significant difference in cost. In addition, the strengthening of the environmental movement in recent years has significantly increased the demand for sustainable vehicles, which directly created difficulties for the auto industry, and forced many manufacturers to reorient some of their production.

With rapidly evolving technologies and growing competition, it becomes necessary for car companies not only to maintain their current level of competitiveness, but also to create new tools to successfully fight key competitors in the industry. In recent years, digital technologies have increasingly become such tools, the achievements in the development of which stimulate innovation, increase the efficiency of work and the sustainability of the prosperity of the industry in question. With the acceleration of the pace of business development, it becomes necessary to revise and modernize the key competitiveness tools. The main changes in the formation of competitive advantages of enterprises in the engineering industry are shown in Figure 2.

This figure examines the main directions of automobile companies' competitive advantages formation. The key ones are the rational use of the company's physical assets, sustainable development, improving the supply chain, improving logistics, monitoring labor productivity, developing innovations, caring for customers. As a result, the company comes to higher productivity, rational use of resources, lower costs and expenses, which directly stimulates the growth of competitiveness in the market. Let us define methodical approaches to assessing the company's competitiveness.

Methodological approaches to assessing a company's competitiveness

The companies' competitiveness, according to Porter (Porter, 1998) , is an advantage over their competitors in a certain industry. The firm receives these benefits under one of three conditions: it is able to generate and maintain profits at a level above the industry average; it manages to get the same results as its competitors, but at a lower cost; the firm benefits from differentiation in the industry. The term "sustainable competitive advantage" formally appeared when Porter proposed the main types of competitive strategies.

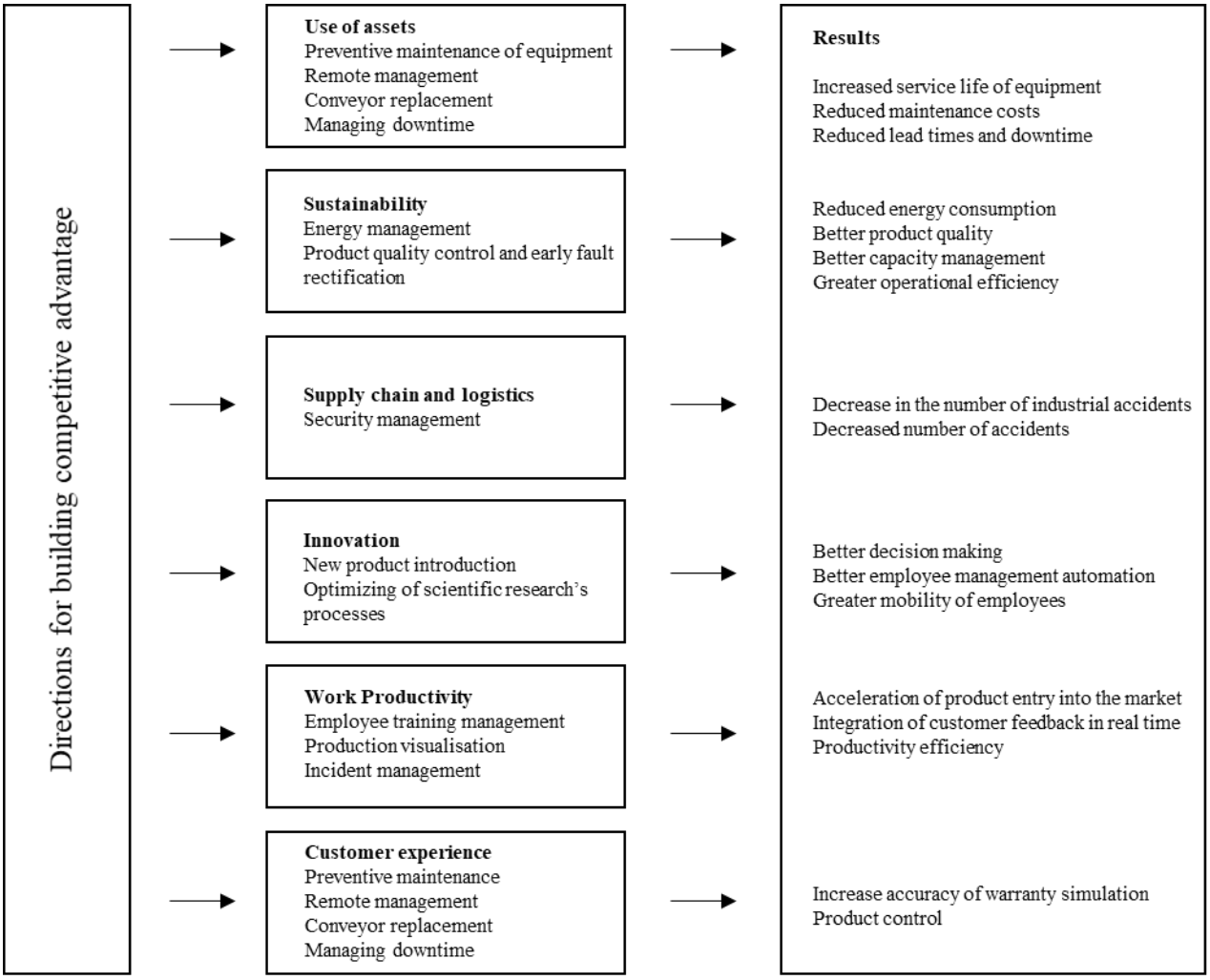

Figure 2. Directions of competitive advantages formation of automobile companies

Source: composed by authors from Tsvok D., Toczynska J. Digitalization as a tool for providing competitive advantages to enterprises in the machine-building industry, 2018

From a resource-based perspective, a company can gain a sustainable competitive advantage by taking advantage of tools and opportunities that are valuable, rare, complex and irreplaceable. Traditional sources, such as natural resources, technology, economies of scale, operational and industrial features, will help enable the company to create and maintain a sustainable competitive advantage, but only until they are copied or acquired by competitors (Barney, 1986 , 1995).

Based on the fact that innovation can be the key to creating a sustainable competitive advantage, individual scientists have proposed innovation as an estimated indicator of competitiveness (Turcotte, 2002).

Vichet Sum in his work offers as an appraisal indicator productivity, efficiency, differentiation, innovation and readiness for new opportunities and threats (Sum, 2009, p. 23).

Prescott and his co-authors define competitiveness as a system of three interconnected elements: competitive capacity, competitive efficiency, and competitive process. Competitive potential implies the amount of resources spent for production, competitive efficiency - efficiency of production (exit-to-cost ratio) in comparison with competitors, and the competitive process refers to the management of the company (Siudek, Zawojska, 2015).

Some authors propose to measure competitiveness through financial performance, i.e., assessing the ability of the company to create high profits and generate revenue, increase the productivity of factors of production, hire more employees, bring positive returns on invested capital, liquidity, debt, etc. (Kožená, Chládek, 2012). In the same way, the competitiveness of the firm can be assessed by comparing the ratio of the market value of the stock to the annual profit, which was received per share, market share.

In addition to quantitative indicators, quality indicators can be widely used in assessing the competitiveness of companies. Note that these methods are quite expensive and are used mainly by large companies. These include benchmarking (comparison with successful firms of the same industry), a method of a balanced system of indicators (assessment of financial performance, results of interactions with the client and the market, internal processes and prospects for the development and growth of these areas), the model of five competitive forces of Porter, EFQM Model Excellence (takes into account compliance with the principles of sustainable development, provision of high-level services to customers, and employees - proper working conditions), the model of Altman (Kožená, Chládek, 2012).

Let us take a closer look at some of the methods.

1. The price-to-profit method can be attributed to traditional methods of assessing competitiveness. This is the simplest method that can only be used for equity companies and companies operating in the same sector of the economy. The basis is the relationship between the market price (rate) of the stock and net earnings per share.

2. Altman's model. This is a bankruptcy model using a combination of multiple coefficients and their subsequent assessment using weights. Although this model is a little more complicated than the previous one, it is still based only on financial analysis. This model has existed in three variants since 1968, 1977 and 2002.

3. Benchmarking (modern trend) is a process of continuous improvement, based on comparing the processes or products of the organization with those players who are leading in the analyzed industry. In a global competition, this system process is a key tool for the company's survival.

4. A balanced system of indicators is an indicator system for evaluating a company's performance. Unlike all other methods, it assesses not only the current competitiveness of the company, but also connects individual indicators with strategic management. The main purpose of this method is to transform the company's vision and strategy for specific goals, indicators, tasks and measures.

5. The EFQM (European Quality Management Fund) model includes 9 main and 32 partial criteria for analysis. Individual criteria have their own weight, and it is important to note that they should only be treated as recommendations, not rules. Five of the main criteria recommend what approaches, methods and tools should be used in an organization to maximize its own results, while the remaining four criteria for results show that has already been achieved in all relevant areas. The basic idea of this concept is based on the assumption that the highest results can be achieved in the company only if the external customers are satisfied, their own employees are satisfied and the environment of the corporation is respected. The main criteria for the quality of the EFQM model include competent management, strategy, partnership, processes, and results for clients.

We offer the following approach to assessing the company's competitiveness. At the first stage, it is necessary to conduct a financial and economic analysis of activities on such indicators as the structure of assets and liabilities, absolute, current and fast liquidity, solvency of the company. At the second stage, it is necessary to characterize the company's sales in dynamics. To assess the actual position and strategic prospects of the company, it is necessary to conduct a SWOT analysis, identify the strengths and weaknesses of the company, as well as determine its development opportunities and emerging threats (Phase 3). Phase four involves mapping strategic groups of leading companies in a particular industry. The information obtained through this methodical approach will help to develop ways to improve the company's competitiveness in the industry and to make sound management decisions. The fifth phase will identify the key industry success factors for building a competitive profile of the surveyed company. The information obtained through this methodical approach will help to develop ways to improve the company's competitiveness in the industry and to make sound management decisions.

Testing Tesla's proposed methodical approach

The modern world can observe a lot of brilliant examples of fast-growing companies that surprise with their ability to compete with the world's leading corporations. One of them is the Tesla company car development. Founded only in 2003, in 17 years of operation it has been able to achieve leadership among the giants of the automotive market, existing in the industry for more than 100 years. The results of the main highlight figures of the financial and economic analysis of the company's activities (the first stage of the methodical approach) are presented in table 1.

After analyzing the key indicators, we can make the following conclusions. The volume of assets shows that Tesla has large funds to Finance its activities, and their constant increase indicates the high attractiveness of the Corporation for investors and customers. In the structure of liabilities, where the main share is occupied by long-term liabilities, capital leasing, deferred income and accounts receivable, there is also an obvious increase. In General, the indicators of assets and liabilities are in the middle range for the automotive industry. From the summary data of liquidity and solvency, it follows that the most difficult period for Tesla was the period from 2017 to 2018. The corporation had low liquidity ratios, which indicated the company's low ability to cope with short-term obligations. However, in general, the indicators under consideration do not go beyond the average range, which indicates the financial stability of the corporation.

Let us consider the nature of Tesla's sales for 2017-2019. (fig. 3).

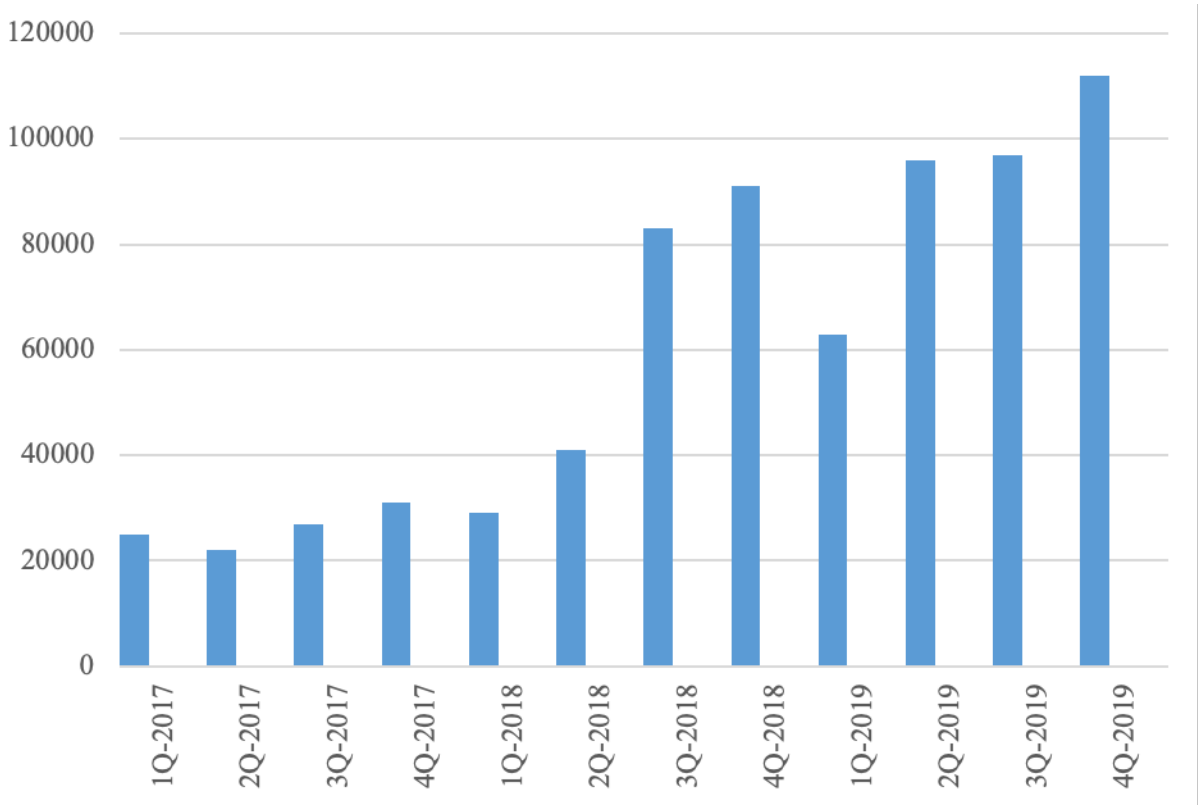

Figure 3. The sales dynamics of Tesla cars by quarters for 2017 - 2019, units
Source: composed by authors from Annual report 2019/Q4. Tesla, 2020

Table 1 - Dynamics of Tesla's key performance indicators in 2010-2019

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Assets, million USD	386.1	713.4	1114.2	2416.9	5849.3	8092.5	22664.1	28655.4	29655.4	34309
Including assets: Cash and cash equivalents, %	25.8	35.8	23.1	35.00	32.58	14.79	15.31	11.97	12.57	19.17
Restricted cash, %	19.1	3.29	2.19	0.12	0.31	0.28	0.48	0.55	0.66	0.75

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Short-term marketable securities, %	0	3.51	0	0	0	0	0	0	0	0
Receivables, % Notes to consolidated financial statements	1.74	1.34	3.08	2.03	3.87	2.09	2.25	1.83	3.24	4.05
Products in stock, %	11.7	7.02	3.08	14.08	16.30	15.79	9.33	8.05	10.62	10.86
Deferred expenses and other current assets, %	2.81	1.32	0.97	1.14	1.62	1.55	0.88	0.95	1.25	2.18
Vehicle operating leases, %	2.06	1.65	1.15	15.82	13.11	22.14	14.14	14.64	7.13	7.48
Property, plant and equipment, %	29.7	41.8	63.3	30.56	31.27	42.06	27.00	35.65	38.65	31.79
Non-current cash and cash equivalents, %	1.26	1.13	0.59	0.27	0.19	0.39	1.21	1.57	1.36	0.82
Other assets, %	5.89	3.14	2.52	0.98	0.74	0.92	0.98	0.97	1.95	2.47
Solar power systems leased and to be leased, %	0	0	0	0	0	0	26.72	22.57	21.39	18.77
Intangible assets, %	0	0	0	0	0	0	1.70	1.25	1.20	1.64
Including liabilities: Accounts payable and accrued liabilities, %	6.46	6.18	15.40	8.53	8.99	8.29	7.49	7.85	9.86	10.01
Deferred income, %	0.96	0.38	0.22	5.65	4.16	6.24	1.86	1.93	1.13	1.74
Deposits and balances due to customers, %	3.98	6.43	6.23	3.38	2.21	1.76	1.62	1.63	1.42	1.09
Liabilities on ordinary shares, %	0.79	0.62	0.48	0	0	0	0	0	0	0
Capital lease liabilities, %	0.10	0.27	0.64	0.43	0.19	0.20	2.95	3.30	3.75	4.36
Non-current liabilities, %	9.30	19.4	20.30	12.13	20.69	16.36	14.56	18.01	16.85	17.45
Other non-current liabilities, %	1.59	1.05	1.13	6.09	5.68	10.28	4.61	4.65	4.86	3.98
Equity capital, %	26.8	15.7	5.60	13.80	7.83	6.75	11.60	8.07	8.82	9.92
Non-current liabilities and capital leases, %	50	50	50	50	50.25	50.13	55.30	54.57	53.30	51.45
Financial ratios: Absolute liquidity, ratio	0.56	0.52	0.2	0.48	0.39	0.17	0.2	0.15	0.16	0.2
Current liquidity, ratio	2.8	1.9	1	1.9	1.5	1	1.1	0.9	0.8	1.1
Quick liquidity, ratio	1.2	1.5	0.4	1.3	1	0.5	0.7	0.5	0.5	0.7

Source: calculated from: Tesla annual reports 2010-2019

The best-selling models are the Model 3, Model X, Model S. Exactly these cars sales Tesla registered

a record revenue of 24.58 billion dollars. compared to $21.46 billion in 2018. It is also worth to note the significant growth in the sale of cars from 17.63 billion dollars. $19.95 billion. In addition, if in 2019 Tesla sold 367.5 thousand electric cars, by 2020 the company plans to overcome the threshold of 500,000 electric vehicles sold.

It is important to note that the growth in revenue in 2019 had a positive impact on the increase in vehicle shipments worldwide. So, by measuring the main indicators, we get the following: after 4 quarters of 2019, GAAP gross profit was 4.1 billion, operating income - 359 million, net income - 105 million, free cash flow - 1.1 billion, operating cash flow less capital expenditures - 1 billion.

Let us conduct a SWOT analysis (the third stage of the methodical approach) of Tesla for further research of competitiveness and identification of recommendations for its improvement (Fig. 4).

The company strengths (S)	**The company's weaknesses (W)**
S1. Advanced patented technologies (which include car design, transmission technology, battery development technology) S2. Quality products in terms of exceptional vehicle performance S3. Unique electric vehicle design S4. Good reputation among customers and positive press reviews S5. External attractiveness of the company for investors S6. Growing demand for Tesla cars S7. Tesla is considered America's best employer	W1. Growing but limited brand recognition among mass market consumers W2. Insufficient production capacity does not allow to take orders from all comers W3. A very limited number of charging stations for electric vehicles in many countries around the world W4. Lack of mass production
Opportunities for the company (O)	**Threats to the company (T)**
O1. Growing demand in the electric vehicle market O2. High barriers to entry into the automotive market for other participants O3. Raising consumer awareness of the environmental benefits of using electric vehicles O4. Rapid rise in the cost of gasoline, forcing consumers to increasingly consider electric vehicles O5. A growing number of international incentives to maintain and develop infrastructure for electric vehicles O6. Possibility of expanding demand in connection with the release of the car "Model 3"	T1. A significant increase in the number of competitors in the production of electric vehicles due to the retraining of many of the world's leaders in the auto industry T2. A growing number of electric vehicle replacements (i.e. gasoline-powered hybrids) T3. Prospects for a sharp short-term decline in the price of oil, which may impede the transition of consumers to electric vehicles T4. Breakthrough of competitors related to the development of alternative energy sources (hydrogen vehicles) T5. Manufacture of defective vehicles T6. Disruption of supplies due to lack of materials

Figure 4. Tesla SWOT Analysis Matrix

Source: composed by authors

At the fourth stage of assessing the competitiveness of Tesla, it is necessary to carry out a comparative analysis with direct competitors in the automotive industry. It is important to understand that many leaders of the automotive industry, such as Toyota, Mazda, Subaru, have exceptional characteristics and are the best sellers, but the cars of these brands are not direct competitors for Tesla. Only companies that directly produce electric vehicles will participate in the comparative analysis. Thus, having built a map of strategic groups, we get the following area of direct competitors (Fig. 5).

BMW, Volkswagen, Ford, KIA, Chevrolet, and Nissan are the direct competitors for the analyzed Tesla corporation. Each company has a good ranking position for 2019 in the overall ranking. None of the

companies falls below the 10th place in the rating table for 2019. However, these companies mostly focus on gasoline-powered vehicles production. In addition, each of them has been working in the automotive industry longer than Tesla. Therefore, it is rational to compare electric vehicles offered by each of the listed companies in the automotive market. For the convenience of conducting a comparative analysis, statistical data on electric vehicles for each of the proposed brands were selected, on their basis a table of key success factors was compiled (the fifth stage of the methodology for assessing the company's competitiveness). To identify the highest quality car brand, the weights of each key factor were calculated. The data are presented in Table 2.

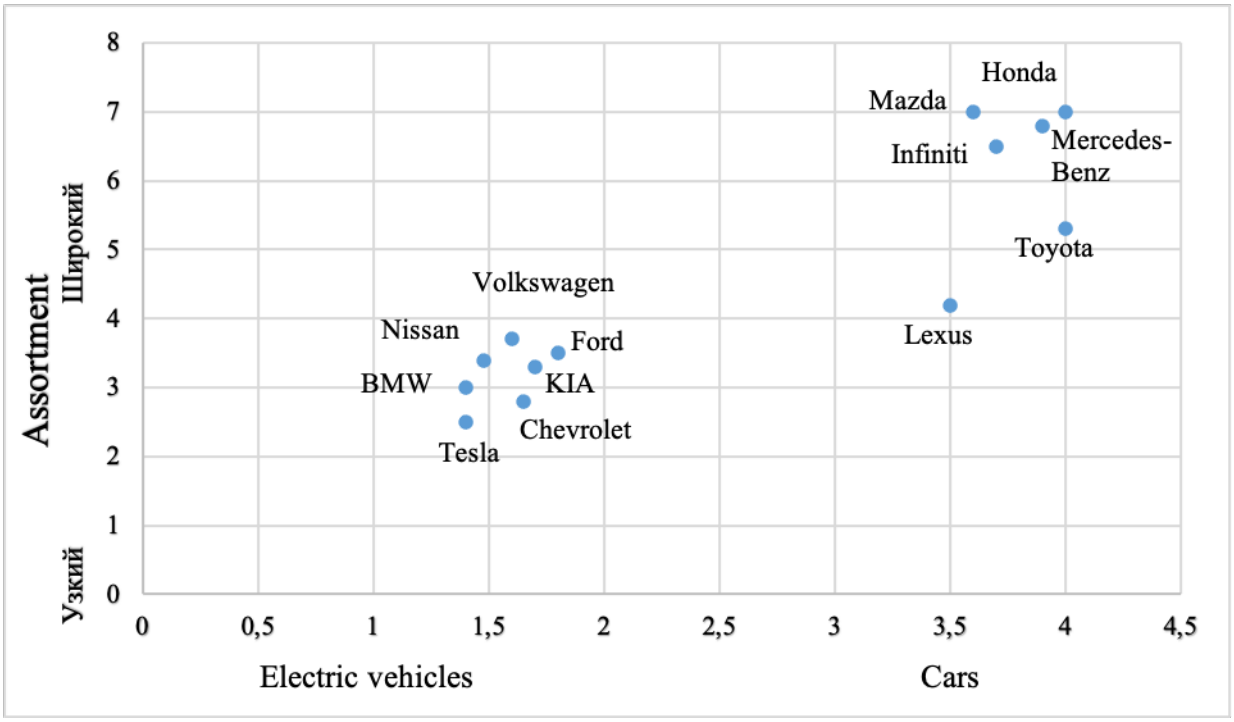

Figure 5. Map of strategic groups of companies leading the automotive industry
Source: composed by authors from electric vehicle manufacturers and companies, 2019

After analyzing the electric vehicles of various companies, we can conclude that Tesla is ahead of the competition in all characteristics, with the exception of the cost of an electric vehicle. However, we will explain this by the costliest production and high quality. The last stage of the methodology of assessing the company's competitiveness is the compilation of a competitive profile for the company (Fig. 6).

Table 2 - Key success indicators of Tesla companies and its competitors

Indicator	Weight	Tesla Model 3	Nissan Leaf	Chevrolet Bolt EV	Ford Focus Electric	Volkswagen e-Golf	KIA Soul EV	BMW i3
Test drive	0.3	5	4	3	2	4	4	2
Speed	0.2	5	4	4	3	3	3	3
Travel distance	0.2	5	3	3	1	2	3	1
Cost	0.15	2	5	3	5	2	4	3
Key Features	0.1	5	4	5	4	3	4	3
Appearance	0.05	5	3	3	2	3	4	4
Amount including weights	1	4.55	3.9	3.4	2.65	2.95	3.6	2.35

Source: technical characteristics of the companies discussed above

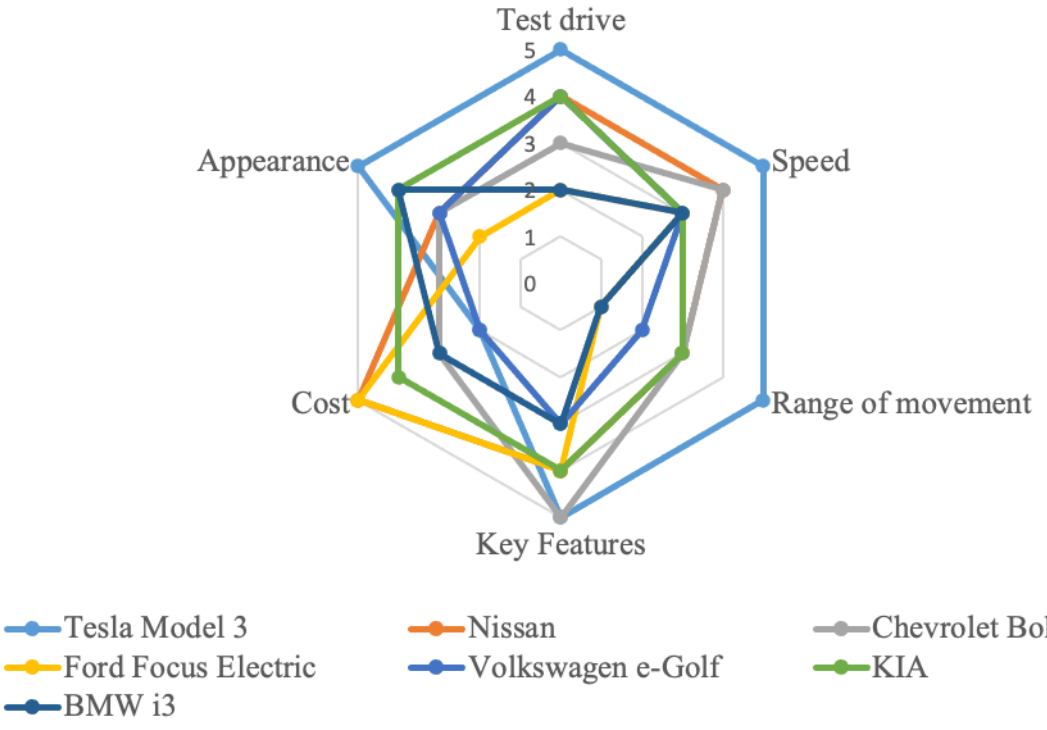

Figure 6. Tesla's competitive profile

Source: composed by authors from Table 2

It becomes obvious that in the production of electric vehicles Tesla has surpassed its competitors in most of the parameters considered. In addition, when considering the premium segment of the automotive market, which includes both electric vehicles and automobiles, Tesla also has a leading position in sales. So, in 2018, Tesla became the record holder for Model 3 electric car sales in the United States, beating competitors such as Lexus, Audi, Mercedes, BMW, Acura.

Results

The carried out analysis using the methodology for assessing the competitiveness of the Tesla company allows us to determine the main directions of increasing competitiveness.

In our opinion, the key direction here is the company's innovative development. Tesla differentiates his strategy in two directions. The first of these focuses on the company's image. The strategy is to produce sensational projects, the development of which has not yet been dealt with by any of the market players. The Roadster 2.0 and Cybertruck electric vehicles are examples of such projects (Ferr, Dyer, 2020). These models of electric vehicles are not widely used and have very limited demand. Their sale is not able to bring significant profits, since production is costly. Despite this, Tesla every year develops this production strategy to improve its image.

Besides the best performance, Tesla pays a lot of attention to the presentation of new products. To attract new investors, Elon Musk, the founder of the company, immediately shows the product in physical form, avoiding classic presentations. Tesla works closely with the media, holding large-scale presentations for them and thereby providing additional advertising for its products (Ferr, Dyer, 2020). Thus, this direction of Tesla's business development concentrates production capabilities on improving the corporation's image, on advertising innovative products and on attracting additional investments.

The second innovative direction of the company's activity is aimed at the development of Tesla's main products, which generate the main income. These include the S, 3, X, Y electric vehicles, which are inferior in design and performance to the Roadster 2.0 and Cybertruck electric vehicles, but are mass-market products. It is from the production of these models that Tesla's main revenue is generated. It is important to note that at a relatively low cost compared to Category 1 EVs, mass-market models also have performance that greatly

outperforms the competition. So, "Model S" and "Model 3" have an acceleration time to 100 km / h 5.9 seconds. and 5.6 sec. respectively. Therefore, it is important for the company to occupy the niche of the most innovative electric vehicles .

Thus, such a competitive strategy aims to transform the automotive industry and striving for development. (such a competitive strategy aims to transform the automotive industry and to development striving)

Conclusion

Thusly we see that at the global automotive market a maintaining of high level competitiveness is a strategical priority for companies. The proposed assessment methodology will allow to absolve the increase direction but not only to identify the internal and external components of the company's competitiveness.

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COMMUNICATION BETWEEN CULTURES, YESTERDAY, TODAY AND TOMORROW

Ladislav Žák

Prague, Czech Republic.
E-mail: zaking@volny.cz

Abstract. The article deals with issues of intercultural communication, especially today and in the future. It suggests the idea that the very existence of cultures that must communicate is a natural condition for intercultural communication. The fact that we live in the current liberal paradigm is rather an "anti-culture". The communication of this anti-culture with any culture ends like the contact of matter and antimatter ends, i.e. annihilation. At the heart of the path to suppressing anti-culture is the ability of the human individual to critically and ethically to examine his environment. We must go this way in order to defeat anti-culture, debilitation and obscurantism, to return the cultural diversity, vitality and the supremacy of our affairs to us. The basis for the creation of each culture is the ability to ethically distinguish between what is worthy or not worthy of our respect and also restraint and not abuse of our position in relation to our neighbours. Neighbours in the cultural and natural environment, space and time...

Keywords: culture, anti-culture, communication, modern liberal paradigm, ethics, obscurantism, strong intellectual degradation.

JEL codes: A14, Z13

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Introduction

It is obvious that the basis of cross-cultural communication is the ability of different cultures to interact with each other. Of course, there are many definitions of culture. It is necessary to highlight that foundation of each culture is the continuity of generations. It's nature, place, and time.

It is also important to mention the ability of the different generations to communicate with each other to overcome the considerable difficulties of cross-cultural communication. The international trade has definitely played the key role in the cross-cultural communication development (Harari, 2017). One should also not forget the role of different intermediaries and also the ubiquitous coincidences, which quite unexpectedly give way for intercultural communication.

Therefore, "Gulliver's Travels" by Jonathan Swift (Swift, 1958) is the best in terms of overcoming ethnic and cultural differences. Of course, everyone knows this novel, but we strongly recommend you to re-read this great novel.

Two points should be considered. First, difficulties in translating concepts. There are many shadows of the "liberalism" definition in different cultures. Thus, the Modern Liberal Paradigm (MLP) should be considered. The MLP includes the terms «neo-liberalism» and «neo-marxism». Second, it is remarkable that the MLP relies on its global "success" of the eradication of human collaboration with nature, space, and time, along with its replacement with the identical names and no essence. This is why our life in the MLP is rather the "anti-culture" (Deneen, 2019). The contact of anti-culture with the culture ends like the contact of matter and antimatter, i.e. the mutual annihilation. This annihilation is particularly destructive for every real culture that contacts liberal anti-culture. In this case and in this way anti-culture can neither be defeated nor changed.

This research will focus on the future of inter-cultural communication, which is to overcome the anti-culture, and the creation of a new real culture on the ruins of destroyed anti-culture. Otherwise, culture will be replaced and blocked by alien, violent, and intolerant cultures. These alien cultures will escape any communication with the anti-culture and people will accept them in general. At the end, some cultures are more acceptable than non-living, artificial anti-cultures. As an example, the well-known position of Islamic leaders, particularly the jihad movement, is a much greater respect to Christians and other confessions than the atheists.

Discussion

To start the discussion about communication between cultures, let us consider the Financial University. In the history of mankind, markets in general and especially financial markets have long been regarded as a distinctive culture. That is, not as the modern empty arena of anonymous and abstract relationships, but as a form of organized memory in which trust, reputation, memory, and duty are required for the market to function. Thomas Lamont, head of J.P. Morgan & Co, once said of his enterprise that "the community as a whole demands of the banker that he shall be an honest observer of conditions about him, that he shall make constant and careful study of those conditions, financial, economic, social, and political, and that he shall have a wide vision over them all." (Deneen, 2019)

Before the last major economic and financial crisis, the financial industry had gradually been spared any such culture, or perhaps a culture stemming from nature, place, and time. Incidentally, this has been the case with many different universities, their dormitories, and their campuses. The dormitory, i.e., belonging to a certain fraternity and all sorts of "good old fashioned ties", prepares a person for a career in the mortgage bond market and, more generally, in the world exchanges. The mortgage industry is based on the financial equivalent of "cliques" in a dormitory, when a person could not care for the consequences of their debt or interest they have from other people. People within the clique do not feel obligated to return the debts because they will be cleared by loaning next. However, like on college campuses, this arrangement leads to irresponsibility and abuse that hurts the community and destroys individual lives and trust in the community. The other side may react similarly or even the same. Calls for increased government regulation and oversight of the unlimited corruption, coupled with infrequent threats to punish and a massive expansion of government control in overseeing basic human relations, is a desire to provide some sort of safe haven. Liberation of a local market culture brings no absolute freedom, only an elusive yet ubiquitous leviathan. By destroying culture one cannot achieve liberation, only helplessness and slavery (Harari, 2017).

The breakdown of cultural ties, strong intellectual degradation, and the actual domination of anti-culture and obscurantism is supposed to "liberate" an uprooted man for an all-pervasive and all-encompassing market and the consolidation of state power. Some individuals appeal to the government to relax cultural norms and traditions in the name of individual liberation. This leads to various pressures that reduce or eliminate key features of long-term informal norms. Without these norms, individuals want unlimited freedom, want to do whatever is not restricted by law or does no apparent harm. However, without the defining rules of conduct, which have generally developed cultural practices and behaviors, the liberated people inevitably come into conflict. The only authority that can assess these claims now is the state, and this again leads to an increase in legal and political affairs in local matters that were previously generally handled by cultural norms. Liberal individualism requires the elimination of culture; and as culture disappears, the leviathan of parasitic liberalism grows, and responsible freedom gives way.

The evidence of our actual MLP-anti-culture, obscurantism, and strong intellectual degradation surrounds us but they are deny each other. The MLP expands, gradually pushes the previous cultures out. It leads to suppression and replacement of cultures mentioned above. We do not reclaim our own cultures that have emerged locally and are rooted in time, but usually develop them from the heritage of relatives, neighbors, or communities, as well as from music, visual arts, storytelling, or food. It is likely that we will consume packaged and market-tested consumer goods, often labeled with trade symbols that mask the volatility of culture (Cílek, Ač, 2019). Our increasing inability to create, to do things our own way, is linked to a number of social phenomena, from the decline in technical education, which is an indicator of our pervasive ignorance of how to fix something, to the significant decline in the market for musical instrument sales and service in the era of mass-produced music.

The author draws the analogy between the behavior of the MLP and the Brown-headed cowbirds (Molothrus ater). This particular kind of bird lays eggs in the nests of more than two hundred species of birds, and these other birds then raise the young cowbirds as their own. The MLP does the same. Under the MLP, the expression "culture" becomes a word that become a parasite of its original meaning and replaces true culture with a liberal imitation. People who don't understand this substitution greedily accept it. Talking about today's

culture, they talk about it in singular, while the real cultures were numerous, local and individual. We often use the term "popular culture". It is a market standardized product developed by commercial companies and designed for mass consumption. The real culture accumulates local and historical experience and memory. In contrast, liberal "culture" is a vacuum that remains when the local experience is gone and the national memory is lost. The beauty of real cultures has been replaced by a celebration of "multiculturalism," the limitation of actual cultural diversity and liberal homogeneity (Bateson, 2006). The suffix "-ism" alludes to the victory of the MLP over true cultural diversity. Although culture has been replaced by anti-culture, the language of culture still continues as means of separation of liberal anti-cultural humanity from authentic cultures. A homogeneous kind of culture actually means that there is none. The more one calls for "pluralism"; or "diversity" or in the "world of retail" for "choice", the more vigorously the destruction of actual cultures advances. Our primary loyalty belongs to glorifying of liberal pluralism and diversity, creating homogeneous and identical followers of difference, demanding and enforcing ubiquitous indifference.

In contrast, cultures, as numerous and varied as they are, share common features that almost always also include beliefs about the continuity of human culture and the natural world, the experience that the past and the future are anchored in the present, and the belief that the place of human living is sacred. This includes a sense of deep gratitude and responsibility to care for the preservation of the native places. The MLP is based on a rejection of each of these basic aspects of culture. First of all, these aspects represent continuity with nature, debts and obligations, accompanied by the passage of time and the change of generations or a strong identification with the place of living. The rejection of these main aspects tries to limit human abilities and hinders humanity's self-development.

It was the culture associated with ethical inquiry and critical thinking that most threatened and endangered the creation of a proper and universal, fully "liberalized" human being. The main ambition and essence of success of MLP was to create a different form of the world, independent of both nature and culture. It was also to wipe any memory of the past, make people indifferent to the future, ruthless towards places worthy of generations of people loving and living in them. The substitution of cultivated actions with indifferent uniform anti-culture, strong intellectual degradation, and obscurantism is another successful tendency of MLP and belongs to the greatest threat to our future life together. However, just the essence of MLP's success already shows the conditions of its demise time and time again.

At the heart of its suppression is the human individual's ability to critically and ethically examine his or her environment (Lindauer, Žák, 2019). It is a thorny path, maybe even a crusade, but it does not lead to hell, but to salvation. Man, and society as a whole, must go through it to defeat anti-culture, strong intellectual degradation, and obscurantism, to regain cultural diversity and vitality. Maybe - "regain the supremacy of our affairs..." or "regain control" (Lindauer, Žák, 2018).

It turns out that forming a true culture must not only restore the direct relationship between man and nature, space and time, but above all — restore the direct relationship between people. This is similar to the recovery of real, life-giving and fertile soil from an almost dead clay by renewing the structure of the micro and macroaggregates of the soil and providing access to various helpers and semi-creators of the living environment. It is also similar to stopping a sand dune that threatens to change all living things in front of it into a dead pile of sand. Not only can the dune be stopped, it is possible to make it a living environment for the culture of various plants and animals again (Bárta, Kovář, 2011).

The news and mission of the newly created culture, its values and opportunities should be spread by word of mouth, directly from one person to another, not only through media and the Internet. Its ways are all the neighborhood relationships that have been created in our time. They are numerous. They sprawl through different spaces: general, professional, interest-based, confessional, real, and digital (Žák, 2012). However, they also spread over time, throughout generations. My children and my parents are my neighbors in time, whether or not we live in the same time or even in the same space.

The basis of each culture is the ability to ethically distinguish what is worthy or not worthy of our respect along with the respecting of our neighbours heritage (Svítek, Žák, 2020). This is the principle of creating a structure of values of the new culture. Restraint and not abusing our position vis-à-vis our neighbors is also

part of the foundation for creating a culture (Taleb, 2019). Neighbours in the cultural and natural environment, space and time...

Conclusion

The founding and development of the "Institute of Scientific Communication" is a perfect example of creatively establishing this new real culture and intercultural communication of our time and the future. The ISC represents an important component, one can directly say the cornerstone, of the hope that the "anti-culture" of the MLP can be overcome by our own forces of knowledge, ethics, and humanity... (Svítek, Žák, 2020)

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