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Evaluation of the Sanctions Impact on Sanctioning Countries' Trade with Russia

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ABSTRACT

The aim of this paper was to present some results of the study of the impact of the sanctions, imposed on the Russian Federation in 2014 and consistently expanded and deepened, not on Russia, but on those who use these sanctions — the countries that imposed the sanctions (the sanctioners). External trade, that is one of the objects of the sanctions, was chosen as the subject of the study. The author's task was to estimate the role of the Russian Federation in the external trade of the countries, which use the sanctions against Russia, before and after the sanctions, and to evaluate the harm caused to these countries by their sanctions and by Russia's counter-sanctions. To solve these problems, the author proposed a mathematical tool for the damage quantitative assessment. The World Trade Organization statistics for 2012–2017 formed a database for the study, and economic-mathematical and statistical methods were taken as research instruments. One may summarize the results of the study as follows. First, Russia plays an insignificant role in foreign trade of most countries that imposed sanctions against the Russian Federation. However, the damage from the sanctions and counter-sanctions for some of them turns out to be quite significant. Second, the negative impact of the sanctions on their initiators in the sphere of external trade is the stronger, the more important for the sanctioning country its trade relations with the Russian Federation are. Third, the burden of the sanctions was less heavy for their main initiator — the United States of America, than for their less economically strong partners that imposed the sanctions. The author's main conclusion is that eventually the economic interests of some of these countries win up over the political goals that go against these interests, and the volume of the foreign trade, that dropped down after the sanctions were imposed on Russia, tends to recover. Russia, shifting from the overseas markets to the domestic one and changing the geographical structure of its international trade, does continue to develop. To present the results of the study to the Russian readers, the version of the article in Russian is submitted to the journal "The World of New Economy". Its title is "Anti-Russian Sanctions: Damage to the Countries that Declared them". The version gives the results of the analysis of the impact of sanctions on technology trade and the content of the study of foreign trade in goods, detailed in this paper.

Keywords: anti-Russia sanctions; sanction imposed countries; exports; imports; trade; damage; the Russian Federation

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INTRODUCTION

Since the first years of the young Soviet state, many countries have been constantly using various and numerous measures of military, political, economic, financial, information, etc. pressure on the USSR, and later on Russia, to achieve their political, military, financial and economic goals [1–4]. Such measures include the so-called sanctions that without a United Nations resolution have become an especially frequent and widespread weapon of economic and geopolitical hostilities [5][1].

The United States of America began another round[2] of sanctions against Russia in March 2014. After the United States, 40 more states, mainly NATO members and states under political and economic influence and patronage of the USA, began to impose sanctions against the Russian Federation.

There is a number of restrictive measures in foreign trade besides sanctions. These are market protection measures (anti-dumping, countervailing, special measures and protective duties) and other non-tariff measures (licensing, quotas, technical barriers, sanitary and phytosanitary measures).

These restrictive measures against Russia are used not only by the opponents of the Russian Federation, but also by BRIC partners: Brazil, India and China (*Tabl. 1*).

It is clear, that besides the sanctions and counter-sanctions, the dynamics of world trade is influenced by many other external and internal processes and factors for the country. For example, the conjuncture of world markets of goods, services and currency, geopolitics, the economic condition of trading countries and their internal political situation, etc. If sanctions are effective, they, in turn, affect, at least, some of these processes and factors. The diversity and complex interrelation of conditions, situations and processes affecting the state and dynamics of foreign trade do not allow us to estimate with absolute accuracy of the impact of a single factor. It seems that this measure can be estimated by comparing the periods of actions and omissions, strengthening and weakening of a particular factor or their group.

The same for the world as a whole, the countries that imposed the sanctions on Russia, and for the Russian Federation trends are growing and falling in exports and imports — their ups and downs (*Fig. 1, 2*), reflect the impact of global commodity markets on the dynamics of foreign trade of all countries. The impact of the sanctions against Russia was manifested not only in a greater decrease in exports and especially imports of the Russian Federation in 2014–2016, comparing to the world and the states imposing sanctions, but also in the increasing gap in the rate of change of the considered indicators.

Despite the fact that the volume of export in 2017 ($ 172.4 billion) was 32.6% lower than in 2013 and the volume of import ($ 103.2 billion) was 29.1% below its level in 2013, the sharp increase in Russian exports and imports in 2017 makes me believe that, at least in foreign trade, the Russian Federation began, as minimum, to recover from the sanctions[3].

ROLE OF RUSSIA IN FOREIGN TRADE OF THE SANCTIONING COUNTRIES BEFORE AND AFTER THE SANCTIONS AGAINST RUSSIA

Russia plays a minor role in the foreign trade of most countries that have imposed the sanctions against the Russian Federation. In 28 of them (70% of such countries), the share of trade with Russia in the total volume of their trade in 2013 did not exceed 5% (*Fig. 3*). The number of such countries increased to 33 (82.5%) in 2017. In 2013, this share was more than 10% in only seven out of 40 countries (in 2017, it was four less) and in 12 countries it was not less than 5% (*Tabl. 2*).

Only seven countries annually ranked among the top ten in terms of their share of trade with Russia in the country's total trade in 2013–2017: Latvia, Lithuania, Malta, the Netherlands, the Ukraine, Finland and Estonia.

The share of the Russian Federation in the U.S. trade turnover in 2013–2017 did not exceed 0.5%. This share was less than 3% in Germany, the United Kingdom and France (*Tabl. 3*).

It is natural to expect that, other things being equal, a reduction in trade with the Russian Federation will have less impact on the trade turnover of the United States of America than on the countries where Russia's share of the trade turnover is higher than in the United States.

[1] In the book, readers will find a long list of the states that used various sanctions in 1948–2006, and the countries against which they were imposed [5].

[2] "No modern nation has wielded economic weapons more than the U.S., which restricted imports, exports, investments and other financial transactions more than 110 times in the 20th century to try to change policies, end weapons programs or topple a government" [6].

[3] Analysis of the changes in the product and geographical structures of Russia's foreign trade that took place after the country's isolation from the world community see, for example, in [8].

Table 1

Leading states in the number of prohibitive measures imposed on the Russian Federation

Country	Number of cases	Country	Number of cases	Country	Number of cases
EU	2420	India	377	Thailand	102
USA	1169	Iran	320	Belarus	42
Ukraine	775	China	174	Brazil	31
Turkey	713	Mexico	120		

Source: About the work on removing barriers on foreign markets. Ministry of Economic Development of the Russian Federation. URL: http://economy.gov.ru/minec/press/news/2019021802# (accessed on 03.04.2019). (In Russ.).

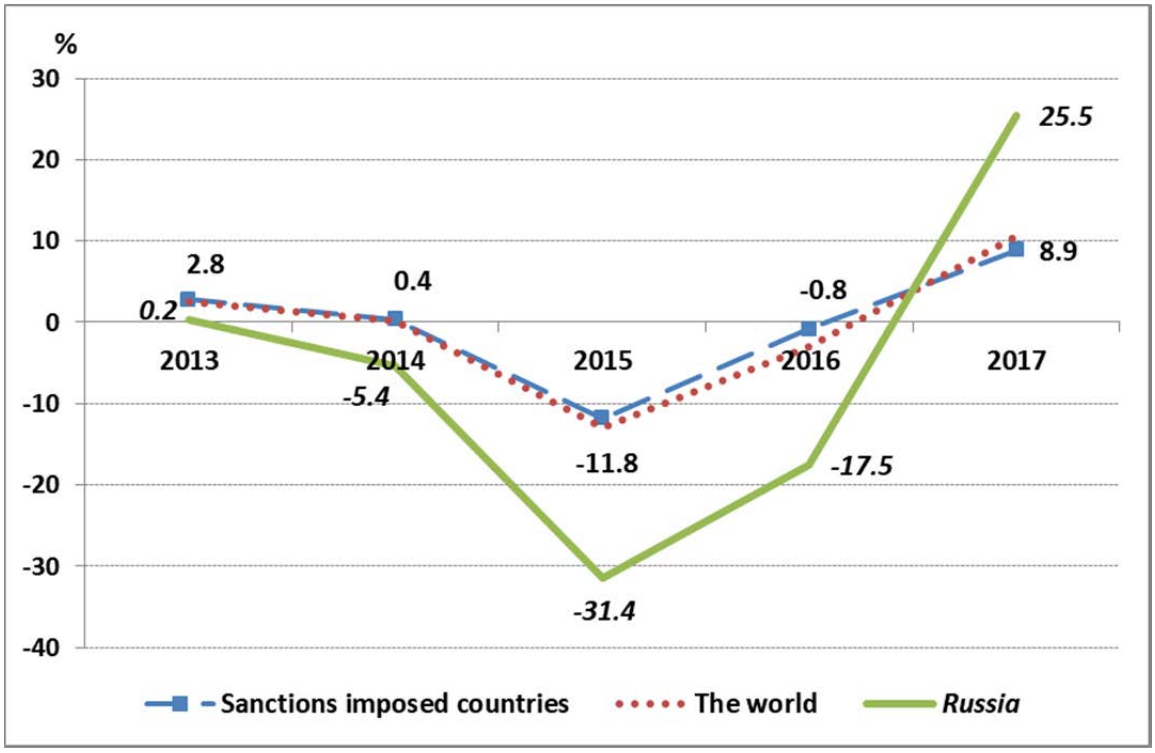

Fig. 1. **Export rates of increment, 2013–2017, %**

Source: Fig. 1, 2 were compiled by the author based on the information from the following sources: "Sanctions against Russia and international trade". URL: https://cdn4.img.ria.ru/images/150970/03/1509700324.png (accessed on 27.01.2018) (In Russ.); World Trade Review 2018. The World Trade Organization. 2018:180–187.

For the sanctioning countries, Russia is primarily a market for their products. In a less degree, it is important for them as an exporter. Before the sanctions against Russia, the total exports of 40 sanctioning countries were 1.8 times higher than their imports from Russia. In 2015, when the effect of foreign trade sanctions was most pronounced, the gap became more than 207% (*Fig. 4*).

Based on the ratio of exports and imports, one can expect that after the sanctions, the countries trading with the Russian Federation are more likely to reduce their imports rather than exports. That's what happened. In 2013–2017, the volume of exports of these countries to Russia decreased by 38.3%, and imports from Russia dropped by 43.8%.

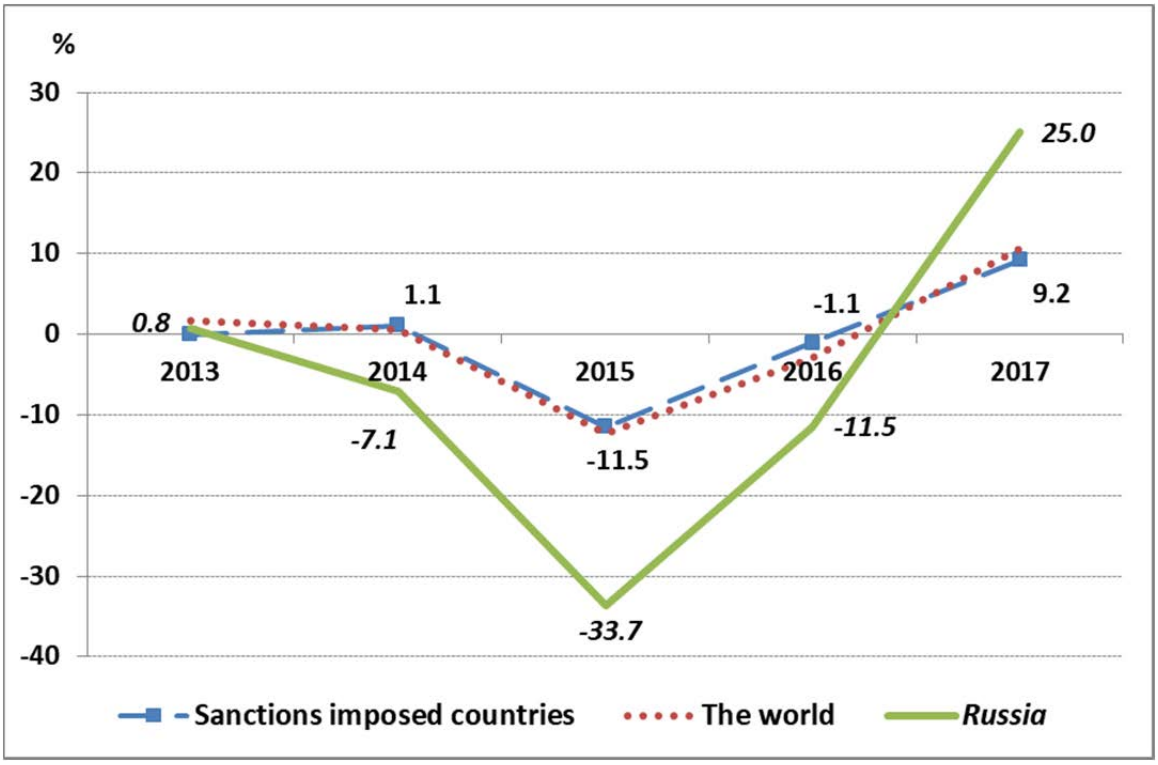

Fig. 2. **Import rates of increment, 2013–2017, %**

Table 2

12 sanctioning countries where the share of trade with Russia in the total volume of their trade in 2013 was at least 5%

Country	Share	Country	Share	Country	Share	Country	Share
Malta	66.4	Cyprus	30.5	Finland	17.2	Poland	9.4
Latvia	57.7	Estonia	21.5	Netherlands	11.9	Slovakia	5.6
Ukraine	31.0	Lithuania	17.2	Greece	9.9	Italy	5.4

Source: Tabl. 2–9 were compiled by the author based on the data from "World Trade Review 2018". The World Trade Organization. 2018:180–187.

IMPACT OF THE SANCTIONS ON THE TRADE OF THE SANCTIONING COUNTRIES WITH RUSSIA

President of the United States Barack Obama's Executive Order- EO-13660 — "Blocking property of certain persons contributing to the situation in Ukraine"[4] (March 6, 2014) commenced a sanction attack on Russia in 2014. It was followed by the sanctions against physical and legal entities (March 14, 2014), geographical (March 20, 2014) and the sectoral sanctions (July 17, 2014). Subsequently, the sanctions were regularly extended, expanded and strengthened. The Countering America's adversaries through sanctions Act, HR 3364[5] (August 2, 2017) fixed for many years ahead the policy of the sanctions of the United States of America. At the same time, the US made it clear that they would not stop there. And they don't stop.

By imposing sanctions on a particular entity, the United States demands that they be used by

[4] URL: http://www.whitehouse.gov/the-press-office/2014/03/06/executive-order-blocking-property-certain-persons-contributing-situation (accessed on 30.04.2014).

[5] URL: https://www.whitehouse.gov/legislation/hr-3364-countering-americas-adversaries-through-sanctions-act (accessed on 21.09.2017).

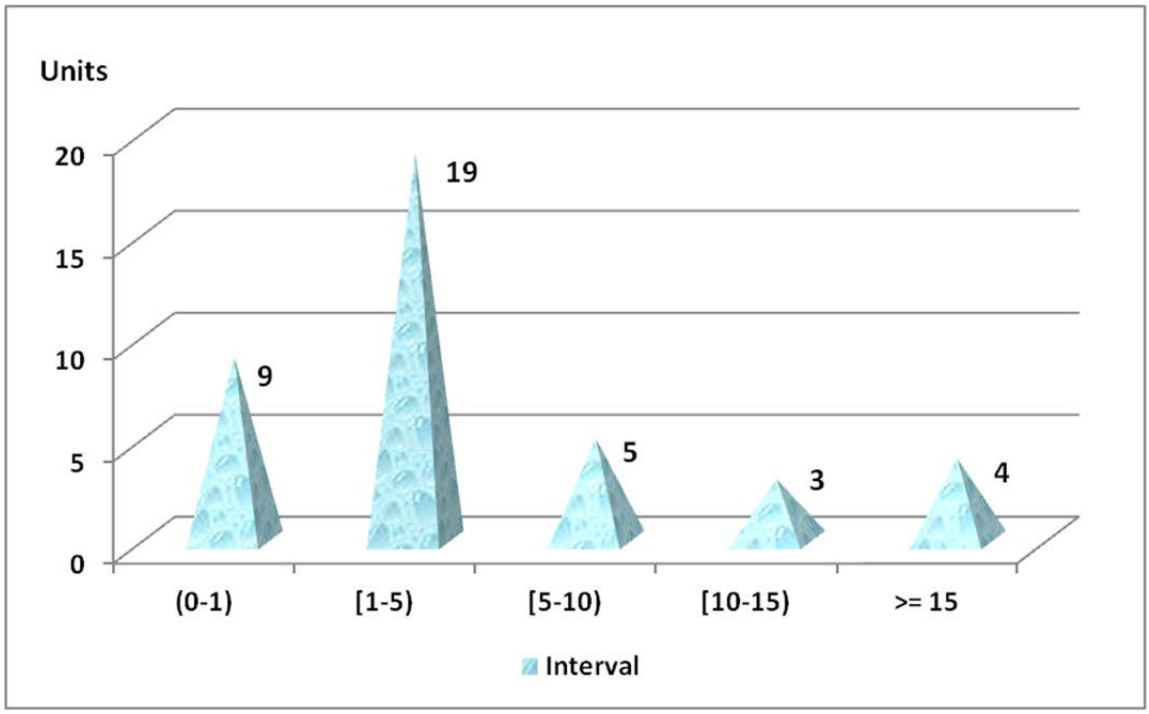

Fig. 3. **Number of the sanctioning countries whose share of the trade with the Russian Federation in their total trade turnover was in the specified interval in 2013, units**

Source: Fig. 3 was drawn up by the author based on the data from website "Sanctions against Russia and international trade" (in Russ.). URL: https://cdn4.img.ria.ru/images/150970/03/1509700324.png (accessed on 27.01.2018); World Trade Review 2018. The World Trade Organization. 2018:180–187.

individuals and legal entities around the world. "A punishment can overtake and after 5–7 years from the date of the business operation if there is a signal and the investigation confirms the guilt of the company at the time of sanctions" [9]. That is why the restrictions on the foreign trade with the Russian Federation affect the foreign trade operations of many countries and cause collateral damage outside Russia. Russia's counter-sanctions (the food embargo imposed in three stages in 2014, 2015 and 2016) also have a negative impact on the world trade.

Bloomberg gave a good example of an inverse relationship. "There's also been collateral damage, felt outside Russia. What sort of collateral damage? The April 2018 sanctions targeting Rusal initially disrupted the global supply chain for aluminum and sent prices soaring by 30 percent. That affected, among others, soda-can makers, the world's biggest miners and big banks that finance the aluminum trade. Repercussions from sanctions have also been felt in the European Union" [10].

The head of "National Association" party (France), Marine Le Pen (Marion Anne Perrine Le Pen), put this feedback loop clearly: "Remember about Russian sanctions. Wanted to punish Russians and sanctioning Russians in reality has led to disastrous economic consequences for a number of sectors of the EU"[6].

In the US, they also realized the existence of an inverse relationship between the sanctions against the target country and the damage to the country that imposed sanctions. "Sanctions can often be a double-edged sword," said Republican Senator Ron Johnson of Wisconsin, the chairman of the Homeland Security Committee. "So we really should take a little bit of a step back and assess where we are and what we can really do" [10].

To estimate the relative losses from the reduction in the foreign trade of a country, that imposed sanctions on Russia, with the Russian Federation, let us calculate the share of the decline in the country's trade turnover with Russia in the total volume of changes in the sanctioning country's foreign trade ($CB^{t}_{j,R}$):

[6] Marine Le Pen parle des sanctions antirusses. URL: https://fr.news-front.info/2019/03/08/marine-le-pen-parle-des-sanctions-antirusses/ (acceded on 11.04.2019).

Table 3

Russia's share in the U.S. trade turnover and in the trade turnover of the three US allies in the anti-Russian sanctions, 2013, 2017, %

Country	2013	2017	Country	2013	2017
Germany	2.9	1.9	France	1.8	1.3
United Kingdom	2.1	1.2	USA	0.7	0.6

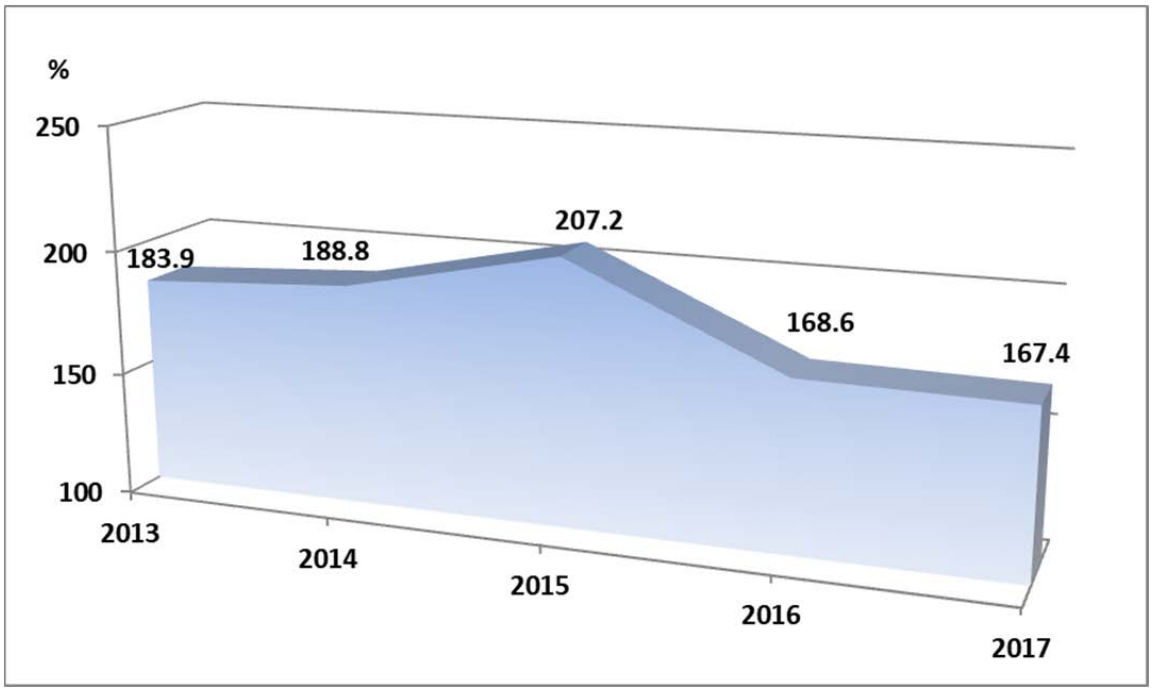

Fig. 4. **Ratio of imports and exports of sanctioning countries with Russia, 2013–2017, %**

Source: Fig. 4 was compiled by the author based on the data from "World Trade Review 2018". The World Trade Organization. 2018:180–187.

$$CB^{t}_{j,R} = \begin{cases} 100\% \times \Delta B^{t}_{j,R} \,/\, \left(\Delta B^{t}_{j,R} - \Delta B^{t}_{j}\right), \\ if\ \Delta B^{t}_{j} \geq 0\ and\ \Delta B^{t}_{j,R} < 0; \\ and\ also\ if\ \Delta B^{t}_{j} < 0\ and\ \Delta B^{t}_{j,R} > 0; \\ 100\% \times \Delta B^{t}_{j,R} \,/\, \left(\Delta B^{t}_{j,R} + B^{t}_{j}\right), \\ if\ \Delta B^{t}_{j} \leq 0\ and\ \Delta B^{t}_{j,R} < 0; \\ 100\% \times \Delta B^{t}_{j,R} \,/\, \Delta B^{t}_{j},\ if\ \Delta B^{t}_{j} > \\ > 0\ and\ \Delta B^{t}_{j,R} > 0. \end{cases}$$

Here $j = 1, 2, \ldots, J$ — sanctioning country index;

R — the index denoting Russia;

$t = 1, 2, \ldots, T$ — index of time intervals;

$CB^{t}_{j,R}$ — relative loss of the sanctioning country j in a period t, suffered as a result of the contraction in the trade turnover with the Russian Federation;

B^{t}_{j} — the volume of the trade turnover of the country j in the period t;

$\Delta B^{t}_{j,R} = B^{t}_{j} - B^{t-1}_{j}$ — the change (increment) in the volume of the trade turnover of the country j in the period t.

Similarly, we will calculate the relative losses of a sanctioning country from the reduction of exports to the target country (in our case, to the Russian Federation — $CE^{t}_{j,R}$), and from the import reduction from Russia ($CI^{t}_{j,R}$). When calculating the relative losses from the reduction of exports, letter "B" in the ratio above is replaced by symbol "E", which means export, and from the reduction of imports — by symbol "I", which means import.

Top ten sanctioning countries with the highest value of the relative losses from the trade reduction (turnover, exports and imports) with the Russian Federation after 2014 are shown in *Tabl. 4–6*.

In 2014–2017, the United States was on the 23rd place out of 40 considered countries (CB_{us} = 8.6%), France on the 26th (6.0%) and the United Kingdom on the 21-th place (9.6%).

In 2014–2017, the USA was on the 19th place out of 40 (CE_{us} = 10.6%), France on the 25th place (6.9%) and the United Kingdom on the 27th place (4.1%).

Table 4

Top ten sanctioning countries with the highest value of the relative losses from the trade reduction with the Russian Federation after 2014 (CB^t_j)

Place	Country	2014–2015	Country	2014–2017
1	Iceland	64.3	Slovakia	92.5
2	Poland	45.7	Latvia	77.4
3	Cyprus	45.6	Germany	69.5
4	Czech Republic	41.6	Malta	52.8
5	Latvia	39.0	Netherlands	51.1
6	Croatia	30.7	Italy	43.1
7	Malta	28.0	Lithuania	42.9
8	Ukraine	26.9	Estonia	36.7
9	Finland	22.0	Ukraine	35.5
10	Lithuania	21.9	Finland	31.1

Table 5

Top ten sanctioning countries with the highest value of the relative losses from the reduction of exports to the Russian Federation after 2014 (CE^t_j)

Place	Country	2014–2015	Country	2014–2017
1	Poland	42.2	Germany	8.9
2	Czech Republic	36.4	Slovakia	56.6
3	Croatia	35.5	Iceland	56.2
4	Lichtenstein	31.4	Spain	40.0
5	Ukraine	27.7	Latvia	35.1
6	Iceland	24.9	Ukraine	34.0
7	Slovenia	21.4	Italy	27.0
8	Israel	19.0	Portugal	26.0
9	Finland	15.8	Japan	25.5
10	Latvia	15.1	Bulgaria	25.3

Table 6

Top ten sanctioning countries with the highest value of the relative losses from the reduction of imports from the Russian Federation after 2014 (CI^t_j)

Place	Country	2014–2015	Country	2014–2017
1	Cyprus	70.0	Latvia	83.8
2	Latvia	48.9	Malta	83.1
3	Czech Republic	48.1	Netherlands	69.2
4	Poland	47.4	Slovakia	62.9
5	Malta	33.7	Lithuania	57.5
6	Lithuania	32.0	Estonia	53.5
7	Estonia	31.3	Italy	48.2
8	Netherlands	27.4	Germany	44.4
9	Finland	26.6	Finland	38.3
10	Ukraine	26.4	Cyprus	37.5

Table 7

Linear correlation coefficients of the shares of trade with Russia and the relative losses from the trade reduction of the sanctioning countries with the Russian Federation

Parameter	Exports, Cor(*E*)	Imports, Cor(*I*)	Turnover, Cor(*B*)
Linear correlation coefficients	0.4225	0.6430	0.5070
Number of observations	39	30	38

Note: the number of observations shows a number of countries which reduced its exports, imports and trade turnover respectively.

Source: calculated by the author.

Table 8

Ratio of the reduction in trade turnover with Russia in some states and the United States, 2014–2017, number of times

Country	Number of times	Country	Number of times
Netherlands	8.2	Poland	2.6
Italy	6.6	France	1.5
Germany	5.6	Finland	1.3
Japan	3.4	Latvia	1.3
United Kingdom	2.7	Switzerland	1.3

Source: calculated by the author.

In 2014–2017, the United States was on the 26th place (CI_{us} = 0.6%), France on the 23rd place (5.3%) and the United Kingdom on the 12th place (32.7%).

In the foreign trade of the United States of America, Russia accounts for a very small share — less than 1% of the foreign trade turnover. Therefore, the U.S. losses from the anti-Russian sanctions in the foreign trade are small. The above indicators of the US relative damages from the trade reduction with the Russian Federation are significantly less than in a number of other countries. The study showed that the higher Russia's share in the country's foreign trade was in 2013, the more damages suffered the country from the downturn in the trade with the Russian Federation. In particular, the calculated values of the linear correlation coefficients indicate the existence in 2014–2015 (there was the largest drop in the foreign trade during these years) of a positive relationship between the values of the relative losses from the slump of the foreign trade volume of the sanctioning states with the Russian Federation and Russia's share in the trade of these countries (*Tabl. 7*).

The error probability of the calculated linear correlation coefficients is 1% (a two-sided confidence coefficient $\alpha/2 = 0.01$). This confirms the above statement that the greater the share of trade with Russia in the country's trade is, the greater the damage to this country from the reduction of trade with Russia.

Statistical testing of the hypothesis of equality of the calculated linear correlation coefficients showed that the correlation for imports is stronger than for exports: Cor(*E*) < Cor(*B*) < Cor(*I*). It seems natural when the volume of imports from a country is reduced more than the volume of its exports. This is how the countries that deployed the sanctions in trade with the Russian Federation did during the period under study.

The fact that after the reduction in the foreign trade with Russia in 2014–2017 the U.S. suffered less damage than the other countries is confirmed not only by the estimates of the relative losses we have calculated (CB^t_j), but also by a direct comparison of the volumes of the foreign trade contraction (*Tabl. 8*).

In 2014–2017, a 98% reduction in trade with Russia fell on the sanctioning countries without the United States of America and only 2% on the United States. So productively in this case, the United States used two principles of struggle against competitors and adversaries. Principle 1: Sanctions against the target should not be detrimental to the sanctioner, especially irreparable. Following this principle, the United States

is trying to damage the economy of the Russian Federation, without affecting the most important areas in which they profit in Russia. Thus, by introducing all kinds of restrictive measures, the US government and large corporations do not prohibit or restrict the trade in the goods in which they are in dire need, or in whose exports they are interested[7]. For example, look how carefully the Countering America's Adversaries through Sanctions Act (HR 3364) prescribes an exception to the number of sanctioned goods related to the activities of the National Aeronautics and Space Administration.

"Nothing in this Act or the amendments made by this Act shall be construed to authorize the imposition of any sanction or other condition, limitation, restriction, or prohibition, that directly or indirectly impedes the supply by any entity of the Russian Federation of any product or service, or the procurement of such product or service by any contractor or subcontractor of the United States or any other entity, relating to or in connection with any space launch conducted for (1) the National Aeronautics and Space Administration; or (2) any other non-Department of Defense customer"[8].

There is no ban on goods advantageous for Western countries to export to the Russian Federation. Neither the US, nor the EU has sanctions against exports of software, computers, touch pads, telephones, civil aircraft and automobiles, pharmaceuticals, alcoholic and non-alcoholic beverages, and some other goods to Russia [7, p. 54; 11, p. 33–34, 12].

Principle 2: It is better to target an offending state together with a group of allies and it is even better to only use them, without personal involvement — "to use others to pull chestnuts out of the fire". (See: [1, 11]). Allies and joint efforts strengthen the warring parties and share with them the burden of costs and the severity of the losses.

CONCLUSION

So, "sanctions can often be a double-edged sword"[9]. They hurt not only those to whom they target. They can harm their initiators, as well as third parties. The results of the study presented in this paper answer the question of the losses incurred in the foreign trade by the sanctioning states in 2014 (the USA and EU) to compel Russia to change its policies, behavior, and even regime, and by the countries that have joined them. The losses of 40 states were estimated. The calculations were made on the data of the World Trade Organization for 2013–2017.

The studies have shown that the fall in the foreign trade volume of the sanctioning countries with the Russian Federation began in 2014 after the sanctions against Russia; it reached its maximum in 2015. In 2016, the rates of decline in both exports to Russia and imports from Russia slowed down significantly in the considered countries, and their trade with the Russian Federation began to grow in 2017.

In 2013, before the sanctions, Russia's share in the trade turnover of the majority (70%) of the sanctioning countries did not exceed 5%. This share acceded 10% in 7 out of 40 countries, and in 4 countries it was higher than 30%. In the United States, for example, it was only 0.7% in 2013, in France — 1.8%, in the UK — 2.1%, and in Germany — 2.9%. This share gradually decreased after the introduction of the isolation measures against Russia. In 2017, it was less than 5% in 82.5% of the states in question, and was more than 10% in only 4 states. In the US, it decreased by 0.1%, meaning that it almost remained unchanged.

The main reduction in the trade turnover of the countries with the Russian Federation in 2014–2017 was due to a rapid decrease in imports from Russia. Calculated relative damage from the reduction in the countries under study was the bigger, the higher Russia's share in their imports was. The US, with its small shares of imports from Russia and its exports to the Russian Federation, suffered significantly less than many countries that joined the USA and EU sanctions against Russia. Thus, the value of the decrease in the trade turnover between Italy and Russia in 2014–2017 was 6.6 times larger than the reduction in trade between the United States and the Russian Federation; for Germany — 5.6 times, for Poland — 2.6 times, for Latvia — 1.3 times. The U.S. share in the reduction of the sanctioning countries total volume of trade with Russia in 2014–2017 was equal to only 2%. The remaining 98% lay on the shoulders of other countries.

So, the 'Big brother' has begun and expanded the sanctions against Russia, and the younger 'brothers and sisters' have damages (in this case, in the foreign trade), they are catspaws for pulling chestnuts out of the fire.

[7] According to the President of the American Chamber of Commerce in Russia, Alexis Rodzianko, "American sanctions affect areas in which trade exchange was previously small, for example, military products" (Spiegel. (2015, June 2). The US "forgets" about the sanctions against Russia, when it is convenient for them. URL: http://russian.rt.com/inotv/2015–05–31/Spiegel-SSHA-zabivayut-o-sankciyah). (In Russ.).

[8] HR 3364. Countering America's Adversaries through Sanctions Act. Sec. 237, (b) (2017). URL: https://www.con-gress.gov/bill/115th-congress/house-bill/3364/tex (accessed on 21.09.2017).

[9] Republican Senator Ron Johnson of Wisconsin, chairman of the Homeland Security Committee said that [10].

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On Complex Inflation Targeting and Modified Inflation Indicators (Experience of Georgia)

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ABSTRACT

The paper analyzes inflation targeting which is used in many countries as a tool for the monetary policy of central banks. The study of the experience of inflation targeting over the past quarter century shows a number of shortcomings. The important one is that inflation targeting is powerless in relation to import inflation. This problem is particularly acute for import-dependent countries. The authors summarize the failure of inflation targeting to influence the import of inflation regarding inflation caused by the increase in production costs. The problem is studied by the example of post-communist Georgia (that uses inflation targeting) and its major trade partners. The authors analyze various modifications of the inflation indicator, such as agflation, munflation, and imflation. It is shown that the first two reflect price fluctuations on the nutrition, medical care, medication and utilities. Imflation reflects the dynamics of import prices on the domestic market, in the formation of which the exchange rate of the national currency is of great importance. The indicators of agflation and munflation together with the traditional indicator of inflation should become one of the important macroeconomic indicators for governments that develop economic and social policies. The authors propose a new approach to monetary policy, called complex inflation targeting. In this case, monetary policy targets are not only inflation, but also imflation. As for the exchange rate of the national currency, it should be influenced by the actual level of the imflation indicator.

Keywords: monetary policy; inflation; inflation targeting; exchange rate; demand-pull inflation; cost-push inflation; hybrid inflation targeting; complex inflation targeting; agflation; munflation; imflation

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INTRODUCTION

Monetary policy related issues are among the most discussed ones in the modern economics. They became especially relevant after 2007–2009 global financial crisis (for example, [1–3]).

Currently, inflation targeting (IT) is one of the most common methods of monetary policy[1]. A number of works have been devoted to generalize the experience of the countries using IT (for example, [4]). The experience of the post-communist countries (for example, [5]) and the countries with emerging economies (for example, [6]) is of particular interest.

Considering the IT regime, many researchers are focusing on studying the relationship between the exchange rate and IT (for example, [7–9]). This issue is of particular interest due to the IT regime predecessors were monetary policy systems based either on a "monetary anchor" or on a "exchange rate anchor".

Among the countries where the monetary policy is based on IT, there are those that combine it with currency regulation. For example, in the Czech Republic adhering to the IT regime, concurrently, the exchange rate ceiling of the national currency is set. This results in the so-called dual targeting — that of inflation and exchange rate [5, p. 81]. Such a monetary policy regime, where besides the inflation, the exchange rate is subject to targeting is called **hybrid** (i.e., mixed) IT (HIT) [10, p. 70].

Speaking about IT, it is necessary to note the fact that for countries with different levels of development, the generally accepted inflation indicator does not always accurately reflect the pressing social and economic problems of these countries.

This question is not only related to IT, but has broader roots and equally important consequences. In particular, for poor countries, first of all, the problem is the rise in price of the food, and not the entire consumer basket (for example, [11, 12]). For these countries, changes in prices of medicines and health care services, as well as utilities, are no less important. At the same time, in the countries with a negative trade balance, the price of imported goods is of great importance. On this basis, it is quite natural to "increase" the possibilities of the inflation indicator by developing its modifications (for example, [13, 14]), including for their possible use in the IT system [15].

The aim of this article is to study the issue of using various modifications of the inflation indicator in the IT system, and thereby "expanding" the scope of this system. As an example, these indicators will be considered for Georgia, a post-Soviet country where the IT regime (in its "pure" form) has been used since 2009. At the same time, IT is also used in the countries, the main trade partners of Georgia, for example, Turkey, Russia, Azerbaijan, etc.

ABOUT IT AND SOME OF ITS WEAKNESSES

The first country in the world to switch to the IT regime in the monetary policy was New Zealand which had stably high inflation for over two decades since 1967, when average inflation was 15% and the maximum one was 20% (for example, [16, p. 261]). In 1984, the Reserve Bank of New Zealand decided to abandon the internationally recognized priority of monetary aggregates and to establish control over the maximum level of inflation, as a result of which the monetary policy switched to the IT regime [17; 18, p. 86–114; 19–21]. Later this example was followed by Canada, the United Kingdom, Finland, Sweden, Australia and Spain [22]. The growth dynamics of the number of countries adhering to the monetary policy of the IT regime is significant: by 2006, the number of such countries was 25 [23, p. 1], and by 2018, already 68[2].

Among the issues studied in relation to IT, one associated with the study of its effect on economic growth is clearly highlighted (for ex-

[1] Annual Report on Exchange Arrangements and Exchange Restrictions 2017. International Monetary Fund. 2018(Apr.30). URL: https://www.imf.org/~/media/Files/Publications/AREAER/areaer-2017-overview.ashx (accessed on 22.05.2019).

[2] Inflation Targets. Central Bank News. 2018. URL: http://www.centralbanknews.info/p/inflation-targets.html (accessed on 22.05.2019).

ample, [24–28]). According to the central bank of Canada, the IT regime has contributed to the country's steady economic growth[3].

The generalization of the experience gained over many years of studying this effect does not give a definite answer: earlier publications have not established a positive effect of IT on economic growth, while empirical studies of recent years confirm this effect with a three-year lag [10, p. 64–65].

The fact that the IT regime contributes to a relatively low level of inflation is confirmed by a number of studies for both developed and developing countries (for example, [23; 29, p. 153–175]).

By now, there have been a lot of publications where substantiated "allegations" against the IT regime stemming from its weaknesses are made in a sense.

In particular, according to Jeffrey Frankel, a professor at Harvard University and a member of the economic council under President Bill Clinton, in the currency crises of the 1990s, the IT regime proved to be an effective mechanism to achieve relative stability in the level of inflation. However, later the IT regime "died" and, as a result, central banks could not decide on a new goal for the monetary policy that would ensure the population's sense of stability [30].

The Bank for International Settlements, which, as an international financial institution, promotes cooperation between central banks to facilitate international financial settlements, also opposes the use of the IT regime, since it quite often counters with financial stability [31, 32].

In addition to these weaknesses of the IT regime, it should be noted that this regime does not consider financial cycles. As a result, this leads to excessive expansionist and asymmetric monetary policy [33].

The basic argument in favor of the IT regime, as a rule, was based on the fact that it allegedly contributed to the reduction of inflation since the early 1990s. At the same time, this statement is also criticized. Since the 1980s, the inflationary trend in many more or less problematic countries was already declining. The main merit of this was not the IT regime, but globalization and the integration of China into the world economy [33].

Nobel laureate in economics Joseph Stiglitz believes that the IT regime will have to be abandoned at least in developing countries whose central banks are not able to control inflation, which is not so rarely imported [34].

The issue of imported inflation, in our opinion, can be generalized for a more general case. In particular, what causes inflation is important.

As is known from general economic theory, the causes of inflation can be either an increase in aggregate demand, or an increase in production costs. As a result, there are two types of inflation: *demand-pull inflation* and *cost-push inflation* (for example, [35, p. 164–167]).

Demand-pull inflation is caused by excess demand, when aggregate supply is not able to satisfy it; in the result, prices begin to rise. It is not by chance that this type of inflation is interpreted in the following way: "too much spending chasing too few goods" [35, p. 165]. Central banks are known to have a number of effective tools to influence the money supply, as a result of which it is actually possible to contain demand-pull inflation.

The situation with cost-push inflation is more complicated when rising production costs may cause a decrease in aggregate supply.

The mechanism for reducing aggregate supply through rising production costs is fairly simple. In particular, due to the increase in production costs, firms aiming to obtain unabated profits seek to raise prices, to which the market can react in two ways:

1. If the market "accepts" the increased prices, then there is an increase in inflation.

2. If the market "rejects" the higher prices, then firms are forced to lower these prices by reducing the profits received, which, in turn,

[3] Renewal of the Inflation — Control Target: Background Information — November 2006. Ottawa: Bank of Canada; 2006. 18 p. URL: https://www.bankofcanada.ca/wp-content/uploads/2010/06/background_nov06.pdf, p. 3 (accessed on 22.05.2019).

may force firms to "leave" the market, resulting in a supply decrease and price rise, i.e. in this case, the inflation rate will increase.

As it is known, sources of cost-push inflation can be an increase in wages (for example, due to appropriate pressure from trade unions) and prices for raw materials and energy [35, p. 166–167].

When different types of raw materials and energy are imported, and their prices are rising on international markets, then there is import of inflation.

Another equally important reason for the conditionally called "import" of inflation is the depreciation of the national currency, as a result of which the prices of imported goods naturally rise. In case the market "rejects" these increased prices, the importers must either reduce the profits received or reduce the imports, which will lead to a corresponding reduction in supply, and, as a result, prices will rise.

It is known that in case of demand-pull inflation, central banks have the appropriate tools to restrain it. In contrast, in the context of cost-push inflation (except when these costs are not directly caused by the depreciation of the national currency), central banks do not have more or less effective instruments of influence either on trade unions or on the rise in prices of imported raw materials and energy.

As for cost-push inflation caused by the depreciation of the national currency, the central banks adhering to the IT regime and, thus, voluntarily refusing to regulate the exchange rate will not be able to influence the reduction of inflation. In other words, imported inflation caused either by an increase in international prices for raw materials and energy, or a depreciation of the national currency in the IT system, remains outside the regulation by central banks.

ABOUT "INFLATION EXPERIENCE" IN DEVELOPMENT OF GEORGIA

The experience of post-Soviet Georgia in the so-called "inflationary development" field has not always been positive. Unfortunately, in the first years after the dissolution of the USSR, it got into the hyperinflationary spiral [36–39]. It became possible to overcome hyperinflation by implementing a complex economic reform [40, 41], as a result of which macroeconomic stability was achieved [42–44].

Based on this "hyperinflationary past", as well as considering the main international trends, the monetary policy of Georgia made maintaining price stability a priority [45], and, as noted above, since 2009, the country's central bank, i.e. the National Bank of Georgia (NBG), switched to the IT regime.

By now, for Georgia, as well as for other developing and especially relatively poor, import-dependent countries, the traditional inflation indicator is virtually unable to reflect the economic problems that characterize pricing processes. In particular, Georgia is characterized by the circumstances that:

- in 2018, in the foreign trade balance, imports exceeded exports by more than 2.7 times and exceeded exports by more than 4 times[4].
- imported goods are 80% of the consumer basket [46, p. 53];
- there is a high level of dollarization — more than 60% by the end of 2018[5].

These statistics show how important imports are for the economy of Georgia. In 2018, in the list of foreign trade partners of Georgia in terms of turnover, the top ten countries were Turkey, Russia, Azerbaijan, China, Ukraine, Armenia, USA, Germany, Bulgaria, and France. The total share of these countries in Georgia's entire trade turnover is 66.2%. Among these ten countries, Georgia had a positive trade balance only with Bulgaria, which accounted for only 3.6% of Georgia's total trade[6]. *Table 1*

[4] External Trade. National Statistics Office of Georgia. 2019. URL: https://www.geostat.ge/en/modules/categories/35/external-trade (accessed on 22.05.2019).

[5] Money Aggregates and Monetary Ratios. Statistical Data. National Bank of Georgia. 2019. URL: https://www.nbg. gov.ge/uploads/depozitaricorporeisheniinglisurad/money_aggregates_and_monetary_ratioseng.xlsx (accessed on 22.05.2019).

[6] External Merchandise Trade of Georgia in January-November 2018 (Preliminary Results). National Statistics Office of Georgia. 2018;(Dec.19). 17 p. URL: https://www.geostat.ge/media/23061/sagareo-vachroba-eqspres-relizi-14.01.2019-%28eng%29.pdf, p. 9 (accessed on 22.05.2019).

Table 1

Nature of trade balances of the major foreign trade partners of Georgia in 2017–2018 and the presence of inflation targeting in these countries

Country	2017 (trade balance)[a]	2018 (trade balance)[a]	With Georgia[b]	Inflation targeting[c]
Armenia	–	–	+	+
Azerbaijan	+	+	+	+
Bulgaria	–	–	–	–
China	+	+	+	+
France	–	–	+	–
Germany	+	+	+	–
Russia	+	+	+	+
Turkey	–	–	+	+
Ukraine	+	–	+	+
USA	–	–	+	+

[a] *Source:* Azerbaijan Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/azerbaijan/balance-of-trade (accessed on 22.05.2019); Armenia Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/armenia/balance-of-trade (accessed on 22.05.2019); Bulgaria Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/bulgaria/balance-of-trade (accessed on 22.05.2019); Germany Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/germany/balance-of-trade (accessed on 22.05.2019); China Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/china/balance-of-trade (accessed on 22.05.2019); Russia Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/russia/balance-of-trade (accessed on 22.05.2019); USA Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/united-states/balance-of-trade (accessed on 22.05.2019); Turkey Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/turkey/balance-of-trade (accessed on 22.05.2019); Ukraine Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/ukraine/balance-of-trade (accessed on 22.05.2019); France Balance of Trade. Trading Economics. 2019. URL: https://tradingeconomics.com/france/balance-of-trade (accessed on 22.05.2019).

[b] *Source:* External Merchandise Trade of Georgia in 2018 (Preliminary Results). National Statistics Office of Georgia. 2019. (January 21). URL: http://geostat.ge/cms/site_images/_files/english/bop/saqonlit%20sagareo%20vachroba%20saqartveloshi%2021.01.2019%20(eng).pdf (accessed on 22.05.2019).

[c] *Source:* Inflation Targets. Central Bank News. 2018. URL: http://www.centralbanknews.info/p/inflation-targets.html (accessed on 22.05.2019).

provides information on the deficiency of the trade balances of Georgia's major trade partners.

Out of ten Georgia's main trade partners, only four countries have a stable positive trade balance (Azerbaijan, Germany, China and Russia), although most of the trade partners (i.e. nine countries, except Bulgaria) have a positive trade balance directly with Georgia. As for the IT regime, it is not used only in three out of these ten countries (Bulgaria, Germany and France).

At present, Georgia's economy is virtually unprotected against unforeseen global and regional phenomena that could cause a revaluation or devaluation of Georgia's national currency, the lari. Such a development of the situation can practically nullify any efforts of the NBG, which focuses only on IT.

It should be noted that for its part, the NBG also does not shut its eyes to this problem, as when forecasting inflation, special attention is paid to exogenous factors affecting the market, which contain risks of both devaluation and revaluation of the national currency. These risks can be caused both by changes in the economic situations in the countries — Georgia's major trade partners, and by the global tendency to strengthen the US dollar, as well as by changes in international raw materials and oil prices. As a consequence, the baseline forecast scenario considers possible significant changes in the above factors[7]. Nevertheless, the NBG adhering to the IT regime and ignoring changes in the national currency exchange rate due to the growth of uncertainty have a rather painful effect on both business and the general population [47].

ABOUT MODIFIED INFLATION INDICATORS

Unfortunately, on a global scale the problem of poverty [48], still remains unresolved. In particular, in 2013, about 746 million people (of which 383 million are in Africa and 327 million in Asia) lived in extreme poverty [49]; and in 2014–2016, about 12.9% of the world's population was starving[8]. According to the World Bank, in 2013, 10.7% of the world's population (approximately 800 million people) lived on less than $ 1.9 a day[9].

It is not difficult to understand that the change in the average price level of the consumer basket used for the traditional estimation of inflation, as a rule, says little to this poor part of the world's population, since the main problem for them is the rise in prices, primarily for food, as well as for health services and utilities.

This question is relevant in Georgia too, where the problem of poverty is most significant for 30% of the population[10]. In 2016, 13.8% of the population of Georgia had an income below the subsistence minimum [50, p. 17]. In other words, this part of the population was in extreme poverty.

To reflect the level of price change for the relatively poor segments of the population more accurately, an indicator of agrarian inflation was developed, i.e. agflation, characterizing the growth of average prices for agricultural products. With due time, the development of this indicator was associated with a significant increase in prices for fruits, eggs, grain and other goods in 2006–2007 [12, p. 139]. The agflation indicator is primarily used in developing, relatively poor countries, characterized by a rise in prices for basic foods in certain periods of time (for example, in India) [11].

[7] For example, Monetary Policy Report. National Bank of Georgia. 2017;(Feb.). 37 p. URL: https://www.nbg.gov.ge/ uploads/publications/inflationreport/2017/150217publish_MPR_February.pdf, p. 7 (accessed on 22.05.2019).

[8] 2018 World Hunger and Poverty Facts and Statistics. World Hunger Education Service. 2018. (September). URL: https://www.worldhunger.org/world-hunger-and-poverty-facts-and-statistics/#hunger-number (accessed on 22.05.2019).

[9] Poverty and Shared Prosperity 2016: Taking on Inequality. Washington, DC: The World Bank; 2016. 170 p. URL: https://openknowledge.worldbank.org/bitstream/handle/10986/25078/9781464809583.pdf, p. 36 (accessed on 22.05.2019).

[10] NDI Poll: Economy Still Top Concern for Georgians; Support for NATO and EU Stable. National Democratic Institute. 2017;(Jan.17). URL: https://www.ndi.org/publications/ndi- poll-economy-still-top-concern-georgians-support-nato-and-eu-stable (accessed on 22.05.2019).

The fact that for economically less developed countries food products, as a rule, take at least half of the consumer baskets in these countries, also testifies to the special value of the agflation indicator. For example, in Russia food makes up 50% of the consumer basket [51], in Azerbaijan — 50%, in Armenia — 50%, in Tajikistan — 57%, in Turkmenistan — 60%[11]. Despite the fact that in terms of economic development, Georgia is more in line with its post-Soviet neighbours, this figure is clearly underestimated and is only 30%[12].

Economically this figure is significantly lower in more developed countries. For example, in the USA it is less than 10%[13], and in the EU — 18%[14]. Nevertheless, agflation as such is not a problem only in developing countries. In particular, the new EU member states faced the problem of agflation (ten countries of Eastern Europe are implied — Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia)[15]. Rising prices for some products, such as dairy products, vegetables and sugar, is not at all uncommon for the EU[16].

For families with relatively low incomes, in addition to food prices, prices for medicines, health care and utilities (water, electricity, sewage, gas and other types of heating) are of particular importance. To comprehensively measure price changes for all these products and services, a statistical indicator was introduced — *munflation* [52]. This term comes from the first letters of the English words — medication, utilities and nutrition.

To calculate the indicator of munflation, the appropriate groups of products and services from the consumer basket should be used, such as treatment, utilities and food products. At the same time, all three groups of products and services require some adjustment. In case of Georgia, in the subgroup "food products and non-alcoholic beverages", lemonade and drinks like coke can be removed, since they, as a rule, are not consumed by the poorest segments of the population.

From the "health care" subgroup, for example, thermometers (despite poverty, a thermometer can be found almost in every family) and maternity services which in Georgia are funded by the government, can be removed. From the "utilities" group, building materials should be removed as they are not usually used by people with low incomes.

In the countries where imports exceed (sometimes several times) exports, it is obvious that price level dynamics should be calculated not only with the traditional inflation indicator, but also based on the part of the consumer basket consisting exclusively of imported goods and services.

The value of the level of import prices is essential for both Georgia and most of its major foreign trade partners. To make it clear, let us consider the ratio of indicators of the level of import prices and inflation for these countries. It should be noted that there is no information about the level of import prices for some countries (in particular, for Russia and Azerbaijan). There is information on the monthly changes in these prices for every remaining country except Bulgaria, with the available data only on the quarterly changes.

For Georgia, the monthly ratio of import price and inflation rates in 2017–2018 is shown in the diagram *(Fig. 1)*.

In the following diagrams (*Fig. 2–9*), the ratio of the level of import prices and inflation is given for Georgia's major trade partners in 2017–2018.

[11] Inflation in Georgia — Causes and Cures. Economic Policy Research Center Issue in Focus, 5th Report. 2012;(June). 36 p. URL: https://www.eprc.ge/admin/editor/uploads/files/Report_Eng-%20Inflation.pdf, pp. 12, 32 (accessed on 22.05.2019).

[12] Ibid., p. 32

[13] Ibid.

[14] Comparative Price Levels of Consumer Goods and Services. Eurostat, Statistics Explained. 2018. (December). URL: https://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_of_consumer_goods_and_services (accessed on 22.05.2019).

[15] Agflation in the New Member States — Some Stylized Facts. International Monetary Fund. 2008. 6 p. URL: https://www.imf.org/external/CEE/2008/120107.pdf (accessed on 22.05.2019).

[16] Commodity Price Dashboard, No 78. European Commission. 2018;(Nov.). 9 p. URL: https://ec.europa.eu/agriculture/sites/agriculture/files/markets-and-prices/price-monitoring/dashboard/food11–2018_en.pdf (accessed on 22.05.2019).

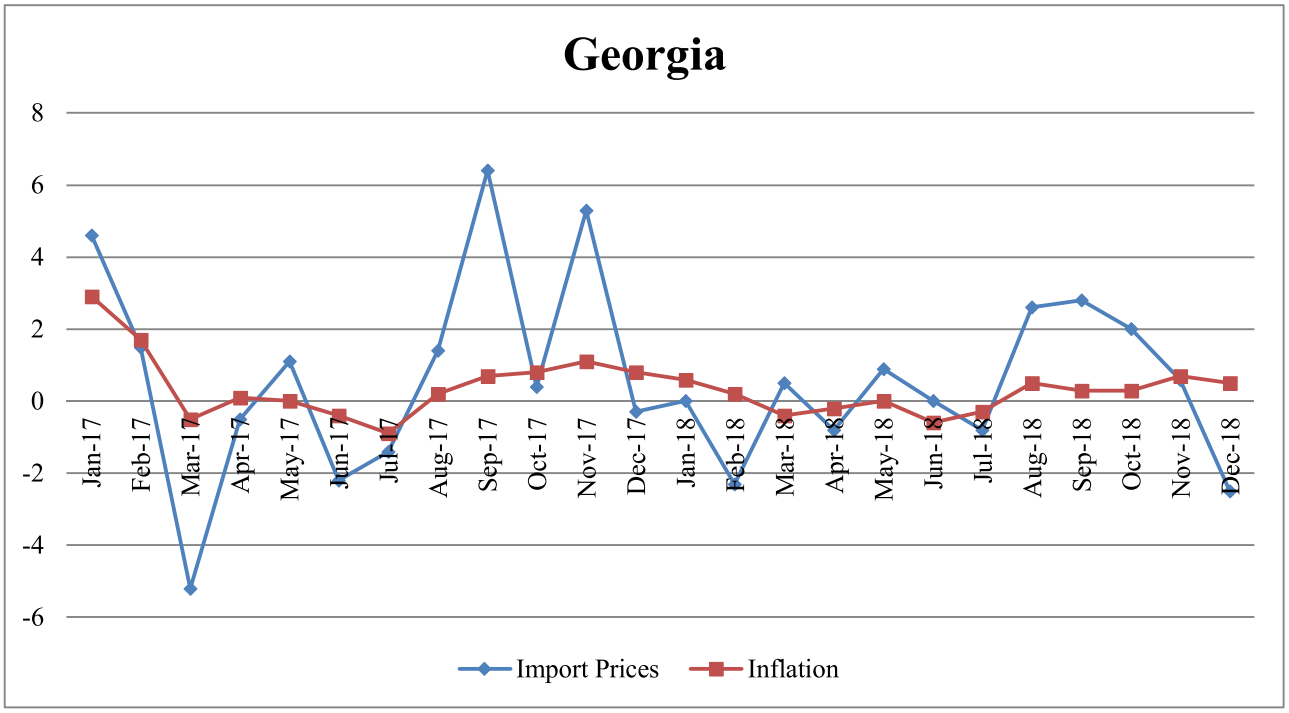

Fig. 1. **Ratio of monthly indicators of the level of import prices and inflation in Georgia in 2017–2018**

Source: complied by the authors based on: Georgia Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/georgia/import-prices (accessed on 22.05.2019); Georgia Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/georgia/inflation-rate-mom (accessed on 22.05.2019).

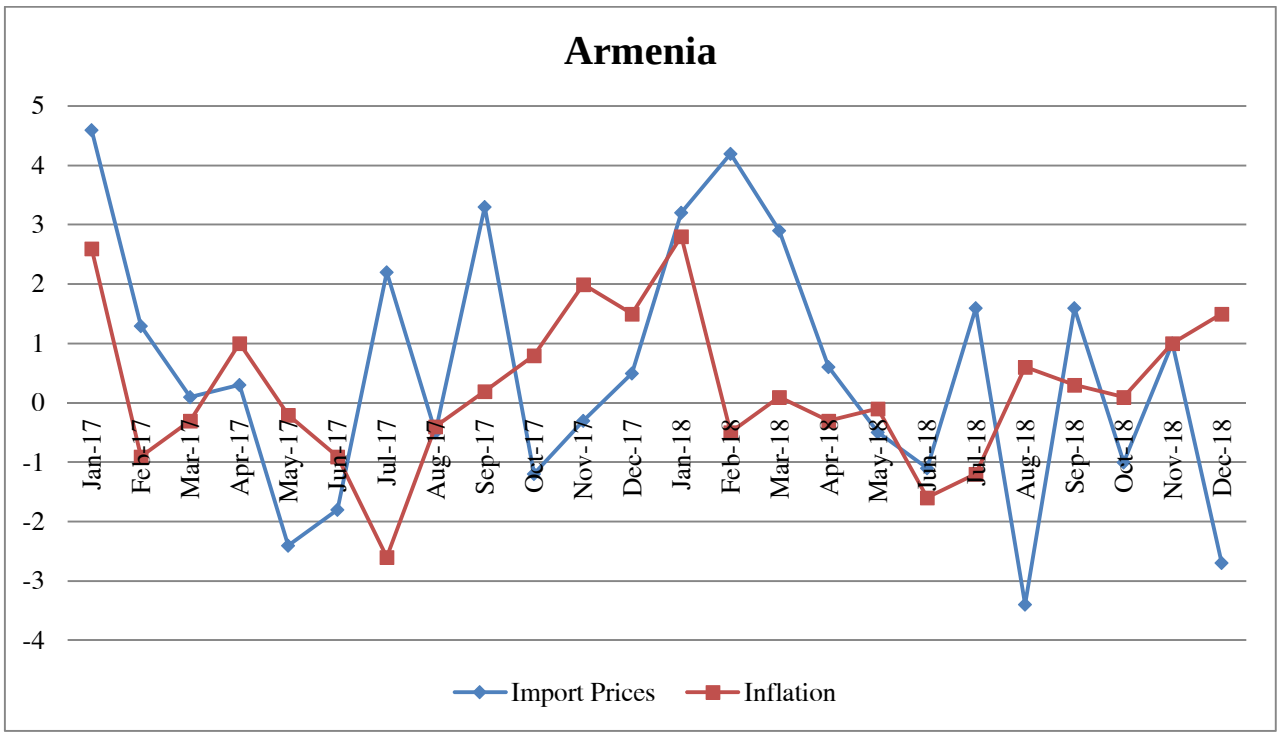

Fig. 2. **Ratio of monthly indicators of import prices and inflation in Armenia in 2017–2018**

Source: complied by the authors based on: Armenia Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/armenia/import-prices (accessed on 22.05.2019); Armenia Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/armenia/inflation-rate-mom (accessed on 22.05.2019).

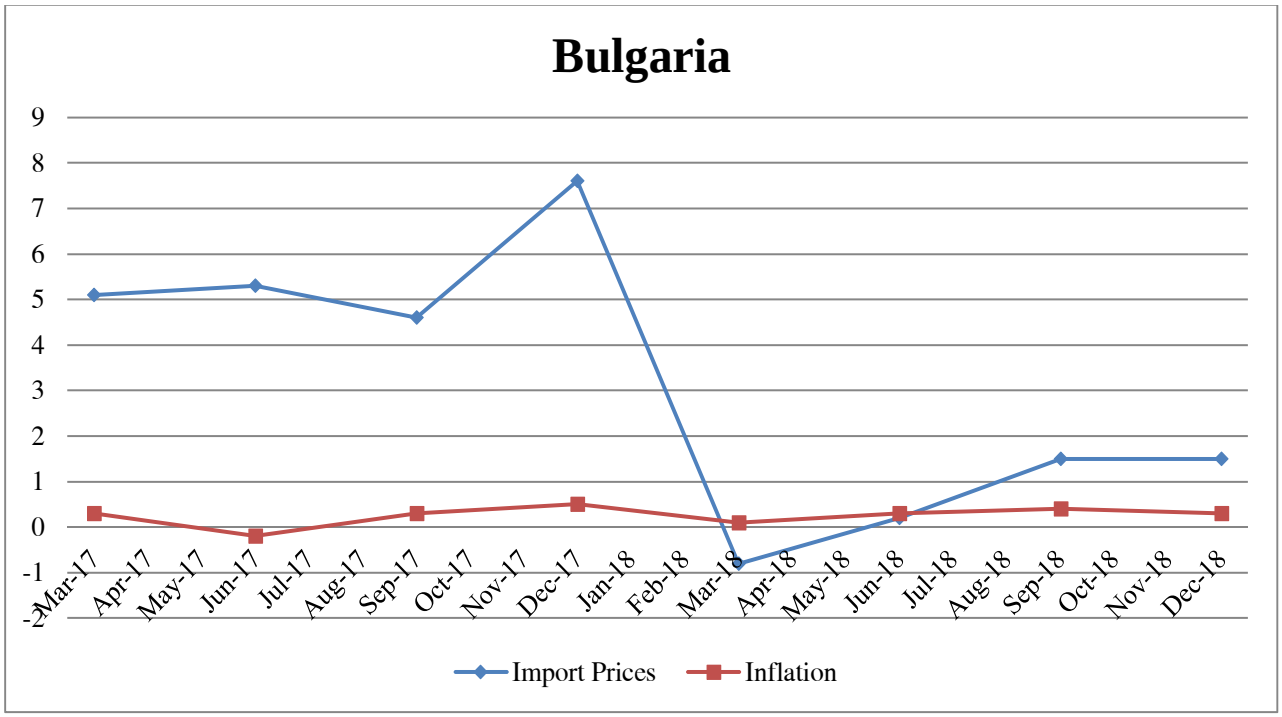

Fig. 3. **Ratio of quarterly indicators of import prices and inflation in Bulgaria in 2017–2018**

Source: complied by the authors based on: Import price indices by quarters. National Statistical Institute, Republic of Bulgaria. 2019. URL: http://www.nsi.bg/en/content/7999/import-price-indices-quarters (accessed on 22.05.2019); Bulgaria Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/bulgaria/inflation-rate-mom (accessed on 22.05.2019).

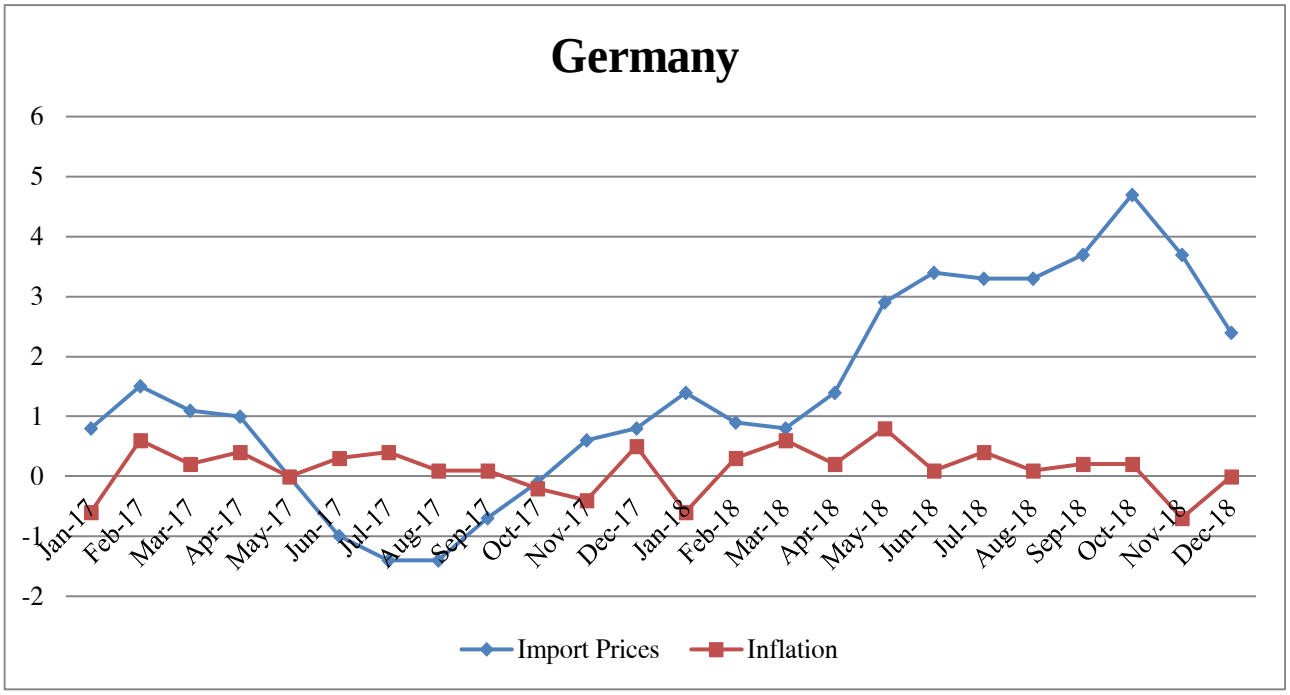

Fig. 4. **Ratio of monthly indicators of import prices and inflation in Germany in 2017–2018**

Source: complied by the authors based on: Germany Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/germany/import-prices (accessed on 22.05.2019); Germany Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/germany/inflation-rate-mom (accessed on 22.05.2019).

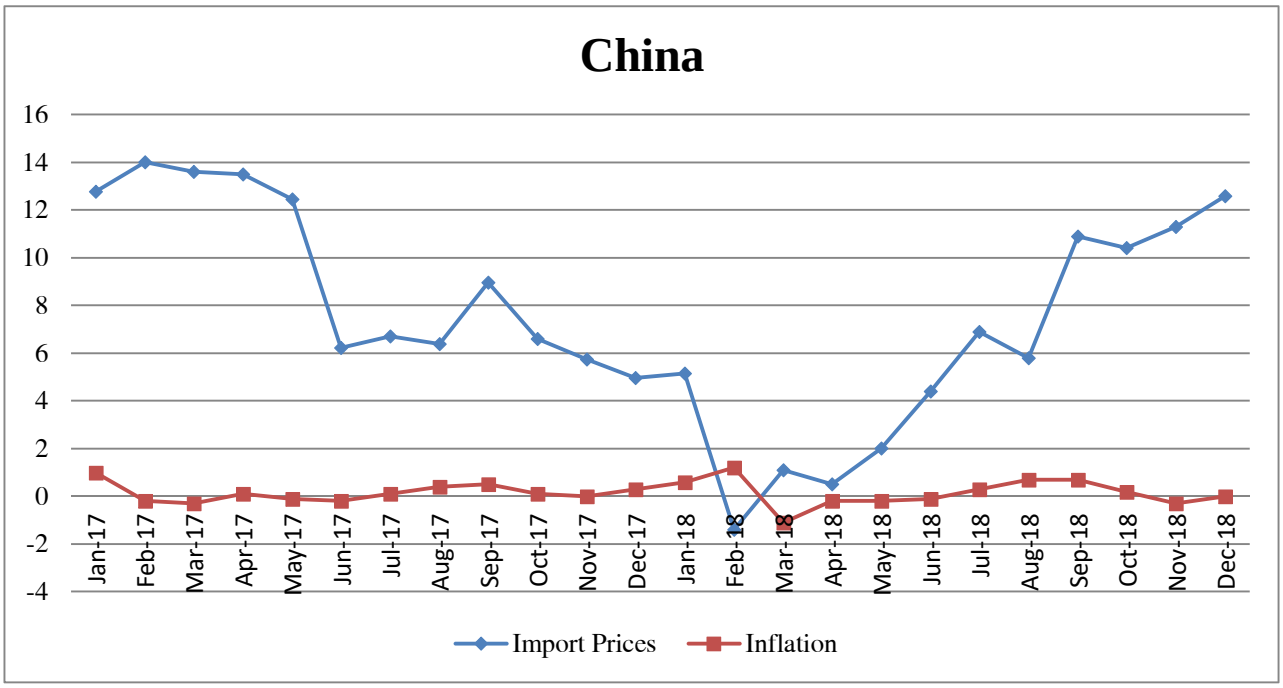

Fig. 5. **Ratio of monthly indicators of import prices and inflation in China in 2017–2018**

Source: complied by the authors based on: China Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/china/import-prices (accessed on 22.05.2019); China Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/china/inflation-rate-mom (accessed on 22.05.2019).

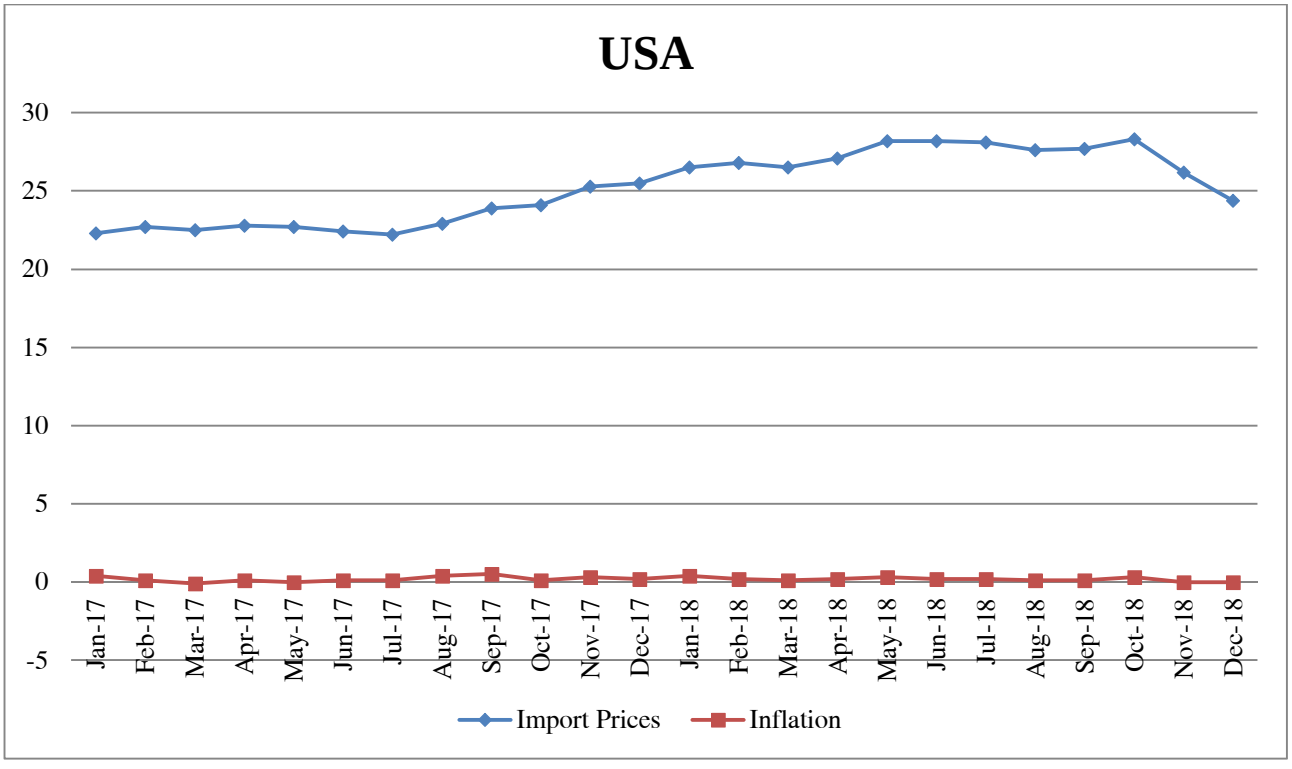

Fig. 6. **Ratio of monthly indicators of import prices and inflation in the USA in 2017–2018**

Source: complied by the authors based on: United States Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/united-states/import-prices (accessed on 22.05.2019); United States Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/united-states/inflation-rate-mom (accessed on 22.05.2019).

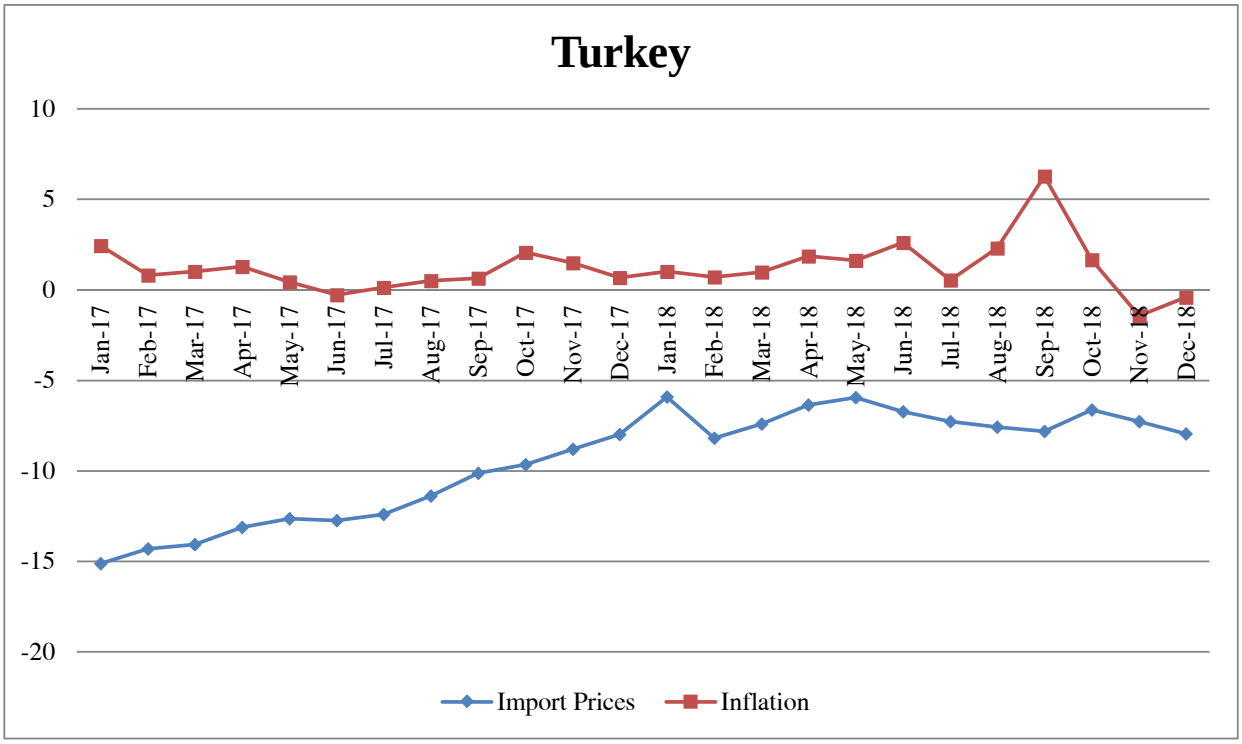

Fig. 7. **Ratio of monthly indicators of import prices and inflation in Turkey in 2017–2018**

Source: complied by the authors based on: Turkey Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/turkey/import-prices (accessed on 22.05.2019); Turkey Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/turkey/inflation-rate-mom (accessed on 22.05.2019).

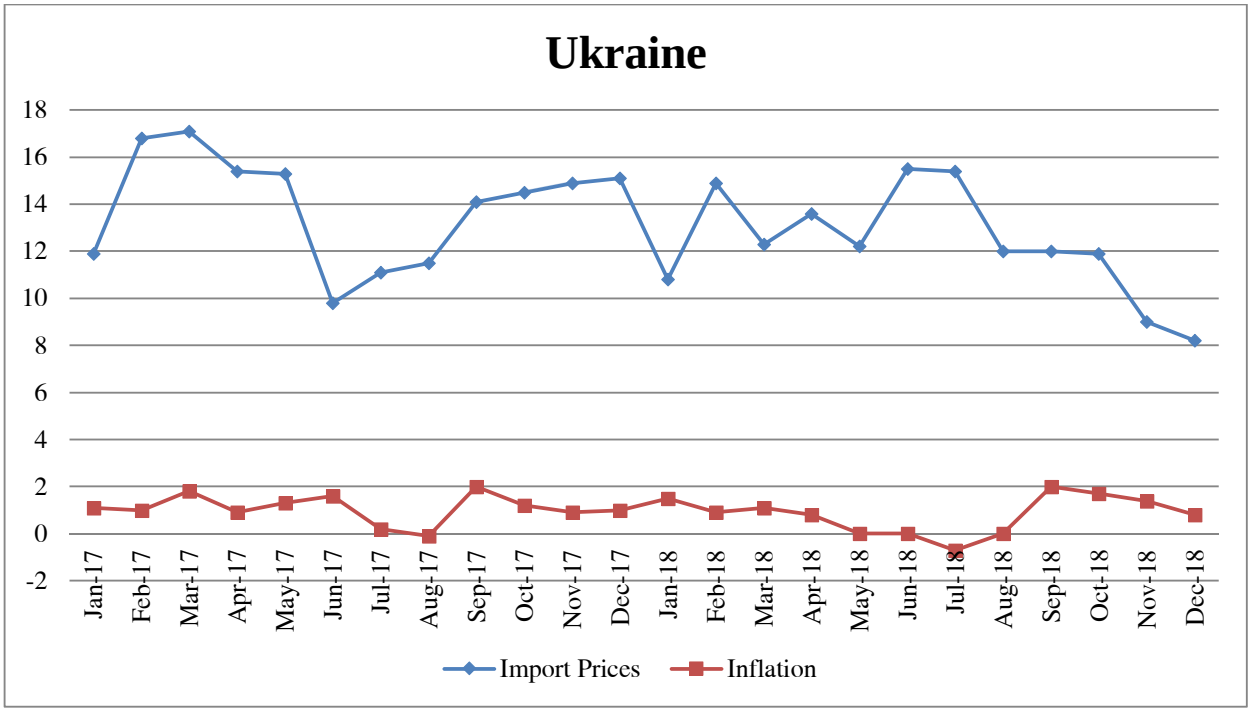

Fig. 8. **Ratio of monthly indicators of import prices and inflation in Ukraine in 2017–2018**

Source: complied by the authors based on: Ukraine Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/ukraine/import-prices (accessed on 22.05.2019); Ukraine Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/ukraine/inflation-rate-mom (accessed on: 22.05.2019).

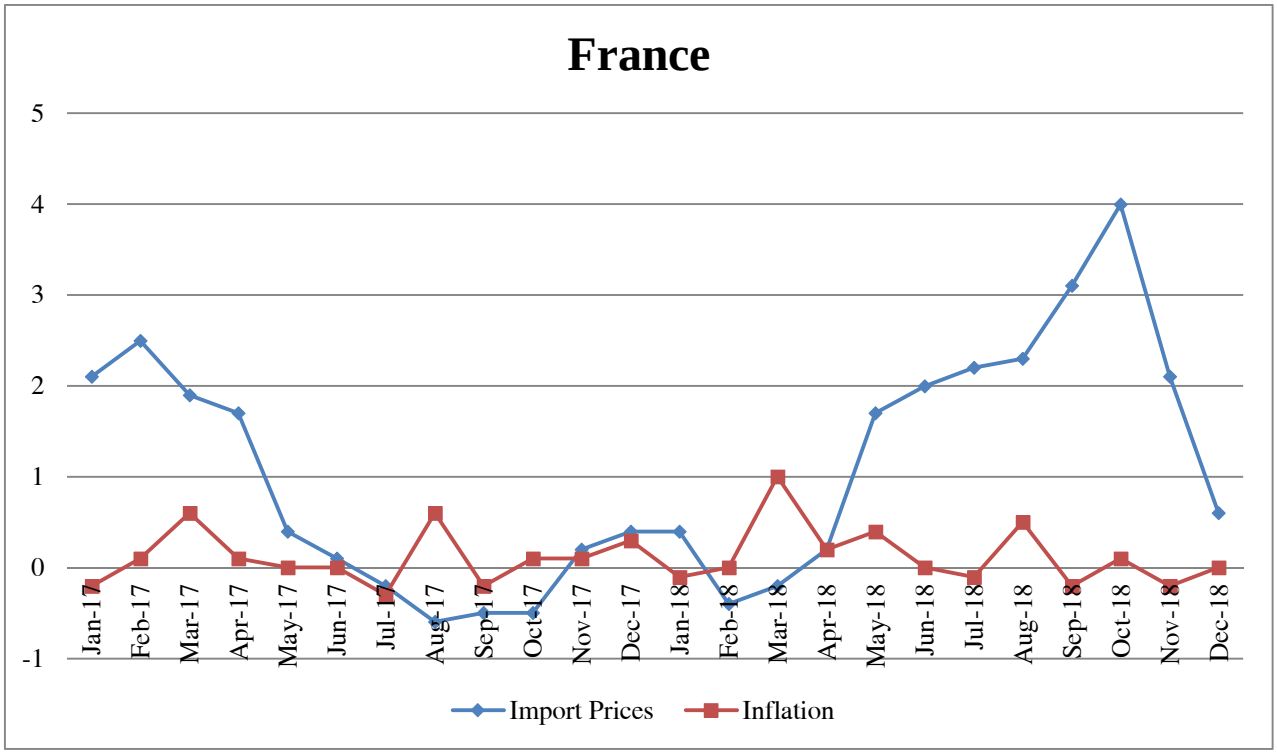

Fig. 9. **Ratio of monthly indicators of import prices and inflation in France in 2017–2018**

Source: complied by the authors based on: France Import Prices. Trading Economics. 2019. URL: https://tradingeconomics.com/france/import-prices (accessed on 22.05.2019); France Inflation Rate Mo M. Trading Economics. 2019. URL: https://tradingeconomics.com/france/inflation-rate-mom (accessed on 22.05.2019).

According to *fig. 1–9,* in almost all countries, both in Georgia and in its main foreign trade partners, except Turkey (*Fig. 7*), the level of import prices, as a rule, exceeds the level of inflation. Despite the fact that Turkey uses the IT regime, the inflation rate significantly exceeds the target indicator[17], which is caused by more political than economic problems (for example, [53–56]). At the same time, it should be considered that the inflation rate in Turkey is largely sensitive to changes in the price of imported goods[18] [57].

It is equally important to consider both average prices of imported goods and changes in the exchange rate of the national currency (for example, [58]), since the prices for these imported goods in the domestic market of the country are in the national currency. Consequently, for buyers in the domestic market of these imported goods it matters how much they cost in the national currency. Whether a possible reason for the price rise of these goods is the level of import prices or the depreciation of the national currency, or both, is a matter for the study of specialists. The indicator that can simultaneously reflect both the average level of changes in import prices and the change in the exchange rate of the national currency is called imflation [52]. It is a combination of two terms — "import" and "inflation".

We suggest to calculate the imflation indicator as follows:

$$I_t^m = \frac{E_t}{E_{t-1}} P_t^m,$$

where: I_t^m is the imflation index in period t;

E_t is the average nominal exchange rate of the national currency to foreign currency in

[17] Turkey Overview 2018. OECD Economic Surveys. 2018;(July). 68 p. URL: http://www.oecd.org/eco/surveys/Turkey-2018-OECD-economic-survey-overview.pdf, p. 9 (accessed on 22.05.2019).

[18] Ibid., p. 42.

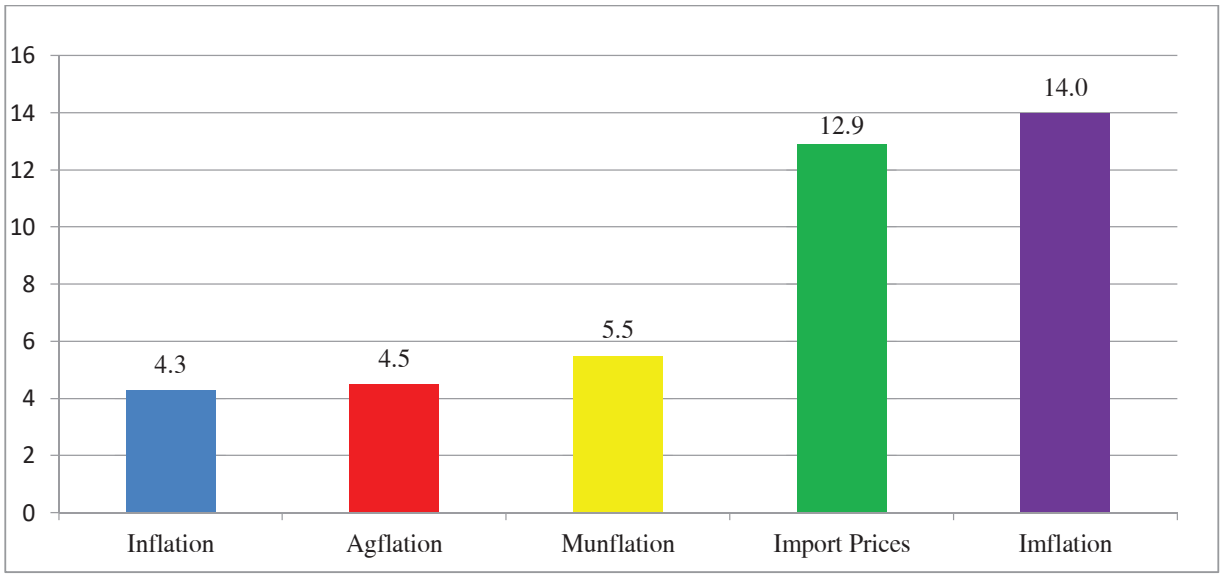

Fig. 10. **Average inflation, agflation, munflation, and imflation for 2017–2018 (in percents)**

Source: calculated by the authors.

period t in which imports are measured (usually in the US dollars);

P_t^m is the indicator of the level of import prices (usually in the US dollars) in period t.

Table 2 shows the annual inflation and its modifications (agflation, munflation and imflation) in Georgia for 2016–2018. Since the National Statistics Office of Georgia did not calculate the dynamics of average prices for 2006–2016 for the part of the consumer basket that covered the imported products, therefore, in *table 2* the imflation indicators are also given only for 2017 and 2018.

Table 2 clearly shows the quantitative differences noted by the inflation indicators and its modifications. It is the fact that with rare exceptions, the indicators of agflation and munflation exceed that of the the inflation. Much more significant is that the indicators of the level of import prices and imflation exceed those of the inflation (*Fig. 10*).

The diagram in *fig. 10* clearly shows how important it is for import-dependent Georgia to consider the dynamics of not only the inflation indicator, but also the imflation indicator, while preparing certain decisions. At the same time, it is noteworthy that the imflation indicator slightly exceeds the level of import prices.

To obtain more reliable information on the price dynamics, it is advisable to calculate the agflation, munflation and imflation indicators along with the traditional inflation indicator. This approach will make a real basis for a more adequate assessment of the current situation in the economy of a country.

ABOUT POSSIBILITIES AND RELEVANCE OF USING MODIFIED INFLATION INDICATORS IN THE SYSTEM OF COMPLEX IT

The agflation and munflation indicators are of great importance for assessing the economic situation of a particular country, especially the social situation of families with relatively low incomes (for example, [13]). However, they will not be able to completely replace the inflation indicator or to be used along with it in the IT system. The fact is that the IT regime is a method of the monetary policy of central banks, and therefore they do not have the tools to influence prices on a limited range of goods and services.

This does not downplay the importance of the agflation and munflation indicators; they should become significant indicators for governments that develop certain aspects of economic and social policy.

Table 2

Annual inflation and its modifications in Georgia (2006–2018)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Inflation	9.2	9.2	10.1	1.7	7.1	8.7	–0.9	–0.5	3.1	4.0	2.2	6.0	2.6
Agflation	13.2	12.4	12.3	1.6	11.7	16.8	–0.9	–0.7	5.1	4.2	1.6	6.8	2.2
Munflation	15.4	11.3	16.7	1.5	6.9	7.2	1.0	0.9	5.7	8.0	1.8	7.2	3.8
Import price level	–	–	–	–	–	–	–	–	–	–	–	18.1	7.7
Imflation	–	–	–	–	–	–	–	–	–	–	–	19.1	7.8

Source: complied by the authors based on: "Personal Inflation Calculator." National Statistics Office of Georgia. URL: http://geostat.ge/personalinflation/?lang=en (accessed on 22.05.2019).

This is fundamentally different with respect to imflation, since the level of this indicator is directly related to the exchange rate of the national currency whose regulation tools are owned outright by central banks.

As noted above, the rise in import prices in the domestic market or, in other words, the rise in imflation, can be caused by three reasons: a) rise in prices of imported goods in the international markets; b) devaluation of the national currency; c) simultaneous rise in prices of imported goods and depreciation of the national currency.

In this context, the imflation indicator can directly fit into the IT system, when the targets of the monetary policy of central banks, especially for import-dependent countries, will be used the imflation target along with the inflation one.

Precisely this IT regime, based not on the single inflation indicator, but on two indicators — inflation and imflation — will provide a *complex* approach to the monetary policy of central banks; with the tools at their disposal, they will be able to regulate the dynamics of prices in the domestic market. For example, if the level of import prices increases, central banks will be able to "mitigate" this price increase as necessary by a corresponding change in the exchange rate of the national currency. If the rise in the prices of imported goods in the domestic market will be caused by the devaluation of the national currency, then central banks will be able to directly affect the exchange rate of the national currency as necessary.

Let us call the IT regime based on the inflation and imflation targets **complex IT** (CIT).

CIT differs from HIT in that if in the HIT system, the exchange rate of the national currency is the target indicator along with inflation, in the CIT system, the target indicators are inflation and imflation, and the exchange rate of the national currency acts as an effective tool to maintain the target imflation indicator.

For Georgia, replacing the IT regime with the CIT regime is of primary importance, considering the fact how much the level of imflation exceeds the level of inflation (*Fig. 10*).

Thus, if the CIT system includes the imflation indicator along with the traditional inflation indicator, then central banks will have to respond to the devaluation of the national currency in order to prevent a rise in prices of imported goods in the domestic market.

CONCLUSION

As is known, among the main macroeconomic indicators the indicator of inflation takes the important place. For over a quarter of a century, in various countries of the world the inflation indicator has been used as a target indicator in the monetary policy system.

Numerous studies are devoted to summarizing the experience of central banks in various countries using the IT regime. They focus not only on studying the positive aspects of the IT regime, but also on a critical analysis of its weaknesses.

In some countries, the IT regime is "expanded" by the fact that the exchange rate ceiling of the national currency is set along with the inflation target. This dual targeting regime — that of the inflation and exchange rate — is called HIT.

One of the weaknesses of the IT regime is that in the countries that mainly depend on imports and where inflation is also imported with imported goods, this regime does not have a proper effect. This case is subject to generalization. In particular, the IT regime can effectively cope with rising inflation only if it is the result of an increase in aggregate demand. If the source of inflation is an increase in production costs, the IT regime is almost helpless.

Post-communist Georgia has accumulated the sufficient experience of "inflationary" development, as a result of which the IT regime has been used since 2009.

The inflation indicator does not always reflect the important features of price dynamics, which is why some modifications of this indicator are used. In particular, over ten years, in many countries of the world they measure the agflation indicator, essential mainly for the countries where the problem of nutrition is particularly acute.

For developing relatively poor countries, the dynamics of average prices for treatment and utilities are also important. For this, the munflation indicator is used reflecting the dynamics of average prices for the product groups that are considered most important for the poor.

For import-dependent countries, the imflation indicator reflecting both the dynamics of import prices and changes in the exchange rate of the national currency is of particular importance.

The agflation or munflation indicators may not be of primary importance for central banks as they do not have relevant tools to regulate them. These modifications of the inflation indicator should be the main indicators for governments while developing economic and social policies.

As for the imflation indicator, it can be subject to regulation by central banks along with the inflation indicator. When the import prices are raised on the domestic market, central banks will be able to control this rise by regulating the exchange rate.

In the CIT regime, both inflation and imflation should become the target indicators for central banks. The fundamental difference between HIT and CIT is that while the exchange rate ceiling of the national currency is one of the target indicators (together with the inflation indicator) for HIT, then for CIT, the exchange rate of the national currency is a tool for regulating the target imflation indicator (used together with the inflation indicator in the CIT regime).

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New Models for Analyzing Changes in Company Value Based on Stochastic Discount Rates

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ABSTRACT

We propose new models for analyzing changes in the value of the company using stochastic discount rates. It is shown that for the majority of the companies under study, local changes in the rate of the company value growth (percentage changes to the previous level) are not explained by the corresponding changes neither in the weighted average cost of capital (WACC), nor in the cash flows. This fact, as well as the research results by J. Cochrane, who proved that discount rates volatility is the main contributor to price volatility, became initial prerequisites for building models based on stochastic discount rates. The work presents three models built on stochastic discount rates, where cash flows are assumed to be growing with a certain trend, and the factors affecting the price of the company are described by stochastic discount factors. These models are alternative in relation to the commonly used traditional cash flow discounting (DCF) models where the free cash flow is discounted through the WACC, or the free flow to capital at the opportunity cost of equity. The first model is used to analyze the dependence of the company value on investments. It uses free cash flow subject to zero growth. The second model uses net cash flow from operating activities plus interest, minus the minimum investment subject to zero growth. The third model uses net cash flow from operating activities plus interest adjusted to taxes. This model requires to estimate the rates of the company downsizing subject to zero investment. The third model is applicable for companies with volatile investments, where it is difficult to reliably estimate free cash flow in case of zero growth. The models are designed for analysis of the factors influencing the value of the company for value-based management. Another application of the models is the evaluation of investment value of the company and the answer to the question of its possible overestimated or underestimated value. The third way to apply this model is the empirical evaluation of the weighted average cost of capital applicable to the company's investment projects, alternative to WACC, assessed by standard methods.

Keywords: enterprise value; financial risks; free cash flow to the firm; weighted average cost of capital; stochastic discount rates; generalized method of moments

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INTRODUCTION

The relevance of the company value analysis is explained by the fact that it is necessary at least to solve two interrelated tasks: the value-based management and the future investment valuation of the company by an investor[1]. These tasks are usually set when choosing a company's capital structure, issuing stocks and bonds, investments, mergers and acquisitions, financial policies, considering investment projects, etc. One of the key issues is also the capital valuation (price, opportunity costs) and its impact on the company value.

From the Modigliani-Miller theory (MM) [1–3], it follows that the weighted average cost of capital is the discount rate applicable to the free cash flow to the firm [4]:

$$EV(0) = \frac{\sum_{t=1}^{\infty} FCF(t,0)}{(1+r(0))^t}. \quad (1)$$

At the same time, $FCF(t, 0)$ and $r(0)$ in (1) denote free cash flow to the firm and the weighted average cost of capital estimated at time $t = 0$. It should be noted that the MM theory does not at all imply that the expected amount of cash flows and the discount rate are constant, that is, they do not depend on the zero moment when the investor makes decisions about investments. However, as a rule, it is implied (by default) that the free cash flow to the firm is a parametric set of random variables depending on t (as a parameter) with an expected value that is also dependent on t, but not dependent on the evaluation time. Moreover, the stiffness of the structure and cost of capital are regarded as an obvious assumption, and instead of (1) a simplified model is usually considered [5]:

$$EV(0) = \frac{\sum_{t=1}^{\infty} FCF(t)}{(1+r))^t}. \quad (2)$$

Note that the generally accepted model (2) differs from model (1) in that the expected cash flows and discount rate do not depend on the moment of investment valuation [6], that is, the moment when the investor makes investment decisions.

Here r is the weighted average cost of capital (*WACC*), which is calculated as the average weighted by the share in the total value of the firm, the value of the average required return: equity, preferred shares and interest debt [6]:

$$WACC = \begin{bmatrix} MV(S)Re + \\ +MV(ND)Rd(1-T) + \\ +MV(PS)Rps \end{bmatrix} / EV. \quad (3)$$

Here $MV(S)$ is the capitalization (market value of ordinary shares), $MV(PS)$ is the market value of preferred shares, $MV(ND)$ is the cost of net debt, *Re*, *Rd* and *Rps* are the required return of the indicated components of the company's capital, and T is the effective corporate income tax rate. *EV* means the total value of a company — the sum of all its capital components [6]:

$$EV = MV(S) + MV(ND) + MV(PS).$$

At the same time, net debt usually means only long-term interest-bearing debt with the deduction of cash and short-term investments, although it is sometimes stipulated [5] that short-term debt, a permanent part of a company's capital (that is, not dependent on seasonal variations), can be adopted for calculation (3). The basis for such a long-term interpretation of the *WACC* in (2) and (3) is that this discount rate should be applicable to free cash flows to the firm, valuated for a very long time. At the same time, the possibility to change the capital structure of a firm is usually not considered. Representation (1)—(3) is not suitable for companies whose cash and securities exceed the debt (for

[1] It is necessary to distinguish a balance sheet valuation and an investment valuation. Balance sheet valuation determines the current market value of assets and is carried out in accordance with International Financial Reporting Standard (IFRS 13). Investment valuation refers to the future (estimated) value of the company and is made by investors in accordance with their internal regulations and methods.

example, Google or Surgutneftegaz). In these cases, it can be assumed that the company's activities, in addition to the main business, also include "financial business", and formulas (1) — (3) are modified in accordance with this assumption, but this goes beyond the framework of the classical MM theory.

One of the key shortcomings of the MM theory, which was immediately noticed by its critics (in particular, Stiglitz [7]), is ignoring the costs of a possible default and financial instability of a company.

In accordance with the traditional theory of capital structure, these costs are the main factor preventing the increase in financial leverage (the level of a company debt). In any case, the level of debt and the risk of default are always considered by the company managers and banks that provide loans.

Despite this, most theorists (including Modigliani, Miller, Myers and Merton) insist that these costs are insignificant, since for most large companies the risk of default is usually insignificant. However, if such companies start increasing their debt, literally following the conclusions of the MM theory (the company's value grows with debt growth), then their risk of bankruptcy becomes significant. This was illustrated by the 2008 crisis when a number of major companies were on the verge of bankruptcy. The main reason for reluctance to recognize the significance of the default risk for choosing a capital structure is that theorists usually come from rather artificial assumptions about an ideal market where bankruptcy really does not change the value of a company's assets. A striking example can be found in the classic work by R. Merton [8], where a stochastic model for the company's value is given and, based on the Black-Scholes model, a clearly contradictory practice and common sense concludes that the MM theory retains its significance even in potential event of default[2].

[2] This article, unfortunately, contains a number of serious errors that have not been critically evaluated and analyzed in the literature, except [18]. In particular, the use of the Black-Scholes model is possible only for stationary random processes.

Later, the traditional approach of the MM theory was questioned, and there arose the problem of choosing the optimal capital structure, resulting in later theories — trade-off and pecking order [9, 10]. The latter theory proposed by Myers is based on the fact that the transaction costs arising from the placement of new issues of debt or stocks can play a key role in choosing the capital structure. As an empirical base, this work used the conclusions by Donaldson [11].

In works by many authors, in particular, Strebulaev and others [12–14], stochastic modelling of changes in company value was carried out to find the optimal capital structure and default risk. The stochastic Merton model was used (but not theoretical conclusions) with heteroscedasticity and GARCH models.

An empirical test of the trade-off and pecking order theories applicability was made by Eu. Fama and K. French [15]. The result was that both of them have certain confirmations. Although this result is hardly satisfactory, since the two theories mentioned above contradict each other to a significant extent.

The works of the scholars belonging to V. Brusov's scientific school [16] consider a different approach to the development of the optimal capital structure of the company, taking into account the finite life of the company and suggests an alternative mechanism to develop the optimal capital structure of the company, different from the trade-off and pecking order theories.

R. Merton's theory critical analysis [8] was carried out in work [17] based on the empirical data. A theory similar to the MM one is being developed in work [18], however, it considers the corrections for default risk and transaction costs. The MM theory is shown to be correct when debt increases to a certain limit where there is no significant increase in financial risks for investors, including the risk of default. When debt increases this limit, the costs of default risk prevail over the benefits of tax shields. However, financial leverage is not the only factor affecting default risk, and therefore the capital structure in fact depends largely on such factors as the specifics

of the company, the success of its business, as well as macroeconomic, country and other risks.

Analyzing the factors that the company value depends on, according to model (1) or (2), two main groups can be distinguished: the factors affecting expected cash flows and the factors affecting the assessment of discount rates. In particular, although the MM theory refers to the overall impact of financial policy on the company value, the main group of considered factors is financial risks reflected in the WACC discount rate (3).

Basically, any risk factors can be reflected in calculating the expected cash flows in (1) or (2), or discount rates in (3). Both principles are theoretically equivalent, but in practice they usually give various results due to the variety in calculation methods.

For example, the *WACC* is usually calculated by means of model (3), where CAPM model is used to estimate the required return on equity that evaluates it solely from systematic risks [5, 6]. At the same time, methods for calculating beta and premiums for market risk can vary greatly among different researchers, and especially among different investment companies that use different empirical "corrections" to beta and market risk premiums — premiums for low liquidity, CDS, etc. The assessment of the required return on equity often includes adjustments for the company's individual risks, or country risks. Strictly speaking, the introduction of such amendments contradicts the theory of CAPM, since in the fully diversified portfolio of securities the effect of individual and country risks is zero in the limit. However, it corresponds better to the risk assessment by investors [19]. Numerous studies [20–23] have shown that it is the reassessment of risks that gives rise to fluctuations in the company value. This is consistent with the principles of risk assessment analysis in the Basel-3 standard for banks [24].

The study is based on the *WACC* calculated in the Bloomberg system, which usually experiences significant fluctuations associated with the systematic risks assessment, the risk-free rate and the premium for a systematic risk. However, changes in the WACC do not fully reflect the risks considered by investors in the discount rate. For example, it was shown in [25] that the *WACC* fluctuations calculated in the Bloomberg system often do not relate to the company value change, or this relationship exists, but it describes only about 10–20% of the variance.

Apparently, the main reason is that the WACC actually does not always and in full reflect the investors' assessment of the real risks of the company. In particular, investor risk assessment is subjective, unlike the WACC, which calculation is usually standard and objective.

From the rational investor expectations hypothesis it follows that, at least, professional investors use an estimate of the benefits derived from owning an asset during an investment horizon (for example, 1 year) and from its actual or potential sale after this period. This leads to a discounted cash flow (DCF) model for estimating the future value of assets, reflected by equality (1).

The relevance of the rational investor expectations hypothesis is challenged by the school of behavioral economics, including R. Thaler [26]. However, this mainly concerns the behavior of households and small investors. Indeed, it is difficult to assume that a housewife applies complex procedures to estimate future utility of consumption and chooses between current and future consumption by maximizing the Hamiltonian expressing the overall utility of consumption. However, there are qualified investors in the financial markets who usually use models like (1) to evaluate the future benefits of investment.

Theoretically, the influence of risks in model (1) can be considered either through cash flows or through discount rates and these approaches are equivalent and interchangeable. However, in real life it is not so: the expected cash flows are usually estimated based on the past experience, and the discount rates reflect future risks assessment by the investor.

An important conclusion was made in J. Cochrane's work [27], where the long-term correlation between the volatility of wide

indexes and their profitability was studied. This paper shows that the main role in the volatility of indexes reflecting the asset pricing (of companies) is precisely the volatility of the discount rate, and the volatility of cash flows contribution is close to zero. This conclusion by Cochrane was the starting point of this study.

Since the discount rates turn out to be responsible for the volatility of market prices, it should be assumed that they are stochastic in nature. Numerous works by various foreign authors [28–33] have considered models that use stochastic discount rates to analyze price changes in stock markets and product markets.

Accordingly, in the work the following research tasks were set:

- to determine the degree of dependency of stock prices of companies on the volatility of their cash flows and discount rates;
- to build cash flows and stochastic discount rates applicable for analyzing company prices,
- to develop a method for analyzing the company value based on appropriate stochastic discount rates.

MODELS AND METHODS OF RESEARCH

Going back to the MM model (2) and (3), we note that here the *WACC* discount rate depends mainly on the capital structure, interest rates, as well as on the systematic risks reflected in the beta coefficient and market risk premium.

At the same time, in (2) it is assumed that the discount rate and cash flows are determined at the time of investment valuation and for all the years ahead (to the investment horizon and even further). The discount rate is determined in accordance with the current *WACC* (3), and the expected cash flows are also estimated at the present time, and this estimate is maintained in the future (that is, it does not depend on the estimation point).

If we assume that this estimate of the expectation and discount rates in (2) may change over time, then we turn to model (1), and also, possibly, to non-stationary cash flows and future discount rates outside the MM and CAPM theories applied at the time of investment valuation.

For example, in conditions of nonstationarity, the basic principle on which the MM theory is based is the impossibility of arbitration. If the expected cash flows of two companies today are equal, but they are not stationary, then the next day (month, year, etc.), they can already be different and then the companies can no longer be considered equivalent.

On the contrary, in general model (1) the discount rate and cash flows can depend on both time and the moment of their assessment by the investor. It is assumed that the assessment of discount rates is changeable and substantially depends on the models used by the investor.

In work [25], low sensitivity of investors to random fluctuations of the company cash flows at intervals from one quarter to three years was established. At the same time, there is no doubt that for fast-growing companies, a significant change in the trend of the expected future cash flow (or, equivalently, the expected growth rate of the cash flow) influences the estimation of the company value by investors. However, this can be attributed to the expected rate of growth of cash flow in the future, and random fluctuations in cash flow themselves do not seem to have a noticeable effect on price, unless investors perceive them as a change in trend.

Based on the empirical data and results by J. Cochrane [27], it can be assumed that investors are guided by a certain average level of cash flow, considering the expected average growth rate. At the same time, the average growth rate can also experience stochastic fluctuations affecting the price of the company. Further it will be shown that these fluctuations are indistinguishable from fluctuations of the discount rate, and therefore, they can be considered as one parameter — the stochastic discount rate of cash flows given at some expected level with a constant average growth rate.

For the beginning, a specific model of generalized moments was chosen, in the variant proposed by Cochrane [35] as the most general model for analyzing the company value. It is based on the general concepts of the utility function and the useful return on an asset:

$$p = M \times CF. \quad (4)$$

Here, p — is the expected total company value (or its capitalization), M — is the vector of infinite dimension of stochastic discount rates (points) in the future moments of time, and CF — is the vector of expected cash flows from the asset (investor's gain on ownership of the asset). Model (4) is similar to model (2), but at the same time, discount rates may depend on time (in the MM theory they are constant), and free cash flows to a company or capital do not necessarily act as cash flows from an asset, as is commonly believed (this issue is discussed below).

The method of "generalized moments" in model (4) does not necessarily set the task of statistical estimation of the best parameters of econometric models classically (see L. Hansen and T. Sargent [36]). Similar to classical method [36], stochastic discount rates are found by minimax methods, as parameters of the C–CARM economic model, and describe intertemporal investor preferences associated with changes in the relative value of consumption and savings. To justify the stochastic discount factors, J. Cochrane also uses the Arrow-Debreu macroeconomic theory of consumption, based on the choice between future and present consumption. This theory is fundamental in modern economic theory, and Jean Tirole [37], in particular, notes that the MM and C–CARM theories can be obtained from the Arrow-Debreux theory of macroeconomic equilibrium. However, Cochrane [35] also notes that model (4) is of more general nature and the stochastic discount rates in (4) are not necessarily related to the C–CARM.

The model proposed in this paper considers stochastic discount rates as a reflection of the assessment of macroeconomic, systematic and systemic risks common to the entire industry where the company belongs. As a result, general model (4) takes the following form:

$$EV(0) = \frac{\sum_{t=1}^{\infty} CF(t,0)}{(1+r(t,0))^t}. \quad (5)$$

Here $CF(t, 0)$ — is the investor's expected future cash flow that develops the company value (in model (1) and in the MM theory, there is only free cash flow), and $r(t, 0)$ — is the predicted discount rate. Note that in model (5), in contrast to (2), expected future cash flow and discount rates depend on future periods and on a zero point in time — this is the moment when the investor analyzes investments and makes decisions about investment and financial policies.

As already noted, R. Thaler criticizes the hypothesis of rational expectations of investors and proves that the concept of intertemporal preferences of investors, based on optimizing their expression (4) with discount factors that do not depend on the reference point, does not correspond to the real behavior of investors. He especially emphasizes that the discount rates may change (shift over time) with a change in the point of reference (the moment of investment valuation). For example, in the case of hyperbolic discounting, an investor always uses a higher rate for more distant points in time.

Model (5) considers the possibility of hyperbolic discounting. Moreover, with a choice of expected cash flows $CF(t, 0)$ and discount rates $r(t, 0)$, model (5) will exactly match any individual investor model. The reason for this universality is that $CF(t, 0)$ in model (5) can correspond to any factors reflecting the benefits of the investor or related to the company value. Also, any method of assessing risks not included in the estimation of the expectation of cost or benefit factors can be considered in the discount rates $r(t, 0)$.

Research results [18, 25] showed that short-term fluctuations in the value of the companies reviewed, measured as a percentage change, are usually not associated with the same fluctuations in free cash flow, net cash flow, or the *WACC*. It also shows for fast-growing companies, for example, such as PAO Novatek, the trend of growth in cash flows entails a similar trend for the company value. At the same time, random deviations of cash flows and company value from this trend are in no way connected. Also, for companies with a stable ratio of free cash

flow to net cash flow, model (1) can be used to discount the free cash flow.

As a result, we can define three postulates underlying the model:

1. In his assessment the investor uses the expected cash flow, which changes with a stable trend. At the same time, the trend assessment may also change, that is, the trend may depend on the moment of evaluation.

2. The investor considers the constantly changing assessment of risks in discount rates, which as a result change in an unpredictable way, that is, they are essentially stochastic factors.

3. At the same time, changing risks can be reflected either in a change in the cost of capital, or in a change in the trend of growth of cash flows. Both factors are stochastic in nature and independent by default.

What follows is the key to the proposed method, the division of cash flows into minimum cash flows and growth flows. Namely, expression (5) for the company value can be written as the total of two components, where the first represents the company value with minimal investment, ensuring that the current business is maintained at a constant level, but does not ensure the growth of the company, and the second is development investment:

$$EV(0) = \frac{\sum_{t=1}^{\infty} CF0(t,0)}{\left(1+r(t,0)\right)^{t}} + \frac{\sum_{t=1}^{\infty} CF1(t,0)}{\left(1+r(t,0)\right)^{t}}. \quad (6)$$

Here, minimum cash flow $CF0(t, 0)$ includes the minimum investment required to maintain the company cash flow at a constant level (the growth rate is zero). The second part of $CF1(t, 0)$ includes additional investments and cash flows expected from investments.

Further, for simplicity (but without loss of generality), general model (6) will be considered for the particular case of the standard method of calculating the total company value for free cash flows to a company. In this case, the first part is an investment project to support the current business with a zero growth rate, and the second — is an investment project to accelerate the growth of the company, leading to an increase in growth rate, or to its decline to negative values. The first part is the company value subject to the minimum investment, and the second — is the net present value of the additional investment (positive or negative).

Both projects are optional — the owners and managers of the company may reject the second project, or even both projects. For example, a project with an investment below the minimum level may be accepted, resulting in a negative growth rate. Moreover, a project of curtailing activities by withdrawing funds from the company can be adopted. In particular, it can be realized by repurchasing shares, or paying dividends through loans. In this case, the cash flow of the second project FCF1 (t, 0) will be negative, and the project will contribute negative value added. Further, for simplicity, we will assume that the second project always has a positive value added (that is, the company has a positive average growth rate).

We will write down (6) as:

$$V(0) = EV\min(0) + PV(0),$$

$$EV\min(0) = \frac{\sum_{t=1}^{\infty} FCF0(t,0)}{\left(1+r(t,0)\right)^{t}},$$

$$PV(0) = \frac{\sum_{t=1}^{\infty} FCF1(t,0)}{\left(1+r(t,0)\right)^{t}}. \quad (7)$$

For the first part, the expectation of cash flows is constant. We will base on the standard method derived from the MM theory — the calculation of the total company value for free cash flow and denote the cash flow corresponding to the zero growth rate, by $FCF(0)$:

$$EV\min(0) = \frac{\sum_{t=1}^{\infty} FCF0(0)}{\left(1+R(0)\right)^{t}}. \quad (8)$$

Here $R(0)$ is the average discount rate for a cash flow of a firm with zero growth rate.

For the second part, cash flows become positive after the investment period. Instead of the time-dependent discount rate $r(t, 0)$, we can go to the constant rate:

$$PV(0) = \frac{\sum_{t=1}^{\infty} FCF1(t,0)}{(1+r(0))^t}. \quad (9)$$

Expression (9) determines the present value of an investment growth project with a positive growth rate. At the same time, it follows from (7) and (9) that the cash flows $FCF(t, 0)$ in model (6) grow with a certain average growth rate $g(0)$ relative to cash flow $FCF0(0)$ with a zero growth rate, which means we can write down the expression (6) as:

$$EV(0) = \frac{FCF0(0)}{R(0) - g(0)}.$$

As a result, for the moment of analysis τ, we obtain the final model to analyze the company value $EV(\tau)$ by use of the stochastic discount rate $r(\tau)$, satisfying postulates 1–3 (see above):

$$EV(\tau) = \frac{FCFe(\tau+1)}{r(\tau)}, \quad (10)$$

$$r(\tau) = \frac{FCFe(\tau+1)}{EV(\tau)} = R(\tau) - g(\tau).$$

Here τ — is the moment when the investor analyzes the investment and makes decisions about investment and financial policy, $FCFe(\tau)$ — is the expected free cash flow to the company with zero growth, $R(\tau)$ — is the calculated discount rate of the company cash flow at zero growth rate, and $g(\tau)$ — is the average growth rate of the company, estimated at time τ.

For free cash flow at zero growth rate in (10), its expression can be used through the expected operating cash flow *CFOexp* (this does not consider profit from financial and investment activities, which is assumed to be insignificant):

$$FCFe(\tau+1) = CFOe(\tau+1) + Int(1-T) - Inv0, \quad (11)$$

$$r(\tau) = \frac{FCFe(\tau+1)}{EV(\tau)} = R(\tau) - g(\tau).$$

Here, free cash flow to a firm is expressed in terms of the average expected operating cash flow to a *CFOexp* firm (τ + 1), deducting the minimum investment required for zero growth of investment *Inv*0 plus interest after taxes *Int*(1-*T*). At the same time, free cash flows in models (10) and (11) depend on the moment of analysis τ, since expressions (8) and (9) are defined for zero moment of investment analysis. To estimate the minimum investment required for zero growth, we can take depreciation adjusted for the replacement value of assets.

All parameters of models (10), (11) are independent stochastic values. However, for the analysis of the company value, only the difference between the cost of capital with zero growth $R(\tau)$ and the cash flow growth rate $g(\tau)$ is important, not each value separately.

If the expected cash flows from operating activities, the minimum investment, the average growth rate and the cost of capital can be separately estimated empirically, then models (10), (11) can be used for factor analysis of changes in the company value compared to its expected value. It is assumed that even a zero growth rate requires some minimal investments that can be assessed.

The problem with free cash flow to a firm is that its relationship with the company value is usually not obvious. For companies with a high growth rate, this flow can be negative for a long time, or its average value can hardly change at a very high growth rate of the company. Therefore, for companies with unstable investments, free cash flow to a zero-trend firm may be difficult to determine analytically.

In these cases, it is preferable to use the net cash flow from operating activities plus interest (that is, the condition of zero investment). This may correspond to a free cash flow, but it is possible that it is not with zero, as assumed in model (8), but with a negative growth trend. For this case, model (10) is as:

$$R(\tau)=\frac{CFO(\tau+1)+Int(1-T)}{EV(\tau)}= \\ =R(\tau)+e(\tau)-g(\tau). \quad (12)$$

The designations in (12) are similar to (11). Here $g(t)$ — is the growth rate of the company-value, but an additional variable $e(t)$ is also added, describing the decline in the company value under the condition of zero investment.

Models (10), (11) and (12) differ from model (4) by J. Cochrane [35], as well as from the method of generalized moments by L. Hansen and T. Sargent [36] in the fact that the stochastic discount rates are not associated with intertemporal investor preferences. Instead, they describe the stochastic discount rate, which depends on:

- first, the cost of capital depending on macroeconomic and financial risks,
- second, the changes in the expected future rate of growth of cash flows.

At the same time, both parameters — the cost of capital and the rate of growth — can be considered as stochastic variables associated with both systematic and individual risks of a company, country, or industry. Here, at least two approaches to models (10) or (11) (but not (12)) are possible:

1. If it can be assumed that the estimated cost of capital based on its weighted average value *WACC* calculated by standard methods (3)[3] corresponds to the return required by the investor, then model (10) or (11) can be used to estimate the company stochastic average growth rate reflecting volatility of the company value.

2. On the contrary, it may be assumed that the investor can reliably estimate the average rate of a company future growth, calculated, for example, from long-term macroeconomic forecasts. At the same time, it is obvious that the estimate of the past growth rate according to statistical data can be interpolated into the future only if there is a reason to assume that the trend will continue (as, for example, with oil companies). Then, from model (10) or (11), an empirical estimate of the stochastic cost of capital is obtained, considering the risks that were not taken into account when analyzing the expected cash flows and their growth rate.

Note that in the second case, a reasonable empirical assessment of the discount rate is obtained, applicable to the company's investment projects, which gives an alternative *WACC* rating, preferable to the common methods based on the CAPM and MM.

Model (12) can be used with the same two objectives, provided that it is possible to reliably estimate the rate of "closing" of the company's activity at zero investment. This model is designed for companies whose free cash flow is insignificant (or even negative) due to high investment in development — for example, companies in a stage of rapid growth or who make significant investments to modernize their business. For such companies, the effects of investment can occur only in the distant future, but the cash flow from operating activities allows to reliably estimate the value of the business.

RESULTS OF EMPIRICAL ANALYSIS OF STOCHASTIC DISCOUNTING BETS AT INDIVIDUAL COMPANIES

Empirical research was conducted on the example of several companies in the oil and gas sector (including BP, Shell, Novatec, Lukoil, Gazprom), since in this sector companies usually have moderate growth rates (close to zero) and the company value changes dependence on the trend does not changes the results significantly. Later, several non-primary sector companies with opposite properties regarding systematic risks were added to them (including Coca-Cola, Sony, Apple, Nike). *Table 1* shows selected results of a study on the independence of relative changes in the company value in the oil and gas sector from changes in cash flows and the *WACC*. The analysis of changes in the relative growth of these indicators to the previous value was used, the essence of which can be illustrated by the expression[4]:

[3] At the same time, investment companies apply various amendments to the classical theories of CARM and MM — see [4–6, 19].

[4] Panel analysis of changes in absolute values often leads to false regressions due to their nonstationarity. However, the relative change in percent growth, as a rule, is of TS nature.

Table 1

Independent changes in the value of oil companies and Coca-Cola from cash flow and *WACC*

Company	FCF (p-val.)	CFO (p-val.)	*WACC* (p-val.)	R^2	F-stat (p-val.)	MCAP (p-val.)	R^2 for the Mcap
BP	0.64	0.6	0.78	0.01	0.89	10E-57	0.97
Shell	0.35	0.38	0.5	0.13	0.07	–331.57	0.94
Coca-cola	0.61	0.65	0.95	0.01	0.97	0.98	1.6E-05
Rosneft	0.63	0.32	0.14	0.07	0.4	2.6E-27	0.94
Lukoil	0.31	0.71	0.4	0.02	0.68	5.1E-45	0.96
Gazprom	0.85	0.24	0.38	0.07	0.23	2.62E-27	0.94

Source: compiled by the author.

Table 2

Comparison of *WACC* values and stochastic discount rates by models (11) and (12) for BP company

	WACC	CFO mln $	FCF mln $	Rcfo	Rfcf	EV mln $	Mcap mln $
Median	0.088	539	135	0.012	0.003	144.000	111.000
St.Var.	0.19	1.84	0.46	0.21	0.21	0.27	0.38

Source: compiled by the author.

$$d\ln(x)=\frac{dx}{x}=\frac{\Delta x}{x}.$$

Table 1 shows that local changes in cash flows and the *WACC* do not affect the changes in the value of the oil companies and the Coca-Cola Company. Thus, two conclusions can be made:

1. For many companies, relative *WACC* changes are not a reliable measure of risk change. This statement is true, at least for the given sample, but presumably for a significant number of companies.

It is for this reason that the method of stochastic discount rates has an undoubted advantage over the traditional methods of estimating the *WACC*. Moreover, in real life, these methods almost always include subjective additives on country risk, liquidity risk and other individual risks (which do not correspond to the classical CARM theory).

It should be noted that for some of the studied companies not included in the *table 1* (for example, Apple), the significance of dependence (p-val.) is within acceptable values (less than 0.05). However, the coefficient R^2, characterizing the fraction of the variance explained, is in all cases too low to speak of a significant dependence (its value, as a rule, does not exceed 0.15).

2. Local changes in the rate of growth of cash flows also do not affect the changes in the rate of growth of the company value.

This does not apply to a change in the trend of growth of cash flows, reflected in stochastic discount rates in models (10), (11) and (12). In this case, models (10), (11), (12) are not based on actual current values of cash flows, but on their expected values obtained from historical data, after smoothing the effects of fluctuations.

Table 2 shows the results of the *WACC* study for the BP company.

Table 2 shows that for the BP company the real discount rates are significantly lower than the *WACC*. For example, if calculated according to model (12) on a net cash flow plus interest (without investment), the WACC value is 7.6% higher than the estimated stochastic discount rate.

This difference cannot be explained by the expected growth rate of the company, which

Table 3

Mathematical expectation and variance of *WACC* and stochastic discount rates by models (11) and (12) for Sony and Shell companies in 2000–2016

Company		*WACC*	CFO mln $	FCF mln $	Rcfo	Rfcf	EV mln $
Sony	Median	0.084	1252	503	0.05	0.02	30,901
Sony	St. Var.	0.026	1.1	2.8	1.2	3	0.59
Shell	Median	0.085	8000	2880	0.055	0.00002	1200
Shell	St. Var.	0.14	0.4	1.2	0.36	1.4	2.6

Source: compiled by the author based on quarterly data from Bloomberg.

for BP (as well as for most other major oil companies) is close to zero. It seems that using the *WACC* as an approximation to the cost of capital for such companies as BP is unreasonable. It can be concluded that for BP (as for other studied oil companies) the *WACC* does not reflect the cost of capital and one should use the stochastic cost of capital derived from (11) for a given average rate of growth of cash flows. With regard to other sectors of the economy (e.g., IT), such a conclusion cannot be made unambiguously.

It may be concluded is that for oil companies the cost of capital is overestimated due to the overestimated values of the equity cost according to the CARM model. The main problem, apparently, is that the historical assessment of beta does not provide an adequate approximation for macroeconomic risks.

A similar assumption can be made for companies in non-resource sectors — the CARM model gives an overestimated equity cost, but the reasons for this effect are a separate issue that requires analysis, which are not the objectives of this study.

Moreover, for these companies the use of free cash flow gives distorted results due to the fact that it includes investments, highly volatile and discretionary by nature. Thus, for BP (as for most other reviewed oil companies, except Novatek), it is preferable to consider not the free cash flow to the company, but the net cash flow from operating activities plus interest, as well as to use model (12).

This choice is even more preferable for such fast-growing companies as, for example, Apple and Facebook. For fast-growing companies, free cash flow to the firm is usually not suitable as a factor for analyzing the value because it is usually very low due to high investments and almost never reflects the growth rate of the company. Moreover, in these cases quite often negative free cash flow to the company is observed.

There are also exceptions to this rule — companies such as Novatek and Coca-Cola have stable investments in relation to cash flow, for them free cash flow and net cash flow from operating activities are closely related and any of models (10), (11) or (12) can be considered. However, even in these cases, the cash flow of operating activities plus interest and the model (12) is more appropriate as a base cash flow.

For other reviewed oil and gas companies, using the *WACC* calculated in accordance with the MM and CAPM theories (or C–CAPM) as a discount rate for cash flow also usually gives an estimated growth rate that is too high compared with empirical data. At the same time, this effect of overestimation is different for different companies. For example, for Sony and Shell companies, this effect is no longer so obvious (*Table 3*),

if we take the discount rate for the net cash flow from operating activities.

The growth rate for these companies is about 3%, which is slightly higher than the estimated average rate of growth based on actual data. Another approach can also be used — to calculate the expected growth rate using empirical data, or even assume it is constant. In this case, the cost of capital can be only considered as a stochastic variable.

In fact, in accordance with (2), investments have an impact on the growth rate of cash flows, and therefore in model (6) they are automatically considered in the stochastic discount rate.

The result is the following method for analyzing the company value by discounted cash flow.

1. One of the models is selected as the basis:

- free cash flow to the company, subject to minimal investment, ensuring zero growth — model (10);
- net cash flow from operating activities plus interest, minus the minimum investment — model (11);
- net cash flow plus interest — model (12).

Cash flows are assumed to be stochastic, with a fixed, expected value at the current moment and a stochastic growth rate in the future (reflected in the discount rate). The average current cash flow growth rate is determined by empirical data that can be adjusted according to the scenario analysis of future opportunities.

2. The statistical characteristics of stochastic discount rates are determined based on models (10), (11) or (12). These parameters can be adjusted by sampling, corresponding to the expected stage of the business cycle, or by another method (for example, in accordance with the VaR estimation methods proposed in Basel-3). Further, the discounted rates are applied to analyze the company value, its growth rate, or the weighted average cost of capital.

SUMMARY

The paper proposed three models (10), (11) and (12) for empirical calculation of stochastic discount rates applicable to analyze the factors that influence changes in the company value.

Model (10) is applicable for analyzing the dependence of the company value on investments and it applies free cash flow subject to zero growth.

Model (11) is applicable for the empirical calculation of the weighted average cost of capital at a known average future growth rate of the company. It uses net cash flow from operating activities plus interest less the minimum investment subject to zero growth.

Model (12) is applicable for analyzing the company value by net cash flow from operating activities plus interest. This model can be sued by companies with unstable investments, for whom it is difficult to reliably estimate free cash flow under conditions of zero growth. In this model, an assessment of the negative growth rate of the company (collapse of its activities) is required, subject to zero investment.

All three models are intended for empirical evaluation of factors affecting the company value, in order to manage it. These models are alternative to traditional DCF models, where free cash flow is discounted through the *WACC*, or free flow to capital at the opportunity cost of equity.

It is shown that for most of the studied companies, local changes in the rate of growth of company value (percentage changes to the previous level) are not explained by the corresponding changes either in the *WACC* or in the cash flows. This fact, as well as the results by J. Cochrane [27], became the presuppositions for the construction of models based on stochastic discount rates (10), (11) and (12).

In models (10), (11), (12), cash flows are assumed to grow with a certain trend, and stochastic factors affecting the company value are described by stochastic discount factors.

Other possible applications of models (10), (11) and (12) are the analysis of the company investment value, the answer to the question whether the company is overvalued (or undervalued) by the market and the estimated (empirical) weighted average cost of capital applicable for investment projects.

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Financial and Economic Performance of the Russian Railways in the Context of Reform

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ABSTRACT

The performance of companies in the real sector of the economy is highly relevant for the economic development of the country. The Joint Stock Company "Russian Railways" (the JSCo "RZD") occupies a special place in the Russian economy, since it does 45% of the total cargo turnover and more than 25% of passenger traffic in the country. The aim of the article is to identify trends in key financial and economic indicators of the Russian railways in the context of the structural reform of the industry. The objective of the study is to develop a methodology for the long-term management of the financial and economic performance of the railways, as well as recommendations for its sustainable growth. The authors analyzed the financial and economic performance of the JSCo "RZD" for 15 years. They used the analysis of time series, logical and analytical method, as well as benchmarking — comparative analysis based on reference indicators. It is shown that with a low but positive profitability, the company's financial and economic situation can be improved. The authors reviewed the dynamics of the operating costs ratio, whose value has an excessively high level in the JSCo "RZD". To identify ways to achieve the optimum level of operating costs ratio, an analysis of financial and economic indicators of the US railway companies was conducted. The factors contributing to the systematic improvement of the operating costs ratio were revealed. Among them are: increase in the JSCo "RZD" market opportunities and their competent use based on flexible adaptation to market conditions and changing customer needs; attraction of private and private-state investments. On this basis, the following actions are proposed for improving the financial and economic indicators of the JSCo "RZD": monitoring of the operating costs ratio; developing a scenario program to improve the long-term competitiveness and effectiveness of the Russian Railways for the period of 2025–2035. The materials of the article are of practical importance and can be used by public authorities, transport companies, as well as for the educational purposes.

Keywords: railway transport; economic and social development; financial and economic sustainability; long-term dynamics of profitability; investment in transport infrastructure; macroeconomic trends; operating costs ratio; state economic policy; structural reform in railway

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INTRODUCTION

Railway transport, which performs more than 45% of freight turnover and over 25% of passenger turnover of the transport system of the Russian Federation, is of key importance for its economic and social development. It is noteworthy that the correlation coefficient "between the volumes and the dynamics of loading in the railway transport of the Russian Federation and the industrial production indicators in the country" for a long-term period is close to one [1, p. 66]. As shown in study [2, p. 133], "loading growth rates in the railway transport are not only adequately, but often more ... accurately reflect changes in the economic situation in the country than the traditional macroeconomic indicators".

Considering such a significant socio-economic role of railways in Russia, the importance of financial and economic sustainability and the effectiveness of their activities go beyond the framework of the transport industry, acquiring a macroeconomic character. Thus, according to the Comprehensive plan for the modernization and expansion of the trunk infrastructure approved by the Government for the period up to 2024[1], the implementation of a number of significant projects for the country's economy is directly linked to the financial capabilities of the JSCo "RZD". After all, investments in the development of transport infrastructure are rightly seen as "investments in long-term economic growth" [3, p. 14]. They are extremely important in order to reverse the emerging negative macroeconomic trends [4]. Investments in transport infrastructure, based not only on the use of budgetary sources, but also on the financial capabilities of the industry itself, are an important tool for implementing the objectives of state economic policy to accelerate growth and improve the efficiency of the Russian economy [5]. At the same time, "the crucial role ... will play ... *infrastructure projects* that increase the coherence of the economic space of the country, reduce producer costs and shorten the economic distance, especially in the eastern and northern parts of the country" [6, p. 9]. The most important projects for the development of the railway network, such as the modernization of the Baikal-Amur Mainline (BAM) and the Trans-Siberian railway (Transsib), are funded with the participation of the JSCo "RZD"[2]. Therefore, the financial and economic results of the Russian railways are of interest not only from the point of view of corporate or industry analysis, but also from macroeconomic, public, and state positions. A long-term analysis of these results should consider the context of the structural reform carried out in the railway transport.

The aim of the study is to identify trends in key financial and economic indicators of the Russian railways in the context of structural reform of the industry, comparing them with the financial and economic results of the US railways achieved under the reform, and developing a methodology for the long-term management of the financial and economic efficiency of railways with specific recommendations to ensure sustainable growth of efficiency of the JSCo "RZD".

ANALYSIS OF DYNAMICS OF JSCO "RZD" PROFITABILITY

According to the Structural reform programme of the railway transport, one of the tasks of the reform was to reduce the "total national economic expenses for the carriage of goods by rail" [7, p. 9]. This implies the implementation of measures to save the operating costs of the industry. Moreover, "increasing the investment attractiveness of the railway transport system" [7, p. 10] was highlighted among

[1] Order of the Government of the Russian Federation of 30.09.2018 No. 2101-r. "On approval of the Comprehensive Plan for the modernization and expansion of the trunk infrastructure for the period up to 2024". URL: http://government.ru/docs/34297/ (accessed on 13.05.2019).

[2] Long-term development program of JSCo "RZD"until 2025. (Approved by the order of the Government of the Russian Federation dated 03.19.2019 No. 466-R). URL: http://government.ru/ docs/36094/ (accessed on 13.05.2019).

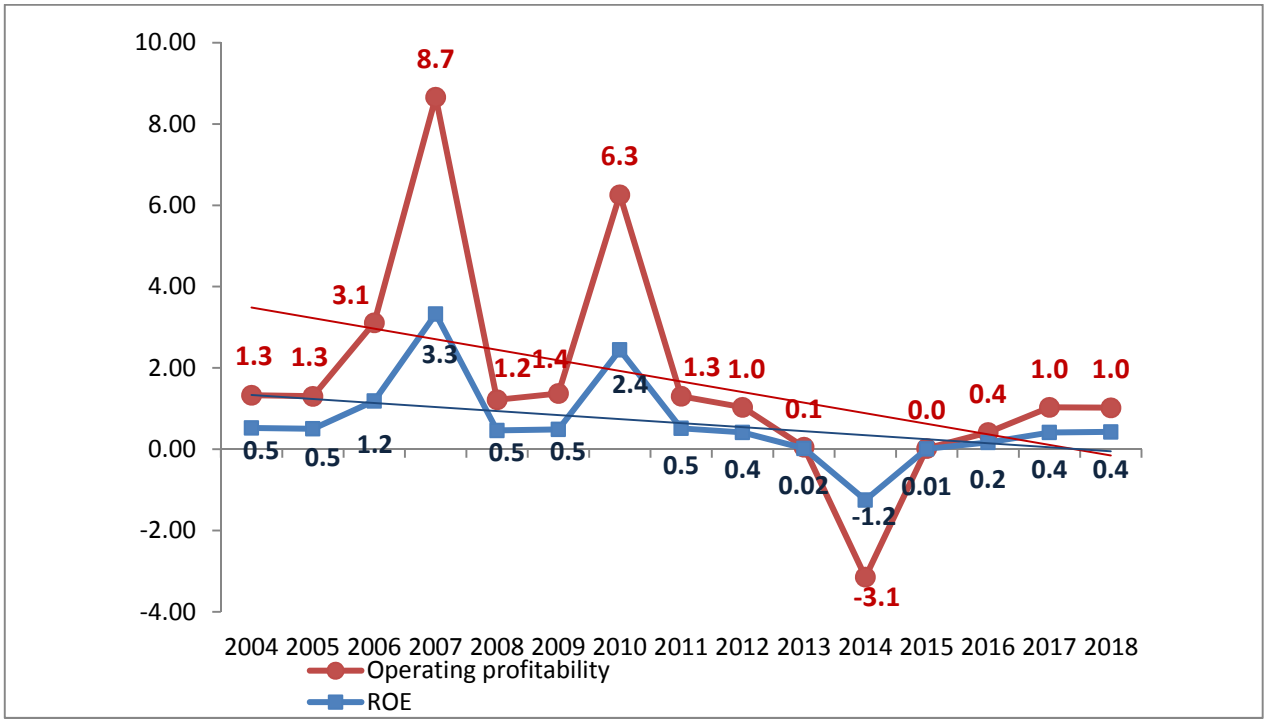

Fig. 1. **Long-term dynamics of profitability of the JSCo "RZD", %**

Source: calculated by the authors based on the data from the JSCo "RZD". URL: http://www.rzd.ru (accessed on 25.03.2019).

the tasks of the reform. This requires increasing returns and profitability of the industry.

The initial moment of the study was the analysis of the long-term changes in the profitability of capital and the main activity of the systemic railway transport company, the JSCo "RZD", during the industry reform and in the post reform period (*Fig. 1*).

As it is seen from the graphs, the level of the JSCo "RZD" profitability is low. Individual "bursts" are explained, to a large extent, by purely financial factors that occurred at a particular period of time. Thus, in 2007, a sharp increase in the profitability was associated primarily with the excess of the monetary value of the contribution to the authorized capital agreed by the founders over the book value of the transferred property (financial result: + 66.8 billion rubles), as well as with financing received from the budget (financial result: + 12.8 billion rubles).

A significant increase in the profitability in 2010 is explained not only by a more rapid growth in transportation revenues (+12.8%) compared with operating costs (+7.9%) in the context of the post-crisis revival of demand for transportation, but also by selling fixed assets and other assets (financial result: +14.7 billion rubles.). It is worth noting that although in 2010 compared to 2009, targeted financing received from the budget and extrabudgetary funds decreased by 24.6 billion rubles, in general, the profit in terms of the difference between other income and expenses increased by 5.7 billion rubles to the level of 2009.

On the other hand, the negative profitability in 2014 is also largely due to purely financial factors that were simultaneous with an accelerated increase in operating costs compared to revenues. Gross profit from transportation decreased slightly in that year by 4.3 billion rubles, and the main negative result was obtained due to exchange differences from the changed value of assets and liabilities payable in foreign currency (financial result: –142.5 billion rubles).

Thus, under the conditions of the generally low profitability of the JSCo "RZD", the effect of the short-term financial factors on its level turns out to be very significant. The level of

the profit and profitability is significantly affected by the assessment of the value of fixed assets, whose share in the property of transport companies is about 80% [8] and the applied accounting standards [9]. Based on the undoubtedly key performance indicator of the current activities of any company, this does not allow to fully reliably assess the financial and economic results and the stability of the Russian railways. Therefore, downward long-term profitability trends due to the "bursts" in 2007 and 2010 and the equally local "failure" in 2014, also cannot be considered a priori sufficient for meaningful, objective conclusions.

RATIO ANALYSIS OF JSCO "RZD" OPERATING COSTS

Amid the improvement of financial statements indicators of companies [10] is recognized, it is advisable to consider other indicators, such as the ratio of operating costs. This indicator is defined as the ratio of the operating costs of the railway (a railway company) to the amount of revenue from traffic, i.e. it characterizes the share of revenue from traffic used to ensure the operational (current) activity. The advantage of this indicator is that it allows to evaluate the economic efficiency of the current activities of railways, eliminating the influence of purely financial factors, such as exchange differences, the difference between the monetary value of the contribution and the value of the transferred property, the creation and restoration of reserves.

Obviously, the target result of any joint-stock company is an increase in net profit. This also applies to the JSCo "RZD" (with its specifics related to 100% state ownership of shares, a systematic role in the economy and high corporate social responsibility), and, moreover, to private railway companies. Therefore, profitability is an indicator of the effectiveness of activities aimed at making a net profit. After all, it is not the profit itself that is important, but its ratio to the capital and the current costs (or income). However, the growth of profit and profitability of the railway in the long term, given the high capital intensity, labor intensity and repair capacity of the industry, can be sustained only if it relies on optimizing operating costs and increasing revenue from traffic. It should be noted that the expenses optimization in the economy of railway transport is not the achievement of their mathematical minimum, but bringing the costs "into line:

- with traffic volumes and the income received from them;
- with the requirements of traffic safety;
- with the creation of technical conditions for future work " [11, p. 87].

Therefore, the assessment and the analysis of profitability are advisable to supplement with an assessment and ratio analysis of operating costs. The long-term dynamics of ratio analysis show whether basic economic conditions are created to ensure a stable and high level of financial efficiency (profitability) or, instead, there is a threat of financial instability or even loss in the future.

It's not a coincidence that the ratio of operating costs, previously called the "operating factor", was considered among the key indicators characterizing the "value of railways in the financial part of the national economy" in the first century of railway [12, p. 249].

In the second half of the last century, one of the most prominent domestic economists dealing with the problems of railway transport, academician T. S. Khachaturov, used this ratio to compare long-term changes in the efficiency of the railways of the most developed countries in the world [13, p. 52].

Operating costs ratio is used in management and analytical activities in the North American rail industry. At present, attention to this indicator is being revived in our country, and its long-term dynamics are of undoubted interest in assessing the effectiveness of the activities of the Russian railways in the context of reform (*Fig. 2*).

It should be noted that similar indicators are used in the non-transport sphere: cost income ratio [14] and share of expenses in revenue [15].

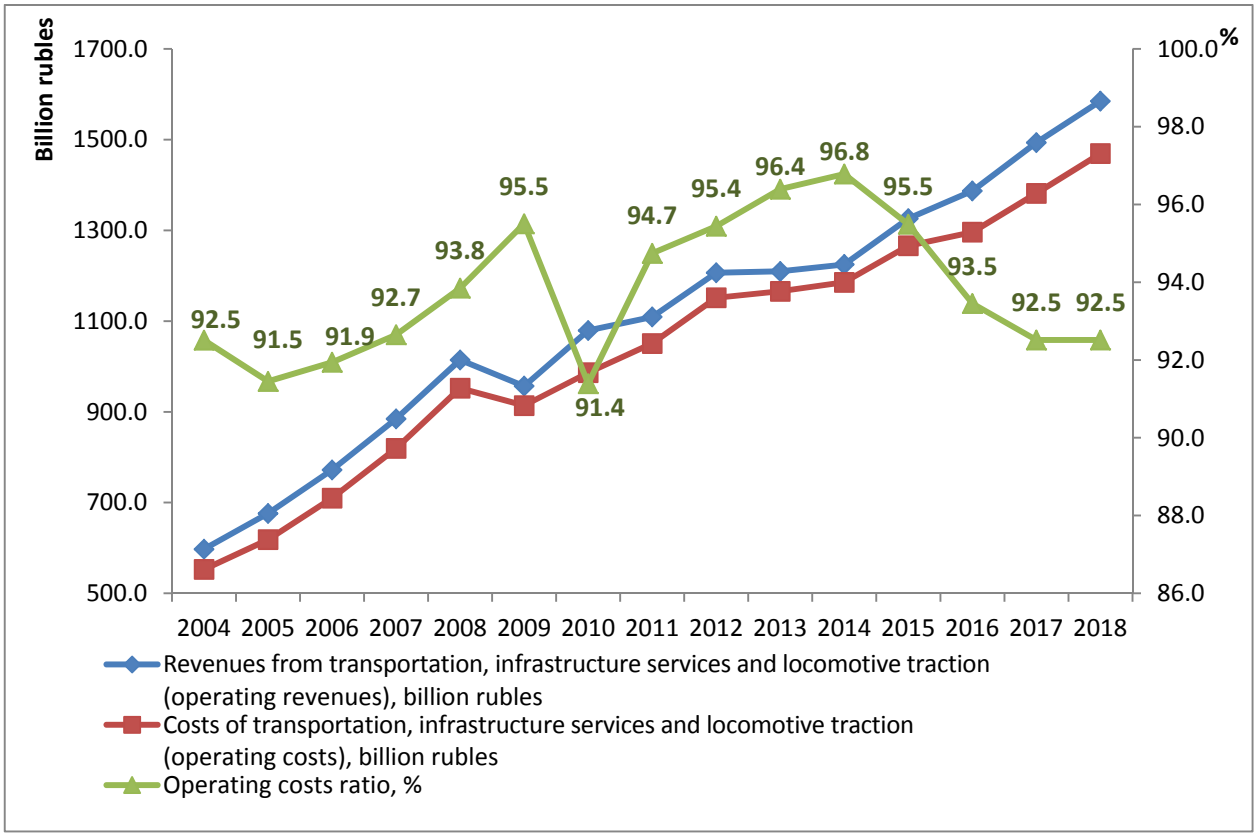

Fig. 2. **Long-term dynamics of the JSCo "RZD" operating costs ratio and the indicators affecting it, %**

Source: calculated by the authors based on the data from the JSCo "RZD". URL: http://www.rzd.ru (accessed on 25.03.2019).

To increase the value of this indicator in the management of railway transport, it is advisable to use a scale of its zonal values based on the results of the analysis of the work of large railway companies [16] and containing qualitative characteristics for each range of values of the operating costs ratio (see *table*). At the same time, the current level of operating costs ratio is the basis of recommendations for management decisions, the result of which should be the achievement of its target level. Thus, due to the classification of the zonal values of the operating costs ratio, it becomes not just one of the estimated indicators [14, 15], but a key management criterion, an indicator, on the one hand, the kind of software solutions to be developed, and on the other, the system result their implementation. Using the methodology of production and economic management based on such an indicator allows to realize a long-term phased increase in the effectiveness of the activities of railways ensuring their technological, financial and economic sustainability. This is especially important for our country where railway transport is the basis of the transport system and a key sector of the economy.

Considering the above, it is of interest to analyze the dynamics of the operating costs ratio of the JSCo "RZD" in the long-term retrospective, covering the establishment and development of the company in the context of the structural reform of the industry.

In the first operation years of the JSCo "RZD", the operating cost ratio decreased. One of the key factors that made this possible was a consciously significant increase in the operating costs of railway transport in 2002, in anticipation of the JSCo "RZD" foundation. That year, the operating costs of the industry were increased by more than 42%, while the reduced work of railways increased by less than 4%. The main factors behind the increase in operating costs were a wage increase

Table

Scale of the zonal values of the operating costs ratio and recommended management decisions

Range of values of operating costs,%	Qualitative characteristic	Recommended management decisions
Over 100	Unacceptable level	Development and implementation of the operational program of anti-crisis measures, ensuring a reduction in operating costs to less than 100%
90 to 100	Excessively high level	Development and implementation of a medium-term program for increasing efficiency, ensuring a reduction of the operating costs ratio to an acceptable level based on improving the efficiency of all technological processes, productivity growth and marketing measures aimed at increasing profitability
80 to 90	Acceptable level	Development and implementation of a long-term program to improve strategic competitiveness and efficiency, ensuring a reduction of the operating costs ratio to an optimal level based on investments in innovative projects
70 to 80	Optimal level	Development and implementation of a long-term program of sustainable balanced development, ensuring the preservation and strengthening of market positions and faster growth of revenues compared to operating costs, with a gradual decrease of the operating costs ratio
Less than 70	Extra-optimal level	Assessment of compliance of the operational costs level with the requirements of sustainable, technologically and economically safe activities and the development of measures to ensure sustainable market positioning with access to new segments and maintaining a high level of efficiency

Source: compiled by the authors on the basis of the study by N.A. Valeev [16].

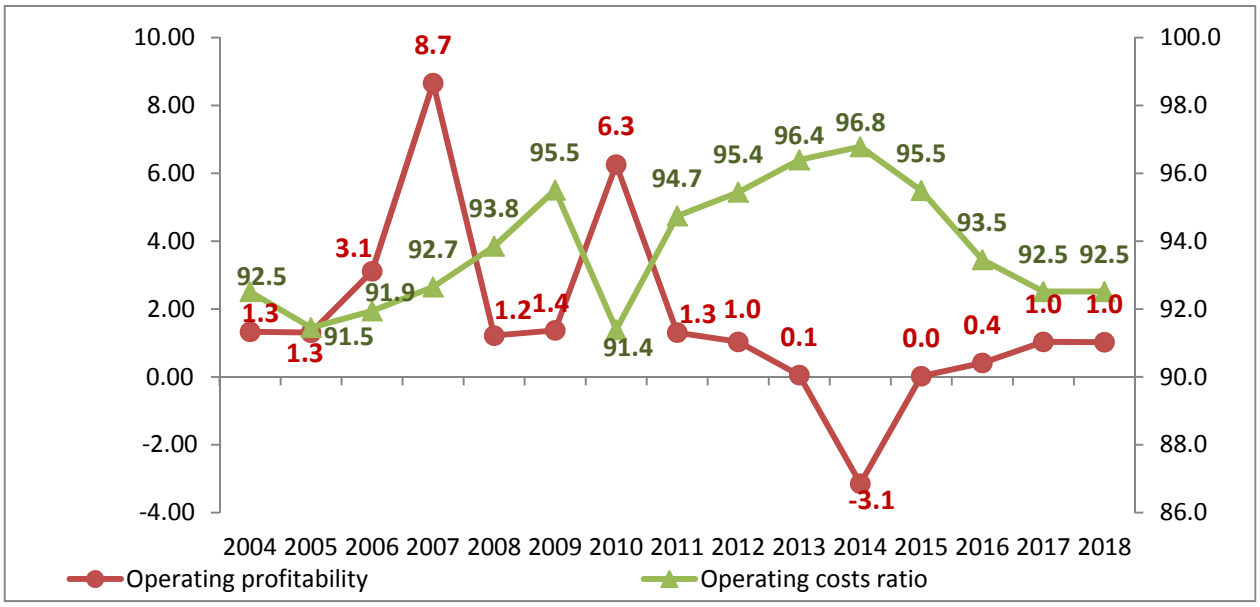

Fig. 3. **Long-term dynamics of the profitability of the JSCo "RZD" main activity and its operating costs ratio, %**

Source: calculated by the authors based on the data from the JSCo "RZD". URL: http://www.rzd.ru (accessed on 25.03.2019).

of more than 43%, an increase in the volume of capital repairs of fixed assets, as well as their revaluation and adjustment of depreciation rates, which led to a 42% increase in the total amount of these deductions [17].

There was a formed "expenditure base" considered in the tariff regulation. That is why, before the main event of the first stage of the structural reform — the creation of the JSCo "RZD" on October 1, 2003 — a certain "safety margin" was formed in financial and economic terms. This was justified not only by the need to ensure social stability and technological sustainability in the industry during the period of fundamental structural transformations, but also in the context of the macroeconomic conditions for a dynamic recovery of the economy and an increase in the standard of living in the country.

In the first years of the JSCo "RZD", the established "expenditure base" not only allowed avoid increase, but even reduced the cost-effectiveness ratio due to the slowed growth in operating costs compared to transportation revenues.

However, starting from the pre-crisis year of 2007, there appeared a tendency of the JSCo "RZD" cost ratio growth. This indicated a decrease in the economic efficiency of the company. Naturally, the global crisis of 2008–2009 (reflected in the activities of the Russian railways, mainly in 2009) aggravated this tendency. It should be noted that in 2009 in the JSCo "RZD" large-scale system measures were taken to reduce the operating costs. They were reduced by more than 38 billion rubles, thereby compensating for a larger part of the decline in transportation revenue, exceeding 57 billion rubles [16]. Due to this, it became possible to limit the growth of the operating costs ratio and to maintain the profitability of the "RZD" company.

The following year of 2010, in terms of the revival of demand for transportation, the revenues of the JSCo "RZD" increased more than the operating costs. As a result, the operating costs ratio decreased to a minimum for the entire period under study. At the same time profitability reached a local maximum. However, in subsequent years, the trend of growth in the operating costs ratio, that established before the crisis, recovered and profitability returned to an extremely low (about 1%) level and continued to decline, until it left negative values in 2014 (*Fig. 3*).

Among the long-term factors that increased the share of the JSCo "RZD" revenues allocated for operational needs, two should be highlighted.

The first factor is the **price disparity**. It is the backlog of indexation of state-regulated railway tariffs from the growth of market prices for resources consumed by rail. "Only for a decade of the JSCo "RZD" activity, the backlog of the freight tariffs indexation lagging behind price increases in industry was about 16%, and ... in relation to industries that are major customers or suppliers of railway transport resources, these differences ... are even higher" [18, p. 4]. As a result of the price disparity, the growth in railroad profitability lags behind the "price pressure" on the company's operating costs from resource suppliers, including employees, whose wages are regularly indexed based on consumer price increases. The price disparity became particularly acute in 2014, when railway tariffs for freight traffic were "frozen" (no indexation was carried out), while price increases in industry and in the consumer market (to which the railway transport, as a labor-intensive industry, is very sensitive), naturally, continued. Not surprisingly, the operating costs ratio in 2014 peaked. This, supplemented by purely financial factors, has led to the unprofitability of the JSCo "RZD".

The second factor complementing the first one is the **change in the structure of freight traffic** of the Russian railways. The share of low-income goods belonging to the first tariff class increased, and the share of high-income goods belonging to the third tariff class decreased [19]. As a result, the growth of the average income rate per 1 ton-kilometer turned out to be significantly lower than the level of tariff indexation, which lags significantly behind the rise in prices for industrial products, including those consumed by rail.

From 2015 regular indexation of tariffs was resumed. At the same time, it is important for long-term financial and economic sustainability that the principles of long-term indexation of freight tariffs are developed, and the tariff level considers the specific development needs of the railway network associated with the "bottlenecks" in carriage and traffic capacity [20].

Together with the operating costs saving measures, this allowed to "reverse" the trend of the operating costs ratio growth, ensuring its progressive reduction, which became the basis for overcoming unprofitability and gradual growth of the profitability of the JSCo "RZD".

In general, for the period under study, as can be seen from *fig. 3*, the dynamics of the operating costs ratio, in contrast to profitability, did not have a clearly pronounced tendency to decrease or increase. This ratio ranged from 90 to 100%. According to the presented in *table* classification of the zonal levels of the operating costs ratio, this is characterized as an excessively high level where the development of the railway company is limited. An excessively high level of the operating costs ratio causes a low amount of profit and profitability, which in the conditions of negative influence of financial factors approaches zero as in 2013 and 2015, or even negative, as in 2014. At the same time, local "bursts" of profitability as in 2007 do not solve the problems of its low level in the long run.

Thus, a fundamentally important task is to move to acceptable level of the operating costs ratio where the sustainable positioning allows to combine current financial and economic sustainability with the generation of certain investment resources for long-term development.

ANALYSIS OF FINANCIAL AND ECONOMIC INDICATORS OF US RAILWAYS

To determine the approaches to the solution of this problem, the experience of one of the most developed and efficient railway systems in the world — the US class I railways — seems important. Class I railroads are determined in the United States by the criterion of operating

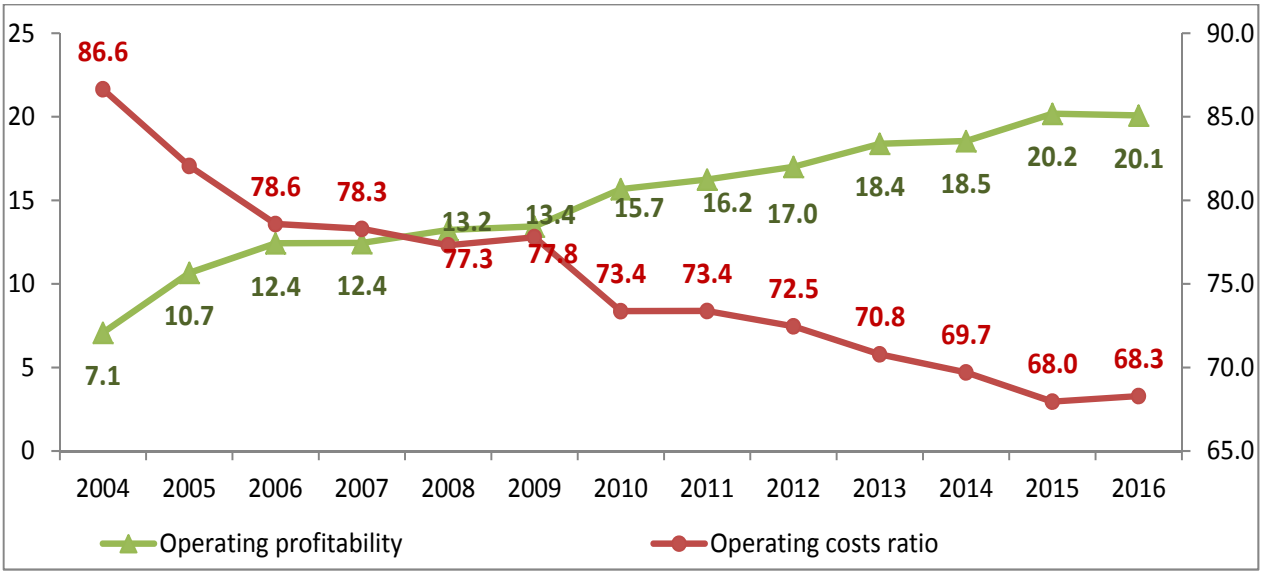

Fig. 4. **Long-term dynamics of the profitability of the U.S. Class I railroads main activity and its operating costs ratio, %**

Source: calculated by the authors based on the Railroad Facts 2016 Edition. Washington, DC: Policy and Economics Department, Association of American Railroads; 2016. 80 p. URL: https://my.aar.org/Pages/Product-Details.aspx? ProductCode=RFB 2016Web.

income, the threshold value of which varies by year. For example, in 2011, Class I railroads belonged to roads with an annual income of $ 433.2 million and more[3], and in 2016, railways with an annual income of $ 447.62 million and above[4]. Despite the changes in both the values of this criterion and the situation on the rail transportation market, the composition of Class I railways in the USA is stable with the same seven railway companies for many years [21].

The long-term dynamics of profitability and the operating costs ratio on the US Class I railways are fundamentally different from those of the Russian railways over the same period of time (*Fig. 4, 5*). The major difference is not even in the level of indicators — there are objective factors that determine the higher efficiency of the North American railways. These are extremely low volumes of passenger traffic (in most countries, low-margin or unprofitable), or a higher level of technical development. The major difference is in the *dynamics* of indicators.

The operating costs ratio has a pronounced tendency to decrease (*Fig. 4*). At the same time, this ratio went through *qualitative* changes: in 2004–2005 it was in the acceptable values zone (according to the proposed classification); in 2006–2013, it was in the optimal values zone allowing to ensure sustainable current activities, high competitiveness and the ability to allocate significant funds for development; and in 2014 it moved to the extra-optimal values zone.

It should be noted that such qualitative changes *were deliberately planned* by the North American railway companies. For example, the Norfolk Southern company, with an operating cost ratio of more than 82% in 2003, set the task to reduce it to 70–79%[5]. According to the developed classification, this means a transition from the acceptable values zone to the optimal values zone. The task was completed. In 2011, the operating costs

[3] Railroad Facts 2016 Edition. Washington, DC: Policy and Economics Department, Association of American Railroads; 2016. 80 p. URL: https://my.aar.org/Pages/Product-Details. aspx? ProductCode=RFB 2016Web (accessed on 15.05.2019).

[4] Railroad Facts 2017 Edition. Washington, DC: Policy and Economics Department, Association of American Railroads; 2017. 80 p. URL: https://my.aar.org/Pages/Product-Details. aspx? ProductCode=RFB 2017Web (accessed on 15.05.2019).

[5] Progressive Railroading. 2003(12):22–24.

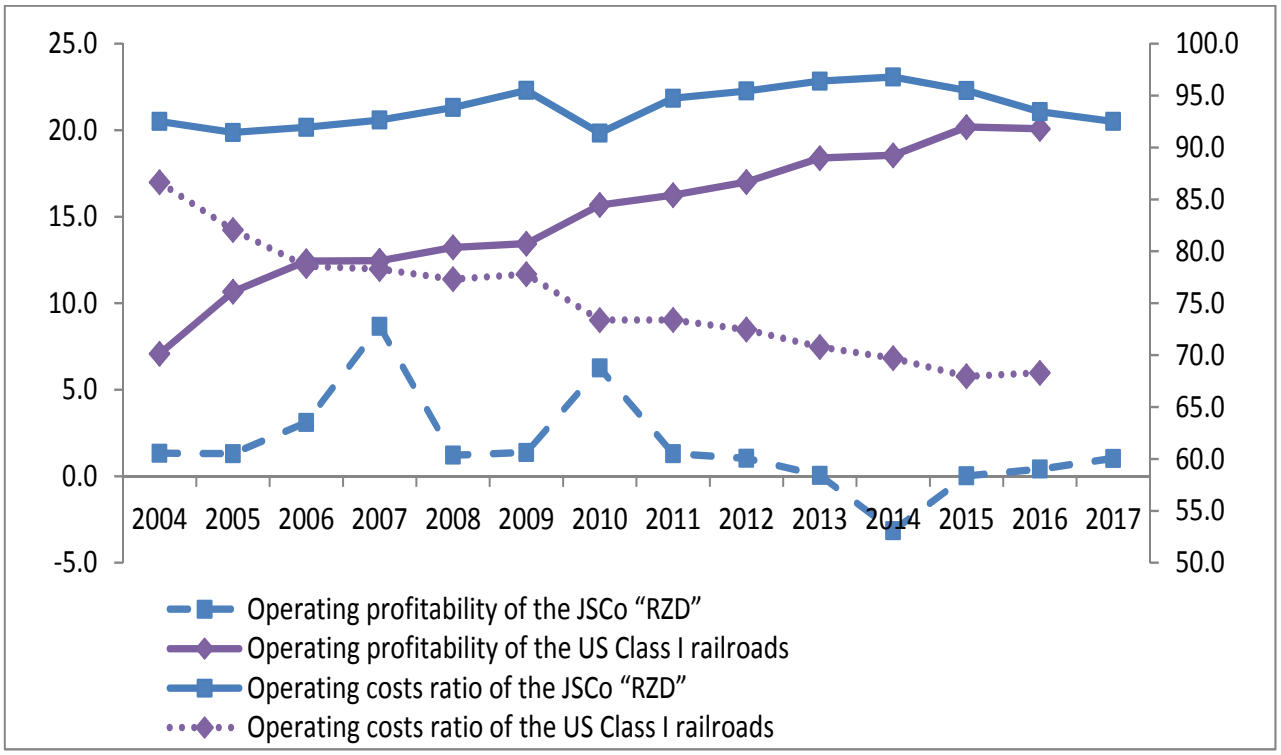

Fig. 5. **Comparative analysis of the financial and economic efficiency of the JSCo "RZD" and the U.S. Class I railroads**

Source: calculated by the authors based on the data from the JSCo "RZD". URL: http://www.rzd.ru (accessed on 25.03.2019), RAILROAD FACTS 2017.

ratio of the Norfolk Southern Company was 73.3%, and in 2016 it was 72.1%[6]. Thus, it has reached the optimal zone and continues to decline gradually.

A radical reduction in the operating costs ratio became the basis of a nearly threefold increase in profitability over a 12-year period (*Fig. 4*).

It is important to note that in the crisis year of 2009 there was practically no decrease in the efficiency of the North American railways. There was only a pause after which the progressive increase in efficiency resumed.

On the example of the US Class I railways, the differences in the profitability dynamics from those of the operating costs ratio are also visible. In 2007, with a certain decrease in the operating costs ratio, the profitability did not change; and in 2011, on the contrary, the profitability increased at a constant operating costs ratio. In 2009, with an increase in the operating costs ratio, the profitability also slightly increased. Despite these minor deviations, the graphs of the cost-effectiveness and profitability for the US Class I railways are almost "mirrored". This is due to the fact that with a fairly low operating costs ratio and high profits, specific financial factors do not have a significant impact on the level and dynamics of the profitability. It is mainly determined by the operating costs ratio, and these figures are practically interchangeable.

In conditions of a high level of operating costs ratio and low profits typical for the Russian railways, financial "fluctuations" can lead to serious differences in the profitability dynamics from the dynamics of its funda-

[6] Railroad Facts 2016 Edition. Washington, DC: Policy and Eco-nomics Department, Association of American Railroads; 2016. 80 p. URL: https://my.aar.org/Pages/Product-Details.aspx? ProductCode=RFB 2016Web (accessed on 15.05.2019); Railroad Facts 2017 Edition. Washington, DC: Policy and Economics Department, Association of American Railroads; 2017. 80 p. URL: https://my.aar.org/Pages/Product-Details.aspx? ProductCode=RFB 2017Web (accessed on 15.05.2019).

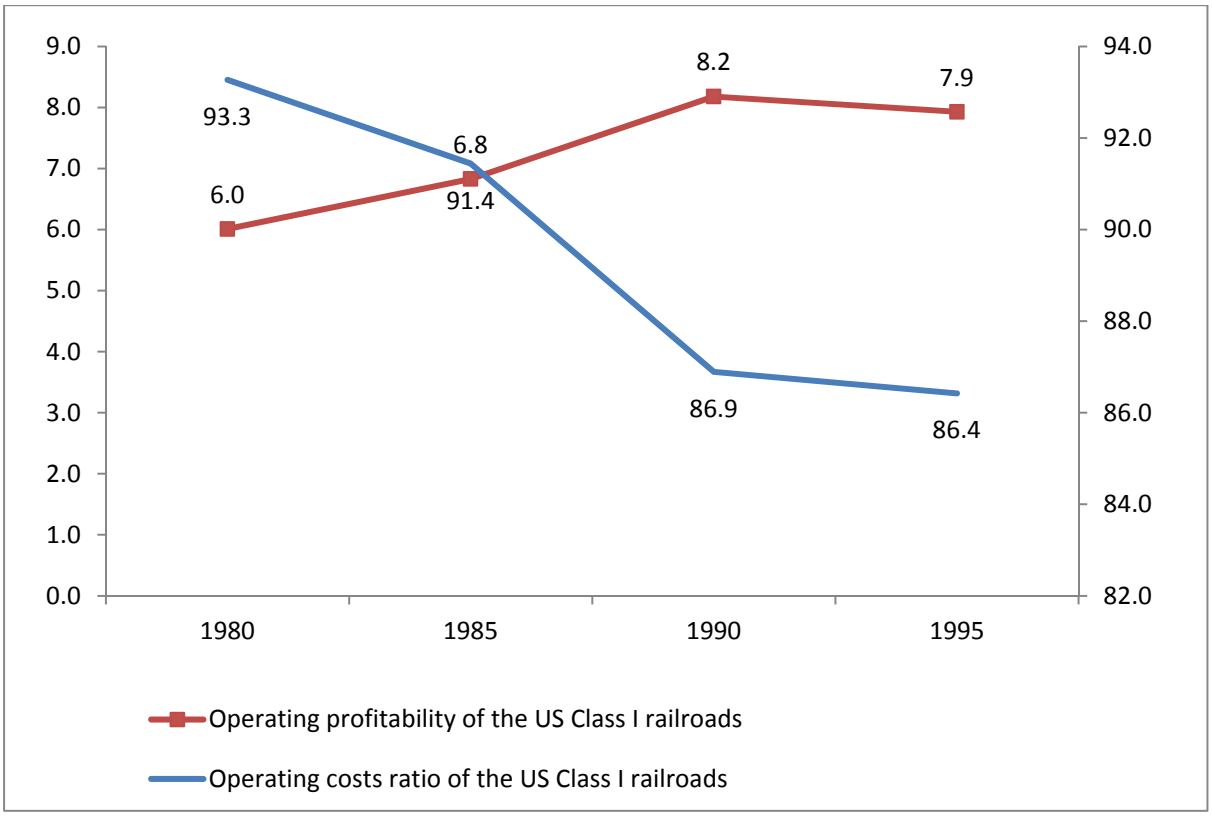

Fig. 6. **Dynamics of the profitability of the U.S. Class I railroads main activity and its operating costs ratio (1980–1995), %**

Source: calculated by the authors based on the data from the RAILROAD FACTS 2017 [16].

mental factor — operating costs ratio (*Fig. 2*). Therefore, in such circumstances, it is especially important to monitor and analyze the operating costs ratio.

The comparison of the performance indicators of the Russian railways under reforms (*Fig. 1, 2*) with the performance indicators of the US Class I railways at the same period is of indisputable interest — the first decade and a half after the reform began (*Fig. 6*).

On the US railways, after the tariffs deregulation and in the competitive environment, in most regions of various vertically integrated railway companies [22], the railways were seeking to attract additional traffic volumes due to lower tariffs than competitors, and therefore, they began to reduce operating costs. This reduction occurred at a faster pace than the reduction in tariffs. As a result, the cost-effectiveness ratio decreased, while the profitability increased. It is important that the cost reduction of the North American railways was achieved through a dynamic increase in the efficiency of the use of basic production resources (infrastructure, rolling stock, labor, fuel) through improved technology and increased investment [23]. Due to this fact, the reduction in the operating cost ratio became sustainable and has been continuing for the fourth decade.

The Russian railways operate in fundamentally different institutional conditions. Infrastructure activities are naturally monopolistic [7], infrastructure facilities are limited in economic turnover, and tariffs are regulated by the state. The resulting lack of investment limits the possibilities for innovative technical and technological development [24].

Obviously, the non-critical, "mechanical" use of the North American railways experience is not possible due to these circumstances. However, it is advisable to study it carefully for possible adaptation to Russian conditions.

The key areas to create conditions for sustainable improvement of the financial and economic indicators of the railway industry in our country are, on the one hand, expanding the market opportunities of the JSCo "RZD" and their competent utilization based on flexible adaptation to market conditions and changing customer needs, and on the other hand, attracting private and public-private investments, including for the implementation of infrastructure projects.

The growth of profit and profitability of the railway in the long term, given the high capital intensity, labor intensity and repair capacity of the industry, can be sustained only if it relies on optimizing operating costs and increasing revenue from traffic.

The analysis of the indicators of the JSCo "RZD" long-term development program until 2025 suggests that its implementation should result in the significant improvement of the company's financial and economic indicators. Thus, the net profit margin in the baseline scenario will be 5.2%, in the optimistic scenario –8.7%. The costs ratio (if calculated as the ratio of current costs to total revenue) will be 84.4% and 79.3% respectively. That is, with the implementation of the baseline scenario, it will be at an acceptable level, and with an optimistic scenario, it will achieve the optimal zone. In any case, the efficiency of the company's activity will roughly correspond to the efficiency level of the US Class I railways of 2004–2005, which has increased significantly since then (*Fig. 4*). Therefore, the JSCo "RZD" will face the task of further significant efficiency growth after 2025. Based on the presented methodology for the long-term management of the financial and economic efficiency of railway transport, the following recommendations can be suggested to solve this task.

First, to organize monitoring of the operating costs ratio annually, quarterly and monthly, both for the company's overall transportation and logistics activities, and for its individual segments, including the transportation of various types of cargo and categories of passengers in specific directions. On this basis, to develop measures to optimize the company's presence in various segments of the transport market and the range of provided services.

Second, to organize a similar monitoring of the operating costs ratio for the the JSCo "RZD" subsidiaries and affiliates which will help to develop recommendations both on corporate governance measures aimed at improving the efficiency of their activities and on improving the "Russian Railways" holding structure. These measures will contribute to the achievement of the JSCo "RZD" Long-Term Development Program parameters, with access to the optimistic scenario (or approaching it).

Third, it is advisable to start developing a scenario program for enhancing the long-term competitiveness and efficiency of the holding "Russian Railways" for 2025–2035. Under the baseline scenario, this program should include the achievement of the optimal level of the cost-effectiveness ratio; under the optimistic one, its further reduction within the optimal values zone to its lower boundary. Early development and approval of such a program will ensure a smooth transition to its implementation after the completion of the Long-Term Development Program until 2025. This will make the long-term growth of the effectiveness of the systematic railway company continuous. This will also prevent the replication of the first 15 years of its work when the level of financial and economic efficiency fluctuated without a pronounced upward trend.

SUMMARY

The dynamics analysis of the JSCo "RZD" financial results shows that, in general, at a low level of profit and profitability of the company, it is significantly influenced by short-term financial factors, such as exchange differences, revenue from the sale of assets, etc. In these conditions, along with the operating profitability, it is advisable to use such an indicator as the operating costs ratio. It characterizes the share of revenues from traffic, aimed at ensuring operational activities. This indicator allows assessing the economic efficiency of the current activities of railway companies, eliminating the influence of purely financial factors. On the other hand, the reduction of this ratio is a fundamental basis for increasing profits and profitability, ensuring the financial and economic sustainability of the railway companies. On the Russian railways, due to the structural reforming and in the post-reform period, the operating costs ratio ranged from 92% to 97%. This is an excessively high level, which allows to ensure profitable work (with a low level of profitability), but it does not allow generating substantial investment resources for technical and technological development.

In general, over the working period of the JSCo "RZD", the operating costs ratio did not have a clearly expressed tendency to change. In recent years, however, its downward trend has been formed, whose development can lead to the transition to the acceptable values zone. A similar transition was achieved by reforming the US railways activities in 1970s — 1980s. The cost-effectiveness ratio was also in the zone of excessively high values, but, as a result of economic efficiency steady growth for many years, it first moved to the acceptable values zone, then to the optimal values zone, and finally to the extra-optimal values zone, which became the basis for a dramatic increase in the profitability and expansion of investment opportunities in the North American railways.

In our country, the possibility to reduce the operating cost ratio of railways is limited to the state regulation of tariffs and deterioration of the freight rail traffic structure in terms of profitability. The key areas to overcome these restrictions are expanding the market opportunities of the JSCo "RZD" and their flexible use, which will increase the profitability of the systematic company in the industry. The basis for optimizing the operating costs should be an innovative technical and technological development of the Russian railways, which requires additional private investment, including via public-private partnerships.

The proposed methodology for the long-term management of the railways financial and economic efficiency is based on the zonal classification of the operating costs ratio. The recommendations were made to achieve the target parameters of the JSCo "RZD" Long-term Development Program until 2025 and to develop a program to improve the long-term competitiveness and efficiency of the JSCo "RZD" for 2025–2035. This should contribute to the formation of a trend towards a sustainable long-term efficiency growth of the Russian railway. Considering their key importance for the economic and social development of our country noted above, this is extremely important for accelerating growth and improving performance of the Russian economy.

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Work Motivation of Staff as a Factor in Improving Financial Performance of a Commercial Enterprise

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ABSTRACT

Effective functioning of any organization is based on a seamless blend of the interaction between a person and organization. The importance of various types of work motivation aimed at achieving the goals of the organization and encouraging staff to work effectively determined the relevance of the study. The purpose of the study is to find ways to improve the system of work motivation, on the example of a particular enterprise, and to develop recommendations for improving the performance of the enterprise based on a motivational mechanism. The research objectives are the following: to analyze the current system of work motivation, to assess the efficiency of labor resources at the enterprise, to develop proposals for improving the financial performance of the enterprise through the motivational mechanism. The object of the study is the staff of OOO KL GROUP company specializing in retail trade of footwear, clothing and other products made of genuine leather. The subject of the study is the system of work motivation of staff and financial performance of the company. The following methods were used in the work: comparison, monographic, economic and statistical, horizontal and vertical analysis, expert assessment, sociology, organization theory and others. The authors used the results of a survey conducted by the territorial managers of the company in ten sales departments in order to identify the intensity of customer flows and the time-management of the company employees. A systematic approach in studying motivation factors allowed to develop proposals for creating a system of staff motivation at the enterprise. It is concluded that the implementation of the work motivation mechanism in the sales departments of OOO KL GROUP company gives the following results: satisfaction with the employees and their activities increases, and the company receives an annual increase in profits. Thus, work motivation affects the financial performance of the company.

Keywords: methods of motivation; staff; work motivation management; labor productivity; revenue; profit; profitability; enterprise performance

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INTRODUCTION

Concept of work motivation of staff in the enterprise

Motivation (from Latin "movere") is a psychophysiological process that controls human behavior and forms internal motivating factors that act through self-awareness. "Motivation" and "stimulation" are two close concepts. However, if the concept of "stimulus" is used mainly to denote material or moral encouragement, the "motive" is used more broadly and covers all aspects of employee behavior [1, p. 39–40].

There are various factors of motivation that are usually divided into extrinsic and intrinsic. Intrinsic factors of motivation may be: self-realization, self-affirmation, creativity, conviction, curiosity, need for communication. Extrinsic factors of motivation include: money, career, position in society, recognition, etc.

By nature, motives can be positive or negative. A positive extrinsic motive of behavior is reward for good work, and a negative one is punishment for the failure to comply work; a positive intrinsic motive is an interesting job, and a negative one is a routine nature of the work performed, as a result of which a person seeks to get rid of it.

Motivation of staff is carried out at three interrelated levels; each of them has its own characteristics.

There is a long-term, medium-term and short-term motivation of each employee at the personal level. All three types of motivation are in place: attraction, retention and effective work. The main principles of motivation at the personal level are timing, individual approach, connection with the interests of the employee. Important factors for effective employee motivation at the personal level are the clarity of the task, its compliance with the competence and interests of the employee.

At the group level, the motivation of productive and effective group work is in place. The motivation of group work is reduced to determining the range of tasks that can be done in a group way, and creating optimal conditions for group interaction. The key factors for effective group motivation are group characteristics, leadership and management style, and the principles are reasonableness, trust and openness.

At the organizational level, work motivation of staff is carried out by economic and political incentive methods supported by all management subsystems. Important factors of effective motivation at the organizational level are the image of the organization and the reputation of top managers, as well as its adequacy to strategic goals. The principles of organizational motivation are responsibility, controllability and balance of interests of all categories of workers.

Thus, a systematic approach to motivation of staff is based on a comprehensive consideration of the psychological principles of the motivational process of individual and group activities, as well as effective methods of motivating recruitment, retention and effective work. The systematic approach includes managing the motivation of employees at all levels using all types of motivation: depending on the time frame — long-term, medium-term, short-term and momentary; depending on the incentives — material and non-material [2, p. 25–27].

Theories and methods of motivation research of staff

The current theories divide work motivation into two categories: content and procedural.

Content theories of motivation are based on the identification of intrinsic motives, called needs. These theories are traced in the works of A. Maslow, S. Bernard, D. McClelland and F. Herzberg. Content theories of motivation are based on the needs and related factors that determine people's behavior [3, p. 252–253].

Procedural theories of motivation are more modern, based on ideas about how people behave, considering their perception and cognition. The main procedural theories are the expectancy theory, the theory of justice, the Porter-Lawler motivation model, and others.

The procedural theories of motivation are: the expectancy theory by Victor Vroom, the

theory of justice, the Porter-Lawler model, the Theory Y, the theory of motivation by Hackman and Oldham, etc. Despite the differences between these theories, they are not mutually exclusive and are effectively used in motivating people to work effectively. According to procedural theories, it is believed that human behavior is determined not only by needs, but also by the expectation of the possible consequences of the chosen type of behavior. In effect, the Porter-Lawler model that includes elements of the expectancy theory and the theory of justice is used more often. According to the Porter-Lawler model, the results achieved depend on the efforts made by the employee, personal abilities and character, and also the awareness of their role in the organization [4, p. 56–60].

Thus, it can be concluded that motivation is the process of encouraging oneself and others to certain activities aimed at achieving personal goals or organizational goals. This process is based on the use of a variety of motives including material, socio-psychological, spiritual, creative, etc. Work designed in accordance with the principles of motivation, provides inner satisfaction, stimulates the quality of work, as well as the performance of more complex work.

There are various methods and techniques for researching the work motives of staff in an enterprise. The most common methods are: a survey allowing to identify the features of motivation of various staff categories; testing, allowing to assess the psychological characteristics of a person; expert evaluations where the expert's main tool is a specially prepared questionnaire or an interview. Leaders, business partners or clients are involved as experts.

In *table 1* we present some techniques and their characteristics for our study of work motives and the system of motivation in the company.

Now, let us consider the methods of management of work motivation which are similar to the methods used in personnel management. There are common, widely used in the management of other objects (production, the national economy as a whole — administrative, economic, social methods) and private methods among them. Personnel management, and, in particular, work motivation, should be based on the principles of a systematic approach and analysis, which means analysis and decision-making in relation to personnel, considering external and internal environment factors and their interrelations.

Usually, three main groups are distinguished among the methods of management of work motivation of staff [5, p. 20–21]:

1. Organizational and administrative methods characterized by direct centralized influence of the subject on the object of management. These methods are focused on such motives of behavior as the awareness of work discipline, a sense of duty, the desire of a person to work in a particular organization.

2. Economic methods due to which material incentive of personnel and individual workers is carried out. Among them are: methods used by federal and regional authorities (tax system, credit and financial mechanism of the country and regions); methods used by the enterprise (economic standards, a system of material incentives for employees, a system of responsibility for the quality and efficiency of work, participation in profit).

3. Socio-psychological methods most applicable in organizations where wages do not reach a high level. They are based on the use of moral incentives to work and influence the person through psychological techniques, in order to transform the administrative task into a conscious duty, the inner need of a person.

Efficiency of use of personnel in the enterprise

The efficiency of the use of personnel in the enterprise is measured by indicators of labor productivity. A direct indicator of labor productivity (labor return indicator) is called output and is calculated as follows:

$$O = V / Ans, \quad (1)$$

where: O –is output;

V — is the volume of output;

Ans — is the average number of staff.

Table 1

Methods used to study work motivation system

Name	Characteristics of the method
Methodology "Assessment of the need for approval". Developed by American psychologists Douglas P. Crown and David A. Marlowe	The need for approval is one of the most significant human needs. To identify this need a scale of approval motivation is used, which allows to determine an indirect measure of a person's need for approval by other people. The stronger this need is, the more the behavior of the person corresponds to the approved sample. Such people do not object to uninteresting work, they are more comfortable and malleable to social influences. They have an increased need for communication.
Methodology "Diagnostics of motivation of the individual to success". Developed by T. Ehlers.	The technique evaluates the strength of the desire to achieve the goal, to success; it was compiled based on a questionnaire of 41 questions. The higher the score, the higher the level of motivation for success. Studies have shown that the higher the motivation of a person to succeed, the achievement of a goal, the lower his willingness to take risks. People who are motivated to succeed and who hope for success tend to avoid high risk.
Methodology "Structure of work motivation". Developed by K. Zamfir.	The structure of work motivation includes three components: intrinsic motivation (IM), extrinsic positive motivation (EPM) and extrinsic negative motivation (ENM). Accordingly, there are 7 positions related to these components in the questionnaire.
Methodology "Diagnosis of the structure of motives of labor activity". Developed By T.L. Badoev.	The technique aims to study job satisfaction. An indicator of overall satisfaction is the sum of points scored. The survey consists of 13 questions. The employee is invited to evaluate the attitude to various factors affecting job satisfaction on a seven-point scale. Evaluation factors are: importance of the profession, prestige of the profession, type of work, organization of work, sanitary conditions, wages, possibility of advanced training, attitude of the administration to work, rest and living of workers, relationships with colleagues, need for the implementation of individual characteristics, possibility of creativity in the work process, job satisfaction in general. Conditional criteria for interpreting responses: 0% –20% — low; 21% — 40% — reduced; 41% –60% — average; 61% –80% — increased; 81% –100% — high.
Methodology "Career anchors". Developed by E. Shane.	The method allows to evaluate the career orientation of the manager and employees, to create an individual model of motivation, based on the aspirations and orientation of each specific person (interests, values, social attitudes).
Methodology of diagnostics of work motivation. Developed by V. Gerchikov.	The technique is used to analyze the motivation of Russian workers. The study of work motives of staff by means of the technique allows to determine the right direction in the choice of motivation methods, the type of employee and the resulting way to stimulate them. Based on the analysis by means of the methodology, it is possible to build an optimal motivation plan for each group of employees, which, in turn, will ensure the growth of labor productivity.

Source: developed by the author.

Depending on the unit of measurement of working time, the output is distinguished: for one worked man-hour (average hourly output); one man-day worked (average daily output); per average number of employees per year, quarter or month (average annual, quarterly or average monthly output) or per worker for the same periods of time [6, p. 77–78].

It is difficult to determine labor productivity due to the problem of measuring this indicator. A variety of labor productivity indicators due is caused by the possibilities of using variations in calculation.

Thus, the essence of labor productivity, as the efficiency of its use, is the ratio of the economic result of activity (revenue from sales of products, works, services) and the number of personnel, etc. In this sense, the growth of labor productivity is a factor in increasing the financial performance of activities (revenue growth, profit, profitability, profit margin) [7, p. 1–9].

The analysis of use of personnel in the enterprise, labor productivity should be considered in close connection with wages. The growth of labor productivity creates favorable environment for pay rise. At the same time, funds for labor remuneration should be used in such a way that the growth rates of labor productivity overtake the growth rates of the remuneration. These are the only conditions to create opportunities for increasing the rate of expanded reproduction.

Labor productivity is one of the most important indicators of economic efficiency; therefore it is extremely important to consider factors affecting the productivity of workers. Regarding the enterprise, all factors can be divided into internal and external.

The external factors include causes that do not depend on the enterprise: a change in the assortment and range of products, in accordance with market demand, leading to a change and labor intensity; social and economic conditions in society, etc. Internal factors are the level of technical equipment of the enterprise, energy intensity of labor, organization of labor and production, applied systems of labor incentives, i.e. all factors that depend on the team and its leaders.

The factors that influence the growth of labor productivity can be divided into three groups [8, p. 22–24]:

1. Material and technical. They are associated with the use of new equipment, new technologies, materials and types of raw materials.

2. Organizational and economic. These factors are determined by the level of organization of management, production and labor.

3. Socio-psychological. These factors imply the socio-demographic composition of the personnel, its level of training, moral and psychological climate, work discipline, and the social and natural conditions of the flow of labor.

The reserves for increasing labor productivity are untapped opportunities for saving labor costs.

At a particular enterprise, work aimed at increasing labor productivity can be carried out by:

- reserves to reduce labor intensity, that is, modernization and automation of production, introduction of new technologies, etc.;
- reserves to optimize the use of working time (production management and labor organization, improving the structure of the enterprise);
- improving the structure of personnel and the personnel themselves (changes in the ratio of managerial and production personnel, staff development) [9, p. 129–130].

Creating normal working conditions at all workplaces is the basis for the high labor efficiency of personnel of various categories, i.e. the factor in achieving the effectiveness of work.

2. RESEARCH METHODS (ON THE EXAMPLE OF OOO KL GROUP COMPANY)

Work motivation management of staff in present-day conditions has a significant impact on the economic efficiency and financial performance of the enterprise, and, ultimately, on its position in the market. By the example of a specific enterprise, let us show the influ-

ence of work motivation on the staff performance, the enterprise performance and the financial results of the company.

The main economic activity of OOO KL GROUP company, established in 2013, is the retail trade of footwear, clothing and leather goods in specialized stores. The company has a regional organizational structure, which includes the head office in Moscow and 109 sales stores, of which 52 are located in Moscow and the Moscow region and 57 — in the regions. The average staff of the company as of January 1, 2019 is 488 people.

At the end of 2018, upon an initiative of the company's General Director, OOO KL GROUP territorial managers conducted a survey in 10 sales stores (5 stores in Moscow and 5 stores in the regions). *The purpose of the survey* was to develop recommendations for improving the level and the performance of the enterprise based on motivational mechanisms. *The subject of the research* is the influence of the motivational mechanisms on the performance in the stores.

Staff performance analysis was based on a study of the consumer demand intensity and the rationality of use of working time by means of timing.

In the study of the motivation system effectiveness, the following methods of the motivation theory were used:

1) methods of the survey method by T. L. Badoev, in order to study job satisfaction at all levels of the company's personnel structure, when an employee was asked to evaluate their attitude to various factors affecting job satisfaction on a seven-point scale.

The survey consisted of 13 questions;

2) methods of diagnosing labor motives, developed by V. I. Gerchikov, which allowed to reveal the value orientation of a certain group of workers and the whole team, the direction of motivation, the direction of improvement of work;

3) methods of expert assessments by means of interviews and specially designed questionnaires.

The company's management assumed that knowing the factors of employee motivation is fundamental for the manager, since it is the ratio of internal and external factors of motivation that helps to coordinate the interests of the employee and the company and develop motivation systems for employees. For employees to truly fulfill their duties with high quality, it is necessary to create favorable working conditions and carry out comprehensive incentives and motivation of staff.

RESEARCH RESULTS

Analysis of the main indicators of financial and economic activity of the enterprise

The main financial and economic indicators of the activity of OOO KL GROUP are presented in *table 2*. The source of information for the analysis was the financial statements of the company for 2016–2018.

The analysis of financial and economic activities of OOO KL GROUP for 2016–2018 showed that the revenues, profits and profitability tend to increase, which indicates that the company is developing, the performance efficiency is increasing. However, the company's revenue growth for 2018 was 6.2%, and the growth of the annual wage bill was 9%, while the labor productivity remained virtually unchanged, i.e. the growth of the annual wage bill is ahead of the growth in the revenue and labor productivity. Consequently, the management of the enterprise has to pay attention to the efficiency of the use of labor resources and the level of work organization.

Analysis of the efficiency of use of labor resources

The analysis of indicators of the efficiency of use of OOO KL GROUP labor resources showed that the average number of the employees in 2018 increased compared to 2017 by 6.15% due to the opening of five new stores, which indicates the growth of the company, the expansion of work, entry into new markets [10, p. 48–53].

Table 2

Key financial and economic performance indicators at OOO KL GROUP

Indicator	2016	2017	2018	2018 to 2017, (+, –)	2018/ 2017,%
Revenue from sale of goods, thousand rubles	1013301	1268530	1347170	78640	6.20
Production cost, thousand rubles	929750	1170630	1240050	69420	5.93
Sales profit, thousand rubles	61681	87920	94570	6650	7.56
Net profit, thousand rubles	31341	39302	48323	6982	16.90
Profitability of sales, %	6.1	6.93	7.02	0.09	1.30
Net profit margin, %	3.1	3.1	3.6	0.5	13.89
Average number of employees, people	452	458	488	30	6.15
Salary fund, thousand rubles	113931	118219	128891	16879	9.00
Production per person per year, thousand rubles / person	2241.8	2769.7	2768.6	–1.1	–0.04
Capital productivity	80.1	93.0	94.5	1.5	1.60

Source: developed by the author.

In 2018, the salary fund increased by 9% comparing to 2017. The revenue in 2018 also turned out to be higher than that of 2017 by 6.2%, while the labor productivity remained almost at the same level. Thus, the growth rate of the wage bill (9%) was higher than the growth rate of revenue (6.2%) by 2.8%.

When considering the issues of the efficiency of use of OOO KL GROUP labor resources, an analysis was conducted of the qualitative composition of labor resources: by sex, age, level of education. The following was revealed: 72% of the personnel are women and only 28% are men. There has been a tendency to rejuvenation of workers, which has both positive (new level of education) and negative features (lack of experience). As for education, the majority of workers have a higher education — 58%, and this is typical more for the regions than for Moscow, where the ratio is the opposite.

At the end of the year, the staff turnover was 19%. Currently, the main reason for dismissal in the enterprise is the low chances of promotion. Thus, the indicators presented above reflect a sector-wide tendency in the country's economy in providing production with personnel, in particular, the unattractiveness of the field for young specialists due to the low level of remuneration and the possibility of career growth.

The personnel policy of the enterprise is ineffective, which is confirmed by such facts as the prevailing growth of the payroll fund of the whole company over the productivity growth and the company's revenue. Motivation is needed to reduce wasted time and downtime, increase productivity, increase output and revenue. In fact, the enterprise opens new points of sale, increases funds for the payment of wages, and production and profitability grow more slowly than the salary fund. Increased output and profitability is possible. We will show how to achieve this on our example — the growth of labor efficiency through work motivation.

Justification of measures to improve financial performance of the company

Profit is the most important indicator characterizing the financial result of the enterprise, since all participants in production are interested in its increase.

Factors affecting profits can be classified according to various criteria. However, the profit of an economic entity is developed under the influence of economic factors which are divided into external and internal. External are those that do not depend, as a rule, on the enterprise or are not controlled by it.

Let us dwell on the internal factors that depend on the activities of the enterprise, and are controlled by it. These include:

- volume and quality of products sold, goods;
- enterprise pricing policy;
- level of prime cost and other costs;
- quality of management at different levels;
- level of work organization;
- level of education and qualifications of personnel;
- technical level of production assets;
- scientific and technical creativity, the creative initiative of employees;
- economic interest of workers, etc.

In many respects, profit growth depends on reducing the cost of production, as well as on the increase in sales. While carrying out the production activities of the enterprise associated with the production, sale of products and profit, these factors are closely interrelated and dependent.

The analysis of OOO KL GROUP financial results for 2016–2018 led us to the following conclusions. The growth of revenue, profit and profitability suggests that the company is developing, the efficiency of its activities is increasing.

The analysis of the structure of expenses in the total amount of revenue, as well as the analysis of the cost structure of the cost components performed by the financial managers of the company over the past three years, showed that the management and administrative expenses of the company changed very little, and the costs of the elements in the cost structure for 2016–2018 changed, for the most part, almost in proportion to the growth in sales of

goods. Therefore, the growth of profits is largely influenced by the growth in sales, increase in the level of work organization, increase in the efficiency of use of labor resources.

Based on the above, our proposals for improving the financial results of OOO KL GROUP will be made on the following statements. It is necessary to develop and conduct activities aimed at increasing productivity, using motivational mechanisms that will bring additional income in the form of revenue from the sale of goods, profits and profitability.

Analysis of staff motivation in enterprises

Let us present some conclusions on the results of our research.

1. The motivational activity of OOO KL GROUP is rather weakly marked. The main motivational element is the store managers in Moscow and the regions. The company uses administrative management methods in the form of a mandatory prescription (order, prohibition). Personnel is in the domain of the personnel department, which, based on the real possibilities of the organization, carries out the recruitment and selection of qualified personnel, the development of modes of operation.

2. In addition to the formal organizational structure, which defines the structure of subordination, rights, duties and responsibilities, there is also an informal structure due to which the production tasks of an enterprise are solved based on human relations. Also, an informal interpersonal system of likes and dislikes established in the team has a direct impact on the motivation of employees.

3. The current bonus system is one of the most significant motivating factors for employees of OOO KL GROUP. As for official salaries of managers and specialists, there is a salary and tariff wage system according to the staffing table. There are professional allowances for individual professional qualities and qualifications of an employee, as well as allowances for a quality attitude to work, overfulfillment of the sales plan. These allowances increase the basic part of the salary, thus they are stimulating, but at the same time, the charge of these allowances is the subjective opinion of the director, which does not reflect the contribution of each employee to the overall business of the enterprise, which ultimately can lead to a conflict situation in the enterprise.

4. As for the employee bonuses, the bonus part is charged on the salary or tariff of the employee, reflecting the actual hours worked [11, p. 20–21]. Bonuses for the performance of production indicators do not show the individual contribution of each employee, since the coefficient of labor participation for sellers and drivers-loaders are the same. [12, p. 25–27]. According to the value of this coefficient and the total bonus fund, sales managers and drivers-loaders will have the same premium amount. Such an approach to awarding does not reveal the individual abilities of each employee and may also lead to a conflict.

5. Traditionally, developing a motivation system in OOO KL GROUP company is structured in the following way: the organization already has a certain remuneration system, and the administration feels the need to change it. However, the idea of the desired payment system is often built on the wrong idea of the real labor motives of the staff.

6. Labor motivation issues are important for any organization, since it is believed that an effective employee is a highly motivated employee. For OOO KL GROUP, it is necessary to correctly identify the motives of the employees, learn how to influence them, and then get a more motivated and more productive employee.

7. All personnel of OOO KL GROUP company (conveniently) can be classified into four groups: management (senior management), managerial and administrative personnel (medium management); specialists (executive staff — sales managers, cashiers), working staff.

Let us present some of the research results for building a motivation system, based on the results of a survey of managerial and administrative staff, as well as a survey of the sales managers in the stores, on whose activities, to a large extent, sales volumes depend (*Table 3*).

As you can see from table 3, the motivation

Table 3

Motives for performing management functions in OOO KL GROUP

No.	Motive	Place in the ranking	
		Sale Managers	Management and administrative staff
1	Bigger salary	1	11
2	Job promotion	2	12
3	Professional development	3	14
4	Interesting and diverse activities	4	13
5	Possibility to use personal skills	5	8
6	Opportunities to work creatively	6	9
7	Self-expression	7	10
8	Independence in work	8	7
9	Social contacts, work with people	9	4
10	Management activities	10	1
11	Leadership brings satisfaction	11	6
12	Greater influence on the activities of colleagues	12	2
13	Possibility of communication	13	5
14	Status in the organization	14	3
15	Family Status	15	15
16	Risk opportunity	16	16

Source: developed by the author.

for higher incomes, career advancement and advanced training, and, lastly, the possibility of risk, turned out to be the highest priority for the sales managers. It is also important that such motives as: interesting and diverse activities, the ability to use personal skills, the ability to work creatively, also turned out to be priorities for them.

The managerial and administrative staff has a different picture. For them, the top priorities were the motives aimed at managing activities, influencing on the colleagues and the status in the organization, and the motives for professional growth and diverse activities — almost in last place.

8. The analysis of specific managerial attitudes in motivation for the middle managers and sales managers of the company had extremely interesting results. They are characterized by a focus on success, the desire for independence and the expansion of responsibilities. However, the willingness to make decisions, the inevitable risk in making decisions, is in the last place. In OOO KL GROUP, the managers

Table 4

Analysis of management motivational sets in OOO KL GROUP

No.	Orientation	% of respondents	
		Sales Managers	Management and administrative staff
1	Profit and success orientation	75	75
2	Independence	68	85
3	Responsibility	65	75
4	Willingness to follow the wishes of employees	51	40
5	Willingness to do more than necessary	70	33
6	Prioritizing new ideas	43	32
7	Oppennes to innovations	40	30
8	Tolerance for risk and decision-making	27	27

Source: developed by the author.

of all levels want to receive a higher reward for working independently, but prefer to shift responsibility for the risk to the top management of the company.

Table 4 presents the results of the analysis of managerial motivational attitudes for the managerial and administrative staff and sales managers in the stores, identified during the survey.

We see that the motivational orientation to the willingness to do more than necessary, and the willingness to innovations and new ideas are higher among the sales managers than the managerial and administrative staff, and the motivational attitudes aimed at profit and success, as well as the willingness to take risks, are the same for all the considered groups. The improvement of the personnel management system as a whole, and not only the wage system, may allow to resolve this contradiction. In such a situation, the company's management cannot afford to neglect the problems of improving the incentive system for the store managers.

9. We now turn to the analysis results of the research conducted in OOO KL GROUP regarding the satisfaction with various aspects of the working situation. During the survey involving about 100 people, the overwhelming majority of the respondents said that they are satisfied with the motivating factors. Here we used the methodology "Diagnosis of the structure of motives of labor activity" by T. L. Badoev aimed at studying job satisfaction when an employee was asked to evaluate their attitude to various factors affecting job satisfaction on a seven-point scale. The survey consisted of 13 questions. The respondents provided the following results: the managerial and administrative staff had an increased level of job satisfaction (65%), sales managers — a lower figure (40%). Almost all employees said that they are satisfied with the variety of work, the factors of human relations with the colleagues and the managers. However, the employees of the commercial enterprise declared unanimously that they were dissatisfied with the wages, the solution of social problems, and the store managers were also not satisfied with the possibility of improving their skills and applying creative skills in the work process.

10. Next, let us see what happens with the labor activity in the enterprise. In OOO KL GROUP is an increased level of labor activity among the sales managers (63%), while it is higher than the level of job satisfaction (40%). The managerial and administrative staff, on the contrary, has an average level of labor activity (59%), and it is lower than the level of job satisfaction (65%).

11. Now we will proceed to the analysis of factors affecting labor activity. The survey showed that the main factor reducing the level of labor activity is the incorrect use of administrative measures by the management. The factors increasing the level of labor activity were called moral and, above all, material incentives. Indeed, in the enterprise, incentives, mainly in cash, were made behind the scenes and were small. Mainly, the orders were given orally and the punishment was in writing. In this case, the punishment was quite often public. Considering the high importance of informal relations in the organization, the administrative influences of this nature were perceived by the staff negatively.

12. Applying the methodology of diagnostics of work motivation by V. I. Gerchikov, we revealed the value orientation of two groups of workers. The problem of motivation was investigated by us in relation to the management, administrative and executive structure of the company (the sales managers in the stores).

Next, we define the motivation mechanism and the directions of work. Based on the analysis of the motivation study data, we selected a group of executive managers — the sale managers — for further research. We will use the mechanisms of motivation to them, since in their structure of motives the priority was professional growth, the desire for interesting and diverse activities, the possibility of using personal skills and self-expression, the desire for creative work, the willingness to do more than necessary. All of these motives should provide increased labor productivity.

Conclusions on the motivation system research results

After the motivation system analysis in OOO KL GROUP, some conclusions can be made.

1. The consequence of low staff motivation in the company is:
- high staff turnover;
- weak connection between the work results of the performers and the rewards;
- poor prospects for career growth of the employees;
- dissatisfaction with the work of the employees;
- insufficient level of performance discipline;
- insufficient professional level of the staff;
- lack of initiative of the employees;
- negative evaluation by the staff of the management activities;
- insufficient attention to study and internship reserve;
- underdevelopment of social and cultural enterprises;
- inefficient system of incentives;
- low efficiency of the methods of normative description of labor.

2. Traditionally, developing a motivation system in OOO KL GROUP company is structured the following way: the organization has already had a certain motivation system, and the management feels the need to change it. However, the idea of material motives and the desired salary system is often based on a misconception about the real labor motives of the staff. Before deciding whether to raise wages, the management needs to carefully examine the motivational structure of the employees.

3. For the managerial and administrative staff, it is practically impossible to standardize work; therefore, they can be managed primarily through motivation and incentives. In many respects, the performance of the company depends on the effectiveness of their motivation. If we talk about ordinary performers (the sales managers in the stores), their work, as a rule, is regulated by various regulations, starting with the rate of output and ending with the job description.

4. The hypothesis that there is a direct relationship between job satisfaction and labor

activity is often wrong. Where management is carried out by administrative methods, people work on orders, very often because of fear to lose their jobs, they are extremely dissatisfied with their work, but nevertheless they are very active, because for them the only chance to make a career is to wait for a certain moment and "to jump" to a higher level of management. Fear of losing the job also increases labor activity. There is a direct link between the size of the salary and the level of job satisfaction.

Thus, it can be concluded that the enterprise has developed a turning point when building an effective motivation system can maintain a sufficiently high level of work efficiency in the long term, i.e. there is an urgent need to change the system of work motivation [13, p. 15–20].

PROPOSALS

Work motivation system of staff in the enterprise

Work motivation system of staff in an enterprise plays an important role in personnel management, as it allows to establish the appointment and place of the employees in the team, to identify leaders and provide their support, to ensure effective communication and resolve conflicts in he team, and finally to connect people's motivation with the final financial results of the company.

It is very important for any company to work not only with clients, but also with its own staff, because the success in accomplishing the tasks depends directly on them. Well built motivation system allows to increase the level of loyalty and motivation of staff, and hence, the effectiveness of their activities. At the same time, it is necessary to consider individual characteristics of each employee for the staff motivation programs to work effectively.

Today, there are many methods of motivation of staff, both tangible and intangible. The final result will depend only on the correct use of combinations of these elements.

Based on the study of the theoretical foundations of motivation and the analysis of the research practical results on the use of various methods and tools of motivation, we offer a system of work motivation for OOO KL GROUP (*Table 5*).

Implementation of work motivation mechanism in the enterprise

Work efficiency, in many respects, depends on how rationally the work is organized and how efficiently the working time is used. A tool to assess the current situation on this issue is the photograph of working time, which allows not only to optimize working time, but also to determine the structure of working time and the most costly operations and work, to identify loss of working time and their causes [13, p. 5–10].

The latest survey in OOO KL GROUP was conducted in December 2018 by the territorial managers in 10 sales stores (5 stores in Moscow and 5 stores in the regions). The purpose of the observation is to identify the intensity of customer flows, as well as the rationality of the use of working time by the employees to use the mechanism of work motivation. The results obtained for the 7 days were analyzed.

It was found out that the main stream of buyers in the stores is held at lunchtime from 12.00 to 14.00 and in the evening from 17.00 to 19.00. Fewest buyers appeared before 10.00 and after 20.00; therefore, it was recommended to use this time rationally to work with the goods and maintain order in the stores.

As a result, it was revealed that after studying the timing of the working day provided for the employees of all the stores and motivating them according to the OOO KL GROUP motivation program, the productivity of the employees in all the stores increased by 5%. The motivation program includes the following rewards:

- 1st place — a paid seven-day internship in Italy at enterprises producing and selling the best brands of Italian shoes (Pollini, Baldinini, Ballin, Casadei, etc.) with a prospect of promotion in OOO KL GROUP (for the position of a territorial manager);

Table 5

System of work motivation of staff at OOO KL GROUP

<table>
<tr><th colspan="4">Motivation</th></tr>
<tr><th colspan="3">Material</th><th>Moral</th></tr>
<tr><td>Salary</td><td>Bonus payment</td><td>Social package</td><td>Gratitudes</td></tr>
<tr><td>Wage differentiation</td><td>Interest</td><td>Leave (study)</td><td>Board of honor</td></tr>
<tr><td rowspan="2">Bonuses based on qualification</td><td rowspan="2">Material assistance</td><td>Sick pay</td><td rowspan="2">Honorary certificate for long service</td></tr>
<tr><td>Pension insurance</td></tr>
<tr><td>Reward for the final result on sales</td><td>Distribution of profits from the company's profit</td><td>Health insurance</td><td>Advanced training</td></tr>
<tr><td>Clear regulations on compensation of staff for errors in work</td><td>Clear regulations on bonuses</td><td>Maternity leave</td><td>Corporate events</td></tr>
<tr><td></td><td>Paying international internship for professional growth</td><td>50% of payment for a kindergarten</td><td></td></tr>
</table>

Source: developed by the author.

• 2nd and 3rd places — acknowledgment with a note in the individual record.

Let us present the survey results in the calculations.

The store employees work on shifts. The duration of one shift is 11 hours. Each employee has an average of 15 shifts per month, and there are 12 months in a year. There was no absence from work due to temporary disability; therefore, the shifts were worked out by the employees in full.

As a result, the average hourly output (productivity) of one employee in 2018 was:

$$2768.6 / (11 \times 12 \times 15) = 1.398, \text{ i.e. } 1398 \text{ rub.}$$

The productivity has increased by 5%, which will make the average hourly output per employee approximately 1,468 rubles. Hence, their output per year will be:

$$1468 \times 11 \times 12 \times 15 = 2906.6 \text{ thousand rubles.}$$

The change in the output of one employee per year after implementing the proposal to increase the work motivation of the managers will be equal to:

$$\Delta out = 2906.6 - 2768.6 = 138 \text{ thousand rubles.}$$

Effectiveness of the proposed measures

Let us show how the proper use of the mechanism of work motivation of staff can link it with the final financial results of the company.

The sales volume directly depends on 227 managers working in all the stores of the company.

After the implementation of the proposed measures the change in the revenue per year will be:

ΔVy = 138 thousand rubles × 227 = 31 326 thousand rubles.

The annual revenue of the entire company will grow by 31,326 thousand rubles and will be:

Vy = 1 347 170 + 31 326 = 1 378 496 thousand rubles, i.e. will increase by 2.33%.

Let us assume that as a result of the growth in labor productivity of the sales managers, their wage allowances will increase by 5%, as a result of which the wages (conventional maximum) will grow by 2%.

Since the annual growth of the average salary per year throughout the company is approximately 2.3% annually, we will also consider these data to reflect the influence of the motivational mechanism in the Report on the company's financial results for the year.

With a constant number of personnel, the salary fund will grow by:

$$\Delta WF = 128\,891 \times 2.3\% + 60\,708 \times 2\% = 4178 \text{ thousand rubles},$$

where 60 708 thousand rubles is the annual salary fund of the sales managers.

The deductions for social needs will be 1253 thousand rubles.

Thus, the cost of sales will increase by 5431 thousand rubles.

The implementation of our proposal will require an increase in commercial expenses of the enterprise by 50 thousand rubles, and management expenses — by 250 thousand rubles.

Now we will show how the Report on the OOO KL GROUP company's financial results will change in a year after the introduction of the proposal for the use of the mechanism of work motivation in the enterprise (*Table 6*).

In *table 7*, we present the performance of OOO KL GROUP as a result of the implementation of the staff motivation mechanism.

The comparative analysis with the earlier results of the stores showed that after the introduction of the proposal to improve motivation, downtime in the work of the sales managers decreased by 10%. The time spent working with goods increased by 5%, and customer service and advice — by 5%.

Thus, the implementation of the proposal to improve work motivation and stimulation in OOO KL GROUP stores produced the following results:

- the productivity of employees in the stores increased by 5%;
- the annual revenue of the entire company increased by 2.3%;
- the profit from sales per year increased by 27%;
- the return on sales increased by 1.7%, reaching 8.72%.

Based on this, it can be stated that the proposed measures on the use of the work motivation mechanism in OOO KL GROUP is effective and can be used in all stores of the company.

CONCLUSIONS

Motivated staff is the key to successful work of the company to implement its strategy and strengthen its position in the market. Today, the effective operation of the organization requires responsible and initiative employees, highly organized individuals striving for the work self-realization.

The main aim of the motivation process is to obtain the maximum return from the use of available labor resources, which allows to increase the overall effectiveness and profitability of the enterprise.

Based on the study of the theoretical foundations of motivation and the research results on the use of the motivation mechanism in the OOO KL GROUP sales stores, the following conclusions were made:

1. The motivational mechanism of the company, although presented, is in its infancy and requires effort to develop and implement. The motivational policy of the company has not been finalized, due to the lack of a motivating link and a specialist in the field of work organization in the management structure.

Table 6

Impact of the proposal to use work motivation mechanism on the financial performance of OOO KL GROUP, thousand rubles

Indicator	Before the proposal	After the proposal	Change (+, –)	Change %
Revenue from sale of goods	1 347 170	1 378 496	31 326	2.33
Production cost	(1 240 050)	(1 245 481)	(5431)	0.44
Gross profit (loss)	107 120	133 015	25 895	24.17
Commercial expenses	(9 630)	(9 680)	(50)	0.52
Administrative expenses	(2 920)	(3 170)	(250)	8.56
Sales profit	94 570	120 165	25 595	27.06
Income from participation in other organizations	–	–	–	–
Interest receivable	–	–	–	–
Interest payble	(1 741)	(1 741)	–	–
Other income	401	401	–	–
Other expences	(32 910)	(32 910)	–	–
Profit (loss) before tax	60 320	85 915	25 595	42.43
Current income tax	(12 064)	(17 183)	(5119)	42.43
Changes in deferred tax liabilities	(134)	(134)	–	–
Changes in deferred tax assets	201	201	–	–
Net profit	48 323	68 799	20 476	42.37

Table 7

Performance of OOO KL GROUP as a result of the implementation of the staff motivation mechanism

Indicator	Before the proposal	After the proposal	Change (+, –)	Change, %
Hour production of one employee, thousand rubles	1.398	1.468	0.07	5
Labor productivity (Annual output of one employee), thousand rubles	2768.6	2906.6	138	5
Revenue per year, thousand rubles	1 347 170	1 378 496	31 326	2.33
Sale profit per year, thousand rubles	94 570	120 165	25 595	27.06
Profitability of sales, %	7.02	8.72	1.7	24.21
Net profit margin, %	3.59	4.99	1.4	38.99
Salary fund	128 891	133 069	4178	3.24

Source: developed by the author.

2. The work motivation system of staff has been proposed which should play an important role in personnel management, and will ensure effective communication and resolve conflicts in the team.

3. The example shows that the introduction of the work motivation mechanism in the OOO KL GROUP sales stores produced the following results:

- the productivity of employees in the stores increased by 5%;
- the annual revenue of the entire company increased by 2.3%;
- the profit from sales per year increased by 27%;
- the return on sales increased by 1.7%, reaching 8.72%.

Thus, it can be stated that the proposed measures are effective and can be used in all the stores of the company to improve the efficiency of use of labor resources, as well as the financial results of the company. The example clearly shows that the proper use of motivation mechanisms allows to link the work motivation of company staff with the final financial results of the entire enterprise.

4. Currently, there are many methods of motivation, both tangible and intangible. The final result will only depend on the correct use of combinations of these elements.

In our opinion, the most effective is the following approach to the development and use of a motivation mechanism and motivation system in personnel management, which will require solving a number of tasks:

- first, research of theoretical material on various methods and tools used to study the motivational profile of the employees and the analysis of the motivation system, which will reveal the value orientation of the employee or team, motivation orientation, directions for improving work;
- second, practical study of the structure of the material and moral motives of the company's employees and the concretization of their essence in the conditions of the company's development;
- third, identification of the factors determining the structure of the motivation mechanism;
- fourth, determination of the possibility to use motivation mechanisms according to the company's development goals (developing proposals for the introduction of mechanisms and calculation of the effectiveness of their use);
- fifth, the choice of an appropriate set of tools to influence the labor behavior of the staff;
- sixth, based on the study of the theoretical material and all research results, to make decisions on the use of motivation mechanisms and changes in the work motivation system of the staff.

RECOMMENDATIONS

To improve the staff motivation system at OOO KL GROUP it is necessary:

1. to develop a full range of measures to manage work motivation by means of:

a) organizational and administrative methods and socio-psychological methods, turning an administrative task into a conscious duty, an internal need to work well; improve the efficiency of the standard description of labor;

b) economic methods, for which it is necessary to develop a system of work incentives at all levels of the organizational structure; to improve the system of material incentives for the employees, which can increase the responsibility of the employees for quality, work efficiency and participation in profit.

2. to use motivation mechanisms aimed at reducing the turnover and retention of valuable personnel in the enterprise, increasing: initiatives of the managers of all levels and leadership, qualifications and professional growth, level of executive discipline, prospects for career growth of the employees.

Improving the work motivation system of all staff links will allow the company to provide a higher degree of staff satisfaction with their workplace, their management, their compensation package, and, importantly, make them more attentive to the results of their work, increasing its efficiency. All this, in turn, will affect the growth of the financial performance of the entire company and the effectiveness of its activities.

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Index Method of Evaluating the Performance of Economic Activities

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ABSTRACT

The subject of the research is the economies of the constituent entities of the Russian Federation and the branches of economic activity functioning in their territories. The aim of the study is to develop methods for assessing the efficiency of economic sectors and types of economic activity within the boundaries of 85 constituent entities of the Russian Federation and to create a rating of the efficiency of the constituent entities by the type of economic activity "Production and distribution of electricity, gas and water". Economic and statistical methods, system analysis, as well as general scientific methods of comparison were used. The main calculations are based on the tax revenue efficiency index developed by the authors by types of economic activity. It is based on 13 indicators, where each corresponds to the type of economic activity and assesses the level of economic development of a constituent entity of the Russian Federation. The authors analyzed the reports on tax revenues and the number of employed population in the context of economic activities. Data analysis and parameter estimation were carried out by means of the statistical information processing program IBM SPSS Statistics 20, the analytical module of the Russian Taxes regional tax revenue information analysis system and the MS Excel 365 tabular processor. Based on the proposed method, the distribution of the constituent entities of the Russian Federation was obtained according to the values index of tax revenues for all types of economic activity in 2016. The effectiveness of tax revenues for individual indicators included in the index was considered. The distribution of the constituent entities of the Russian Federation by the type of economic activity "Production and distribution of electricity, gas and water" was obtained. The distribution indicators for each constituent entity of the Russian Federation were calculated. Graphs showing the structure of the tax revenues efficiency index in the Moscow region and in the Altai Republic in 2016 were built. The proposed method allows to obtain a comprehensive indicator of the system's activities and development, to assess its potential, to define goals, to identify infrastructural problems and the shortcomings in economic diversification, as well as to evaluate investment risks and threats.

Keywords: regional economy; index method; index; employed population; tax income; type of economic activity

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INTRODUCTION

The economy of the Russian Federation is in a difficult situation. The economic development of the country is influenced by both external and internal factors. The external factors hampering the development of the economy include the aggravation of the geopolitical situation, the continuously extension of the sanctions lists against the activities of Russian companies, the instability of world markets, the fall in energy prices, etc. The list of internal factors slowing down the economic development is even more extensive. These include: prolonged financial and economic crisis, technological backwardness of domestic companies and industries, inefficient use of human and natural resources, unfavorable conditions for lending to companies in the domestic market, aging and low rates of input of fixed assets, etc.

In work [1, p. 118–127], the functioning of the Russian economy as a diffuse system is considered, and a model of a macroeconomic production function is developed, an analogue to Cobb-Douglas function [2, p. 139–165]. Work [3, p. 120–127] presents a conceptual model of the financial and economic functioning of a constituent entity of the Russian Federation, where the efficiency of economic activities in the region is estimated through the tax revenues produced in its territory. This type of aspect will be applied in the studies described below.

In article [4, p. 63–70], the first attempt was made to use the index method to analyze the performance of the constituent entities of the Russian Federation. It also presents a rating of the performance of the constituent entities of the federation. As a result, all the constituent entities of the Russian Federation were divided into three clusters: the constituent entities of advanced development, the constituent entities aspiring to the average value, and the constituent entities lagging behind in economic development.

In work [5, p. 139–145], by the example of the Ivanovo region, the technological backwardness of the manufacturing industries located on its territory, aging and low rates of introduction of fixed assets and the inefficient use of the active and busy population are shown. Similar studies are devoted to the following works of domestic and foreign authors [6; 7, p. 113–116; 8, p. 7–10].

The authors attempted to investigate the financial and economic state of the constituent entities of the Russian Federation based on the index method in the context of economic activities. The index method refers to the methods of statistical analysis and its applied aspect of research is used in many branches of science and technology. This method has received particular application in economic research. At the same time various aspects of economic and management activities are touched upon.

This method has won the greatest popularity in the field of macroeconomic research. For example, at the World Economic Forum in Davos in 2018, it was proposed to use the Inclusive Development Index; IDI. This index assesses the economic situation in 107 countries according to the criteria of economic growth, sustainability and equity. The IDI is based on twelve indicators combined into three groups. Forum experts believe that the IDI reflects the level of a country's economic development better than an indicator of GDP growth[1].

According to the IDI, Norway ranks the first place, and the Republic of Mozambique is the last. The Russian Federation is in the 19th place, losing four points to the Republic of Kazakhstan.

A number of works by foreign authors are devoted to the application of the index method in economic research. Special attention is paid to the development of methods for calculating the index of stable economic well-being, known as the Genuine Progress Indicator (GPI). The GPI was developed by Herman Daly and John Cobb in 1989. This index was proposed by the scientists as "a way of measuring the economy that will give better guidance to those interested in promoting economic welfare" [9]. GPI is the value of GDP per capita of a country, adjusted

[1] Inclusive Development Index 2018: World Economic Forum in Davos. Economy News (econominews.ru). 1999–2018.URL: http://www.econominews.ru/mirovaja-jekonomika/524-indeks-inkljuzivnogo-razvitija-2018-vsemirnyjj.html (accessed on 26.07.2018).

for the amount of expenditure invested in socio-economic and environmental development. Creating a GPI is one of the successful attempts to synthesize an aggregated monetary index. Today in the field of GPI research the following works are known: [10, p. 13–28], [11, p. 162–172], [12, p. 330–341].

The index method is also used to assess the development of the territories of the Russian Federation. The Consortium Leontief Centre — AV Group has developed a document entitled "Regional Competitiveness Index — Growth Poles of Russia (AV RCI-2015)"[2]. This paper describes the methodology for creating and applying the "Regional Competitiveness Index" where it determines the ability of a region to compete for markets and resources. Similar studies are carried out in the works "Analysis of the factors of improving Russia's competitiveness in the international market" [13] and "Estimating the economic development of countries based on the global competitiveness index" [14, p. 128–138].

Ecological economics often uses the Environmental Sustainability Index (ISE), developed by Columbia and Yale Universities for the World Economic Forum in Davos. The applied aspect of using the ISE at the present stage is reflected in works [15, p. 13–28] and [16, p. 285–300].

Also, the index method can be used in logistics [17, p. 158–169] to analyze the development of green production [18, p. 229–248], the efficiency of production activities in various sectors of the economy [19, p. 639–662], [20, p. 243–261] and others.

The subject of this research is the economics of the constituent entities of the Russian Federation and the branches of economic activity functioning in their territories. 85 territories of the Russian Federation were considered as constituent entities. 13 types of economic activity were analyzed.

The aim of the study is to develop methods to assess the performance of the industries in 85 constituent entities of the Russian Federation in the context of economic activities. It will include a performance rating of the constituent entities of the Russian Federation by type of economic activity, in particular, the distribution of electricity, gas and water.

The studies were based on economic-statistical methods, system analysis, as well as general scientific methods of comparison. The main calculations were made by means of the index method developed by the authors to analyze the types of economic activity of the constituent entities of the Russian Federation.

RESEARCH RESULTS

To give an objective account of the economic activity of the constituent entities of the Russian Federation, the authors propose a method based on an integral indicator of tax revenues for all types of economic activity — an efficiency index of tax revenues. To assess the efficiency of tax revenues in the constituent entities of the Russian Federation, it is proposed to use the index method.

When calculating the index values, the statistical data for 2015–2016 were used, presented by the Federal Tax Service of the Russian Federation and the statistical data on the main socio-economic indexes provided by the Federal State Statistics Service of the Russian Federation. To simplify the subsequent analysis, the collected data was consolidated in the database of the information-analytical system of regional tax receipts "Taxes of the Russian Federation" [21, p. 56–57].

Currently, the system of federal districts of the Russian Federation includes 9 structural units, which include 85 constituent entities. The Ministry of Economic Development of the Russian Federation and the Federal Agency for Technical Regulation and Metrology developed the All-Russian Classification of Types of Economic Activity — OK 029–2014[3] (OKVED), slightly updated in 2018. According to this document, there is a detailed specification of all economic sectors of the Russian Federation. The data provided by the Federal Tax Service

[2] Regional Competitiveness Index — Growth Poles of Russia (AV RCI — 2015). URL: http://av-group.ru/wp-content/uploads/2015/10/AV_RCI_2015.pdf (accessed on 26.07.2018).

[3] Rosstandard "OK 029–2014 (NACE Ed. 2). Russian Classification of Economic Activities" dated 31.01. 2014 No. 14. Collection of legislation of the Russian Federation with amendments and additions as amended on 03.29.2018.

of the Russian Federation were used in the calculations: Statistical Tax Reporting Form No. 1-NOM[4] and the Federal State Statistics Service of the Russian Federation "Regions of Russia. Socio-economic indexes"[5]. In these reports enlarged types of economic activity corresponding to the OKVED sections are defined (*Table 1*).

Let us introduce the next relative performance index. It is equal to the ratio of the value of tax income to the average annual number of the employed population of a constituent entity of the Russian Federation for a certain type of economic activity. Let us call this index a relative performance index of tax revenues (OPEN) by type of economic activity. For each constituent entity, thirteen indexes can be determined (by the number of types of economic activity, $m = 13$) — $OPEN_{ij}$, where the index i takes values from 1 to 85 (by the number of constituent entities in the Russian Federation, $n = 85$), and the index j corresponds to the type of economic activity and, therefore, varies from 1 to 13.

This index characterizes the tax income on average for a constituent entity that is brought to the country budget by one employee engaged in the relevant type of economic activity. In the future, this index will be denoted as X_{ij} for simplicity.

Now, we will calculate the average value of the relative performance index of tax revenues for all constituent entities for each type of economic activity. As a result, we will obtain thirteen values determined by the formula of a simple average

$$\overline{X}_j = \frac{\sum_{i=1}^{n} X_{ij}}{n}.$$

Then, for each tax, we will determine the variance D_j and the standard deviatio σ_j of the relative performance index of tax revenues for constituent entities. These variation indexes were calculated by means of the following formulas:

$$D_j = \frac{\sum_{i=1}^{n} (X_{ij} - \overline{X}_j)^2}{n-1} \text{ and } \sigma_j = \sqrt{D_j}.$$

Using the calculated average values, we will center all relative indexes X_{ij} by the following formula $\dot{X}_{ij} = X_{ij} - \overline{X}_j$. If we now apply the valuation operation using the standard deviations $\dot{X}_{ij}$ to the centered relative indexes σ_j, we will obtain standardized relative performance indexes of tax revenues (indexes) for each type of economic activity in all constituent entities $U_{ij} = \frac{\dot{X}_{ij}}{\sigma_j}$. Note that the values U_{ij} do not have dimensions. Moreover, all average values of standardized relative performance indexes of tax revenues for each type of economic activity are zero, i.e. $\overline{U}_j = 0$ for all j, and all variances of these indexes $D_j = \frac{\sum_{i=1}^{n} (U_{ij} - \overline{U}_j)^2}{n-1}$ are equal to 1.

Since the value of tax income for various types of economic activity is influenced by numerous diverse factors, it can be assumed that standardized values U_{ij} are subject to different laws of distribution, but with the same averages and variances. Thus, each constituent entity of the Russian Federation can be characterized by a system of dimensionless indexes with the same average values equal to zero and variances equal to one.

If the obtained indexes for all types of economic activity are summed up for each constituent entity, we will eventually have the values of a certain aggregate index reflecting the efficiency of tax collection in the constituent entity for all types of economic activity: $I_i = \sum_{j=1}^{m} U_{ij}$. The resulting index of tax collection efficiency is based on 13 indicators, each of them corresponding to the type of economic activity and assessing the level of economic development of the constituent entity (the index value in the i-th constituent entity is equal to I_i).

Let us estimate the share of each type of economic activity in the total tax revenue and in the number of the employed population (*Table 1*).

[4] Report on form 1-NOM as of 01.01.2017 in the context of the constituent entities of the Russian Federation. Nalog.ru: Federal Tax Service of the Russian Federation. 2005–2018. URL: https://www.nalog.ru/rn77/related_activities/statistics_and_analytics/forms/6092076/ (accessed on 19.09.2018).

[5] Regions of Russia. Socio-economic indexes. URL: http://www.gks.ru/; Federal State Statistics Service. 1999–2018. URL: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf (accessed on 21.09.2018).

Table 1

Ratio of shares of foreign economic activity in tax revenues and the employed population in 2015–2016

No	Type of Economic Activity (TEA)	Share of TEA in tax revenues, d_{tr}, in %		Share of TEA in the employed population, d_{ep}, in %		Relation D_{tr} to d_{ep}	
	Year	2015	2016	2015	2016	2015	2016
1	Agriculture, hunting and forestry; fishing, fish farming	0.80	0.86	9.42	7.63	0.08	0.11
2	Mining	34.31	29.52	1.59	1.55	21.69	19.01
3	Manufacturing industries	19.75	22.45	14.39	14.22	1.37	1.58
4	Production and distribution of electricity, gas and water	3.45	4.13	2.81	2.76	1.23	1.50
5	Construction	4.80	5.24	8.26	8.65	0.58	0.61
6	Wholesale and retail trade; repair of motor vehicles, motorcycles, household goods and personal items	12.12	12.37	18.85	18.92	0.64	0.65
7	Hotels and restaurants	0.67	0.74	1.96	2.29	0.34	0.32
8	Transport and communication	6.40	6.55	8.04	8.30	0.80	0.79
9	Real estate transactions, lease and provision of services	11.92	12.31	8.78	9.93	1.36	1.24
10	Education	2.33	2.34	8.10	7.70	0.29	0.30
11	Health and social services	1.90	1.91	6.62	6.39	0.29	0.30
12	Provision of other public, social and personal services	1.51	1.56	3.74	4.40	0.40	0.35
13	Other activities	0.04	0.02	7.44	7.26	0.00	0.00

Source: calculated by the authors based on the data from the Federal Tax Service of the Russian Federation. URL: https://www.nalog.ru/rn77/related_activities/statistics_and_analytics/forms/6092076/ (accessed on 09.19.2018) and the SSC of the Russian Federation. URL: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf (accessed on 09.21.2018).

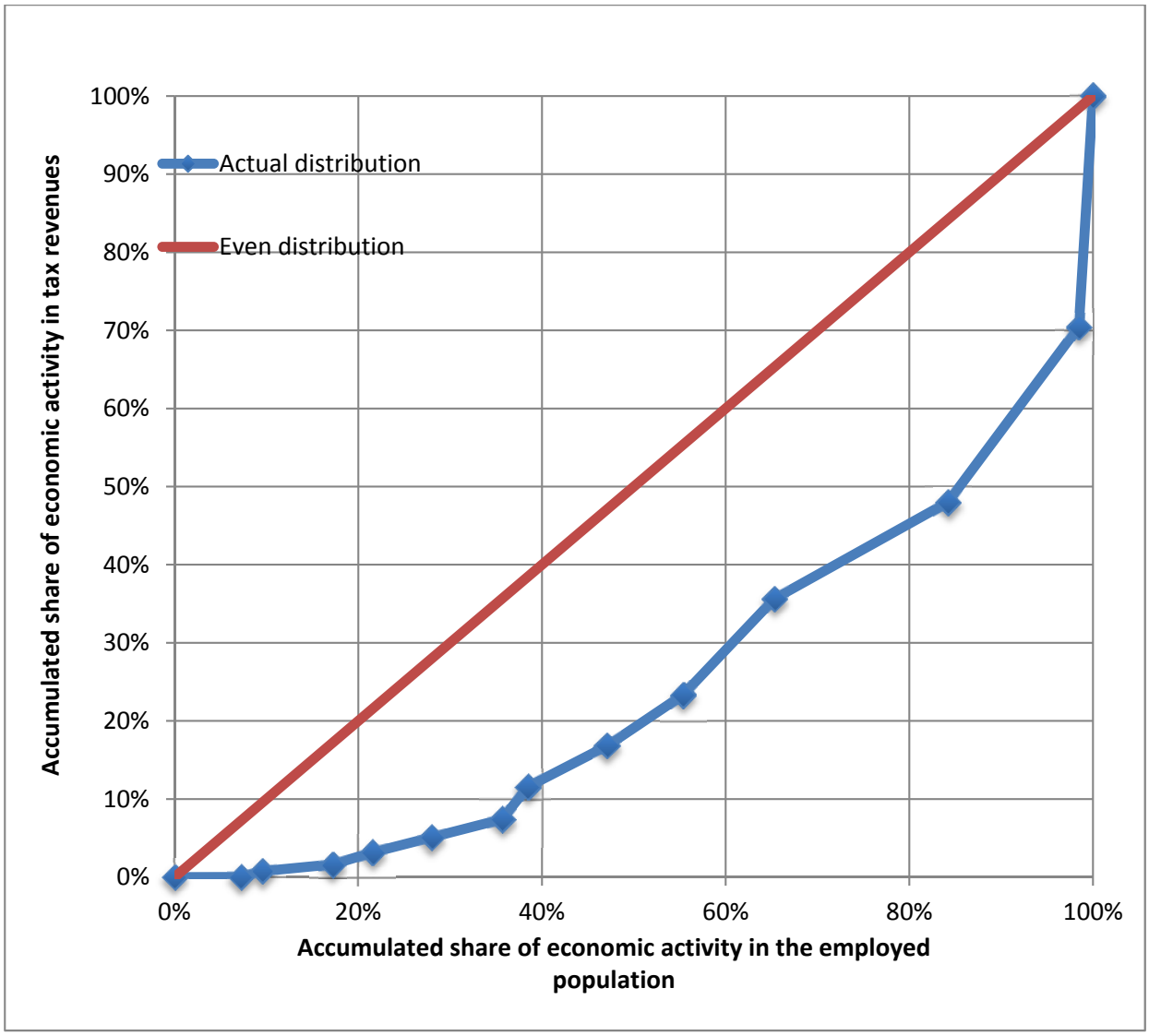

Fig. 1. **Distribution of tax revenues by economic activity in 2016 (broken line — the actual distribution; dotted line — even distribution)**

Source: built by the authors based on data from the Federal Tax Service of the Russian Federation. URL: https://www.nalog.ru/rn77/related_activities/statistics_and_analytics/forms/6092076/ (accessed on 19.09.2018); GKS RF. URL: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf (accessed on 21.09.2018).

Table 1 shows that the share of foreign economic activity "Mining" is almost a third of all tax revenues.

Comparing the structure of tax revenues and the employed population, we see that the ratios of the shares of tax revenues d_{tr} to the shares of the employed population d_{ep} by types of economic activity differ significantly among themselves (for example, in 2016 the highest value of 19.01 was observed for the foreign economic activity "Mining", and the smallest — 0.11 for the foreign economic activity "Agriculture, hunting and forestry; fishing, fish farming"). They differ from the even distribution of tax revenues (in this case, the ratio of the shares of d_{tr} to d_{ep} is equal to 1).

Figure 1 shows a graph of the distribution of tax revenues by type of economic activity (analogous to the Lorenz curve), which clearly demonstrates the inequality of such a distribution (a significant deviation from the uniform distribution).

The degree of uneven tax revenues by type of economic activity can be quantified. For such an

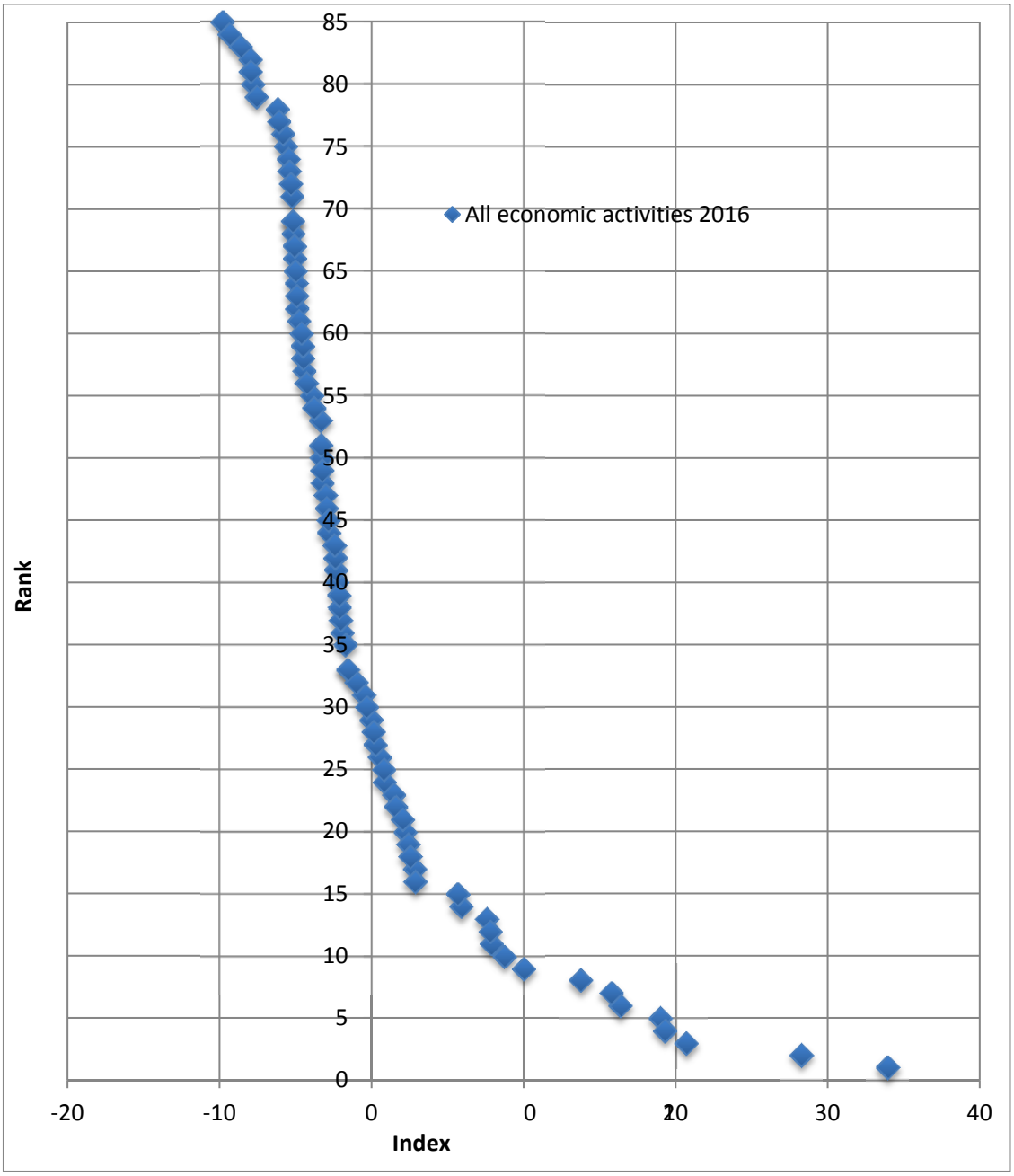

Fig. 2. **Distribution of the constituent entities of the Russian Federation in accordance with the tax revenues index for all types of economic activity in 2016**

Source: developed by the authors based on *Tabl. 1.*

assessment, we use the analogue of the Lorenz coefficient K_L. The value of this coefficient can be determined by formula (1)

$$K_L = \frac{1}{2}\sum_j \left| d_{\text{нпj}} - d_{\text{знj}} \right|, \qquad (1)$$

where the summation is performed for all types of economic activity. The value of the coefficient K_L, reflecting the unevenness of tax revenues by type of economic activity in 2016, was equal to 0.40. The obtained value of the coefficient K_L indicates that the distribution of tax revenues by types of economic activity in 2016 is significantly different from the uniform distribution.

Proposed by the authors, the index of efficiency of tax revenues is an integral indicator

that can be used to measure the level of economic development in the regions, their intersubjective comparison and to assess the effectiveness of tax revenues in various types of economic activity. The method of building up the index makes it possible to analyze its (and its individual indicators) dynamics, which allows to assess changes in the economic activities of the constituent entities in the role redistribution of economic activities in terms of the effectiveness of tax revenues.

The proposed method of calculating the index makes it possible to use a variety of measurements in any socio-economic system (evaluating the resource, economic, social, etc. system potentials), which allows to obtain a comprehensive indicator of the economic development of the system, to assess its potential, to define goals, to identify infrastructure problems, gaps in the diversification of the economy, and to assess investment risks and threats.

Here are some examples demonstrating the possible use of the index of efficiency of tax revenues in analyzing the economic activities of the constituent entities of the Russian Federation. *Figure 2* shows the distribution of the constituent entities of the Russian Federation according to the values of the index of efficiency of tax revenues *I*.

It can be seen that there is a fairly strong stratification of the constituent entities of the Russian Federation on the effectiveness of tax revenues. For example, the number of the constituent entities whose index value is positive (above the average level) is 28, and in 57 constituent entities the value of this index is below zero.

The effectiveness of tax revenues can be considered by certain types of economic activity, i.e. by individual indicators included in the index. *Table 2* presents the distribution of the constituent entities of the Russian Federation by the indicator in the foreign economic activity "Production and distribution of electricity, gas and water". It follows from the table that the most developed constituent entities in this foreign economic activity are: Moscow, the Krasnoyarsk Territory and the Khanty-Mansiisk autonomous district. A total of 26 constituent entities are above the average level (zero), and 59 of them are below. The Republic of Ingushetia, the Chechen Republic, the Republic of Kalmykia, the Pskov and Kirov Regions are the weakest. It can be concluded that the development of foreign economic activity "Production and distribution of electricity, gas and water" among the constituent entities of the Russian Federation is very uneven.

Based on *table 2* we will make figures 3 and 4. *Figure 3* shows the distribution curve of the constituent entities according to the index reflecting the efficiency of tax revenues from the foreign economic activity "Production and distribution of electricity, gas and water".

Figure 4 shows a histogram of positive index values of efficiency of tax revenues for the foreign economic activity "Production and distribution of electricity, gas and water" (index I_4) in descending order.

Let us consider the effectiveness of tax revenues by type of economic activity. For this, it is necessary to evaluate all summands (indicators) included in the index. For example, *figure 5* shows a histogram reflecting the structure of the index of efficiency of tax revenues for the Moscow region (the index value is 8.72; it is the 10th among the constituent entities of the Russian Federation on this indicator). It can be seen that the highest efficiency of tax revenues in this constituent entities is observed in such foreign economic activity as "Production and distribution of electricity, gas and water".

Let us consider the efficiency of tax revenues in a constituent entity in the middle of the ranked list (the index value is –2.44; it is 43rd among the constituent entities of the Russian Federation on this indicator).

The structure of the index for this constituent entity, presented in *figure 6*, indicates that for all FEA, the efficiency of tax revenues is close to the average values, practically the values of all indicators are within the intervals $(-\sigma; +\sigma)$.

Table 2

Indicator of distribution of the constituent entities of the Russian Federation by type of economic activity "Production and distribution of electricity, gas and water" in 2016

Constituent entity of the Russian Federation	Indicator 1240	Rank	Constituent entity of the Russian Federation	Indicator 1240	Rank
Moscow	**5.46855**	**1**	**Nizhny Novgorod region**	**–0.29498**	**44**
Krasnoyarsk Territory	4.38956	2	Republic of Karelia	–0.30163	45
Khanty-Mansiisk Autonomous District	2.21977	3	Kaluga region	–0.32573	46
Republic of Khakassia	1.89342	4	Kabardino-Balkarian Republic	–0.32852	47
St. Petersburg	1.61829	5	Orenburg region	–0.32902	48
Irkutsk region	1.50083	6	Jewish Autonomous Region	–0.35516	49
Moscow region	1.4381	7	Primorye Territory	–0.39471	50
Leningrad region	1.24543	8	Ivanovo region	–0.41518	51
Tyumen region	1.11134	9	Zabaikalye Territory	–0.41524	52
Amur region	1.10717	10	Republic of North Ossetia	–0.41681	53
Stavropol Territory	0.64021	11	Mari El Republic	–0.42119	54
Yamalo-Nenets Autonomous District	0.53125	12	Penza region	–0.42483	55
Magadan region	0.38516	13	Vologda region	–0.42684	56
Tula region	0.30986	14	Ryazan region	–0.42811	57
Sverdlovsk Region	0.30364	15	Sevastopol	–0.42813	58
Murmansk region	0.27138	16	Lipetsk region	–0.43485	59
Kamchatka Territory	0.27018	17	Kemerovo region	–0.44914	60
Novosibirsk region	0.22632	18	Smolensk region	–0.45503	61
Saratov region	0.19555	19	Republic of Crimea	–0.46636	62
Rostov region	0.15088	20	Belgorod region	–0.46737	63
Kaliningrad region	0.07724	21	Voronezh region	–0.47341	64
Chelyabinsk region	0.06231	22	Altai region	–0.50418	65
Republic of Bashkortostan	0.04357	23	Republic of Mordovia	–0.5377	66
Kurgan region	0.04078	24	Omsk region	–0.54277	67
Tomsk region	0.03717	25	Kursk region	–0.54752	68
Krasnodar region	0.02234	26	Astrakhan region	–0.5752	69
Tver region	–0.02663	27	Oryol region	–0.59274	70
Yaroslavl region	–0.04949	28	Novgorod region	–0.59961	71
Sakhalin region	–0.08211	29	Republic of Adygeya	–0.6092	72
Republic of Dagestan	–0.08899	30	Arkhangelsk region	–0.6145	73
Nenets Autonomous District	–0.1304	31	Udmurtian Republic	–0.62054	74
Khabarovsk region	–0.1342	32	Altai Republic	–0.63453	75
Republic of Sakha	–0.13707	33	Tambov region	–0.65505	76
Chuvashi Republic	–0.15907	34	Ulyanovsk region	–0.65973	77
Komi Republic	–0.18091	35	Chukotka Autonomous Region	–0.66153	78
Perm region	–0.18875	36	Republic of Buryatia	–0.66884	79
Republic of Tatarstan	–0.19606	37	Bryansk region	–0.71352	80
Republic of Tuva	–0.2024	38	Kirov region	–0.72622	81
Karachayevo-Cherkessian Republic	–0.22021	39	Pskov region	–0.83866	82
Samara region	–0.27729	40	Republic of Kalmykia	–0.84296	83
Volgograd region	–0.28408	41	Chechen Republic	–0.98714	84
Vladimir region	–0.28646	42	Republic of Ingushetia	–1.04336	85
Kostroma region	–0.28845	43			

Source: calculated by the authors based on the data from the Federal Tax Service of the Russian Federation. URL: https://www.nalog.ru/rn77/related_activities/statistics_and_analytics/forms/6092076/ (accessed on 09.19.2018). GKS RF. URL: http://www.gks.ru/free_doc/doc_2017/region/reg-pok17.pdf, (accessed on 07.25.2017).

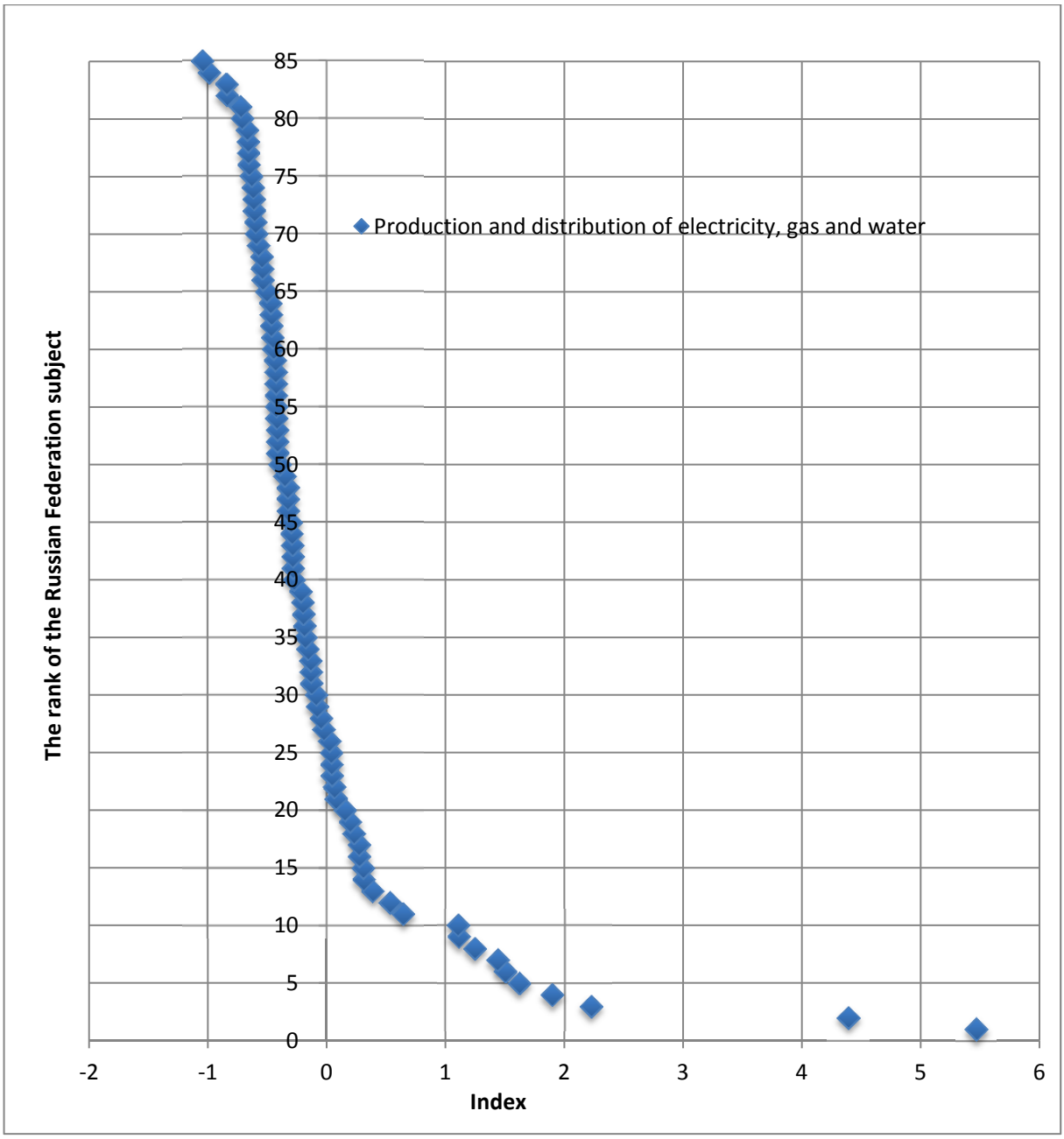

Fig. 3. **Distribution of the constituent entities of the Russian Federation in accordance with the tax revenues index by type of economic activity "Production and distribution of electricity, gas and water" in 2016**

Source: developed by the authors based on *Table 2*.

CONCLUSIONS

The article reviews the scientific works of domestic and foreign authors in the field of application of the index method and its indicators. It is revealed that this method is widely used in various fields of economics and management. The index of efficiency of tax revenues is proposed, based on 13 indicators, each of them corresponding to the type of economic activity and assessing the level of economic development of a constituent entity of the Russian Federation.

Based on the proposed method, the distribution of the constituent entities of the Russian Federation is obtained according to the values of the index of tax revenues for all foreign economic activities in 2016. The effectiveness of tax revenues for individual indicators included in the index is considered. The distribution of the

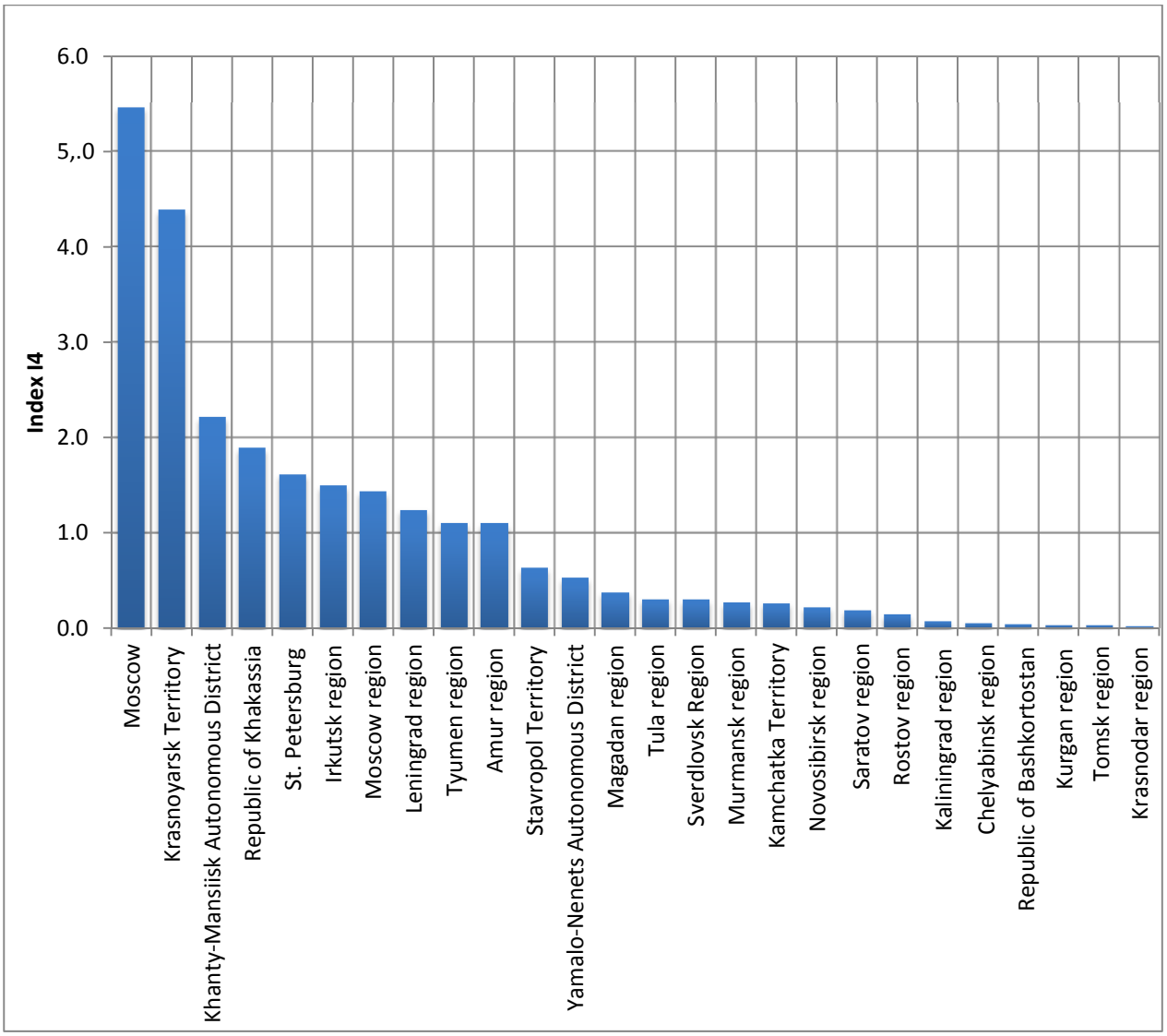

Fig. 4. **Ranked number of values of the tax revenues efficiency index by type of economic activity "Production and distribution of electricity, gas and water", exceeding the average value**

Source: developed by the authors based on *Tabl. 2*

constituent entities of the Russian Federation is obtained according to the economic activity index "Production and distribution of electricity, gas and water". Distribution indicators for each constituent entity of the Russian Federation are calculated. Graphs showing the structure of the index of efficiency of tax revenues in the Moscow region and the Altai Republic in 2016 were built.

It should be noted that the presented index method allows to evaluate the efficiency (effectiveness) of tax revenues in the constituent entities of the Russian Federation simultaneously for all types of economic activity, to compare the constituent entities among themselves according to the values and structure of this index, to classify the constituent entities of the Russian Federation in terms of tax revenues, to analyze the change in dynamics and to predict its values in the future. The proposed method of calculating the index makes it possible to use a variety of diverse factors that affect the socio-economic system (economic, socio-demographic, technological, etc.), which allows to obtain a complex index of the system activities and development, to assess its potential, to define goals, to identify infrastructure problems, gaps in the diversification of the economy, and to evaluate investment risks and threats.

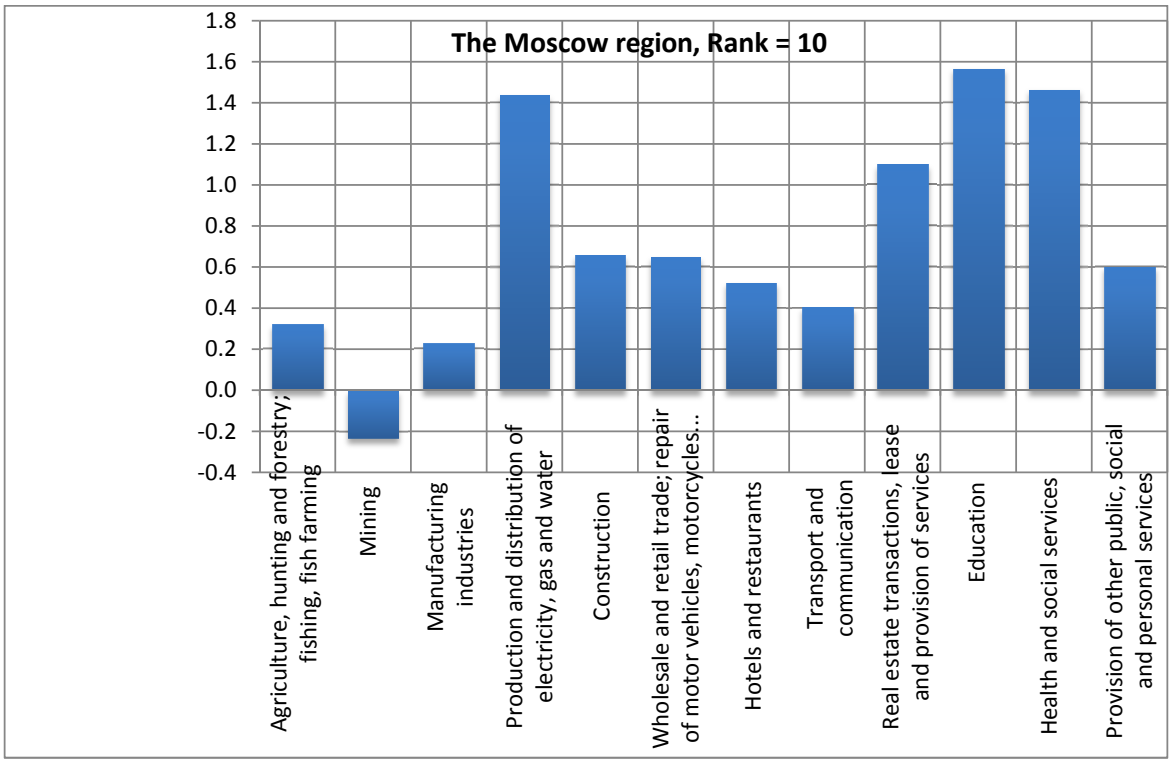

Fig. 5. **Structure of the tax revenues efficiency index in the Moscow region in 2016**

Source: developed by the authors based on *Tabl. 1*.

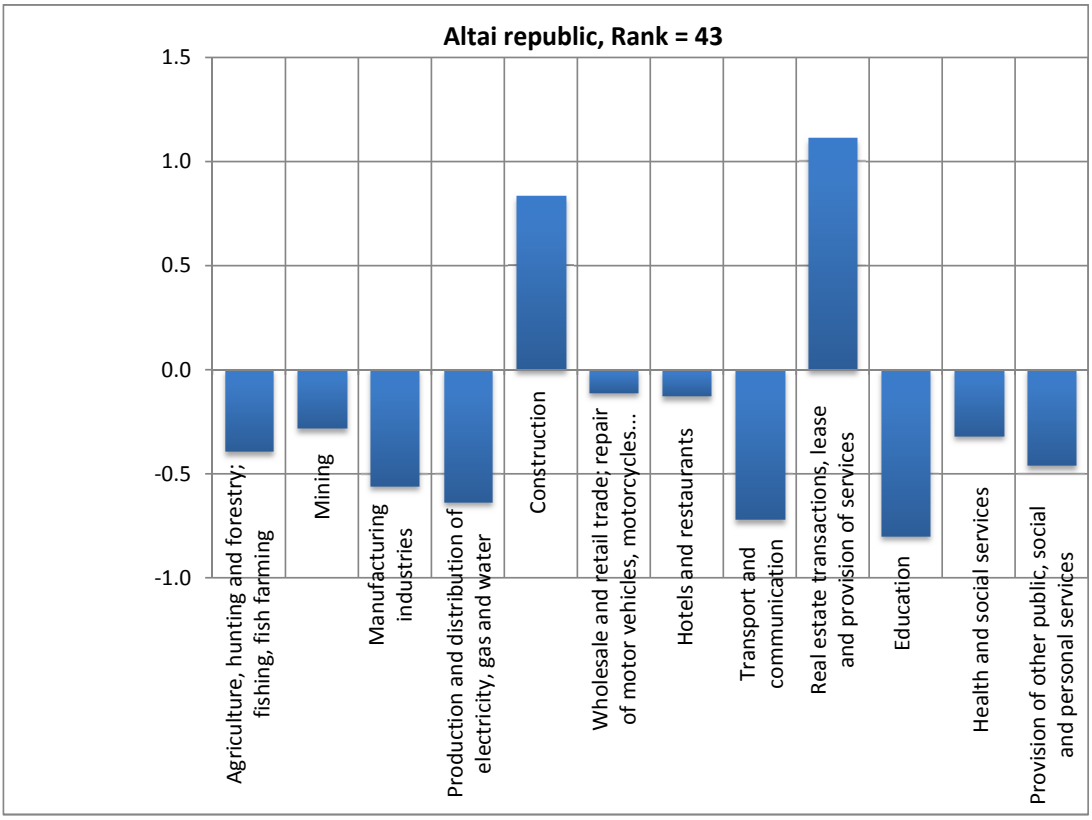

Fig. 6. **Structure of the tax revenues efficiency index in the Republic of Altai in 2016**

Source: developed by the authors based on *Tabl. 1*.

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Problems and Prospects of Development of Microfinance Organizations in the Russian Federation

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ABSTRACT

Intensive development of microfinance organizations in Russia has a double meaning. On the one hand, they are claimed by the population; on the other hand, the state control over their activities is difficult. The study reveals the nature, problems and prospects of development of microfinance organizations in Russia. The aim of the authors is to determine the nature of the controversial development of the financial market segment and suggest mechanisms that can resolve these contradictions. The study used a systematic approach and statistical methods. The authors analyzed analytical and statistical information of the Bank of Russia. The lack of adequate mechanisms for the state regulation and control over the activities of microfinance organizations the state is due to the gaps in the legislative framework. This was the reason for the increase in the share of overdue debts, the high debt load of the population, the intensification of collectors, the increase in lawsuits. The actions are proposed for increasing transparency of microfinance transactions without increasing the administrative burden on regulatory authorities. Among them are: attracting private investors-lenders to microfinance activities with the development of Internet infrastructure, creating a special online platform to register microloan transactions between individuals and / or legal entities in real time with recording them in the Bank of Russia and in tax services. It is also necessary to amend the legislation on microfinance activity. This sequence of actions will lead to a reduction in the informal sector in the microfinance segment and in the financial market of the Russian Federation as a whole. The proposals made in the article can be used to develop the anti-crisis program of the Government of the Russian Federation in this area.

Keywords: financial market; microfinance organizations; microloans; microcredit companies; legal regulation; tax services; population solvency; control mechanisms; statistical indicators

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INTRODUCTION

To implement measures within the Main directions of development of the financial market for the period of 2016–2018, 2019–2021, the Bank of Russia together with the Government of the Russian Federation have developed a special plan of actions (roadmap), maintaining three priority development goals:

1. Improving the level and quality of life of the citizens of the Russian Federation by means of financial market instruments.

2. Promoting economic growth by providing competitive access to the subjects of the Russian economy to debt and equity financing, risk insurance instruments.

3. Creating conditions to grow the financial industry.

As part of the first goal, it is planned to increase financial literacy and availability of financial services for the population and small and medium businesses through the development of the microfinance sector.[1]

Microfinance organizations are commercial financial organizations that issue loans to borrowers on the terms of urgency, payment, and repayment of microloans (analogs of loans, but, as a rule, small amounts for a short period).

Microfinance organizations (MFOs) are not credit organizations, although the nature of their activities is similar to the credit activities of commercial banks [1]. Initially, microfinance referred to services related to issuing small loans (microloans) to individuals for whom the access to traditional bank lending is restricted for some reason (remoteness of a settlement, no credit history or negative points in credit history, insignificant amount for short term, etc.). Nowdays microfinance operates within the framework of issuing loans of a small amount on the terms of urgency, repayment, payment and for a short period. Moreover, microfinance organizations can provide services related to saving money, insurance, leasing, remittances and payments [2].

Microfinance (as a tool of the financial market and need satisfaction of society) received an incentive for its development in the current (for the present state) form in the last quarter of the 20th century. It was then that microfinance programs appeared in a number of developing countries (Bangladesh, Brazil, India). The first such project is considered to be the project on financing the indigent developed by Bangladeshi economist and businessman Mohammed Yunus. The program was as follows: the residents of the country were given small sums of money from his MFOs as loans, but only on the condition that they would be invested in a small business of their own, and not used for consumer spending. Gradually, this initiative grew into the creation of Grameen Bank (Grameen Bank of Bangladesh), which became the first microfinance bank in the world, and remains the benchmark of classical efficient microfinance until now [3].

In general, microfinance institutions actively developed and scaled only in fairly poor countries in Asia and Africa.

However, now microfinance (as a financial tool and a tool for need satisfaction of society) is also used in European countries, the USA, the CIS, BRICS, etc.

It can be stated that today microfinance is being integrated into the global financial market and becoming an alternative to bank loans: electronic microfinance systems are being created, credit exchanges, including the WEBMONEY electronic money system, etc. [4–6].

A huge role in the development of microfinance belongs to the UN which developed new priorities declaring 2005 the "Year of Microfinance" and awarding the founder of modern microfinance Mohammed Yunus the Nobel Peace Prize in 2007. That is, in general, microfinance in the modern sense is not a "usurious loan" which existed in antiquity and was associated with high interest rates and almost enslaving conditions. Modern microfinance should support the development of society, includ-

[1] The main directions of development of the financial market of the Russian Federation for the period of 2019–2021. URL: http://vkk-journal.ru/wp-content/uploads/Osnovnyie-napravleniya-razvitiya-finryinka-Tekst.pdf (accessed on 03.04.2019).

ing small business, but should not become a business related to bond and usurious lending, which it is sometimes in real life [7]. Therefore, the development of the financial (including microfinance) market of the country should be balanced in relation to the real sector of the economy to ensure its stable growth [8, 9].

S.V. Solov'eva and M. Yu. Remezova note that many development banks and funds operate in Russia, but investment activity is still underdeveloped [10]. The authors point to the absence of an effective mechanism to transform financial resources into investments which often do not leave the banking system and bypass the real sector of the economy. To solve the problem, it is proposed to develop a mechanism for the Bank of Russia to directly buy bonds of development institutions issued for financing investment projects of strategic importance and for refinancing banks of any property pledged by such securities. Reducing the availability of resources in the global financial markets for Russian companies as a result of the sanctions, in theory, was supposed to be a catalyst for the development of lending to the domestic market. Unfortunately, this did not happen as a result of the following negative factors: instability of macroeconomic indicators, limited resource base, high cost of loans [11]. In a situation where the profitability of products of most enterprises of the domestic economy is lower than the interest rate, the banking system has an overwhelming effect on the finances of enterprises [12, 13].

The activity of microfinance organizations makes it possible to access financial products for those who have difficulties in obtaining bank loans. On the other hand, the activities of microfinance organizations legalize "usurious" business. The main problem is that microfinance is carried out at very high interest rates not considering the real creditworthiness of borrowers; when collecting debts, microfinance organizations often violate the current legislation.

The subjects of the financial (including microfinance) market should conduct research to study the needs for lending to the population. It is necessary to make changes to the current legislation where various options should be prescribed for credit support not only enterprises, but also individuals. As an alternative to microfinance, programs should be developed for lending to various categories of citizens, to control the formation of new organizations in the financial sphere and the repayment of credit debts.

RESEARCH RESULTS

Historical background and trends of microfinance development in Russia

In Russia, the history of microfinance began at the end of the XIX century. In 1895, a new type of credit organization appeared named "credit partnerships" (in fact, it was an analogue of the modern credit cooperative); at the beginning of the XX century the number of such organizations exceeded 16 thousand with a total number of shareholders over 10 million people. However, in the late 1930-s, the era of the Soviet industrialization, the activities of mutual credit societies and other credit cooperatives was terminated, their functions were transferred to the state bank. This segment was further developed in our country only with the start of market reforms.

From 1990 to 1992, the first credit cooperatives (credit unions) appeared. Such organizations were necessary to finance the incipient small business with still undeveloped banking system. At this stage, there was no regulatory framework for MFOs, where the concepts of "microfinance" and "microfinance activity" would be defined. Later, certain areas of microfinance started new types of lending in the form of consumer credit cooperatives (including agricultural ones) and mutual lending societies.

Due to the lack of clear legal regulation of microfinance activity, the informal sector was developing most actively, with all that it implies: extremely high interest rates, illegitimate ways of debt recovery, raiding and racketeering.

From 2004 to 2010, the number of consumers of microfinance services increased by more

than 5 times (the number of borrowers exceeded 100 million people), and the number of small businesses served was about 400 thousand. At the same time, microfinance organizations were represented by different forms, consumer credit cooperatives should be considered basic.

Since 2011, the activities of MFOs in Russia have been regulated by the law "On microfinance activities and microfinance organizations"[2] (hereinafter: "Law on microfinance activities"). The law makes a distinction between microfinance organizations and consumer credit cooperatives (the latter in contemporary legal status are not considered as microfinance organizations), and microfinance organizations are clearly distinguished from other economic entities of the national financial market. According to its main provisions, it is commonly called microfinancing activities of legal entities that have the status of a microfinance organization, other legal entities that also have the right to carry out microfinance activities to provide microloans. Information about such organizations should be entered in the state register of microfinance organizations.

At the same time, depending on the scale of activity and the value of assets (capital), the following types of microfinance organizations are defined (this provision took effect in 2016):

- microfinance companies;
- microcredit companies.

Major differences between microfinance companies and microcredit companies are related to the mechanisms for raising funds (capital). So, microfinance companies can raise funds from individuals (under certain conditions that are provided by law), and microcredit companies can raise loans only from the founders. All MFOs (microfinance companies and microcredit companies) can receive bank loans.[3]

Article 12 of the "Law on microfinance activity" contains information on restrictions on the activities of microfinance organizations. The most important and significant of them are:

1) microfinance organizations cannot issue loans in foreign currency;

2) microfinance organizations cannot change (increase) unilaterally the rates and commissions on loans;

3) microfinance organizations may not apply penalties to borrowers in case of full or partial early repayment of the loan, provided that the MFO received a notice of this no later than 10 days before the maturity date;

4) microfinance organizations cannot carry out any types of professional activity in the securities market;

5) microfinance organizations cannot issue microloans to a legal entity borrower or an individual entrepreneur if the principal amount of the borrower of a legal entity or an individual entrepreneur to this microfinance organization under contracts in the case of granting the microloan exceeds 3 million rubles;

6) microfinance organizations cannot charge the borrower with interest and other payments if the amount of such charges exceeds the principal amount of the debt without interest (the "body" of microloan) by 4 times. This applies only to contracts of up to a year and, unfortunately, does not apply to charging fines and penalties. This prohibition must be written on the first page of the loan agreement.

ANALYSIS OF THE CURRENT STATE OF THE MICROFINANCE SEGMENT

The main purpose of microfinance organizations is to provide microloans to the population, entrepreneurs without a legal entity and, in some cases, legal entities.

Microfinance organizations are required to have legal status of a legal entity, to generate reports in accordance with the requirements of the Bank of Russia, to comply with the established standards, to issue microloans only in the currency of the Russian Federation (rubles).

[2] Federal law "On microfinance activities and microfinance organizations" dated July 2, 2010 No. 151-FZ (as amended on July 29, 2017). Legislative acts of the Russian Federation. 2010. No. 27. Art. 3435.

[3] Microfinance and microcredit companies. CreditBanking. URL: https://cbkg.ru/articles/mikrofinansovye_i_mikrokreditnye_kompanii__najjdite_otlichija.html (accessed on 10.10.2018).

Table 1

Number of microfinance organizations in Russia, their registration and exclusion from the register, units

Indicator	Indicators by year						
	2012	2013	2014	2015	2016	2017	2018 (III quarter)
Number of MFOs at the beginning of the year	998	2,503	3,850	4,153	3,663	2,588	2,271
Included in the register	1,574	1,970	1,632	1,191	696	1,142	1,066
Excluded from the register	69	623	1,329	1,681	1,771	1,459	1,336
Number of MFOs at the end of the year	2,503	3,850	4,153	3,663	2,588	2,271	2,001

Source: compiled by the authors according to the Bank of Russia. URL: http://www.cbr.ru/finmarkets/files/supervision/OKP-MFO_04–2017.pdf (accessed on 10.10.2018).

A microloan, in turn, is the amount of money that the borrower receives from the lender under the contract on conditions meeting the standards established by law (repayment, urgency, payment). The amount of such a loan can not exceed 1 million rubles. Agreements for microloans are derivatives of a loan agreement (Article 807 of the Civil Code of the Russian Federation). The legislation of the activities of microfinance organizations is set in a certain framework, therefore, the activity of "usurers" (as a rule, individuals who give money to other individuals for a specified period at interest under a regular loan agreement) remains outside the legal field.

All microfinance organizations that issue microloans are included in a special state register. Inclusion and exclusion from the register, the rules of procedure will be determined by the supervisor in this area (the Bank of Russia). The register data is available in the open list on the website of the Bank of Russia. Since microfinance organizations are controlled by the Bank of Russia, all relevant statistics are posted accordingly on the official website of the Central Bank of the Russian Federation. Other analytical data presented, for example, on the portal of the Expert RA[4] rating agency, does not differ from the data posted on the Bank of Russia website by more than 3–5%.

Therefore, the information on microfinance organizations posted on the Bank of Russia website is not only relevant, but also reliable. Thus, the main analytical and statistical information will be presented later in the article with the reference to the Bank of Russia website.

In mid-October 2017, the total number of MFOs in the register of the Bank of Russia was 2,271 units. On October 25, 2018, there were 2016 units. The number of microfinance organizations reduced by 11% in a year. As of April 9, 2019, the total number of microfinance organizations was 1992, i.e. the reduction in their number was another 1.2%. The dynamics of changes in the number of microfinance

[4] See, for example, the Microfinance Market at the End of 2018: an Adaptive Strategy. URL: https://raexpert.ru/researches/mfo/2018 (accessed on 21.05.2019).

Table 2

Number of organizations eligible for banking operations, units

Indicator	Indicators by year						
	2012	2013	2014	2015	2016	2017	2018 (III quarter)
Quantity, total at the end of the year	1,094	1,074	1,052	1,024	978	567	512

Source: compiled by the authors according to the Statistical Bulletin of the Bank of Russia for the corresponding period. URL: https://www.cbr.ru/publ/bbs/ (accessed on 05.20.2019).

organizations in the Russian financial market in the period from 2012 to III quarter of 2018 inclusively presented in *table 1*.

In *table 2* the dynamics of credit institutions with the right to conduct banking operations is shown for comparison (see *Table 2*).

From 2012 to 2018, in Russia, the number of organizations entitled to carry out banking operations was almost halved (by 53.2%), and microfinance organizations — by 20.1%, which is undoubtedly due to the increased supervision of the Bank of Russia, which clears the market of unscrupulous participants.[5] The key reason for excluding microfinance organizations from the register is a violation of the rules of operation and regulation. Considering that the predominantly weak players left the microfinance market, the reduction in the number of organizations entered in the register did not affect the development of the segment as a whole.

Exclusion from the register is mainly due to the tightening of regulation and control in this market, increasing the requirements for the size of the capital of microfinance organizations. It may also be noted that since 2014, all microfinance organizations that had previously applied the simplified taxation system should have moved to the main taxation system. This, of course, increased both the administrative and fiscal burden on their activities.

In general, considering the specifics of the activities and the goals of creating various Russian MFOs, all these organizations as of October 2018 can be conditionally divided into the following main groups:

1) large network microfinance organizations that have a widespread system of service offices, maintain an aggressive advertising policy on the Internet, in the media, often attract bank loans and issue their own bonds, attract household loans (if they received the appropriate status of microfinance companies);

2) regional microfinance organizations that have one or more sales offices within their region, where there is a demand for microloans, mainly from the public;

3) specialized microfinance organizations engaged, as a rule, in one type of microloans, for example, on the security of real estate or cars, etc.;

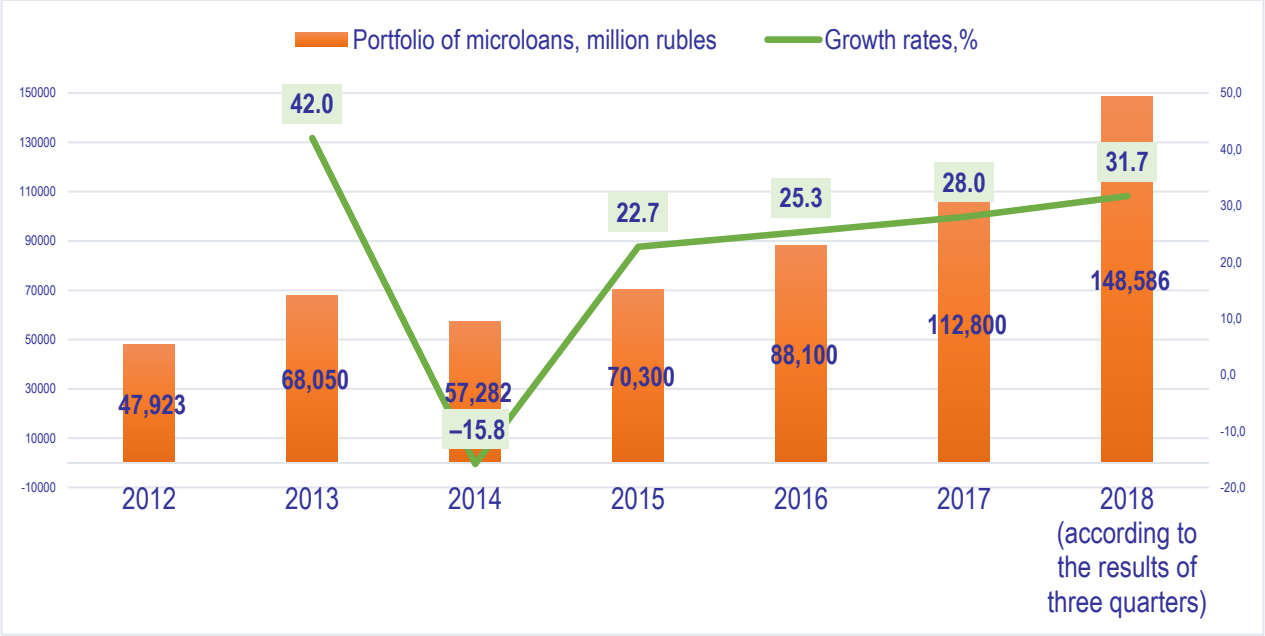
[5] Microfinance. Central Bank of the Russian Federation (Bank of Russia). URL: https://www.cbr.ru/Content/Document/File/71165/review_mfo_18Q3.pdf (accessed on 12.04.2019).

Table 3

Volumes and dynamics of microfinance in the Russian market

Indicator	Indicators at the end of the year						
	2012	2013	2014	2015	2016	2017	2018 (III quarter)
Portfolio of microloans, total, million rubles	47,923	68,050	57,282	70,300	88,100	112,800	148,586
Arrears, %	15.2	18.0	18.8	25.0	34.0	42.4	32.9
Net profit, million rubles	3,379	4,809	4,769	4,085	7,907	5,267	8,404
Capital, million rubles	n/a	n/a	n/a	n/a	61,408	66,709	33,405

Source: compiled by the authors according to the Bank of Russia. URL: https://www.cbr.ru/StaticHtml/File/14700/review_mfo_16.pdf (accessed on 10.10.2018).



Dynamics of the microloan portfolio issued by microfinance organizations

Source: compiled by the authors according to the Bank of Russia. URL: https://www.cbr.ru/StaticHtml/File/14700/review_mfo_16.pdf (accessed on 10.10.2018).

4) microfinance organizations that are affiliated with commercial banks or large companies. This gives an advantage to such organizations (fast and low cost of lending for developing capital base and assets, accessibility to a pool of consumers, etc.);

5) microfinance organizations created to finance small businesses (as mentioned above, their share in the total number is only 11%). They often participate in regional and federal programs aimed at supporting small and medium businesses;

6) microfinance organizations that operate exclusively in the virtual space, issuing online microloans not visiting offices. They use Internet marketing, their own web-platforms, the terms of a public offer compiled according to the norms of the Civil Code of the Russian Federation to attract customers. The risks of their activities include the imperfection of the legal framework[6].

In 2017, microcredit companies accounted for the largest share (about 97%), no more than 3% for microfinance. In 2018, respectively, 97.3% and 2.7%, for the first quarter of 2019–97.4% and 2.6%.

The contraction of the microloan portfolio in 2014 and its subsequent growth are closely linked to the crisis. In 2014, there was a demand contraction in the economy, resulting in a decrease in microloans. Despite the demand contraction continued in 2015, the population began to move actively from the market of consumer bank loans to the microloan market (*Tables 3, 4*). The microfinance market entirely reflects the general level of economic development: it is during the periods of recession and economic recovery that the growth rate of the microfinance segment slows down or accelerates due to the compression / expansion of the boundaries of financial services consumers — the poor and needy parts of the country's population [14]. The changes in the dynamics of microfinance in the Russian market are reflected in *table 3*

The portfolio growth rate in 2017 accelerated: core assets (total microloan portfolio) increased by 28.0% (in the previous year — by 25.3%). As a result, the portfolio of assets reached 112.8 billion rubles (*Table 3*). In 2017, the principal debt of microloans issued to individuals grew most rapidly by 33.1% from the beginning of January to the end of December 2017. At the same time, the growth rate of the indicator on legal entities was 19.6%. The portfolio of microloans issued to individual entrepreneurs increased over the same period by 6.0%.

The net profit of microfinance organizations (*Table 3*) for 2017 was 5.3 billion rubles, which is by one third less than the value of the previous year. Microfinance companies earned 74.7% of the total profits earned by microfinance organizations. Equity for the year increased by 8.6% and reached 66.7 billion rubles. Return on equity amounted to 8.2% per annum. However, by the end of 2017 the need to create reserves for possible losses on microloans in 100 percent of the estimated value reduces the profits of microfinance organizations.

Pressure on the financial results of microfinance organizations may also be caused by changes in operating expenses associated with the expansion of staff to meet the approved basic risk management standard.

At the end of September 2018, the size of core assets (portfolio) of microfinance organizations increased by 32.9% compared to the value at the end of III quarter of the previous year and reached 148.6 billion rubles. The growth was due to the portfolio of microfinance companies (an increase of 45.2% to 84.3 billion rubles), the increase of which, first of all, was provided by the positive dynamics in the segment of individuals. In total, microloans to individuals accounted for 81.4% of total core assets of microfinance organizations; the share of small and medium businesses (as a recipient of microfinance services) was 18.3%. Changes in the regulation of microfinance organizations, including the limitation of the maximum daily interest rate to 1% from July 1, 2019, will facilitate the transfer of some companies oper-

[6] Microfinance market, creation and implementation features of MFOs activities. Law company "Dekart". URL: https://idekart.ru/articles/124463 (accessed on 11.10.2018).

Table 4

Selected indicators of financial organizations, million rubles

Indicator	Indicators at the end of the year						
	2012	2013	2014	2015	2016	2017	2018 (III quarter)
The volume of loans, deposits and other funds placed by organizations, individuals and credit organizations	25,110,510	29,886,148	35,222,770	34,844,819	36,931,187	42,160,694	44,589,984
Loans provided to small and medium businesses	6,023,724	6,933,243	5,568,433	4,540,505	4,559,661	5,304,913	4,717,972
Authorized capital	1,332,095	1,451,360	1,598,428	2,3339,74	2,381,043	2,513,715	2,612,982
Total amount of profit (+) / loss (–) received by existing credit organizations	930,133	884,297	780,722	263,694	788,429	870,321	900,507

Source: compiled by the authors according to the Statistical Bulletin of the Bank of Russia for the corresponding period. URL: https://www.cbr.ru/publ/bbs/ (accessed on 05.20.2019).

ating in the "loans to salary" segment (or PDL segment — from English "pay day loans") to the segment of medium-term consumer loans (or to the segment of IL — from English "Installments").

It is interesting to compare some performance indicators of the domestic microfinance sector with other financial organizations (*Table 4*).

During the period under review, the volume of loans, deposits and other funds placed by financial organizations to other organizations, individuals and credit organizations increased by 77.5%, while financing of small and medium businesses decreased by 21.7%, which explains their increased interest in microfinance.

In 2012–2018, there was a duplication of the authorized capital (96.2%). The financial result decreased by 3.2%. Its change was uneven. The lowest value was recorded in 2015.

Comparison of individual performance indicators of the financial and microfinance sectors of the Russian economy, presented in tables 3 and 4, testifies to the enormous difference in their

Table 5

Structure of key performance indicators of microfinance institutions in 2016–2017, I — III quarters, 2018, %

Indicator	Indicators at the end of the year, quarter				
	2016	2017	I quarter 2018	II quarter 2018	III quarter 2018
Number of contracts, including:	100	100	100	100	100
with individual entrepreneurs;	0.13	0.09	0.05	0.04	0.05
with legal entities;	0.10	0.09	0.06	0.07	0.05
with individuals	99.77	98.2	99.89	99.89	99.90
Profile assets (amount of principal debt on microloans issued), including:	100	100	100	100	100
with individual entrepreneurs;	13.5	11.1	10.8	10.6	9.9
with legal entities;	10.8	10.1	9.5	9.2	8.7
with individuals	75.7	78.8	79.7	80.2	81.4
Amount of microloans issued during the reporting period, including:	100	100	100	100	100
with individual entrepreneurs;	5.5	4.4	3.6	3.7	3.8
with legal entities;	6.9	5.9	4.4	5.4	5.2
with individuals	87.6	89.7	92.0	90.9	91.0

Source: calculated by the authors according to the Bank of Russia. URL: https://www.cbr.ru/StaticHtml/File/14700/review_mfo_16.pdf (appeal date 10.29.2018); files.rmcenter.ru/year/2018/11/BankRossii_OBZOR.pdf (accessed on 06.02.2019).

scales in the progressive development of the latter. If the difference in lending volumes in 2012 was 524 times, then in 2018 it was 300 times. The ratio of the authorized capital was an average of 52 times. The profit received by financial organizations in 2012 was 275.3 times higher than the profit received by the microfinance sector, in 2018–107.2 times.

As you can see from the data in *table 5*, microloan contracts are mainly signed by individuals. During the period under review, their share is about 100%, while there is a decrease in the number of contracts signed with entrepreneurs and legal entities. The amount of principal debt on microloans issued by entrepreneurs and legal entities is decreasing, while on individuals it is growing steadily: from 2016 to III quarter of 2018 by 5.7%.

The amount of microloans issued to individual entrepreneurs and legal entities during the period under review decreased by 1.7%, and to individuals increased by 3.4% (*Table 5*).

The growth rate of the microloan portfolio "before paycheck" should be noted during the period under review (no more than 30 thousand rubles for no longer than 30 days). This fact should be considered as a result of the systematic work of the Bank of Russia aimed at improving the quality of risk assessment in this segment, including improving the requirements for creating reserves for possible loan losses for microfinance organizations[7] and introducing a multiplying factor (1.1) that increases the calculation of the sufficiency ratio capital load on capital on loans "before salary".

The analysis of official static data allows to conclude that the microfinance segment is developing, but its potential is higher than the current market (more than three times), as indicated by official sources of the financial market macro-regulator[8], and scientific research on trends and patterns of microfinance development in Russia [13, 15]. This is due to the high demand for microfinance services from the public and small entrepreneurs, which is a natural consequence of lower living standards and limited availability of credit products for small businesses.

The total of all functions (social and economic plan) performed today by microfinance organizations can be described as follows: reducing poverty, supporting entrepreneurial initiatives, ensuring the availability of financial services, growth opportunities for small business, "promoting" innovation, developing the financial system on the whole.

The main advantage of microfinance for entrepreneurs is the expansion of the possibility of implementing small and agile projects for whom the bureaucracy of bank lending or public-private partnership is destructive [15]. The main reasons why the population increasingly prefers to use microfinance services instead of commercial banks [16] include:

immediate loan on demand without collecting references and other documents required to confirm creditworthiness in the bank (until the beginning of 2017, the provision of a passport was sufficient, but since the beginning of 2017 identification has also been carried out according to the insurance number of an individual personal account or SNILS, although this does not change the idea);

- reduction in consumer lending by banks (including due to stricter credit rating requirements);
- quick decision making procedure for issuing a microloan;
- the ability to borrow small amounts for short periods (but here a bank credit card may be an alternative).

The development of the microfinance market is directed towards lending to small settlements, since the settlements with a population of up to 50 thousand people do not have potential attractiveness for banks due to high transaction costs. For microfinance organizations, this market is interesting, and the client base turns out to be of sufficient quality, since the target audience of microfinance is, as a rule, people with incomes of up to 30 thousand rubles a month per family (now it is 70% of the Russian population). Comparing the data on the real standard of living of the population with the data on microloan needs, it can be noted that this need is quite high (on average 250–300 billion a year), loans in small sums are demanded (from 9 to 12 thousand rubles; in cities with a million-plus population this amount is somewhat larger and averages in 15–19 thousand rubles).[9]

Thus, the development potential of the microfinance market is very high. First, no more

[7] Establishing new categories to develop MFOs reserves for possible losses on loans to small and medium businesses (lower values compared to conventional legal entities) and PDL loans (elevated values — 100% from 91 days overdue).

[8] Overview of key indicators of microfinance organizations // Bank of Russia. URL: https://www.cbr.ru/StaticHtml/File/14700/review_mfo_16.pdf (accessed on 29.10.2018); files.rmcenter.ru/year/2018/11/BankRossii_OBZOR.pdf (accessed on 06.02.2019).

[9] Statistics on the size and dynamics of loans of MFOs and consumer credit cooperatives in 2016–2017. URL: https://www.wecreditunion.ru/novosti/glavnoe/statistika-po-razmeram-i-dinamike-zaimov-mfo-i-kpk-v-2016–2017-gg/ (accessed on 10.10.2018).

than a quarter of the market is currently covered. Second, given the current trends in socio-economic development in the country, the population will be forced to use microloans, since growth rates of prices for consumer goods are significantly higher than growth rates of real incomes of the population. Third, small business always needs to rapidly finance working capital, but commercial banks generally do not seek for cooperation with small business, since at high risks the margin value of the transaction is relatively small. The average microloan in this segment is no more than 500–700 thousand rubles.[10]

Considering the high proportion of overdue loans and recurrent conflicts with the recovery of overdue debts, the development of microfinance, including at the legislative level, does not look positive to many experts. Overestimated cost of services of microfinance organizations is a significant problem [17, p. 500–512]. Even before the introduction in 2017 of the norm on which the accrued interest on a microfinance loan can not exceed more than 3 times the amount of the principal debt, many organizations used expensive loans up to 2% per day (ie, about 60% per month or 720% per year).[11] Now rates have decreased, but their level is many times higher than the level of bank lending. In this form, the product is not suitable for financing capital, and not current assets in business activities. Citizens who need even a small amount of borrowed funds can get a credit card, its percentage rarely reaches 20–30% per annum which is much less. Therefore, it is quite logical that clearly insolvent citizens and citizens who do not have a high financial culture (as a result, they turn out to be defaulted customers) apply for microloans at such rates in microfinance organizations.

With the decline in real incomes of the population in 2014–2017, the growth of the loan portfolio of microfinance organizations, the growth of overdue debt (and its share in the portfolio) just show that the microfinance market in Russia has become a kind of modern usury tool, but not a tool to support socio-economic development.

The main advantage of microfinance for entrepreneurs is the expansion of the possibility of implementing small and agile projects for whom the bureaucracy of bank lending or public-private partnership is destructive.

That is why the State Duma has repeatedly received offers to ban microfinance organizations in the country completely. In 2016, the Bank of Russia suggested that it was impossible to expect or demand a complete ban of microfinance organizations, since there is a wide demand for microloans "before salary" from individuals, and this ban will contribute to the development of illegal lenders (i.e. shadow market). Therefore, the Bank of Russia tightened the rules for microfinance organizations, began to implement measures aimed at regulating this sphere.

In 2017, the Bank of Russia introduced the Basic Standard for the protection of the rights and interests of individuals and legal entities, the recipients of financial services of microfinance organizations (MFOs).[12] According to

[10] Statistics on the size and dynamics of loans of MFOs and consumer credit cooperatives in 2016–2017. URL: https://www.wecreditunion.ru/novosti/glavnoe/statistika-po-razmeram-i-dinamike-zaimov-mfo-i-kpk-v-2016–2017-gg/ (accessed on 10.10.2018); Overview of key indicators of microfinance organizations. Bank of Russia. URL: https://www.cbr.ru/StaticHtml/File/14700/review_mfo_16.pdf (accessed on 10.10.2018).

[11] Why loans in microfinance organizations are dangerous. URL: http://konfop.ru/чем-опасны-займы-в-микрофинансовых-op/ (accessed on 11.10.2018).

[12] The basic standard for protecting the rights and interests of individuals and legal entities — recipients of financial services provided by members of self-regulatory organizations in the financial market, uniting microfinance organizations: Approved by the Bank of Russia on 22.06.2017 URL: http://www.cbr.ru/StaticHtml/File/11755/Standart_MFO_22062017.pdf (accessed on 10.10.2017).

this standard, organizations will not be able to provide a citizen with more than 10 short-term loans, the duration of which is less than 30 days, during a year; the extension of loan agreements more than seven times is also prohibited. The Bank of Russia believes that these restrictions will be further tightened. Thus, from January 1, 2019, it is assumed that the number of loans from a microfinance organization for one citizen will be limited to only nine contracts, which can be extended no more than five times. At the same time, a microfinance organization is deprived of the right to provide short-term loans with a similar obligation in force for a client in the same organization.

The microfinance market entirely reflects the general level of economic development: it is during the periods of recession and economic recovery that the growth rate of the microfinance segment slows down or accelerates.

Measures aimed at improving the regulation of microfinance organizations, in the authors' opinion, will be incomplete and ineffective, if not to reduce the "shadow" sector, which is a direct competitor. There are proposals to completely ban systematic microloans by individuals without registration as a microfinance organization. Otherwise, such individuals should be included in a special register, and transactions should be recorded in a special database, which will allow to prove the fact of a loan being issued if it is not returned by the borrower, and to control the calculation of interest by lenders. For sure, this proposal cannot be called wrong from the point of view of strengthening state control over the financial sector, but its implementation will require changes in civil legislation, otherwise the rights of lenders (including those who issue loans irregularly) will be affected.

The optimal solution in this situation would be the introduction of specific legal norms regarding the microfinance activity of individuals (possibly in the form of a separate law, or in the form of amendments to codified acts: Civil Code, Tax Code). Owning financial resources, individuals will be able legally provide microloans to other individuals and / or legal entities, especially since there are already similar mechanisms — the so-called virtual credit exchanges. Due to the fact that transactions can be controlled and fixed, their subsequent taxation, the implementation and legalization of such microfinance activities will be useful for the Russian economy where both the consumer and corporate (entrepreneurial) segments face the lack of financial resources for business or certain development projects.

It is likely that the two-level supervision of the activities of microfinance organizations, including interest rates, is also useful, which is also relevant, given the low financial and legal culture of the majority of the economically active population. In addition, it is necessary to develop a segment of virtual microfinance organizations, since the activities of such organizations can also become quite transparent (all transactions will be recorded and monitored if the mechanisms for such control are prescribed in legislation) [18–20].

CONCLUSIONS

The paper reviews the history of the development of the microfinance segment in Russia, studies and summarizes the main regulatory and legislative documents in this area. The available official statistical information was analyzed. The comparison of individual indicators of the financial and microfinance sectors of the Russian economy indicates a tremendous difference in the scale of their progressive development of the latter. It should be noted that the register of the current microfinance organizations on the website of the Central Bank of the Russian Federation is regularly updated, but the release of

statistical books describing the development of this segment of the financial sector is seriously delayed: today, information on indicators for III quarter of 2018 is available. Analysis of the microfinance market, the study of trends and patterns of its development in Russia is rarely the subject of domestic scientific work.

Microfinance organizations are business entities engaged in microfinance activities (issuing microloans to individuals, individual entrepreneurs and organizations). The microfinance market in Russia is an actively developing specific segment of the common (national) financial market. A microloan, as a rule, is expressed by a relatively small amount (from 9 to 20 thousand rubles) and is issued for a short period. Moreover, there are far fewer formalities with a microloan than with bank lending.

On the one hand, it is attractive for many customers (who cannot confirm their income, have a damaged credit history, need small amounts for short periods, but do not use such tools as credit cards, as well as for a number of legal entities and individual entrepreneurs). On the other hand, this creates significant risks for both microfinance organizations and the borrower (due to the very high interest rates, which are essentially usurious). The limitation of the maximum daily interest rate to 1% from July 1, 2019 will facilitate the transfer of the part of companies operating in the "loans before salary" segment to the segment of medium-term loans.

The increase in the share of overdue debts of borrowers to microfinance organizations, the increasing problems associated with the collection of debts by illegal methods, and the high debt load of the population raise many questions about the prospects for the development of this segment of the Russian financial market. However, the Bank of Russia considers this area necessary for the economy, therefore it takes measures to increase responsibility and legitimize: it tightens the requirements for microfinance organizations and their activities, regulates the level of interest rates, etc.

The microfinance market in Russia has become a kind of modern usury tool, but not a tool to support socio-economic development.

Prospects for the development of microfinance in Russia are seen in the withdrawal from the shadow sector of the microfinance activity of individuals or legal entities. It is impossible to ban the "shadow" area of microfinance, but the proposal to form mechanisms for attracting private investors-lenders to this sector, including through the development of a virtual microfinance infrastructure (credit exchanges, etc.), makes practical sense. Of course, this will require amending microfinance legislation or adopting a separate law.

It is also necessary to improve the technical and technological sides: it is necessary to implement counter-mechanisms to control microfinance activities through the creation of a special online platform where micro-loan transactions between individuals and / or legal entities will be registered. This information will be received in real-time both by the Bank of Russia and the tax authorities. This approach, on the one hand, does not increase the burden on the regulatory authorities, and, on the other hand, helps to provide an alternative to the shadow microfinance sector and to bring it into the formal institutional space of microfinance activity.

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Tsvetkov V. A. — study of the elaboration of this problem in Russian and foreign studies; development of a methodological approach to the study and justification of the key priorities for microfinance development in Russia.
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Impact of Crisis Coverage on the Financial Market of Russia

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ABSTRACT

The article examines the impact of informational messages characterizing the crisis in the economy on the financial market indicators. The aim of the article is to build an index that allows assessing the crisis situation in the country based on text analysis of informational messages. Due to the literature review, the factors determining the crisis in the economy were identified. The empirical base of the study included more than 10 million news texts from various sources accredited by Thomson Reuters. For the first time, the authors compiled a "bag of words" (dictionary) to determine the crisis situation in the country; and by means of the text analysis, they developed the author's crisis index calculated on the basis of news reports in foreign media about Russia. They conducted the analysis of the relations between the crisis index and the stock index MOEX. According to the results of the study, it has been established that an increase in the number of news reports determining the crisis situation in the economy has a negative effect on the financial market: it leads to a drop in stock prices. Thus, not only objective economic factors, but also the information component influencing the mood of investors and the behavior of economic entities, affects the key indicators of the financial market. The proposed author's crisis index can also be used to assess other relations, for example, the effect of the crisis on the exchange rate.

Keywords: text analysis; crisis; crisis index; financial market; stock index

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INTRODUCTION

The Russian economy is in a protracted crisis. The drop in the value of the country's currency, the economy contraction, the decline in real incomes of the population are the primary signs of a crisis in the economy. At the same time, the sentiment of the news context has an increasing influence on the financial market. Depending on the news reports carrying various emotional tints, investors' mood change. One of the factors for a negative media coverage is information about a crisis in a country or the world. Such reports indicate an increase in investment risks and, accordingly, affect the behavior of financial market participants. In economics, to identify a crisis situation, they use index construction that reflects appearing crisis situations in a country's economy.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

Most studies construct crisis indices based on macroeconomic indicators. Among foreign studies, work [1] can be mentioned where the factors determining currency crises are revealed. According to the research results, the most significant crisis indices are: low level of gold and foreign exchange reserves, inability of short covering by the central bank reserves, high external and internal debts of the public sector to GDP. In work [2], the authors use such indicators as trade and regional integration to construct a crisis index. The authors conclude that the globalization and expansion of international trade contribute to the spread of economic crises from one country to another. In research [3], a crisis index of economic liberalization is constructed. The research results show that rising unemployment has a significant impact on a crisis emerging in the economy.

One of the most common crisis indices is the EMP (exchange market pressure). This index is a weighted average of the depreciation rate of the national currency (usually compared with the US dollar in nominal or real terms), a monthly change in the value of foreign reserves of foreign currency (in percentage terms) and a monthly change in interest rate [4, p. 115]. This index is used to determine a financial crisis period, as well as to study the dependencies of economies of different countries from each other. Based on this index, the fluctuations were investigated during the crisis period of the currency of Fiji [5], Russia and the CIS countries [6].

Among domestic studies, work [7] should be noted where the authors determine crisis periods via the construction of various indices of economic security. The main indicators used to construct the indices are: GDP, industrial output, investment in fixed assets, unemployment, ratio of per capita income to the subsistence minimum, ratio of the average pension to the average wage, total amount of foreign exchange reserves, etc.

In work [8], the most common groups of the stock market crisis indices were investigated: stock indices, rates of return, yield spreads. The authors identified the outrun features of the P/E and P/BV indicators for the Russian stock market.

In research [9], the authors construct an integral index of the crisis origin by means of the following variables: GDP dynamics, crisis duration and recession (the number of years when negative GDP growth rates were observed), rising unemployment, and budget deficit.

By means of text analysis techniques, the Bank of Russia constructed a high-frequency index calculated on the basis of daily news to assess the dynamics of economic activity in the country. Based on the analysis of the news data for the period from January 2014 to August 2017, the influence of the news on the economic activity in the country is determined. The resulting factor is the PMI (Purchasing Managers Index) published by Bloomberg. A wide range of indices makes it possible to comprehensively evaluate crisis phenomena highlighting the key

risks inherent in each crisis period. Based on the data, it is possible to forecast crises in the short and long term.

The aim of the study is to construct an index allowing to assess the crisis situation in the country based on text analysis. The authors believe that there is a relationship between the situation in the financial market and the news describing the crisis situation in the country. Spreading news reports containing information on various manifestations of the crisis influences investors' mood. Detecting the economic crisis leads to a fall in stock prices on the stock market.

INDEX CONSTRUCTION METHODOLOGY

To identify the relationship between the financial market situation and the news covering various manifestations of the crisis, this work uses the so-called sentiment analysis extracting positive or negative emotions from texts [10]. Such an automatic analysis allows to determine whether the text under review is positive or negative to the object in question.

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First publications on sentiment analysis appeared in the late 1990s — early 2000s [11–13]. Since then, quite a lot has been done in this area: lexicons of sentiment-related words have been compiled and algorithms have been developed [14–16].

In modern text analysis systems, the most common assessments are: *positive sentiment, negative sentiment*, and *neutral sentiment*. Neutral sentiment means that the text does not have emotional coloring. Successful cases of using multidimensional spaces are also known [10].

To determine the sentiment of the text, methods based on dictionaries (lexicon-based methods) are widely used. These methods imply that words in a dictionary correspond to a certain emotional scale and are the markers for the overall sentiment of the text.

Among the direct methods of compiling lexicons of sentiment-related words the following directions can be defined:

1. Compiling lists of sentiment-related words manually [17]. This approach is particularly effective in addressing the specific task to extract the sentiment from texts of specific topics.

2. Using ready-made dictionaries and lists. There are special thesauruses where the emotional component of the vocabulary is marked up. For English, this is SenticNet, SentiWordNet and WordNet-Affect. For example, SenticNet [18] is a semantic thesaurus, which reflects not only the sentiment of the vocabulary, but also cognitive information.

In this work, the lexicon of sentiment-related words was compiled manually, since the sentiment-related words were extracted in the subject area "crisis and crisis situation"; there are no ready-made dictionaries and lists for this area yet.

The content of the lexicon of sentiment-related words and the classification of its vocabulary are largely determined by a specific task. Therefore, only negative sentiment is of interest for the subject area "crisis — crisis situation". This aim significantly reduces the lexicon of sentiment-related words.

Thus, the lexicon of negative sentiment-related words of the subject area "crisis — crisis situation" was compiled manually. For this purpose, scientific articles about economic crisis written in English by foreign authors were used [19–23]. These authors consider the economic crisis as financial, while highlighting its currency, debt and banking subaspects. When analysing these texts, special atten-

tion was paid to the lexical units describing the causes of a crisis situation, as well as the forms of each crisis type.

At the first stage, negative sentiment-related words of the semantic field "crisis" were manually identified by an expert linguist from the texts (about 100 thousand words). The expert judged by the highest frequency of lexical units in the above works. Besides the sentiment-related words of the subject area "crisis — crisis situation", the so-called intensifiers were also included in the lexicon. They changed (increased or decreased) the significance of the following words.

According to the semantic features, these words were then divided into groups. The classification of the vocabulary and the groups are given below.

1. Words related to the semantic field "crisis" with a negative connotation.

2. Words related to the semantic field "anxiety" with a negative connotation.

3. Words related to the semantic field "deterioration".

4. Adjectives and adverbs-intensifiers denoting an excessive degree.

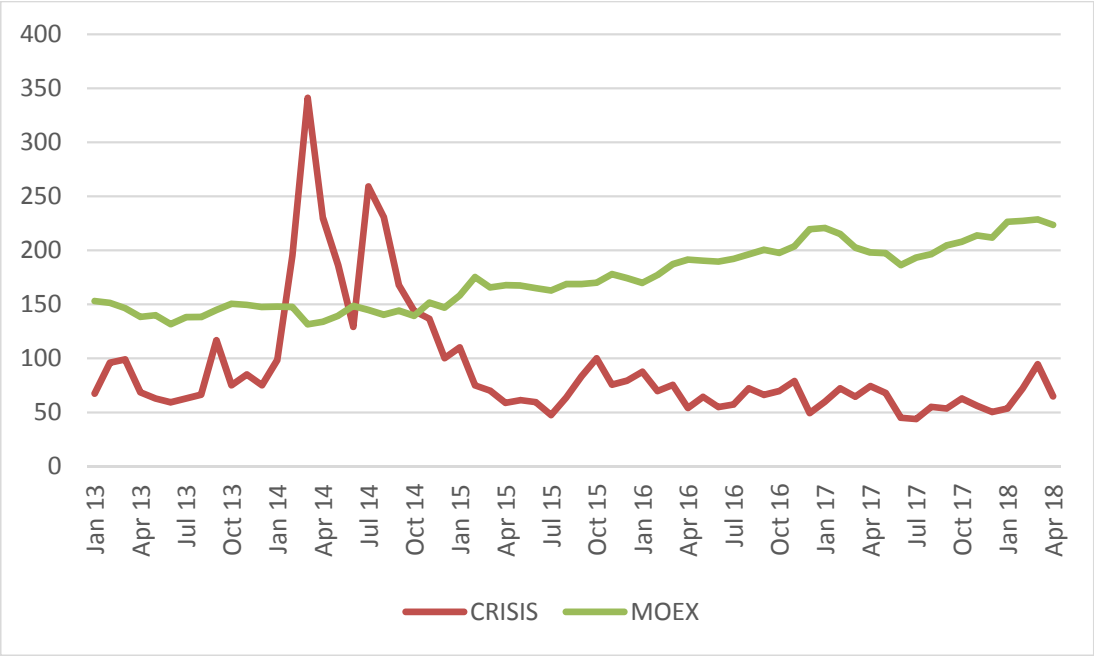
The following words were assigned to the first group — the semantic field "crisis": "asset price bust", "asset price bubble", "bailout", "bank liquidation", "bankrupt", "bankruptcy", "boom", "borrow", "borrower", "borrowing", "burden", "corrupt", "corruption", "credit crunch", "currency", "currency attack", "current account deficit", "debt", "deficit", "deflation", "derivative speculation", "devaluate", "devaluation", "disruption in foreign exchange markets", "downgrade", "downgraded", "excessive consumption", "exchange rate", "external deficit", "financial innovation", "fluctuate", "fluctuation", "foreign debt", "hedge funds", "high inflation rate", "high public sector debt", "high unemployment", "housing bubble", "housing market", "imbalance", "interest rates", "job loss", "layoff", "leverage", "loan", "loose financial conditions", "low ranking", "mortgage", "mortgage lending", "non-performing loans", "oil prices", "overvalued currency", "pressure", "rating", "rating agency", "real estate boom", "redundancy", "redundant", "regulatory weakness", "risk", "risky", "securitization", "securitize", "securitized", "shadow banking", "sovereign debt", "speculative attack", "speculative investment", "subprime", "subprime loans", "subprime mortgage", "trade deficit", "trading loss", "unemployed", "unemployment", "unregulated", "volatile", "volatility", "weak competitiveness", "weak regulation".

The negative effects of the crisis and the sanctions against Russia not only directly affect the economic indicators of the country's development, but also have a negative indirect effect on the economy by creating a negative media coverage that brings discredit to Russia to investors.

The following words were assigned to the second group — the semantic field "anxiety": "concern", "doubt", "doubtful", "fear", "gloomy", "insecurity", "loss of confidence", "panic", "tension", "threat", "threaten", "turbulence", "turbulent", "turmoil", "uncertain", "uncertainty", "unprecedented".

The following words were assigned to the third group — the semantic field "deterioration": "decline", "declining", "depreciate", "depreciation", "deteriorate", "deterioration", "diminish", "diminishing", "downturn", "drop", "fail", "failure", "fall", "gap", "go down", "inefficient", "instability", "lack", "laggard", "loose", "loosen", "loss", "low", "lower", "meltdown", "plunge", "recession", "reduce", "reduction", "slowing", "slow", "growth", "slowdown", "slump", "tight", "tighten", "tightening", "unstable", "vulnerable", "weak", "weaken".

The following words were assigned to the forth group: "abundance", "abundant", "exces-



Crisis index and Moscow Exchange index

Source: calculated by the authors.

sive", "rapid", "rapidly", "significant", "significantly".

The lexicon included not only separate parts of speech, but also collocations, both negative and emphatic, for example: rising unemployment, face bankruptcy, weak competitiveness, low ranking, overvalued currency.

Thus, the manually compiled lexicon of negative sentiment-related words of the subject area "crisis" includes 171 units.

In addition, two indices were developed regarding the sanctions:

1) SAN 0 is an index showing the number of references in the media to the words "sanctions" and "economic sanctions";

2) SAN 1 is an extended index calculated on the basis of the words: "sanctions", "economic sanctions", "restriction", "prohibition", "blockade", "block", "barrier", "ban on import".

DATA ANALYSIS

Thomson Reuters news reports are used as an empirical base, since their content was proved to meet the requirements of the text consistency for sentiment analysis and studying the influence of the news on the financial market. The news for the period from 2006 to 2018 was selected as a source; the test period was January 2013 — May 2018. The news was selected by the keywords "Russia, Russian, Moscow, Kremlin" during the test period. To test thematic modeling and sentiment analysis, a total sample of more than 10 million news texts from various sources from various sources accredited by Thomson Reuters was used. The main sources of information were: The New York Post, CNN, Breitbart, Reuters, Fox, Atlantic, The Washington Post, Buzzfeed.

As part of the study, the interdependence between the calculated author's crisis index (crisis) and the Moscow Exchange index (MOEX) was studied (see *figure*). Monthly data for the period of January 2013 — May 2018 were analyzed. The sample size is 64 observations (the exchange rate and the Moscow exchange index are considered as a monthly average).

To identify the relationship between the variables under review, a correlation analysis was first carried out (*Table 1*). The analysis results show that the crisis has the greatest impact on the stock index and has the opposite effect.

Table 1

Correlation analysis of the considered variables

	MOEX	CRISIS	SAN 0	SAN 1
MOEX	1.000000	–0.522382	–0.346004	–0.379796
CRISIS	–0.522382	1.000000	0.910611	0.935603
SAN 0	–0.346004	0.910611	1.000000	0.995201
SAN 1	–0.379796	0.935603	0.995201	1.000000

Source: calculated by the authors.

As it is seen from *table 1,* the indices on the crisis and the sanctions have a very close relationship. Consequently, at present for Russia, the imposed sanctions are the main factor in the manifestation of the crisis. The impact of the crisis index on the stock market is negative. Thus, not only the economic crisis itself, but even a mention of crisis signs in the news leads to a drop in prices on the Moscow stock exchange.

The GARH-model was used to analyse the impact of the crisis on the stock index (*Table 2*).

Table 2 shows that the crisis has a negative effect on the change in the stock index: the higher the crisis index is, the lower the value of the MOEX index is. The coefficient of determination (R-squared) is 96% which means a high explanatory power of the selected variables; there is no autocorrelation in the residuals.

The final equation for calculating the MOEX index is as follows:

$$MOEX = 127.65 - 0.038 \times CRISIS + 0.73 \times \times MOEX_{-1}.$$

Given that the sanctions were defined as the main factor of the crisis in the current period of time, the initial data set was divided into the period up to March 2014, i.e. before the first sanctions against Russia, and after. The reanalysis revealed that the influence and dependencies of variables during the sanction period increase (*Table 3*).

As it is seen from *Table* 3, the values of the coefficients increased according to the data presented in *Table 1*. The value of the correlation coefficient between the developed crisis index (CRISIS) and the Moscow Exchange index (MOEX) increased from –0.52 to –0.68. Similarly, the relationship between the stock index (MOEX) and the sanction indices (SAN 0, SAN 1) increased from –0.34 to –0.61 and from –0.38 to –0.61 respectively. Thus, the sanctions, as well as coverage of this topic in the news have the most negative impact on the Russian economy today. Increasing correlation coefficient values between the variables under review also indicates the increasing media coverage influence on the financial market indicators on the whole. Thus, the negative effects of the crisis and the sanctions against Russia not only directly affect the economic indicators of the country's development, but also have a negative indirect effect on the economy by creating a negative media coverage that brings discredit to Russia to investors.

Table 2

Impact of the crisis on the stock index (MOEX)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
CRISIS	–0.037885	0.018923	–2.002038	0.0453
@TREND	1.537348	0.155297	9.899403	0.0000
Const	127.6524	6.909549	18.47478	0.0000
AR(1)	0.726824	0.067346	10.79241	0.0000
	Variance Equation			
C	2.018538	1.611175	1.252836	0.2103
ARCH(1)	–0.124038	0.096184	–1.289590	0.1972
GARCH(1)	1.063141	0.091077	11.67295	0.0000
R-squared	0.959633	Mean dependent var		174.3964
Adjusted R-squared	0.955308	S.D. dependent var		29.08690
S.E. of regression	6.149094	Akaike info criterion		6.436995
Sum squared resid	2117.436	Schwarz criterion		6.675121
Log likelihood	–195.7653	F-statistic		221.8801
Durbin-Watson stat	1.816403	Prob(F-statistic)		0.000000
Inverted AR Roots	.73			

Source: calculated by the authors.

CONCLUSIONS

Thus, we proved that the manifestations of a crisis in a country, possible to be determined not only traditionally by the values of the main economic indicators, but also by the content of news reports, can influence the key economic indicators and the activities of economic entities in the country. In particular, mentioning a crisis in Russia provokes a decline in the Moscow Exchange stock index, thereby reflecting the economic sentiment of investors.

The paper suggests a tool for the quantitative analysis of the qualitative factor — the content of informational news reports. This analysis allows to study the relashionship between various economic indicators and the news. The consistency of the developed crisis indicator is proved by the example of the most obvious relashionship — the impact of the crisis on the stock mar-

Table 3

Correlation analysis for March 2014 — April 2018 (the period of sanctions against Russia)

	CRISIS	MOEX	SAN 0	SAN 1
CRISIS	1.000000	–0.687177	0.958541	0.964155
MOEX	–0.687177	1.000000	–0.614648	–0.608722
SAN 0	0.958541	–0.614648	1.000000	0.998526
SAN 1	0.964155	–0.608722	0.998526	1.000000

Source: calculated by the authors.

ket. In the future, the proposed author's index can be used to assess other relashionships, such as the impact of the crisis on the performance of Russian companies.

A negative media coverage about Russia can be used as an additional measure of economic impact by the countries that imposed the sanctions. To a greater extent news reports influence the stock market and reduce the attractiveness of Russian companies as a source of investment. Thus, it can be stated that the external negative factors aimed at destabilizing the Russian economy are reflected in the financial market indicators. To improve the economic situation in Russia, it is necessary to resolve political conflicts and disagreements leading to information pressure and sanctions against Russia.

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Fedorov F.Yu.— calculation of the crisis indicator.
Vinogradova L.V.— compiling a "bag of words".

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New Instruments for Financing Small and Medium Enterprises in Russia: Crowdinvesting

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ABSTRACT

Access to financing is a fundamental factor determining growth opportunities for small and medium enterprises. Along with the state forms of support for the subjects of this business segment, as well as traditional banking products, private investment mechanisms are being developed through the establishment and extension of crowdinvesting platforms. They imply involving funds of population as the most important market agent. The aim of the article is to reveal the key importance of the institutional development of the crowdfunding and crowdinvesting market as a modern tool for supporting small and medium enterprises, reproduction of people's personal savings and incomes of professional investors. The following scientific methods and approaches were used in the study: observation, comparison, analogies, analysis, synthesis, method of expert assessments, system and structured approach. The authors' definition of crowdinvesting is given. Three fundamental features of crowdinvesting are defined: collective microfinancing of a project from an alternative set of startups, an intermediate agent in the form of a remote platform, financial retribution. To prove the development of the world and domestic crowdinvesting market, its condition and the performance indicators of well-known crowdinvesting companies are characterized in dynamics. The authors revealed the key advantages of crowdinvesting, factors stimulating of its volume growth in Russia, as well as risks, mainly associated with insufficient regulation of the new and fast-growing institutional mechanism of crowdinvesting. The important perspective of crowdinvesting as an instrument of project financing in Russia is highlighted on the example of specific scopes for investment, multifunctional services of Russian platforms, expanding pool of investors, new financial and technological methods of exchange and support. The study allowed identifying a number of key areas for crowdinvesting development in Russia. The work mainstreams: building an effective regulation system for crowdinvesting platforms, including through developing self-regulation tools, a co-financing program for crowdinvesting projects from development institutions, the work of the regulatory sandbox, legislative consolidation and support for implementing new types of information and economic interaction on crowdinvesting platforms (not only B 2B, P2B, but also G2B, B 2G).

Keywords: crowdfunding; crowdinvesting; project financing; small and medium enterprises; crowdinvesting platform (playground); startup; crowdinvestor; crowdlending; investment risk; P2P-lending

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INTRODUCTION

There are no generally accepted definitions of the concepts of "crowdfunding" and "crowdinvesting" in Russia as these definitions are not legal. The regulator, the Central Bank of Russia, implements the IOSCO approach (International Organization of Securities Commissions) that focuses on two independent forms: investment and loan crowdfunding.

Crowdfunding is a mechanism for raising funds, co-financing companies or programs via Internet sites.

In this study, crowdinvesting refers to an alternative method of collective venture microfinance, involving equity investment and return of invested funds with profitable interest through an intermediate agent (Internet platform, platform). Thus, we are talking about optimizing the size of interaction costs by simplifying the process of making a transaction by taking advantage of automated platforms.

It is emphasized that crowdinvesting to a lesser extent (compared to classical crowdfunding) pursues altruistic and social goals and at the same time is more focused on financing commercial projects, primarily small and medium businesses (SMEs), on a reimbursable basis [1].

CROWD FINANCE MARKET DEVELOPMENT

Despite the legislative restrictions of different countries, today there are more than 300 crowdinvesting sites around the world. In this case, the site implements the following possible functionality:

- provision of information services within the loan agreement, epy securities sale and purchase agreement (shares / bonds);
- on the one hand, to collect a pool of enterprises — borrowers and, on the other hand, a group of investors. Here is a "stream financing" where the financial resources of an individual investor are balanced among the borrowers — participants in the investment pool. The automated platform generates an assessment of future borrowers deciding on the subject composition of the pool. In the future, the platform performs an intermediary function interacting with investors on repayment of the base part of the debt, as well as interest and tax payments refund;
- developing the financial result with subsequent non-financial remuneration.

At the same time, sites are just one of the ways to attract investors for a startup. Many companies use their own blog or affiliate program (Dodo Pizza, SkyWay) to attract investments. The parties of crowdinvesting can be: venture funds, professional private investors, business angels, the state (in Russia this party is the last among the participants as there are no laws regulating the activities of the sites as such) [2].

Crowdinvesting is not a replacement for the existing financial institutions, it is an additional tool built into the system of the existing and already well-understood products [3]. Crowdinvesting is the most common in the USA (EquityNet, AngelList, SeedInvest, Funders Club, CircleUP platforms) and Great Britain (CrowdCube, Seedrs, Zopa) (*Fig. 1*).

Crowdinvesting started as an independent ideology in 2012, promoted by the regulatory document signed by President B. Obama — JOBS (Jumpstart Our Business Startups) Act. The Act legalized the investment activity of non-professional investors — American citizens [4]. The Act was submitted by the Securities and Exchange Commission (US Securities and Exchange Commission); the contribution of the experts from the business community, in particular Indiegogo, Rockethub, Kickstarter and others, is emphasized.

SPECIFICS AND ATTRACTIVENESS OF CROWDINVESTING IN FOREIGN PRACTICE OF FINANCIAL INVESTMENT

To promote the JOBS Act, the non-governmental organization FINTRA, as well as the public structure CFIRA (Crowdfund Intermediary Regulatory Advocates), were also created.

Today, the operational functioning of the crowdinvesting and crowdlending platforms in the USA is controlled by the Securities and Exchange Commission. In 2013, the AngelList plat-

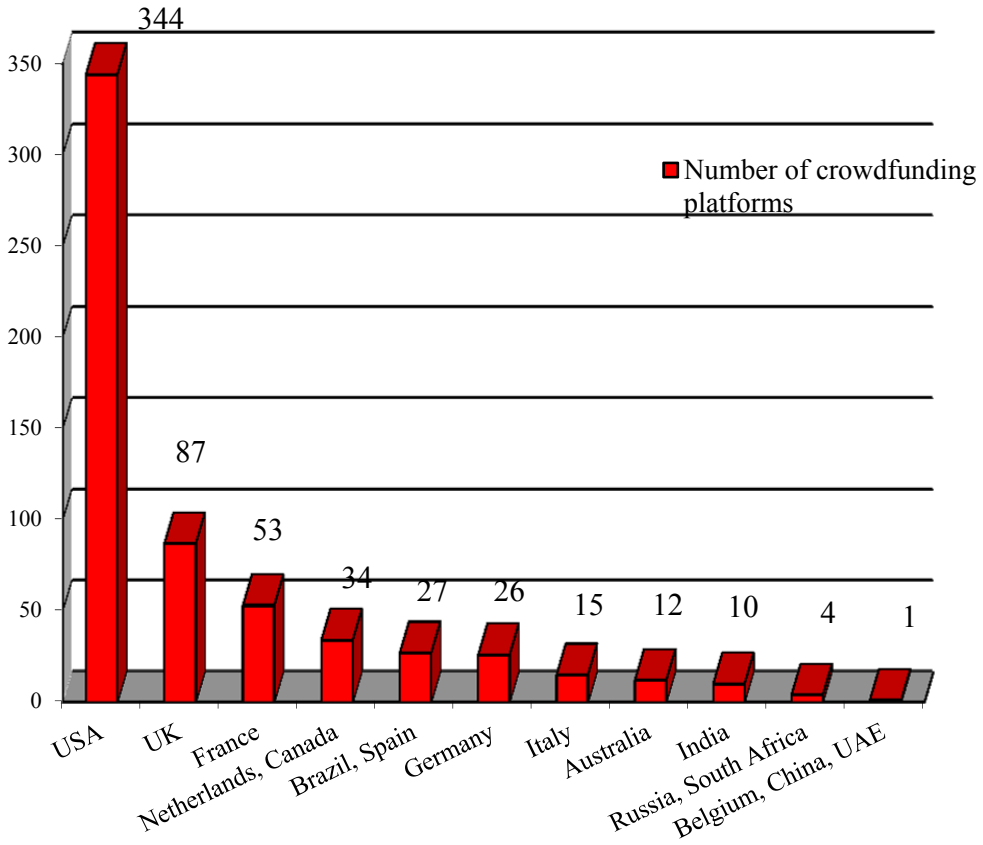

Fig. 1. **Rating of countries by the number of crowdinvesting platforms as of December 2013**

Source: URL: http://www.infodev.org/infodev-files/wb_crowdfundingreport-v12.pdf (accessed on 15.05.2019).

form attracted about $ 15 million from private investors. In 2012–2018, the borrowers within the crowdinvesting finance system were:

- Glen Iron — 4 stages of financing, $ 2.1 million, ASSOB platform;
- Antabio — 207 crowdinvestors, 300 thousand euros, WiSeed platform, a biotechnological startup;
- TalentBin — a startup aimed at creating an Internet network to attract young talents; $ 2 million, FundersClub platform.

The examples of the most successful crowdinvesting platforms in Germany are Seedmatch, Companisto, Innovestment which account for 85% of the market attracted crowd capital and 82% of funded start-ups [5].

The dynamics of crowdinvesting in the world is presented in *Fig. 2*.

Today, there is such a situation in the field of financial investments that in the field of crowdinvesting, both seed-rounds with borrowed resources of 50,000–2 million USD and A-rounds, which are larger in terms of financial turnover, are closing. In this case, as we are speaking about the funds raised from 2 to 10 million US dollars, the tool is objectively attractive for start-ups in the later stages. Anyway, the reproduction of startups, their transformation into a global area of entrepreneurship is considered as one of the most important tasks in the development of an innovative economy and the state intellectual capital [6]. Under these conditions, crowdinvesting becomes a catalyst of the areas that are investment-attractive for the state and deserve financial support from it.

INSTITUTIONALIZATION OF CROWDINVESTING MARKET IN RUSSIA

Smartmarket.net was the first platform in Russia, announced in 2012 and closed in 2013. In 2013,

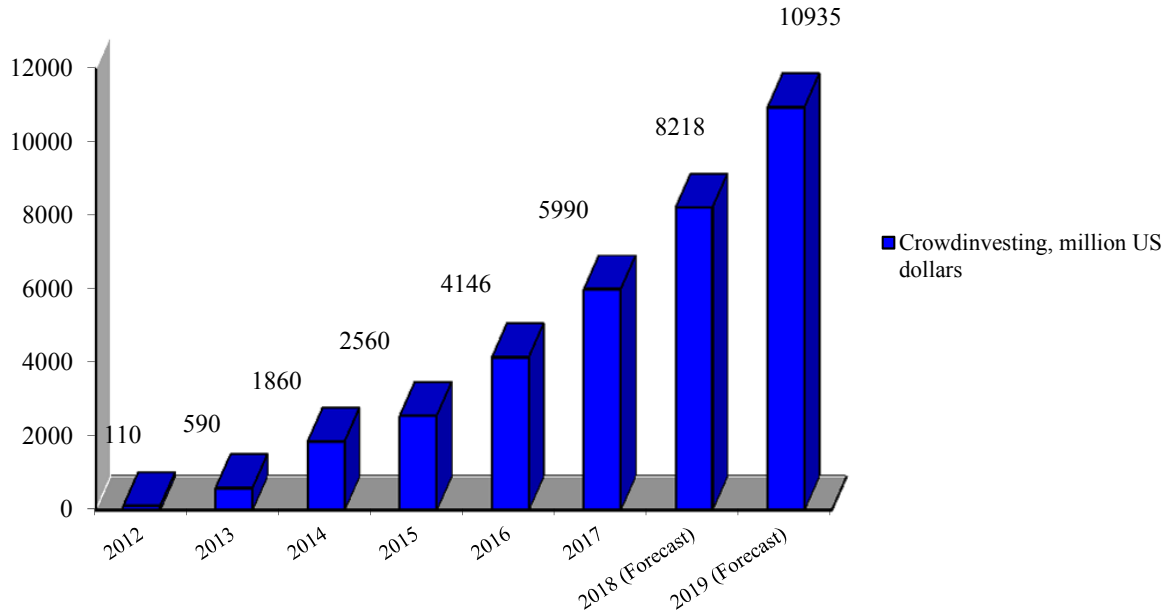

Fig. 2. **Dynamics of crowdinvesting in the world in 2012–2019**

Source: URL: http://www.cbr.ru/statichtml/file/18221/bojor.pdf (accessed on 12.05.2019).

the crowdinvesting platforms VCStart (closed in 2015), WeShare (activity suspended for a relaunch in the future) opened. As a result, there were two projects left by 2015: the StartTrack and SearchFunds platforms, as well as SIMEX was opened, a multifunctional online platform for exchanging digital assets and investing in ICO projects, crowdinvesting.

The investment on the SIMEX platform is realized in the investment share — the investor's rights to the project specified in the investment offer. According to their investment shares, the investor receives an option for a share in the project's profit. The main investment methods via SIMEX are the primary acquisition of investment shares directly from projects and the possibility of secondary acquisition of investment shares through bidding from other investors. Dividends are paid according to investment shares. The investor can sell investment shares on the secondary bidding at the SIMEX platform. At the same time, the trade commission on the stock exchange is 0.1% of the transaction (the fee is paid by the maker and the taker). Partnership reward from the transaction is 0.02%.

The following facts indicate the importance of the crowdfunding market (for the period of 2014–2017):

- 3.4 billion rubles of private investors;
- over 900 million rubles accumulated by venture projects;
- 40 thousand private crowdinvestors;
- crowdlending and crowdinvesting allowed to finance more than 870 business projects;
- more than 1 thousand priority jobs were created;
- GDP growth for business promotion based on crowdinvesting technologies amounted to about 11.5 billion rubles;
- tax revenues from established or funded business amounted to more than 700 million rubles[1].

In this regard, objectively we attribute the advantages of crowdinvesting: the possibility to invest small amounts, the advantages of diversification, a large choice of projects, investment in several projects at the same time, few formalities for placing funds, company and product marketing, fast implementation (start-ups have a fixed period, which considering the relocation of numerous investors, means to solve the designated tasks on time) [7]. Within this model,

[1] New tools to attract funding for the development of technology companies: the practice of use and development prospects in Russia: an analytical report 2018. URL: https://publications.hse.ru/mirror/pubs/share/direct/219492205).

the role of a financial intermediary is reduced to the organizational connection of the participants, while the investor himself creates the composition and the structure of the individual investment portfolio and spreads risks to lose investments [8].

The main advantage of crowdinvesting in work is not so much the development of company law, as a non-property and / or property right to claim a share of the profits, a part of the commodity turnover, and services. This emphasizes the independence of this right from other shareholders which eliminates the risk of corporate conflicts due to this reason. Finally, the advantage of crowdinvesting over other types of financing refers to financing own funds in companies' capital, and therefore, the investors and the initiators of the startup promotion have an enhanced responsibility for the process.

The factors stimulating the growth of crowdinvesting in Russia by small and medium enterprises are:

- difficulties in obtaining investment funds in banking institutions;
- insufficient attention to the development of alternative banking and public instruments for financing SMEs by citizens (individuals);
- difficulties in raising funds to start an enterprise that does not have a credit history in traditional financial organizations;
- insufficient development (absence) of the regional infrastructure in financial organizations.

Further, the success factors of the crowding investment campaign are attributed by researchers from New Mexico State University (USA) and Aalto University (Sweden) to the number of investors, funding targets, the duration of the campaign, the provision of open financial information and the project's B 2C orientation [9, 10].

At the same time, the authors' study helped to identify the weaknesses of crowdinvesting:

- traditional investment risks. The scoring systems of the analyzed platforms are at a fairly low level, which mediates the increase in risk for lenders [11];
- lack of institutional norms and control requirements (in particular, criteria and methods that guarantee the transfer of investor's funds to a specific project are not regulated, methods for registering title to the investment result are not regulated);
- risk of fraud (establishing a financial pyramid on the basis of the platform);
- bankruptcy risk;
- subjective platform positioning (platform exclusively for wealthy investors);
- remaining national legislative differences in crowdinvesting that impede the permanent globalization of this segment of the capital market;
- insufficient financial literacy of the population: unwillingness to work with borrowed and investment funds, inept investment planning and forecasting financial results;
- subjective distrust to digitalization of the investment process through the tools and mechanisms of the current Internet platforms;
- privacy, low transparency of the market of intellectual capital of Russia, privacy of business information, which mediates the difficulties in searching and finding the recipient company and investment project [12].

When investing in the project, it is necessary to forecast its success. A distinctive feature of crowdinvesting is that investors receive a sales volume share. At the same time, profit growth is not limited and is not recorded at all.

Three basic types of crowdinvesting should be defined:

- royalty is a part of non-financial remuneration. In addition to non-financial bonuses [a product or service as a result of a business project activities (rewards)], the sponsor receives a share of the project's revenues (financing music projects, films, games);
- national lending (crowdlending) is focused on issuing a loan to a startup owner to develop their idea. This type of crowdinvesting is distinguished by clear development and availability of a schedule of return on investment capital;
- equity crowdfunding is the most advanced form of crowdfunding, implying an intermedi-

Table 1

Indicators of crowdinvesting development in Russia in 2015–2017

Indicator	2015	2016	2017
Capital investments, mln rubles	232	1505.5	1837.7
Number of funded companies	81	277	871
Number of investors	105	1313	14466

Source: URL: https://incrussia.ru/understand/infografika-kak-ustroen-rynok-kraudinvestinga-v-rossii/ (accessed on 12.05.2019).

Table 2

Scopes for investment where crowdinvesting is used

Type of trading activity	Number of companies	Percentage of total, %
Wholesale	321	29.25
Retail	196	18.33
IT	91	8.55
Production	38	3.58
Advertising	38	3.57
Construction	44	4.13
Architecture	15	1.43
Administrative and economic activity	15	1.43
Services	65	6.09
Other	252	23.64

Source: URL: https://incrussia.ru/understand/infografika-kak-ustroen-rynok-kraudinvestinga-v-rossii/ (accessed on 15.05.2019).

ary in the form of a specialized platform, and the royalties are: a certain share of ownership, ownership of shares, giving the right to vote at general meetings and a dividend yield.

The defined features of equity crowdfunding mediate financial and reputational business interest, providing the entities outside the organized exchange market with a convenient and non-alternative tool for attracting financial resources to start or expand entrepreneurship.

CROWDINVESTING AS A PROMISING TOOL FOR PROJECT FINANCING IN RUSSIA

We emphasize that crowdinvesting should be recognized as a special trending tool for project investment in Russia. The statistical materials proving this idea are presented in *table 1*.

According to the information in *table 1*, investment in capital in 2017 increased by 7.9 times compared with 2015, the number of companies that effectively use equity investment sites increased by 10.8 times, and the number of investors who participate in project financing — by137.8 times.

Thus, this refers to the attractiveness of crowdinvesting both for the subject of investment and for the active investor. According to Ink, in 2017 the largest volume of the main transactions in the business financing segment belongs to investments under a loan agreement (2.53 billion rubles), the smaller — to investments in capital (1.04 billion rubles): the percentage ratio is 90% to 10%, respectively.

Let us analyze the areas of activity that promote this method of investing projects (*Table 2*).

Table 3

Performance indicators of the main crowdinvesting companies in Russia

Platformname	Aggregate turnover, rub.	Investment amount per company	Average check per company from investor	Average number of investors in a company	Minimum investment, rub.	Platform commission, %	
						for company	for investor
StartTrack	1.498 billion	22 million	426 thousand	52	3 million	5.0	0
Gorod Deneg	465.8 million	1 million	420 thousand	2–3	50 thousand	2.5–5.5	2.0
Potok	714.4 million	520 thousand	4.5 thousand	115	100 thousand	6.7	0
Venture Club	897 million	13 million	3.3 million	4	3 million	1.0–5.0	Club system with paid membership
Planeta.ru	760.2 million	282 thousand	1.5 thousand	189	10 thousand	10.0–15.0	0

Source: URL: https://incrussia.ru/understand/infografika-kak-ustroen-rynok-kraudinvestinga-v-rossii/ (accessed on 15.05.2019).

According to *table 2*, the biggest number of companies using crowdinvesting as an investment tool are concentrated in the wholesale and retail trade (the total share is 47.58% of the consumers of the market for equity investment services). At the same time, investments of more than 3 million rubles attracted 130 companies against 937 companies with financial resources of less than 3 million rubles. This proves the importance of this type of financing for SMEs.

The information about the main crowdinvesting platforms is presented in *table 3*.

It is necessary to define a fundamental feature: the cumulative turnover of the platform is not always mediated by the number of investors. For example, "Potok" has an average number of investors of 115 people. At the same time, the total turnover is 714.4 million, which is 20% less than the turnover of the "Venture Club" (4 investors).

A special position in the crowdfunding market in Russia is occupied by the Aktivo platform which specializes in investment in commercial real estate. The Aktivo offers new opportunities to create a passive rental flow for investors interested in purchasing real estate. It refers to investments in square meters leased to network supermarkets. Each property undergoes a thorough audit of legal purity and profitability. The final decision is made by an investment committee consisting of recognized market experts.

Co-investment objects are managed by an independent specialized company and are individually structured using private rental mutual funds. One object is one fund. An independent management company and a specialized depository are ensured by the security of property ownership. All objects are separated from each other and from the obligations of both the Aktivo and the management company. Thus, it refers to mixing the contents of a well-known financial instrument such as mutual fund with equity crowdfunding.

Working as a closed-end mutual fund, the Aktivo platform is deprived of the opportunity to receive state support under the Federal Law of 24.07.2007 No. 209-FZ "On the development of small and medium businesses in the Russian Federation".

In 2015, the Penenza crowdfunding platform comes out in the B 2B format. The start of the project was so successful that in autumn 2017 it was decided to develop the direction and to cover also the P2B segment (associated with the provision of unsecured personal loans, where the lender is an unlimited circle of individuals, and the borrower is a business). The contribution of individual investors does not exceed 15% of the total amount of funds, which is more than 1.3 billion rubles invested via the Penenza. At the same time, a steady growth of the indicator was noted: for 2018, the total portfolio of private investors on the platform increased from 6 million to 200 million rubles. At the same time, the average size of the portfolio of individuals amounted to 120 million rubles and brought over 30 million rubles to investors at the end of the year. Private investors have issued loans worth more than 1.2 billion rubles to Russian business (at the same time, the investor's portfolio may turn around on the platform several times due to the short-term loans).

The Penenza offers investors to finance borrowers (legal entities) who participate in tenders. A similar focus of activity is specific to another well-known crowdinvesting platform — "ModuleMoney".

At the same time, since October 2018, due to changes in the regulatory framework (223-FZ and 44-FZ), there has been an increase in tender security. Ensuring procurement requests among participants of small and medium businesses should be on special accounts in one of the eighteen banks identified by the Government of the Russian Federation (*Fig. 3*).

The conclusion of a special agreement on crowdinvesting platforms with a bank means the realization of an objective advantage: the bank controls the moment of withdrawing money from a special account. This minimizes the risk of withdrawing a loan to secure an application to the borrower's current account.

The analysis showed that the investor's work at the Penenza platform is accompanied by:

- relatively low risk: the probability of delay is 0.4% and default is 0.2%;
- unique character of the applied cross-scoring system. Unlike traditional banking systems, the underwriting process is carried out in a cross-sectional way by means of 400 criteria based on open source information and documentation provided by the borrower. It should be emphasized that their own scoring system LoanBerry is the evidence of the development the underwriting process methodology by the platforms;
- use of overbooking principles — a unique system, an analogue of leverage. The investor invests money in applications ten times bigger than his deposit. The loan involves only the amount of the deposit, but according to the applications accepted by the borrower earlier.

ROLE OF INVESTOR AND FINANCIAL TECHNOLOGIES IN THE CROWDFUNDING MARKET: CURRENT TRENDS

This study allowed to highlight the cooperation of its platforms with some subjects of the banking community as innovations in the crowdsourcing market.

Thus, Bank Uralsib offers customers to use the services of the StartTrack platform. Legal

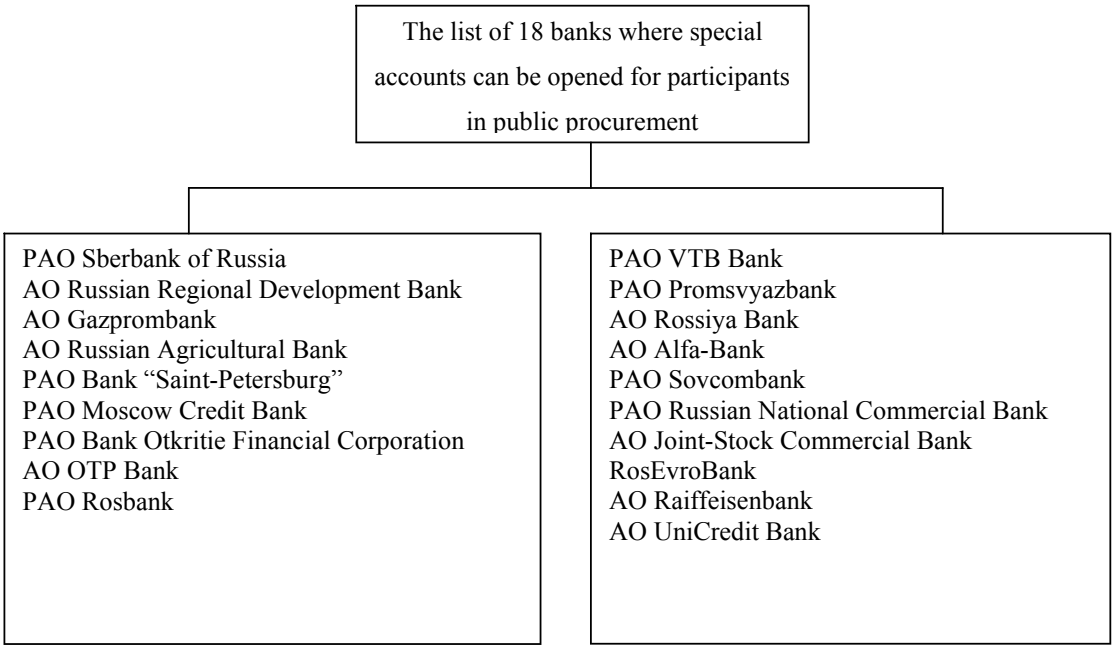

Fig. 3. **Complete list of credit institutions with special accounts where money intended for securing applications is deposited by participants in procurement under federal laws No. 44-FZ and No. 223-FZ**

Source: URL: https://www.garant.ru/products/ipo/prime/doc/71890282/ (accessed on 15.05. 2019).

entities — the clients of the Ak Bars Bank received loans from individual investors of the Potok platform for about 6.5 million rubles. The investment portfolio consists of the subjects, 20 companies; the funds are diversified evenly, which increases the security of loans to individuals. In the first quarter of 2019, PAO Sberbank of Russia will launch a similar platform to develop the P2B direction.

Providing loans to small businesses, whose creditworthiness is not evaluated according to the classical methodology, the credit institution accumulates skills in the financial technology market, additional profits, forms a new circle of relatively loyal borrowers, optimizes the size and composition of credit risks [13]. For the digital platforms, expanding the sources to raise funds and their investment directions means reducing the duration of the financial cycle, new transactions and incrementing the financial result [14].

Objectively, the infrastructure of credit relations in Russia requires development of the formation of a single socio-economic complex oriented to the reproduction of stable links between financial and credit institutions and market entities. Its system organization should contribute to the optimal distribution of the diversity of credit resources, reduction of transaction costs of banks, synchronization of credit links between different parts of the national market.

Indeed, in the future, in the Russian financial market, crowdfunding is predicted to make an independent capital investment by institutional investors (banks, private and public funds, financial groups) in the companies located on the platforms. The share of institutional investors in the crowdsector in the US and the UK is, respectively, 21% and 25% [15].

Moreover, in the financial system of these countries, an approach is widely known when a professional institutional investor (business angel, accelerator, fund) performs the function of a team leader. It is the team leader as a guarantee for the reliability of other investors interacts with the team of the invested project, on behalf of investors is in the borrower's board of directors, organizes professional expertise. At the same time, for example, in the Syndicate Room (UK), an ordinary investor

buys a share in a company where the presence of a large business angel is already marked. The Syndicate Room, as one of the first equity financing platforms at the beginning of 2019, accumulated funding in the amount of £ 215 million, interacts with more than 170 companies representing 30 areas of investment, and unites more than 150 team leaders.

In the mid-term, crowdfunding is given a signature role in institutional community based on the development of horizontal links focused on financial and technological methods of exchange and support. Among the factors of the crowdinvesting development are: the work of smart funds (OpenLedger, ICOO), blockchain technology, cryptocurrency.

Thus, in 2017, the use of crowdtechnologies on the WAVES blockchain platform contributed to the financing of the Russian startup ZrCoin in the amount of $ 7.07 million from 3 955 investors. The cost of the raw ZrCoin token is convertible with the cost of a kilogram of zirconium dioxide. Accordingly, borrowed funds are directed to finance the launch of two production lines of synthetic zirconium dioxide with a total capacity of 800 tons per month. During the ICO (public sale of tokens), the investors invested in lightcoin, bitcoin, ethereum.

Meaning the initial offer of coins and allowing small companies to avoid significant brokerage payments and a phased long listing procedure, ICO ZrCoin (Initial coin offering) was an effective substitute for IPO (Initial Public Offering). At the same time, the restrictions adopted in a number of countries on the ICO should be considered.

In the United States, by decision of the Securities and Exchange Commission (SEC), since 2017 the token has been equal to securities and is subject to regulation by relevant legislation (the first example of the Token of the DAO project). As a result, the sites initiating the ICO technology, to be safe, block access to participants with the US IP addresses and call it impossible for US investors to participate in crowdinvesting.

On the other hand, for companies with advanced development rates, relevant criterion indicators of income and mastering IPO technologies, the current US financial legislation provides a grace period of five years, during which the general audit requirements are not met. This benefit is mentioned in section 404 of the Sarbanes-Oxley Act (Sarbanes-Oxley Act; a law that tightened significantly the requirements for the financial statements of American companies and the process of their preparation since 2002).

Assessing the global scope of ICO-investment in projects, we note that in 2017 their volume amounted to 1.266 billion dollars, which is 470.27% more than in 2016 (222 million dollars), and two times more than venture capital in the blockchain and bitcoin projects in 2016.

The ubiquity of digital technologies leads to the development of a platform economy, where companies are leading, not in a specific industry, but providing complex services to the end user. It is necessary to emphasize the need for further development of the multifunctional services of the Russian platforms. Relying on foreign experience, we are speaking, in particular, about the marketplace of start-up vacancies, testing the secondary market of crowdfunds, trading recommendations services and portfolio management. As a result, high-grade ecosystems are formed for investors and start-ups, which in the future serve as the basis for the globalization of crowdplatforms [16].

The Center for Strategic Development in the analytical report “New funding tools for the development of technological companies: practice of use and prospects for development in Russia” highlighted a number of key risk scenarios for the development of crowdfunds presented in *Fig. 4*.

CONCLUSIONS

Significant approaches to regulate crowdfunding and, in particular, crowdinvesting, in Russia should be considered:

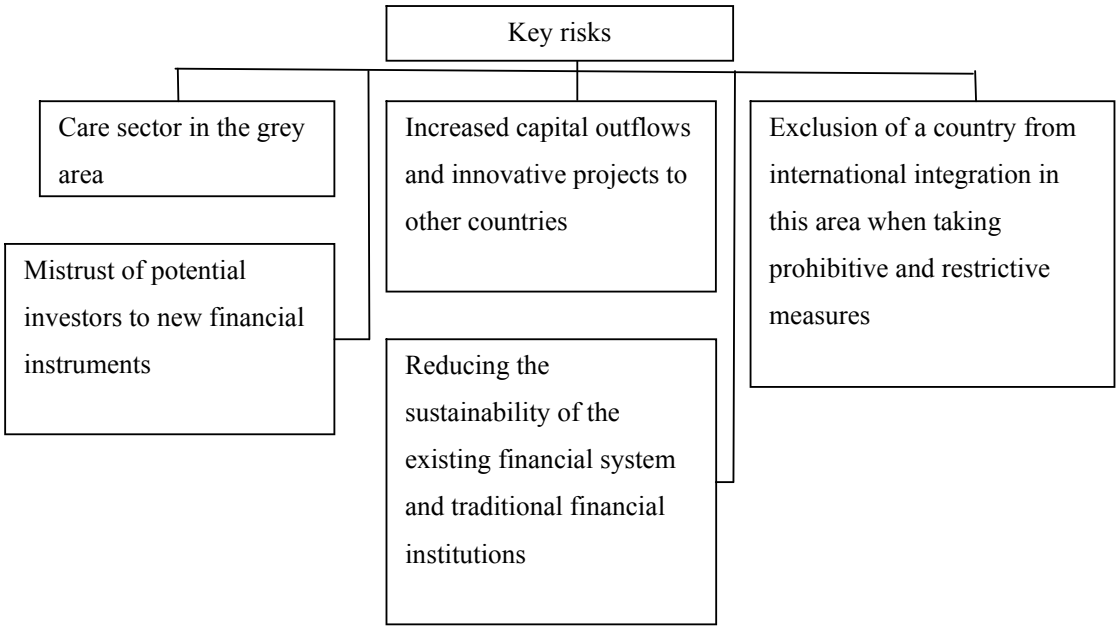

Fig. 4. **Key risk scenarios for the development of crowdfunding**

Source: URL: http://www.cbr.ru/statichtml/file/18221/bojor.pdf (accessed on 14.05. 2019).

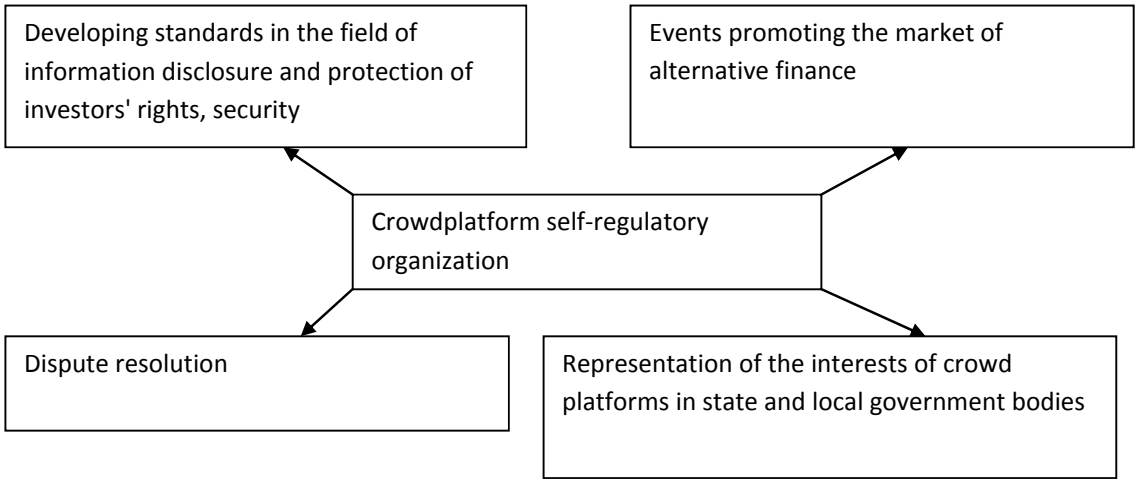

Fig. 5. **Functions of self-regulatory organizations in the crowdfunding market**

Source: URL: https://www.csr.ru/wp-content/uploads/2018/05/Doklad-novye-dengi.pdf (accessed on 15.05.2019).

- developing instruments for attracting traditional (institutional) investors to the financial mechanism of crowdinvestment while strengthening the position of non-professional investors [17];
- setting the upper limit of investment for non-professional investors. In this direction, as part of the instructions of the President of the Russian Federation, following the meeting on the use of digital technologies in the financial sector, the issues of investor classification and the establishment of a marginal amount of financial participation in a crowd transaction were updated. At the same time, it is important to consider the size of the income of resident individuals in the Russian Federation, comparing it with the same indicator in the countries where the restrictions are already applied;
- increasing for the investors the availability to the information about the general and

specific risks of the project funded by crowdfunding;

• official (normative) promotion of the All-Or-Nothing model (the alternative to the implemented Keep-it-All model) for all crowdfinance technologies. The platform representing the interests of the investor sets a goal and does not provide the project organizers with the next tranche until the goal is achieved;

• strengthening of the regulatory mechanism by the state of the intermediate participant (platform). In the case of crowd platforms, we are not speaking about the use of regulatory mechanisms already developed for investment funds, credit organizations, including banks and securities market. To build a productive system of state regulation, it is important to take into account the decentralized financial and economic nature of crowdfinance, and therefore, the phased implementation of a mechanism for their regulation.

Thus, the Bank of Russia considers the following sequence of actions:

• monitoring and voluntary survey of platforms;

• developing criteria for their classification and subsequent registration on this basis;

• reporting and establishing general requirements for financial indicators, risk management system for each classification group. Now some stages (in particular, voluntary survey of crowdfunding platforms) are being implemented. At the same time, the role of self-regulation tools has been updated in the leading countries of crowdfunding development. Thus, in France, the USA, Japan, and the UK, a crowdplatform, a member of a self-regulating organization, forms the business image of a reliable institution whose actions are focused on increasing the availability and quality of financial services for the population. The created institution of a self-regulating organization in the field of crowdfunding should be responsible for a number of activities indicated in *Fig. 5*.

The active participation of the Russian platforms in the development of the regulatory framework of their functioning is important. Thus, world experience shows the active policy of the well-known platform Symbid (the Netherlands), participating in the coordination of Dutch crowdfunding legislation. The actions are aimed primarily at improving standards in the field of crowdfunding stocks. The initiatives include joint promotion with Crowdsourcing.org and the European Crowdfunding Network (ECN) of the Crowdfunding Accreditation for Platform Standards (CAPS). The Symbid is also a member of the European Trade Association of Business Angels (EBAN) [18];

• regulatory consolidation of basic concepts in crowdfunding;

• developing tax preferences for crowdplatform on venture startups. For example, the UK legislation is focused on providing tax deductions to investors who invest in high technology companies (The Enterprise Investment Scheme Tax Shelter). English law also provides for a tax deduction on the amount of income tax (50% of the value of acquired shares of the company). This is the Seed Enterprise Investment Scheme (SEIS). At the same time, the maximum deduction is regulated — 150 thousand pounds sterling.

In Australia, Arts Tasmania, a joint program of state organization and the Pozible (a platform for financial support of creative ideas and projects), is known for the Crowdfunding Platform. Startups that successfully accumulate resources on the crowdplatform receive additional government funding (up to 2 thousand Australian dollars).

In Russia, among the proposals, the VAT exemption of crowdfunding platforms services is considered (similar with professional participants of the securities market);

• legal possibility to promote crowdtechnologies when financing infrastructure and other projects by means of public-private partnership (PPP) mechanism and crowdtechnologies (fundraising);

- further development of the venture business ecosystem [19]. At the same time, the majority of the current venture capital funds focus on professionals with experience in high technology. We emphasize the importance of attracting and developing personnel of financial specialization for who solving multidimensional issues of participation in project capital is a priority [20];
- taking measures to promote alternative financial instruments in the activities of the current development institutions (the Skolkovo Foundation, the Agency for strategic initiatives to promote new projects, the Internet Initiatives Development Fund, the Russian Venture Company, Vnesheconombank, the Federal State Budgetary Institution "Fund for the promotion of small enterprises in the scientific and technical sphere"). In this context we are speaking about the provision of grants, the promotion of social crowdfunding platforms;
- developing principles on a unified state policy in the field of support and regulation of the activity of alternative financing mechanisms. Now it is impossible to include crowdfunding institutions in business incubators; there are no co-funding programs for crowdprojects from the development institutions. In this area, the draft Federal Law "On attracting investments using investment platforms" (initiated by the Bank of Russia and the Ministry of Economic Development) has an unconditional practical interest; a number of working groups were created where professional market participants acted as full members, in particular:
- a working group at the Ministry of Economic Development of Russia to develop crowdfunding, crowdinvesting and crowdlending;
- a Bank of Russia working group to monitor, to assess consumer risks and to develop proposals on regulating the crowdfunding sector. In particular, public policy issues were discussed at the platform of the Fintech working group established on the basis of the Skolkovo Competence Center for Regulatory Regulation of the Digital Economy.

At the moment, a number of measures are being implemented to transfer to the target market model, including by the work of the regulatory "sandbox". In the terms of this model, the platform work and its effectiveness are determined by meeting a number of criteria established by the Bank of Russia.

Some Asian countries, in particular Singapore, have experience in implementing the model. In this state, the created Monetary Authority (MAS) updates the regulatory approach in evaluating crowdinvesting and P2P lending projects. Regulatory sandbox allows investors, organizers and platforms themselves to implement innovations in the field of public lending, observing current legislation (platform FundedHere, platform alliance FundedByMe, CoAssets and New Union). When the platforms achieve the target effect, the MAS takes appropriate regulatory moderate steps. The principles of the regulatory sandbox and certification by the self-regulatory organization (UK Crowdfunding Association) are used in the UK, in France (national Financement Participatif France), in Japan (Japan Securities Dealers Association).

At the same time, the government policy should be balanced. Unreasonably high demands and low limits on the volume of transactions mediate the outflow of potential investors, as a result, the stagnation of the sector and its extinction. Finally, conservative enhanced control and regulation of project information disclosure means an unjustified increase in administrative costs, a decrease in the efficiency of project activities.

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