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To cite this article: M Y Savelyev *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **666** 062093

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Newly Industrialized Countries: Is There an Alternative to the Golden Billion?

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Abstract. In order to identify the features of economic development and the historical fate of new industrial countries (NIC), an econometric analysis of their strategies and development dynamics since 1950 was carried out based on the parameters of real GDP growth rates and their standard deviation. 6 types of development were identified. The dynamics of development for 8 economic cycles and paired correlations between countries are estimated. 4 waves of growth rates and 5 waves of MSD were revealed. It is hypothesized that the correlation of growth rates shows the similarity of countries in their use of opportunities, and the correlation of MSD shows that of their responses to threats. Connection graphs are constructed and 3 clusters of countries with similar historical destinies are obtained as a result of the analysis. It is recorded that there are 3 groups of 11 countries with a similar development strategy. The other 10 have no development analogues. Determined: China applies import substitution and export strategies, it can become the leader of the NIC and compete with the global dominance of the OECD countries; the post-industrial development of the NIC cannot be based on a liberal, import-substituting or export strategy. As an alternative, a strategy for improving the living standards is proposed.

1. Introduction

The problem that this study aims to solve is whether there is an alternative to the "Golden billion" countries among the new industrial countries: by the type of economic development and by the multiplicity of centers of economic growth? What economic policies do these countries pursue and what strategy do they follow? Are there any prospects for NIC economic unions that can compete with the OECD countries?

2. Relevance

The relevance of solving this problem is due to the need to have scientific evidence of the possibility of building a multipolar world.

3. Scientific significance of the issue with a brief review of the literature

The object of this study is the so-called "new industrial countries" (hereinafter — NIC), a group of developing countries that have made a qualitative transition in their socio-economic development over the past decades. In a short period of time, the economies of these countries have made the transition from backward, typical for developing countries, to that of highly developed ones.

Among them are the "first wave" NIC: Hong Kong, the Republic of Korea, Singapore, Taiwan, Argentina, Brazil and Mexico. A number of countries also belong to the "second wave" NIC: Chile, In-



dia, Malaysia, Thailand; the "third wave NIC" are Indonesia, Turkey; fourth wave NIC are Iran, Philippines. Promising industrial countries include Nigeria, Egypt, Pakistan, Bangladesh, and Vietnam [1,2].

There are two main NIC models: Asian and Latin American ones. The difference between the models is that the Asian model is primarily focused on foreign markets, while the Latin American model is focused on import substitution. At the same time, there are also common features in the two models, such as: high rates of economic development, attractiveness for investment as a result of cheap labor, policies that encourage education and quality work, an offensive strategy in the world market, dynamism in the scientific and technical sphere, etc. [3].

UNIDO researchers note that between 1990 and 2000 and 2000 and 2013, new industrial countries experienced a sharp increase in the rate of income creation, as the final demand for manufactured goods was increasingly dependent on domestic markets [4].

Thus, the subject of this study is the features of socio-economic development of countries classified as new industrial countries.

The work of E. A. Bragina is devoted to the study of models of development of new industrial countries that have stepped from the pre-industrial to the post-industrial era [5]. According to the author, the development of NIC, at least in East Asia, was based on a single model based on the export orientation of the economy in close connection with the regional leader. This idea of the "flying geese" model, which embodies the paradigm of movement according to the leader-followers scheme, was formulated by the Japanese economist Akamatsu in 1932 and got its name for its graphic similarity to birds flying behind the leader [6]. Its essence is in the mechanism of transmitting impulses from the leading country to the next ones. It is fully applicable to Japan's relationship with the first NIC in the Asia-Pacific region.

A.V. Karimullina carries out the analysis of Western literature on the problem of economic development of the "first wave" NIC [7]. The main approaches of the "dependency theory" are considered. According to it, the world economic system is a two-level hierarchy: *Center-Periphery* [8]. Due to the lack of sufficient national capital, the process of industrialization in the Periphery countries is impossible without the participation of capital from the Center. Long-term dependence on foreign capital has two main negative consequences for the Periphery economy: limited economic growth and increased inequality in income distribution. For example, the special nature of Japanese colonialism: in its colonies, Japan created objects of transport and communication infrastructure, heavy industry enterprises, and in the post-war period, labor-intensive industries began to move from the former metropolis to Korea and Taiwan through the mechanism of the product life cycle [9]. P. Evans also notes the dependence of Asian countries on foreign aid [10].

The Center-Periphery model is based on the world-system theory developed in the 1970s by A. G. Frank, S. Amin, J. Arrighi and T. dos Santos. The most famous version was developed by I. Wallerstein [11]. In Russia, the school of world-system analysis is represented by B. Yu. Kagarlitsky [12], A. I. Fursov [13] and A. V. Korotaev [14]. According to this model, the NIC countries are included in the semi-periphery, which also includes old industrial countries that are not related to Western civilization: in particular, the countries of the former Eastern European socialist bloc. In this regard, we count Russia and South Africa among the countries studied. They added to the sample, fully covering the BRICS countries – an association of the most powerful economies in the world that are not members of the OECD.

In contrast to the theory of dependence, the works of R. Barrett and M. White state not only the absence of traditional consequences of dependence on foreign capital, but also an increase in growth rates and a reduction in social inequality. Researchers say that the effects of addiction can also be positive, as demonstrated by Asian NIC. In their opinion, the nature of the consequences depends on the area of application of foreign capital (agriculture, industry, infrastructure), as well as on the specific industry (mining, light, heavy industry) [15].

The neoclassical approach to the analysis of the economic development of Asian NIC is based on other positions. In the first works in this direction (B. Balasha, I. Little, E. Chen, H. Hughes) argues

that the economic success of Asian NIC was made possible by their reliance on market incentives that ensured efficient resource allocation [16,17,18].

In contrast to the neoclassical approach, the "revisionist" approach focuses on the active role of the state. R. Wade identifies three determining factors in which active state intervention was manifested: capital accumulation, protectionist policy, and selective industrial policy [19]. Alice Amsden builds on his approach to the analysis of the economic development of Asian economies based on the concept of the countries of "late industrialization". The process of late industrialization is based on catch-up development (flying geese pattern), which is supplemented by national characteristics of the industrialization process. In the case of East Asian countries, this is an active role of the state (along with subsidies issued to East Asian enterprises and banks, certain standards were set that they had to meet in production, export activities, and later in R&D) [20].

In the early 1990s, publications began to appear in which the authors argued that the strategy based on export orientation and cheap labor had reached its limits. Increased wages led to the shift of labor-intensive industries and to the reallocation of FDI flows in favor of China and Southeast Asian countries, while more high-tech production continued to rely on technology imports from Japan and the United States, which led observers to call all this "growth without development" [21].

The nature of the economic growth of Asian NIC also remains relevant. In their work A. Young, P. Krugman, J. Kim, L. Lau econometrically prove that the basis of economic growth in Asian NIC is not an increase in total factor productivity (TFP), or technological change, but an increase in the volume of used factors of production [22].

Sergeev V. M., Alekseenkova E. S., Nechaev V. D. [23] distinguish among the national models of innovative development, innovative models of countries belonging to the NIC. For example, models based on the East Asian type (South Korea, Hong Kong) differ significantly from the North Atlantic model. Innovation systems based on this model are almost completely devoid of the component of fundamental science (and partly of applied science). Being focused on the export of high-tech products, East Asian countries tend to borrow the technologies themselves from countries following the North Atlantic model. Another type of innovation system is represented by countries such as Thailand and Chile. Thailand's innovation system focuses on the development of the tourism industry, innovative methods in this area, as well as other industries that generate significant revenues and ensure rapid economic growth. Chile's innovation system is aimed at developing agriculture, and its share continues to grow. In addition to agriculture (and new technologies for processing agricultural products), the Chilean economy is now based on forestry, fisheries, services, and education. Special attention is paid to the development of transport and communications, as well as telecommunications and information technologies.

Our previous research shows that inter-civilizational competition between territories occurs not only among themselves, but also with corporations and non-profit organizations of political orientation, including foreign States [24, 25]. In these competitive conditions of national and subnational territories, the following models of economic development of regions are applicable: region-market territory providing infrastructure services to any investors (liberal strategy of effective development), region-quasi-state management of the territory itself becomes the subject of a self-sufficient development (strategy of import substitution and integrated development), region-quasi-corporation management uses competitive advantages of its territory for penetration in other areas (national strategy for sustainable development), the region-society management is focused on meeting the needs of its own population (strategy quality of life and harmonious development). From this point of view, NIC implement only quasi-state and quasi-corporation models. In fact, liberal and socially-oriented models do not provide advanced industrial development.

4. Problem statement

In order to refute or confirm the above hypotheses about types, models, strategies, and "waves" of development, as well as to empirically test the above phenomena, this study aims to quantify the features

of economic development in selected countries. The main attention is focused on the analysis of economic growth and economic risks of the studied countries. If the most important indicator of growth is traditionally considered to be the growth rate of real GDP, then research on the risks of economic development of countries does not have such a consolidated opinion of the scientific community.

5. Scientific Relevance of the Issue with a Brief Review of the Reference Material. Theory

Haertfelder M., Lozovskaya E., and Hanush E. distinguish four groups of methods for assessing country risks in the analysis of the securities market [26]:

1. Qualitative evaluation methods. It is based on expert opinions.
2. Quantitative assessment methods. Based on known country statistics, the most significant indicators in the country's development that affect the risk assessment are selected, or risk factors.
3. Combined methods of country risk assessment: models based on both qualitative and quantitative information:
4. Structural-qualitative (factor) method for the statistical evaluation of country risk. The method is based on an expert study of two risk characteristics: the probability of occurrence and the amount of losses, i.e. risks are weighted by the probability of a particular scenario.

Examples of country risk assessment methodologies are shown in Table 1.

Table1. Methods for assessing macroeconomic risk.

Method name, author	Methodological grounds
1. Country Risk Service [27]	The methodological basis of the study is a combined approach: the model includes 60 questions — 30 qualitative and 30 quantitative ones. Based on the results of the assessment, three main indices are compiled: sovereign risks, currency risks and banking sector risks, as well as two additional ones: political and structural and economic risks.
2. International Country Risk [28]	List and score scale of indicators that make up the economic risk assessment index: – GDP per capita for the current year (0-5); – real GDP growth (0-10); – annual inflation rate (0-10); – budget balance (0-10); – trade balance of the country (0-15)
3. The BERI index [29],	The scheme for evaluating the BERI index looks like this. First, 15 factors are considered, among them: (a) political stability (factor weight—3.0); (b) attitude to foreign investment and profit transfer (1.5); (c) desire for nationalization (1.5); (d) inflation; (e) economic growth (2.5); (f) wage/productivity costs (2.0); (g) balance of payments; (h) currency convertibility (2.5); (i) bureaucratic obstacles (1.0); (j) compliance with business agreements and the possibility of their implementation (1.5); (k) quality of services and reliability of partners under contracts (0.5); (l) quality of local management (1.0); (m) transport communications (1.0); (n) availabil-

	ity of short-term loans in local markets (2.0); (o) availability of long-term loans / investment capital (2.0).
4. "Country beta models" of the Higher School of Economics [30]	Country risk is the ratio between the profitability of the stock market in a particular country and the profitability of the stock market in the rest of the world. The calculation uses current data on stock indexes of countries presented on the Wall Street Journal website.
5. Institutional investor's Country Credit Rating and Euromoney's Country Risk Index (each covering more than 100 countries) [31]	In these ratings, country risk is assessed by a combined set of economic indicators. Euromoney's Country Risk Index evaluates countries based on 9 parameters, and each of them has a certain weight in the overall rating. In general, the Euromoney rating characterizes the country's economic ability to pay its debts.

Most methods of country risk assessment serve the interests of foreign investors: strategic (financial and real sectors), speculative or conservative stock markets, but do not allow us to solve the problem of this study. In this regard, for the purposes of this study, we have chosen the classic method of estimation for technical analysis – calculating the mean square deviation (hereinafter – MSD) of profitability. In our case, the yield is taken as an indicator of the initial economic growth: the growth rate of real GDP. This tandem of indicators allows us to assess economic development by two parameters (growth and risk) in comparable units, in fact, fixing the differences between countries in the effectiveness and sustainability of economic development.

Source data for analysis: for countries of the world - The Conference Board, Total Economy Database [32], for the USSR - the Angus Maddison Historical Statistics database [33], for the whole world the above-mentioned Angus and World Bank data are used [34]. The world GDP growth rate is analyzed for Angus up to 2008, and for the World Bank data since 2008. The periods for analysis are selected taking into account the world economic crises. A total of 8 periods are allocated:

1951-1958,
1959-1967,
1968-1975,
1976-1982,
1983-1991,
1992-1998,
1999-2009,
from 2010 to 2019

6. Research results

Real GDP growth rates and standard deviations are calculated for the selected periods. The results of calculations are summarized in Table 2 and 3.

Table 2. Real GDP growth rate.

A country	Cycles								On average 1951- 2019
	1951- 1958	1959- 1967	1968- 1975	1976- 1982	1983- 1991	1992- 1998	1999- 2009	2010- 2019	
Argentina	1.0362	1.0288	1.0538	1.0004	1.0126	1.0522	1.0179	1.0143	1.0257
Bangladesh	1.0150	1.0349	1.0144	1.0371	1.0438	1.0482	1.0573	1.0678	1.0415
Brazil	1.0602	1.0519	1.1062	1.0436	1.0255	1.0259	1.0310	1.0138	1.0424
Chile	1.0447	1.0389	0.9971	1.0405	1.0576	1.0718	1.0374	1.0360	1.0402
China (Of- ficial)	1.1119	1.0196	1.0861	1.0667	1.1105	1.1131	1.1059	1.0808	1.0852
Egypt	1.0342	1.0477	1.0733	1.0818	1.0505	1.0471	1.0500	1.0397	1.0517
Hong Kong	1.0671	1.0889	1.0798	1.0994	1.0738	1.0339	1.0401	1.0332	1.0623
India	1.0356	1.0350	1.0418	1.0380	1.0607	1.0619	1.0684	1.0736	1.0531
Indonesia	1.0378	1.0146	1.0985	1.0541	1.0709	1.0396	1.0484	1.0542	1.0508
Iran	1.0444	1.0908	1.1289	0.9836	1.0331	1.0297	1.0479	1.0130	1.0454
Malaysia	1.0145	1.0573	1.0830	1.0839	1.0704	1.0665	1.0482	1.0537	1.0580
Mexico	1.0624	1.0622	1.0753	1.0587	1.0181	1.0330	1.0156	1.0282	1.0420
Nigeria	1.0339	1.0191	1.1218	1.0102	1.0231	1.0218	1.0757	1.0381	1.0431
Pakistan	1.0272	1.0581	1.0553	1.0666	1.0664	1.0416	1.0454	1.0400	1.0494
Philippines	1.0701	1.0489	1.0605	1.0533	1.0116	1.0311	1.0432	1.0631	1.0478
Russian Federation	n/a	1.0628	1.0568	1.0205	1.0011	0.9306	1.0547	1.0187	1.0215
USSR	1.0543	1.0462	1.0422	1.0179	1.0066	0.9316	1.0706	n/a	1.0263
Singapore	1.0552	1.0671	1.1282	1.0841	1.0767	1.0708	1.0529	1.0490	1.0701
South Af- rica	1.0441	1.0552	1.0488	1.0289	1.0102	1.0181	1.0347	1.0178	1.0322
South Ko- rea	1.0615	1.0626	1.1229	1.0701	1.1096	1.0558	1.0525	1.0328	1.0680
Taiwan	1.0830	1.0891	1.1064	1.0892	1.0980	1.0651	1.0402	1.0320	1.0719
Thailand	1.0468	1.0882	1.0730	1.0712	1.0951	1.0399	1.0432	1.0370	1.0604
Turkey	1.0700	1.0525	1.0779	1.0333	1.0565	1.0467	1.0315	1.0552	1.0520
Vietnam	1.0431	1.0236	1.0244	1.0420	1.0607	1.0834	1.0667	1.0629	1.0514
Japan	1.0827	1.1008	1.0837	1.0453	1.0578	1.0181	1.0112	1.0158	1.0493
Total for the sample The WORLD Angus The WORLD the World Bank	1.0539	1.0510	1.0650	1.0630	1.0533	1.0547	1.0372	1.0422	1.0458
	1.0463	1.0488	1.0507	1.0313	1.0364	1.0300	1.0419	n/a	1.0397
	n/a	1.0340	1.0264	1.0127	1.0179	1.0120	1.0160	1.0182	1.0189

Table 3. Mean square deviation of real GDP growth rate.

A country	Cycles								On average 1951- 2019
	1951- 1958	1959- 1967	1968- 1975	1976- 1982	1983- 1991	1992- 1998	1999- 2009	2010- 2019	

Argentina	0.0380	0.0588	0.0278	0.0503	0.0569	0.0413	0.0735	0.0415	0.0516
Bangladesh	0.0224	0.0214	0.0557	0.0163	0.0076	0.0033	0.0065	0.0064	0.0282
Brazil	0.0241	0.0272	0.0217	0.0490	0.0446	0.0258	0.0215	0.0326	0.0383
Chile	0.0406	0.0479	0.0667	0.0816	0.0386	0.0228	0.0271	0.0179	0.0467
China (Of- ficial)	0.0691	0.1437	0.0760	0.0417	0.0381	0.0232	0.0209	0.0143	0.0684
Egypt	0.0311	0.0385	0.0434	0.0204	0.0248	0.0184	0.0138	0.0172	0.0292
Hong Kong	0.0552	0.0574	0.0452	0.0408	0.0414	0.0435	0.0358	0.0149	0.0468
India	0.0182	0.0284	0.0229	0.0306	0.0206	0.0122	0.0202	0.0151	0.0257
Indonesia	0.0364	0.0342	0.0480	0.0434	0.0233	0.0775	0.0168	0.0057	0.0411
Iran	0.0582	0.0248	0.0283	0.1111	0.0739	0.0484	0.0333	0.0477	0.0650
Malaysia	0.0400	0.0178	0.0376	0.0202	0.0386	0.0632	0.0288	0.0094	0.0372
Mexico	0.0305	0.0240	0.0144	0.0372	0.0344	0.0453	0.0286	0.0117	0.0346
Nigeria	0.0382	0.0745	0.1221	0.0674	0.0583	0.0117	0.0343	0.0350	0.0670
Pakistan	0.0225	0.0120	0.0228	0.0141	0.0087	0.0107	0.0215	0.0074	0.0191
Philippines	0.0220	0.0173	0.0165	0.0178	0.0527	0.0252	0.0163	0.0106	0.0297
Russian Federation	n/a	0.0120	0.0223	0.0116	0.0241	0.0554	0.0472	0.0221	0.0501
USSR	0.0317	0.0473	0.0319	0.0175	0.0317	0.0623	0.0154	n/a	0.0535
Singapore	0.0128	0.0527	0.0375	0.0117	0.0419	0.0453	0.0390	0.0384	0.0408
South Af- rica	0.0122	0.0125	0.0160	0.0258	0.0250	0.0216	0.0201	0.0096	0.0229
South Ko- rea	0.1034	0.0321	0.0378	0.0473	0.0209	0.0512	0.0299	0.0119	0.0503
Taiwan	0.0198	0.0214	0.0434	0.0382	0.0372	0.0128	0.0320	0.0279	0.0375
Thailand	0.0406	0.0242	0.0210	0.0237	0.0325	0.0665	0.0223	0.0223	0.0369
Turkey	0.0527	0.0329	0.0179	0.0337	0.0297	0.0480	0.0563	0.0361	0.0408
Vietnam	0.0030	0.0663	0.0600	0.0647	0.0173	0.0126	0.0096	0.0061	0.0411
Japan	0.0250	0.0223	0.0490	0.0101	0.0114	0.0153	0.0234	0.0126	0.0396
Total for the sample	0.0134	0.0251	0.0210	0.0100	0.0623	0.0551	0.0190	0.0118	0.0346
The WORLD									
Angus	0.0113	0.0111	0.0172	0.0144	0.0103	0.0098	0.0088	n/a	0.0134
The WORLD									
the world									
Bank	n/a	0.0069	0.0210	0.0166	0.0097	0.0084	0.0171	0.0053	0.0146

Figure 1 shows the growth rates of real GDP (hereinafter referred to as GR) and the MSD of the growth rates of real GDP (hereinafter referred to as MSD) of the studied countries in 1950–2019. According to the ratio of growth rates and risks, there are 6 groups:

- high risks and GR — China — the new potential hegemon of global economic development, applies both industrial development strategies simultaneously: export and import substitution,
- high risks, medium GR — Iran, Nigeria — OPEC countries – apply export strategy for raw materials,
- medium risk, rapid growth — "Asian tigers" — the export strategy of the industrial products,
- average risk, low growth — the USSR and Latin America — strategy of import substitution,

- medium risks and GR — balanced strategy (Vietnam, Indonesia and Turkey) – countries used different development strategies in different time periods,

- low risks, medium GR — underutilization of growth opportunities in India, South Africa, Bangladesh, Egypt, Pakistan, and the Philippines.

At the same time, the old industrial countries include South Africa, the USSR-Russia and Argentina because of low economic growth rates, and South Africa that also belongs to the group of low risks (unused growth opportunities).

The effective development line (minimum risk with fixed growth or maximum growth with fixed risk) runs along the points of the countries like China, Taiwan, Thailand, Egypt, India, and Pakistan. Inefficient development covers countries China, Nigeria, USSR-Russia with the exception of old industrial countries: China, Nigeria, Chile. It is obvious that over this long period of time, China has demonstrated both maximum growth and maximum risks with the consistent use of several development strategies.

SD

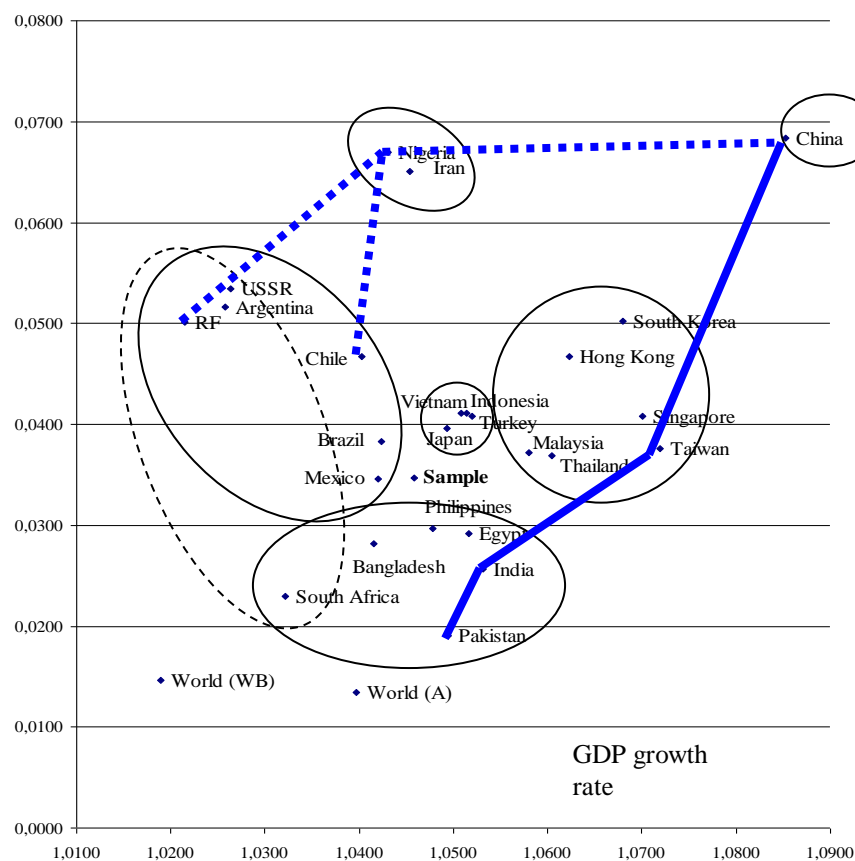


Figure 1. Economic development of NIC in 1950-2019.

In the course of the study, a correlation analysis of the growth rates and MSD of the growth rates of countries by periods of economic cycles was carried out. Significant correlation coefficients are shown in Tables 4 and 5.

There are 4 groups of countries according to the correlation of trends in real GDP growth rates and 5 groups of countries according to the correlation of COEX. Groups of countries by correlation of real GDP growth rates:

- the first group – Bangladesh, Chile, India, Vietnam (Fig. 2) – accelerating growth rates,

- the second group – Hong Kong, Indonesia, Singapore, South Korea, Taiwan, Thailand (Fig. 3) – fading growth,
- the third group – Egypt, Malaysia, Pakistan, Thailand (Fig. 4) – late peak growth in 1968-1991,
- the fourth group — Brazil, Iran, Mexico, South Africa (Fig. 5) – the early peak of growth in 1959-1975.

GDP growth rate

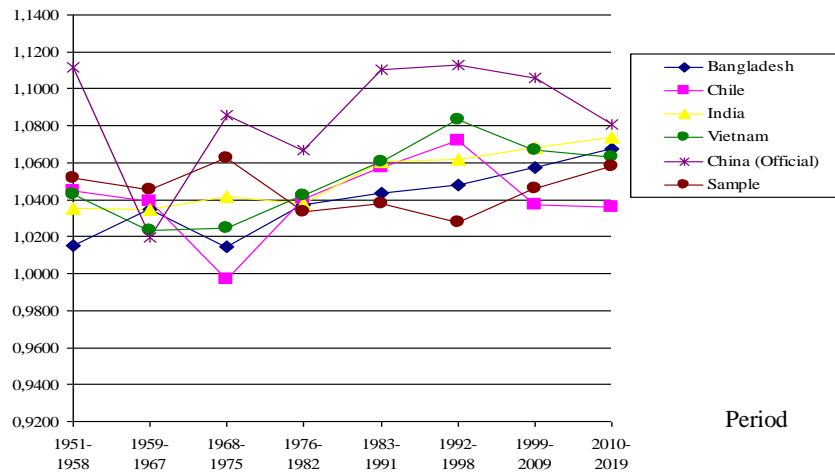


Figure 2. Real GDP growth rates for the first group of countries.

GDP growth rate

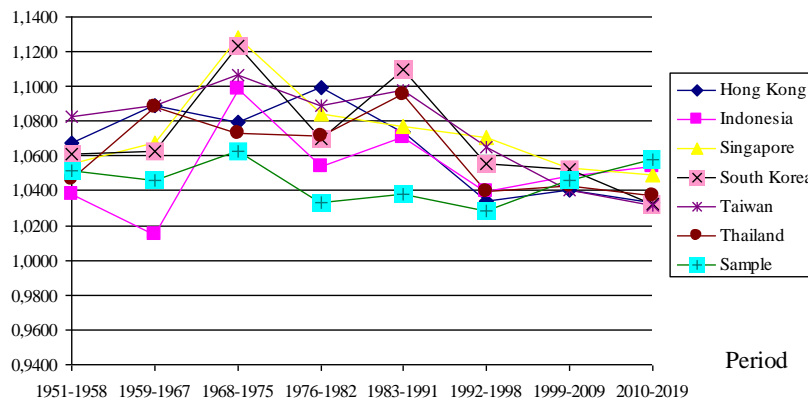


Figure 3. Real GDP growth rates for the second group of countries.

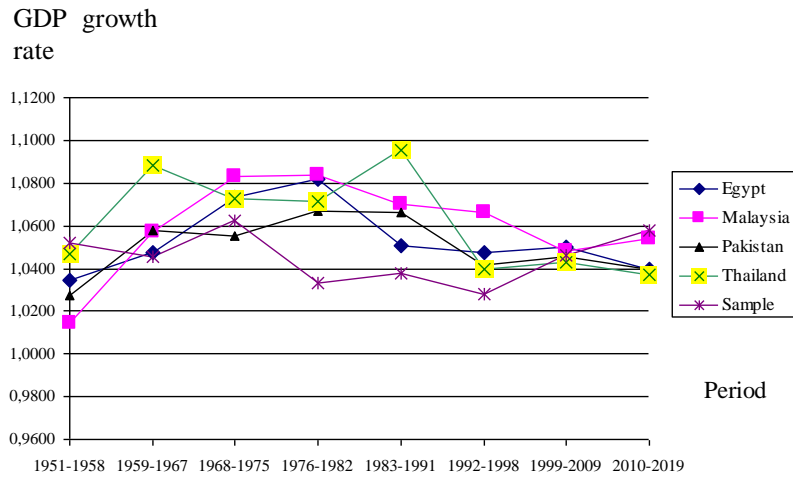


Figure 4. Real GDP growth rates for the third group of countries.

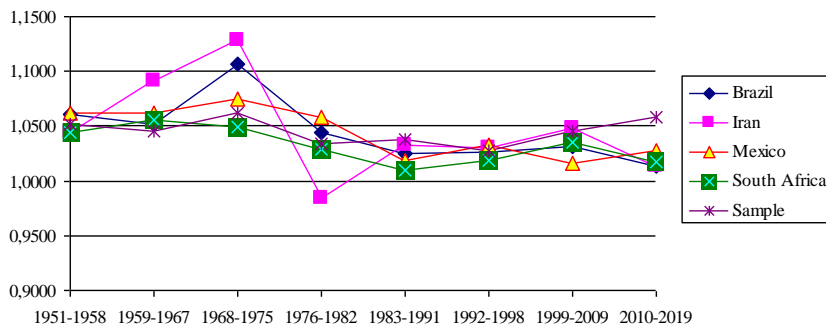


Figure 5. Real GDP growth rates for the fourth group of countries.

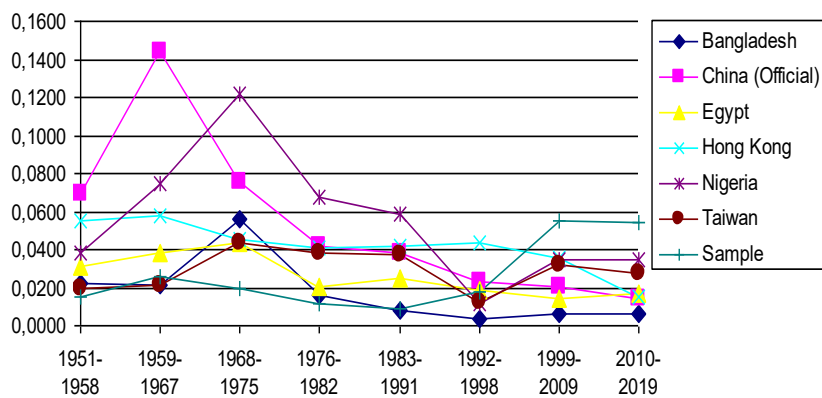


Figure 6. Standard deviation for the first group of countries.

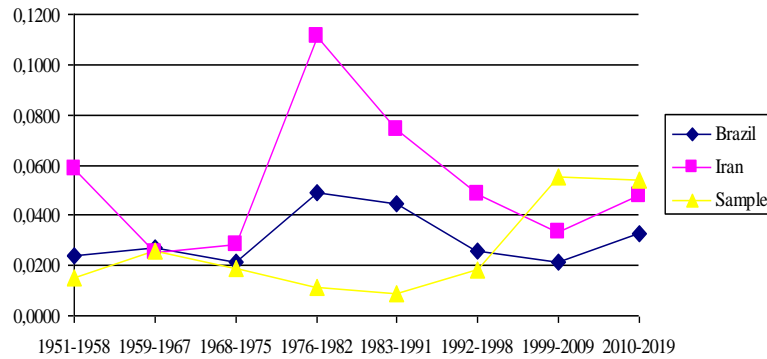


Figure 7. Standard deviation for the second group of countries.

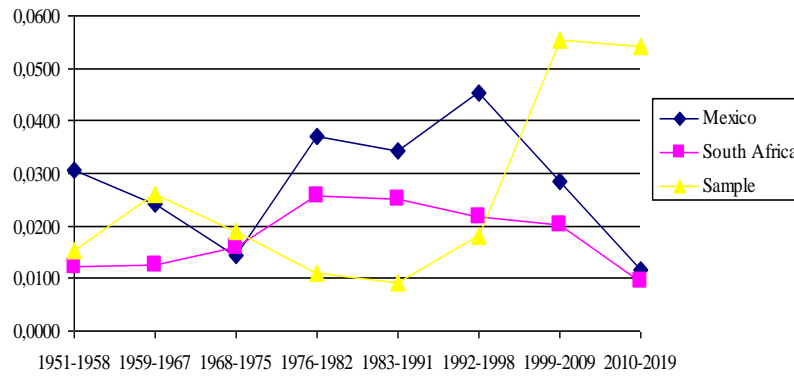


Figure 8. Standard deviation for the third group of countries.

Groups of countries according to the correlation values of the standard deviation: the first group – Bangladesh, China, Egypt, Hong Kong, Nigeria, Taiwan (Fig. 6) – declining risks, the second group – Brazil, Iran (Fig. 7) – peak risks in 1976-1982, the third group – Mexico, South Africa (Fig. 8) – peak risks in 1976-1998, the fourth group – Chile, India, Vietnam (Fig. 9) – risk peak in 1959-1982, the fifth group – Indonesia, Malaysia, Thailand (Fig. 10) – the peak of risks in 1992-1998.

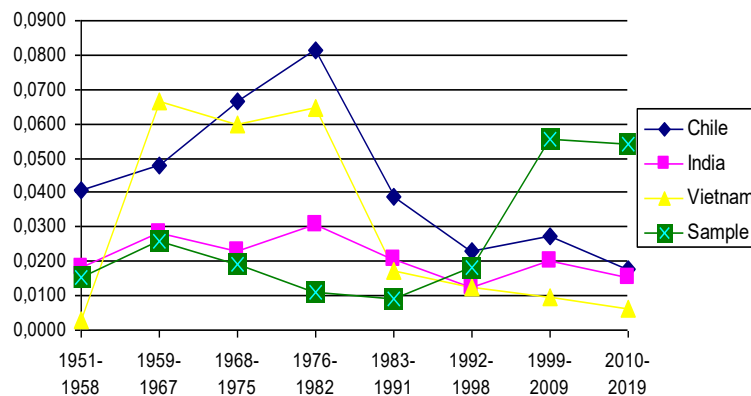


Figure 9. Standard deviation for the fourth group of countries.

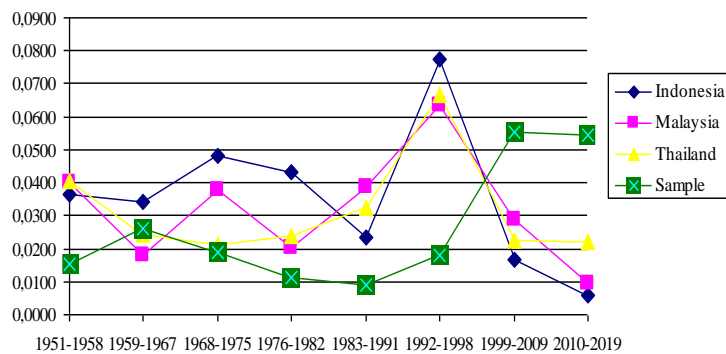


Figure 10. Standard deviation for the fifth group of countries.

It is assumed that the close correlation between economic cycles among countries indicates similar history of these countries. In the case of a high correlation between the average growth rates of countries, we can say that these countries are responding to the existing development opportunities, and in the case of a high correlation with the average growth rates, we can say that these countries are responding to the existing risks and threats.

On the basis of the revealed significant positive correlations, graphs of countries' relations by growth rates and risks are constructed (Fig. 11 and 12). The fact that these graphs overlap made it possible to create clusters of the history of NIC (Fig. 13). The correlation is significant at the level of 0.01 with a value of more than 0.835, and at the level of 0.05 it is more than 0.707.

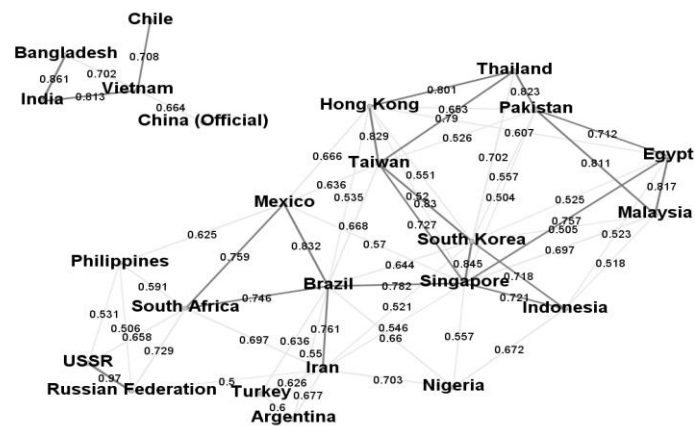


Figure 11. Groups of countries by GDP growth correlation.



Figure 12. Groups of countries by COEX correlation.

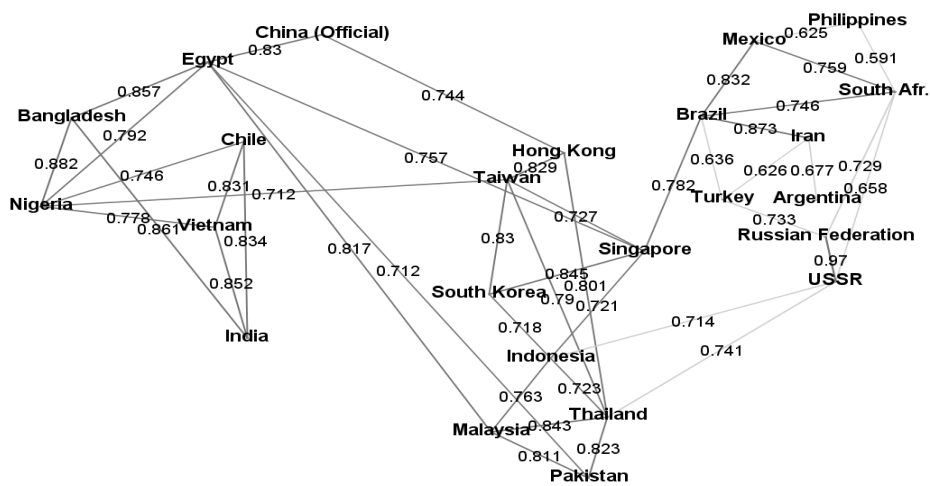


Figure 13. Clusters of the historical fate of NIC.

In these clusters, you can identify pairs of countries with the closest ties to each other as cluster cores. The results of this grouping show the following clusters:

1 cluster: 1 group – the core of India/Vietnam (0.85 and 0.81) + Chile, group 2 – core Bangladesh/Nigeria (0.88) + Egypt and China.

2 cluster: 1 group –South Korea/Singapore (0.85) as the core + Taiwan and Hong Kong, group 2 – Malaysia/Thailand (0.84) + Indonesia and Pakistan.

3 cluster: Brazil/Iran (0.87 and 0.76) as the core + Mexico and South Africa with unstable links to the Philippines and Argentina.

USSR/Russia can be united by an unstable connection with Turkey in cluster 4.

Thus, according to the type of development and history, we have the following NIC classification matrix (table 4).

7. Conclusions

The analysis allows us to come to the following conclusions:

1. New industrial countries differ greatly in their historical fate and type of development.
2. According to the type of development, two main strategies were used: export and import substitution. The export strategy provides two types of development: raw materials and industrial products. There are also countries that have changed their strategies and not taken full advantage of development opportunities. Only one country – China – applies both strategies simultaneously and is a new potential leader in human development.
3. Dynamic analysis of changes in growth rates over economic cycles showed the presence of 4 waves of development, and risk analysis showed five, and its overlap indicates 3 stable clusters of similar historical fate.
4. When grouping NIC, there are 6 types of development and 4 clusters of similar historical fate, where only 3 groups can be distinguished: 1 — India, Bangladesh, Egypt, 2 — South Korea, Singapore, Taiwan, Hong Kong, Malaysia, Thailand, 3 — Brazil, Mexico, and possibly Argentina. Within these groups, we can assume that there is a convergence of development strategies. Other significant phenomena are represented by individual countries.
5. The identified waves and types of development do not confirm the classification of NIC waves put forward by previous researchers and distinguish a larger number of types of development.
6. There is no reason to create sustainable economic associations of NIC other than the 3 above-mentioned strategic groups. It is possible to create tactical associations such as BRICS or SCO. In general, each country that is not included in the already established group will either join the existing associations, for example Vietnam joins ASEAN, Mexico cooperates with the United States after the end of the current crisis there, or will be forced to form its own strategic group, such as China with the global development program "One belt, One road". In fact, only this Association can strategically compete with the global dominance of the OECD countries in the world.
7. The exhaustion of industrial development resources in the most developed NIC suggests that they need a different post-industrial development strategy to establish parity with the OECD countries. Only in this case can we say that NIC can become an alternative to the "Golden billion".
8. Of the four territorial development strategies, export and import substitution strategies are industrial development strategies. The liberal strategy is the basic neocolonial strategy of the global West aimed at maintaining its status quo. Only the strategy of improving the living standards allows NIC to move to post-industrial development. This model of a networked society based on consumer ownership of the means of production and direct democracy has been proposed by us in a number of works [25, 35, 36, 37, 38, 39].
- 9.

Table 4. Matrix of classification of new industrial countries by type of development and history.

Type of development	History	1 cluster	2 cluster	3 cluster	4 cluster
High risks and growth	China				
High risks and medium growth	Nigeria			Iran	
Medium risks and high growth			South Korea, Singapore, Tai-		

			wan, Hong Kong, Ma- laysia, Thailand	
Average risks and growth	Vietnam	Indonesia		Turkey
Medium risks and low growth	Chile		Brazil, Mexico, Argentina (?)	USSR/ Russia (?)
Low risk and medium growth	India, Bangla- desh, Egypt	Pakistan	South Afri- ca, Philip- pines (?)	

8. References

- [1] Demand for Manufactured Products: A Factor for Inclusive and Sustainable Industrial Development. Industrial Development Report 2018 by the United Nations Industrial Development Organization (UNIDO). URL: https://www.unido.org/sites/default/files/files/2017-11/IDR2018_OVERVIEW_RUSSIAN.pdf (accessed 07.02.2020)
- [2] Karimullina A V 2011 Modern Western Interpretations of the Features of the Economic Development of New Industrial Countries in Asia Southeast Asia: Actual Problems of Development No 16 URL: <https://cyberleninka.ru/article/n/sovremennye-zapadnye-interpretatsii-osobennostey-ekonomicheskogo-razvitiya-novyh-industrialnyh-stran-azii> (date of access: 07/04/2020)
- [3] Demand for Manufactured Products: A Factor for Inclusive and Sustainable Industrial Development. Industrial Development Report - 2018 by the United Nations Industrial Development Organization (UNIDO). URL: https://www.unido.org/sites/default/files/files/2017-11/IDR2018_OVERVIEW_RUSSIAN.pdf (accessed 07.02.2020)
- [4] Abramova I O, Bolshov I G, Bragina E A, Degterev D A, Deich T L, Kalinichenko L N, Korndyasov E N, Kukushkin V Yu, Kulkova O S, Kupriyanov P I, Lileev I L, Matveeva N F, Matsenko I B, Morozenskaya E V, Morozov V P, Novikova Z S, Pavlov V V, Pashkova E V, Popova O P, Pospelov V K, Rybalkin V V, Skubko Yu S, Sledzevsky I.V 2016 Robert Herve Tambo Talla, Ulchenko N Yu, Khalitova A R, Khamatshin A D Africa: Modern Strategies for Economic Development: Monograph (Moscow: Institute for African Studies RAS) 432 p
- [5] Akamatsu K 1962 A historical pattern of economic growth in developing countries *Journal of Developing Economies* vol **1(1)** pp 3-25
- [6] Hein S 1992 Trade Strategy and the Dependency Hypothesis: A Comparison of Policy, Foreign Investment, and Economic Growth in Latin America and East Asia *Economic Development and Cultural Change* Vol 40 **3** pp 495-521
- [7] Cumings B 1983 The Origins and Development of the Northeast Asian Political Economy: industrial sectors, product cycles, and political consequences *International Organization* **1**
- [8] Evans P 1987 Class, State and Dependence in East Asia: Lessons for Latin Americanists. Deyo Fr. (ed.) The Political Economy of the New Industrialism (Ithaca-London) pp 208-209
- [9] Wallerstein I 2001 Analysis of world systems and the situation in the modern world. Translated from English P M Kudyukin ed. B Yu Kagarlitsky (SPb.: University book)
- [10] Kagarlitsky B Yu 2004 Peripheral Empire: Russia and the World System (M.: Ul-ra.Kultura)
- [11] Glazyev S Yu, Fursov A I 2014 The Big Leap Strategy (M.: Algorithm)
- [12] Korotayev A 2007 Compact Mathematical Models of World System Development, and How they can Help us to Clarify our Understanding of Globalization Processes Globalization as Evo-

- lutionary Process: Modeling Global Change. Edited by George Modelski, Tessaleno Devezas, and William R. Thompson (London: Routledge)
- [13] Barrett R, Whyte M 1982 Dependency Theory and Taiwan: Analysis of a Deviant Case *The American Journal of Sociology* Vol 87 **5** p 1086
- [14] Wolf Ch 1988 Markets or Governments: Choosing between Imperfect Alternatives Cambridge (Mass: MIT Press) p 27
- [15] Chen E 1979 Hyper Growth Asian Economies: A Comparative Study of Hong Kong, Japan, Korea, Singapore, and Taiwan (New York: Macmillan) p 41
- [16] Balassa B 1988 The Lessons of East Asian Development: An Overview *Economic Development and Cultural Change* vol 36 issue **3** p 288
- [17] Wade R 1989 What Can Economics Learn from East Asian Success? *Annals of the American Academy of Political and Social Science* Vol 505 p 69 (1989)
- [18] Amsden A 1991 Diffusion of Development: The Late-Industrializing Model and Greater East Asia *The American Economic Review* Vol 81 **2** p 283
- [19] Sen S 1988 Asia: Myth of a Miracle *Economic and Political Weekly* Vol 33 **3** p 439
- [20] Krugman P 1994 The Myth of Asia's Miracle *Foreign Affairs* Vol 73 **6** p 77
- [21] Sergeev V M, Alekseenkova E S, Nechaev V D 2020 Typology of models of innovative development [Electronic resource] URL: http://ecsocman.hse.ru/data/2011/12/29/1270393214/Politeia_Sergeev_Alexeenkova_Nechaev-2008-4.pdf (date accessed: 02/07/2020)
- [22] Saveliev M Yu 2015 New forms of intercivilizational competition of territories *Bulletin of the Udmurt University. Series "Economics and Law"* **7** 66-75 URL: <https://cyberleninka.ru/article/n/novye-formy-mezhtsivilizatsionnoy-konkurentsii-territorii> (date of access: 08/29/2020)
- [23] Saveliev M Yu 2015 Multicultural institutionalism: General economic theory of civilizations. The political economy of traditionalism Network Society Project: [monograph] (Izhevsk: Assoc. according to methodol. ensuring business activity and societies development "Mitra") 488 p <http://cognitiofluctus.ru/science/s001/001.htm> (date accessed: 29.08.2020)
- [24] Haertfelder M, Lozovskaya E, Hanush E 2005 Fundamental and technical analysis of the securities market [Text] Moscow: Peter (OOO Typ. Pravda)
- [25] Country Risk Service URL: <https://www.eiu.com/n/solutions/country-risk-service/> (date accessed: 02/07/2020)
- [26] The International Country Risk URL: <https://www.prsgroup.com/explore-our-products/international-country-risk-guide/> (date accessed: 02/07/2020)
- [27] Business Environment Risk Intelligence URL: <http://www.beri.com/> (date of access: 07.02.2020)
- [28] Dubolazova Yu A et al 2017 Innovative mechanism - the most important direction for the implementation of the effective development of an industrial enterprise *International scientific research journal* **04(58)** Part 3 pp 86–88
- [29] Euromoney country risk Euromoney URL: <https://www.euromoney.com/country-risk> (date accessed: 02/07/2020)
- [30] The Conference Board, Total Economy Database Available at: https://www.conference-board.org/retrievefile.cfm?filename=TED_1_APR20191.xlsx&type=subsite (date accessed: 04.07.2020)
- [31] Angus Maddison Historical Statistics of the World Economy: 1-2008 AD Available at: http://www.ggdc.net/MADDISON/Historical_Statistics/horizontal-file_02-2010.xls (date accessed: 07/04/2020)
- [32] World Bank "World Development Indicators" Available at: <https://databank.worldbank.org/source/world-development-indicators> (date accessed: 04.07.2020)

- [33] Savelyev M Yu 2015 Above-constitutional institutions for the coordination of business entities in different cultural environments *Bulletin of UdsU. Economics and Law* Vol 25 **6** Part 2 pp 135-149 <https://cyberleninka.ru/article/n/nadkonstitutsionnye-instituty-koordinatsii-hozyaystvuyuschih-subektov-v-raznyh-kulturnyh-sredah> (date accessed: 08/29/2020).
- [34] Savelyev M Yu 2016 Institutional problems of consumer organizations in the conditions of an equalizing culture and decentralized network coordination *Bulletin of UdsU. Economics and Law* Vol 26 **5** pp 58-67 <https://cyberleninka.ru/article/n/institutsionalnye-problemy-organizatsiy-potrebiteley-v-usloviyah-uravnitelnoy-kultury-i-detsentralizovannoy-setevoy-koordinatsii/viewer> (date accessed: 08/29/2020)
- [35] Savelyev M Yu 2016 Neoinstitutionalism: methodological contradictions and multicultural means of overcoming them *Science of Udmurtia* **3(77)** pp 47-56
- [36] Savelyev M Yu 2019 The regional aspect of multicultural institutionalism *Problems of the regional economy* **3-4** pp 50-62
- [37] Savelyev M Yu, Polyakov Yu N, Savchenko A I 2020 What regions and societies can be considered innovative: post-industrial or knowledge-producing? *Problems of the regional economy* № **1-2**

Acknowledgments

The research was carried out with the financial support of the RFBR under Scientific Project No. 20-010-00869.

The reported study was funded by RFBR, project number 20-010-00869.