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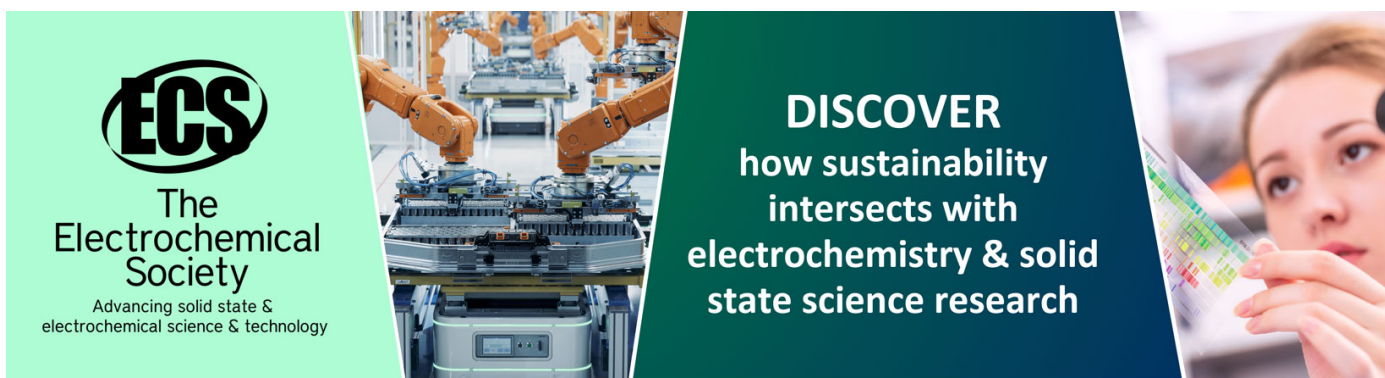
Search for Effective Governments in Post-Soviet Russia While Excluding the Factor of World Oil Prices from the Results of the Country's Economic Development

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Search for Effective Governments in Post-Soviet Russia While Excluding the Factor of World Oil Prices from the Results of the Country's Economic Development

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Abstract. The method of multi-criteria assessment of economic development based on an econometric model with the identification of production, market and institutional factors in relation to the parameters of economic growth and development risks is developed. The methodology is applied to the study of actual data on the economic development of post-Soviet Russia, which allowed us to obtain objective assessments of the activities of individual governments on a large set of criteria: oil-dependent, oil-dependent and diversifying, progressive, regressive and passive, conservative and destructive, managed and unmanaged development, etc. both in terms of growth and development risks, as well as individual development factors. The article describes the parameters of economic development during periods of shock therapy, radical reforms, post-devaluation recovery, building a "vertical of power" and "nationalization of the elite". It is concluded that the last periods only preserved the institutionally degraded society, but did not ensure its development. The period 2004-2008 is the only one when a positive purposeful impact of the government on development risk was revealed, namely, it was organized to reduce the fluctuation of economic growth during the period of rising oil prices. There were no positive targeted effects of governments on economic growth.

1. Introduction

The economic development of post-Soviet Russia has been studied by means of econometric analysis. During the periods of activity of individual governments, economic growth and development risks were studied, taking into account the exclusion of the factor of world oil prices.

2. Relevance

Due to the fact that the state is the largest participant in economic relations, research on the quality of government activities is carried out always and everywhere, which is further stimulated by the order for the foundations of political struggle.

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

A pioneer in the field of calculating the results of economic activity over long historical periods was A. Madison [1], who widely used methods of quantitative analysis (quantification) as a tool for historical analysis. He studied in detail the phenomenon of changing long-term economic leaders. In particular, the example of Western Europe and China shows that the modern state of the Western economy came not only as a result of the "take-off" that occurred as a result of the industrial revolution, but also because of the previous active development of universities and printing, as well as institutions of the bourgeois world order, free exchange of knowledge. In this Maddison sees the greatest difference be-



tween Western culture and China, which until the 16th century remained the leader in contribution to world production, but stagnated due to a bureaucratic management system and the refusal of free exchange of knowledge.

Balcerowicz L., Zhontsy A. compared the economic growth trajectories over the past half century in pairs of countries that were selected in such a way that they had as much similarity as possible, including in relation to difficult-to-measure factors, such as culture (for example, Australia and New Zealand) [2].

In the work of Ul. Freinkman, V. Dashkeeva and M. Muftyakhetdinova present an original multi-factor statistical model designed to explain fundamental inter-country institutional differences based on a limited set of economic, geographical, and cultural-historical factors. The conducted statistical calculations make it possible to more accurately assess the size of the institutional gap in Russia and its dynamics in 1996-2006 [3]. They note that the basic goals of the government's medium-term socio-economic programs have changed slightly. Progress in the development of basic market institutions (such as protection of property rights, protection of shareholders rights, formation of the land and real estate market, management of state property, bankruptcy and protection of creditors' rights, etc.) was insufficient, which gives grounds to assume that the legislative and regulatory support for the development of economic institutions is inadequate [4,5]. At the same time, we can talk about a chronic lag in legislation from economic realities.

Large-scale cross-country comparisons of the quality of public administration and its impact on economic growth were carried out by Kaufmann, Kraay and Zoido-Lobaton using their KKZ index (by authors' names), as a sum of six institutional characteristics that reflect cross-country differences in the quality of institutions in the following areas: 1. Rights of citizens and accountability of state bodies. 2. Stability of the political system and absence of violence. 3. Efficiency of public administration. 4. Quality of regulatory institutions. 5. Quality of legal institutions. 6. Anti-corruption control [6,7].

In the work of M. Myasoedov [8], on the one hand, it is shown that during the rule of the Democrats in the United States from 1949 to 2013, higher GDP growth rates of the American economy were achieved, but on the other hand, with reference to the Nobel laureate P. Krugman [9] and the study of Blinder and Watson [10], it is concluded that "the Democrats were just lucky to rule in those periods when the economy was in the upper phase of the cycle". And the reasons for "luck", including the rise in oil prices in the 1970s and early 2000-s.

Criticism of the neoclassical theory of economic growth in the works of W. Easterly and R. Levin [11] led to the formation of modern stylized facts (empirical patterns of economic growth), such as long-term divergence: growing differences in GDP per capita between countries, the impact of national policies on long-term economic growth, etc.

Based on a comparative analysis of the development of Finland and Russia A. Helanterä and Simon-Erik Ollus [12] showed that material resources only partially affect the economic and technological indicators of a particular country. In the context of modern industrial development, intellectual capital plays a vital role: educational and research potential, as well as competence in the broad sense of this concept. Along with material and intellectual capital, a country's economic and technological performance also depends on historical, cultural and social factors. In the analysis Helanterä and Ollus pays special attention to them. Each country has unique historical, cultural, and social codes similar to biological genes. They largely determine the ability of a society to adapt to changes in the external environment. The authors also conclude that the differences are mainly determined by the role of the state in stimulating economic development and in creating infrastructure. During the entire period of development, Finland has created efficient and stable state management structures, while Russian state structures are unstable and do not enjoy public confidence, which hinders the overall competitiveness of the country.

T. P. Skufyina, studying the post-war period of development of the USSR economy, notes that there was no negative growth in the main macroeconomic indicators in the USSR (the analysis of national income (1950-1989), gross industrial output (1930-1989), and capital investment (1950-1989).

That is, there are no classical cycles (crisis, depression, recovery, recovery), but, as Sovietologists say, "cyclical" fluctuations, that have two phases (acceleration-deceleration) [13].

A. O. Baranov, considering two time intervals of the post-Soviet period of Russia's economic development 1992-1998 and 1999-2011, said that they differed fundamentally in the dynamics of macroeconomic indicators. The first seven years of the analyzed period are characterized by a dramatic deterioration in all macroeconomic indicators. The second period is characterized by a significant increase in labor productivity and currently Russia ranks among the world's leading economies in terms of GDP, only being significantly behind the world leaders: the United States and China. However, in terms of GDP per capita and labor productivity, the Russian economy corresponds to the level of countries with average economic development indicators. The gap with the world's economic leaders in this indicator remains very large. The author comes to the conclusion that the country needs a new economic breakthrough, comparable to the period 1999-2008, in order to radically reduce the gap between the most efficient economies in the world. [14].

Akindinova N. V., Bessonov V. A., Yasin E. The authors analyze the Russian economic dynamics of the last three decades in the context of the transition from the plan to the market, i.e. in the paradigm of transformation. This transformation, which began in the late 1980s, outlined long-term trends in the economy. The authors conclude that by the beginning of the 2010s, the Russian economy had completed a period of recovery from the transformational downturn of the 1990s, and then the economy moved into a phase of decaying growth and the formation of a "new normal" characterized by moderate long-term rates. However, the slowdown in GDP growth strengthens Russia's position as a "middle-income" country close to the level of Central and Eastern European countries and does not allow us to expect a convergence in the future with the indicators of developed countries, and also contains the risk of sooner or later being left behind by actively growing developing countries [15].

Asemoglu D., Johnson S., Robinson D. on the example of "quasi-natural historical experiments" — the division of Korea into two parts with different institutions and the colonization of most of the world by European countries, which began in the 15th century — conclude that the facts do not confirm the key role of the geographical location, religion or culture. In contrast, differences in economic institutions seem to be the main causal factor underlying the differences in per capita income between countries. For this reason, institutions are a fundamental reason for differences between countries in income levels and long-term economic growth rates [16].

In general, there are 2 main areas of research: the dynamics of economic growth indicators and the factors that cause it.

4. Problem statement

The paper analyzes the GDP indicators of post-Soviet Russia during the periods of activity of various governments. The method of analysis is a comparative statistical analysis of indicators of economic growth and economic risks: the growth rate of real GDP and the mean-squared departure (MSD) of the same indicator. At the same time, the most effective development can be considered the development in which economic growth is maximized and risks are minimal.

The level of world oil prices is considered as the main factor affecting economic growth indicators. Correlation analysis is used to assess the impact of this factor. To study the influence of the factor of world oil prices on economic growth indicators, a production function is constructed.

The periods of activity of the governments of post-Soviet Russia are highlighted as periods of analysis:

1990-1992 – governments of Silaev I. S., Yeltsin B. N.-Gaidar E. T.,

1993-1998 – government of V. S. Chernomyrdin,

1998-2000 – the crisis-technical governments of Sergei Kiriyenko, Primakov E. M., S. V. Stepashin, Vladimir Putin,

2000-2004 – government of M. M. Kasyanov, 2004-2008 – governments of Fradkov M. E. and Zubkov V. A., 2008-2012 – government of Vladimir Putin,

2012-2010 – government of Dmitry Medvedev

The information base for analyzing economic development indicators is the Total economy data-base (TED) [17], as well as the database for analyzing oil prices [18] and the consumer price index [19]. Calculated weather indicators based on these data are shown in Table 1.

Table 1. Growth rates of Russia's real GDP and oil prices.

Period analysis'	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
1. The actual growth rate of GDP	0.9700	0.9495	0.8547	0.9133	0.8743	0.9586	0.9624	1.0140	0.9470	1.0640	1.1000	1.0510	1.0470	1,0730
2. The price of oil taking into account the consumer price index, USD per barrel.	22.0048	17.8413	17.1250	14.9359	13.4296	13.8899	15.8942	14.8141	10.2126	13.7775	20.1551	17.0975	17.4267	19,1678
3. The growth rate of oil prices	1.2005	0.8108	0.9599	0.8722	0.8992	1.0343	1.1443	0.9320	0.6894	1.3491	1.4629	0.8483	1.0193	1,0999
4. The estimated GDP growth rate	1.0271	0.9563	0.9792	0.9604	0.9612	0.9841	1.0065	0.9698	0.9185	1.0346	1.0669	0.9610	0.9894	1,0058
5. The residual GDP growth rate	0.9444	0.9929	0.8729	0.9510	0.9096	0.9740	0.9562	1.0456	1.0310	1.0284	1.0310	1.0936	1.0582	1,0668

Period analysis'	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1. The actual growth rate of GDP	1.0720	1.0640	1.0820	1.0850	1.0520	0.9220	1.0450	1.0430	1.0370	1.0180	1.0070	0.9769	1.0033	1.0163	1.0225
2. The price of oil taking into account the consumer price index, USD per barrel.	25.5157	35.4557	41.0267	44.6865	56.0114	37.0835	45.6585	61.9672	59.7853	57.8426	51.1324	27.9402	23.8123	28.1034	35.2246
3. The growth rate of oil prices	1.3312	1.3896	1.1571	1.0892	1.2534	0.6621	1.2312	1.3572	0.9648	0.9675	0.8840	0.5464	0.8523	1.1802	1.2534
4. The estimated GDP growth rate	1.0538	1.0754	1.0417	1.0333	1.0689	0.9556	1.0579	1.0901	1.0223	1.0216	1.0034	0.9274	0.9726	1.0323	1.0524
5. The residual GDP growth rate	1.0172	0.9894	1.0386	1.0500	0.9842	0.9648	0.9878	0.9568	1.0144	0.9964	1.0036	1.0534	1.0315	0.9845	0.9716

5. Research result

Based on the data obtained, the average growth rates and standard deviations for the periods of government activity are calculated. The data are presented in Table 2, and graphically in Figure 1.



Figure 1. Analysis of the economic development of Russia during different governments.

All periods since 1998 have shown GDP growth. From the presented data, the government periods 2000-2004 (Kasyanov M. M.) and 2004-2008 (Fradkov M. E., Zubkov V. A.) can be considered the most effective. In these periods, the highest GDP growth rates and the lowest level of economic risks are observed. The periods 1990-1998 are characterized by a drop in GDP and a high level of risk. The periods 1998-2000 and 2008-2012 are periods with average GDP growth and high risk, while the period 2012-2018 is a period of medium growth and low risk.

However, the situation may change significantly if the influence of the "oil component" is excluded. The raw material nature of the Russian economy is noted in many works (Akindinova, N. V., Besonov, V. A., Yasin, E. G., Baranov, A. O. Kalganova, L. A.) [20, 21, 22] and it is the export of energy resources that has long been the main factor in Russia's economic growth.

To identify dependencies between economic indicators and factor of world oil prices we use correlation analysis and revealed a high significance of the correlation coefficients and high correlation between the GDP growth rate, the price of oil, the logarithm of growth rate of oil prices and the factors most correlated with GDP growth (Table 3).

Table 2. Analysis of Russia's economic development during the period of activity of individual governments.

Period of analysis	1990-1992	1993-1998	1998-2000	2000-2004	2004-2008	2008-2012	2012-2018	1990-2018
1. Average GDP growth rate	0.9233	0.9439	1.0349	1.0684	1.0709	1.0186	1.0114	1.0051
2. MSD of GDP growth	0.0615	0.0474	0.0800	0.0212	0.0135	0.0549	0.0188	0.0642
3. Correlation coefficient between GDP growth and oil prices by period of government activity								
CC significance coefficient	p=0.808	p=0.645	p=0.057	p=0.048*	p=0.246	p=0.046*	p=0.045*	p=0.001*
Correlation coefficient	0.2974	0.1370	0.9959	0.8823	-0.6385	0.8849	0.7650	0.5975
4. Estimated average GDP growth rate	0.9871	0.9682	1.0046	1.0146	1.0545	1.0379	1.0038	1.0053
5. MSD of estimated GDP growth rates	0.0361	0.0271	0.0780	0.0443	0.0177	0.0527	0.0421	0.0191
6. Residual average GDP growth rate (ratio of actual and estimated GDP growth rates): p. 1/p. 4	0.9354	0.9612	1.0302	1.0530	1.0156	0.9814	1.0076	0.9988
7. MSD of residual GDP growth rates	0.0604	0.0616	0.0015	0.0301	0.0291	0.0225	0.0279	0.0489
			0.9998		-0.8971	0.9067	0.8757	
8. Correlation coefficient between actual and estimated GDP	0.3604	0.2358	p=0.012	0.8590	p=0.039	p=0.034	p=0.010	0.6626
	p=0.765	p=0.653	*	p=0.062	*	*	*	p=0.001*
		0.8203			0.9658			
9. Correlation coefficient of the residual and actual growth rate	0.8363	p=0.046	-0.2705	-0.6185	p=0.008	0.3791	-0.6883	0.6952
	p=0.369	*	p=0.826	p=0.266	*	p=0.529	p=0.87	p=0.001*
					-0.9809		-0.9527	
10. Correlation coefficient of the residual and estimated growth rate	-0.2100	-0.3621	-0.2882	-0.9333	p=0.003	-0.0465	p=0.001	
	p=0.865	p=0.481	p=0.814	p=0.02 *	*	p=0.941	*	-0.0770
11. MSD of actual and estimated GDP growth rates	0.056733	0.039281	0.072592	0.043104	0.017165	0.051726	0.031539	0.055467
12. MSD of actual and residual GDP growth rates	0.054917	0.039281	0.05074	0.025821	0.036063	0.044394	0.022957	0.056699
13. MSD of residual and estimated GDP growth rates	0.052486	0.04038	0.050994	0.040944	0.030534	0.048692	0.034375	0.047341

Note. The sign * indicates significant values of correlation coefficients.

Table 3. Correlation coefficient between GDP growth rate and oil price factors.

Correlation between the country's GDP growth rate and...	Significance of CC (p)	Value of the correlation coefficient
the growth rate of the oil price	0.001*	0.5975
logarithm of the oil price	0.022*	0.4226

Primas'. The sign * indicates significant values of correlation coefficients

The correlation coefficient between the GDP growth rate and the oil price growth rate is 0.5975 with a p-significance level of 0.001, which indicates that there is a moderate relationship between the analyzed indicators and the possibility of further analysis. Therefore, the values of the correlation coefficient are calculated for the periods of activity of various governments of post-Soviet Russia, which is shown in table 2.

According to the data obtained, the correlation coefficients between GDP growth and oil prices in the periods 2000-2004 and 2008-2018 are significant. At the same time, for these periods, the correlation coefficient value is higher than 0.7, which indicates a high dependence on world oil prices.

To exclude the influence of world oil prices on Russia's economic development indicators, a production function is constructed using the least squares method, which has the form:

$$GR_{gdp} = \frac{(167 + 33 \cdot TP_{LH}) \cdot (889 + 34 \cdot Ln_{LH})}{200000}, \quad (1)$$

where GR_{gdp} is the country's GDP growth rate, $GR_{oil\ price}$ is the oil price growth rate, and $Ln_{oil\ price}$ is the logarithm of the oil price.

This function reflects the form of dependence of the country's GDP growth rate and the factor of world oil prices. Therefore, the next step is to calculate GDP growth indicators using the formula (3). the results of the calculation are also shown in Table 1, in the context of governments – in Table 2 and in Fig. 2.

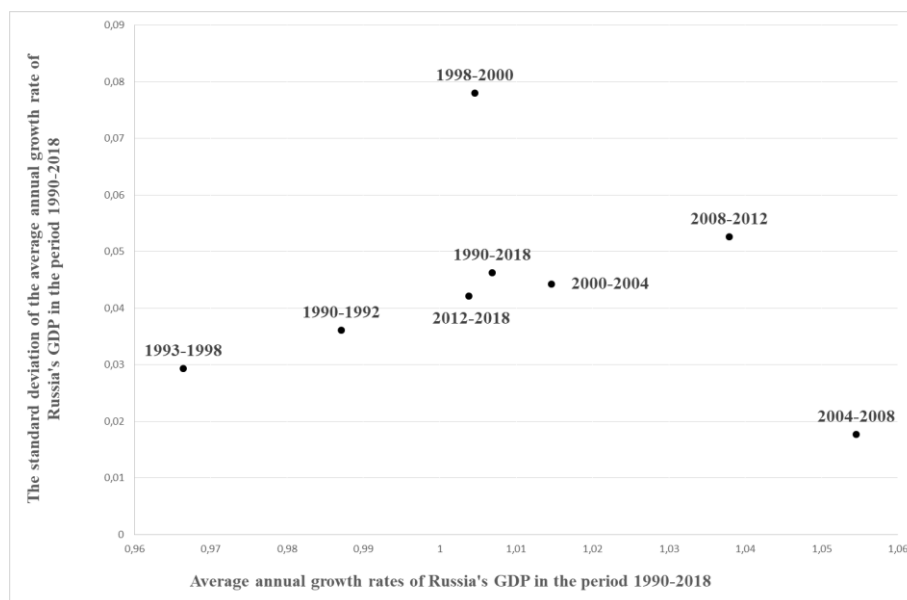


Figure 2. Change in standard deviations and calculated GDP growth rates in Russia for the period 1990-2018.

The highest estimated GDP growth rates are for the period 2004-2008, while the level of economic risks is minimal. The situation has also changed for the remaining periods. Thus, the periods 1990-1992 and 1993-1998 were characterized by a decrease in estimated GDP and high risks, but according to the calculated data, the risks of economic activity became relatively lower, and the decline was not as deep. As for the periods 2000-2008, when the highest rates of GDP growth and the lowest level of economic risks were observed (Fig. 1), this conclusion remains the same for 2004-2008, and in relation to 2000-2004, we can speak about the average rate of estimated economic growth of the country and the average level of economic risks. In general, in terms of the ratio of the estimated growth rate and the MSD, the most cost-effective period for Russia in terms of the possibility of using the factor of world oil prices is 2004-2008, and the most inefficient periods are 1990-2000 and 2012-2018. Overall, for five out of seven of the studied periods, the parameters of economic development of Russia are on the same line based on risks from growth and only in the period 1998-2000, the situation was much more adverse in terms of risk, and in 2004-2008 it was significantly more favorable risk and growth. Thus, most governments were on roughly equal terms in terms of world oil prices.

Significant correlation coefficients between the calculated and actual growth rates were obtained in the periods 1998-2000 and 2004-2018. At the same time, in the periods 1998-2000, 2008-2018, the dependence is direct and strong. In the period 2004-2008, the dependence is strong, but reversed, i.e. the government provided growth not only due to the "oil factor", but, on the contrary, during a period of high price growth, GDP growth was restrained, and during a period of low price growth, it was compensated, working to significantly reduce risk. This is also confirmed by the fact that in the period 2004-2008, the value of the MSD between the actual and estimated growth rates was minimal.

The maximum values of the actual and estimated MSD growth rates were reached in 1990-1992 and 1998-2000, but the situation here is fundamentally different: at the beginning of market reforms,

the post-Soviet economy of Russia did not yet show strong oil dependence and fluctuation depended on other factors, and after the crisis of 1998, the economy recovered much faster than an increase in oil prices could provide for.

Figure 3 shows three groups of periods: when the growth rate did not depend on oil prices, when it showed a direct and inverse relationship. The trend is obvious: growth is higher if the state diversifies the economy due to other factors. This was the case in post-Soviet Russia for only 4 years. Governments of these periods can be qualitatively assessed as oil-dependent, oil-dependent and diversifying, respectively.

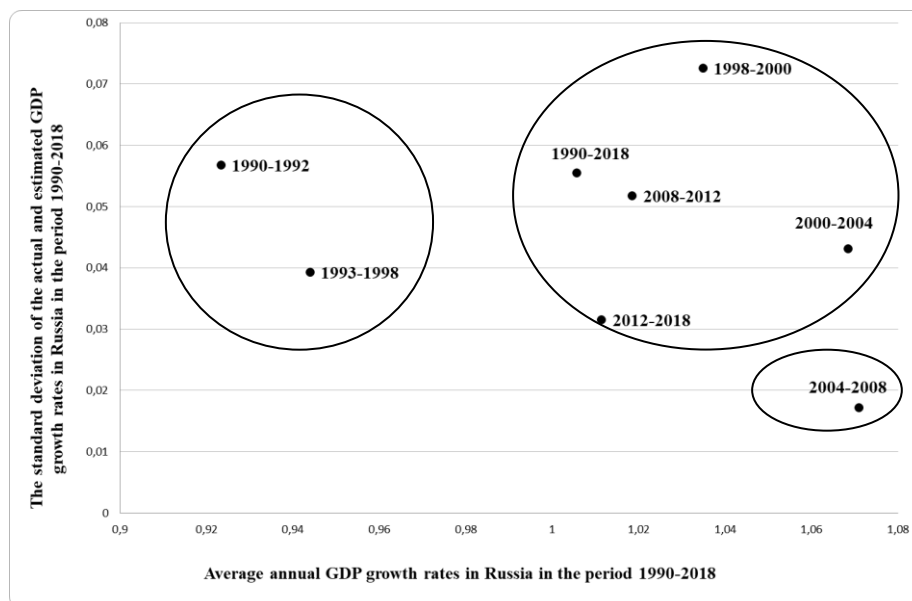


Figure 3. The ratio of the actual average annual growth rates of Russia's GDP and the standard deviation of the actual and estimated growth rates of Russia's GDP in the period 1990-2018.

In figure 4, the bisector of the coordinate axes divides periods into two groups: when the actual growth rate was higher than the calculated one, and vice versa. According to this criterion, when evaluating governments, they can be divided into progressive and regressive governments, respectively. And if in the period 2008-2012 there was a well-known exogenous factor, the crisis of 2009, the regression of the economy in the period 1990-1998 is explained only by endogenous factors of an institutional nature: reforms that destroy the economy. The period 2012-2018 with approximately equal actual and estimated growth rates indicates the absence of additional growth factors: the government did not influence the growth of the economy, it can be classified as passive.

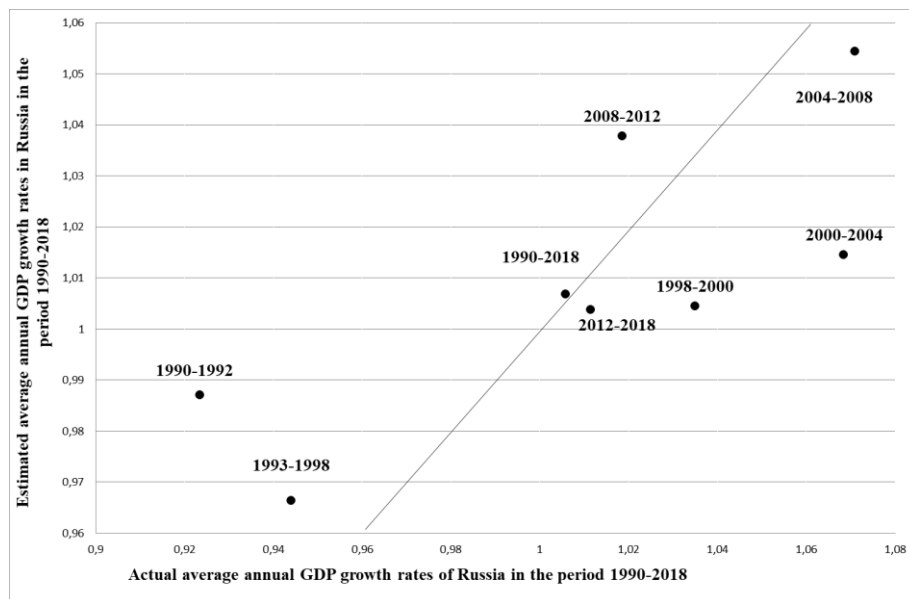


Figure 4. Ratio of actual and estimated average annual GDP growth rates in Russia in 1990-2018.

If Figure 3 shows the relation to the oil factor according to the criterion of economic growth, then Figure 5 shows the relation to the oil factor according to the criterion of development risk. In 2000-2008 and in 2012-2018, the deviation between actual and estimated growth rates are lower than the deviation from average growth rate in the period, i.e. risk is mainly generated by the volatility in oil prices. In other periods, the opposite is true: development risks depend on non-oil factors. In 1998-2000 and in 2008-2012, this factor was the global economic crises, and for the governments of 1990-1998 it was the reforms that destroyed the economy. The dominant development risks here can be divided into 3 groups: oil, market and institutional.

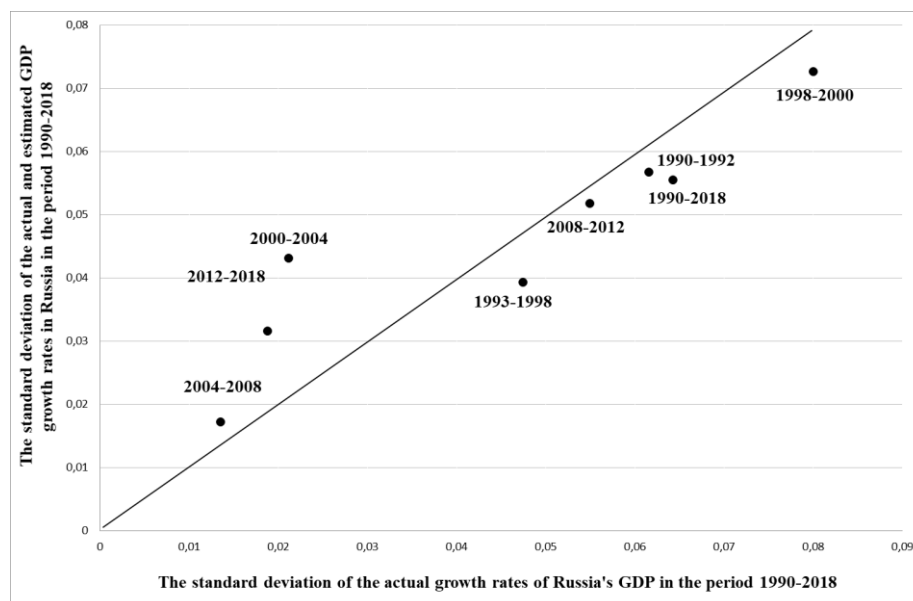


Figure 5. Ratio of the standard deviation of the actual average annual GDP growth rate and the standard deviation of the actual and estimated GDP growth rates in Russia in 1990-2018.

In Figure 6, the bisector of the graph axes divides the periods into two groups: where the calculated risks are lower than the actual ones, and vice versa. During periods when oil risks were the main source of risk, the actual risks were lower than the estimated ones. In other periods, market and institutional risks were added to oil risks, which significantly increased the actual risk compared to the calculated one. When evaluating the government, these groups can be identified as conservative and destructive, respectively.

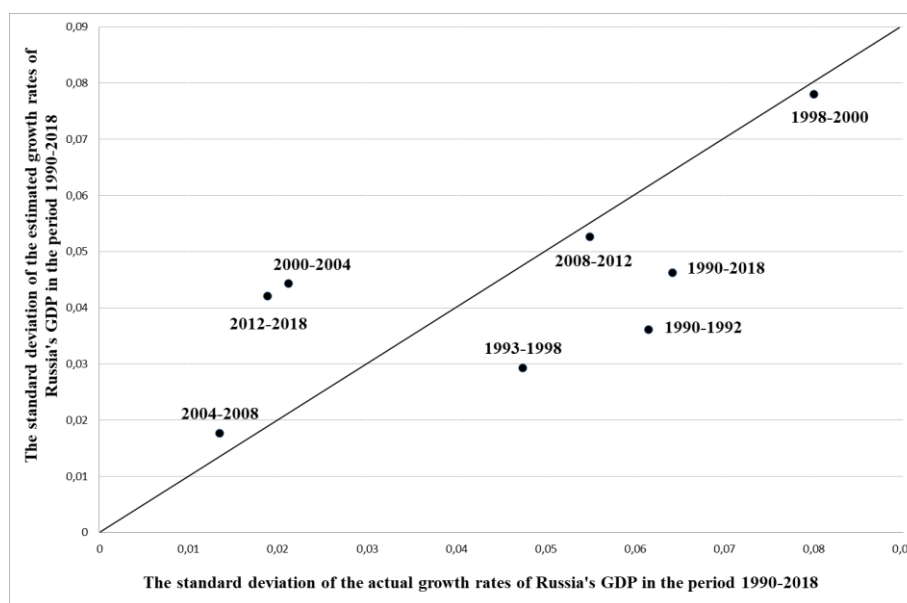


Figure 6. Ratio of standard deviations of the actual and estimated average annual GDP growth rates in Russia in 1990-2018.

The study of the difference between the actual and calculated values of growth rates allows us to understand how the economic growth indicators were affected by other exogenous and endogenous factors other than oil. Figure 7 shows the ratio of MSD and growth rates for the "remainder" of economic growth after deducting the oil price factor from it.

The highest rates of economic growth in post-Soviet Russia, excluding the factor of world oil prices, occurred in the period 2000-2004, while the risk level takes average values. A fairly high rate of economic growth with a minimal level of risk also occurred in the period 1998-2000, when the economy grew exactly 3% faster than the oil factor provided for three consecutive years. Both of these periods are associated with the recovery of the economic situation after the significant devaluation of the national currency during the crisis of 1998: the utilization of spare production capacity and the growth of non-energy exports gave this effect.

In the period 1990-1998, GDP under the influence of "residual" factors decreases, and risks remain high. Among the significant changes compared to the actual data in Fig. 1 and Table 1, we can note the period 2004-2008: from a period with a high growth rate and relatively low risk, it "moved" to a period with an average growth rate, i.e. initially economic growth in this period was due to the "oil component". This conclusion is also typical for the period 2008-2012, when it moved from a period with an average level of economic growth and average risks to a period of declining economic growth, i.e., again, the economic growth of that period was due to the factor of high world oil prices.

In general, figure 7 shows 3 trends affecting the influence of other factors: the post – devaluation trend of 1998-2004 with a relatively balanced ratio of growth and risk, the trend of the "vertical of power" 2000-2018, the "second line" of balanced development, and the trend of "radical reforms" 1990-1998, which shows an inverse relationship: the greater the decline, the greater the risk. It is

noteworthy that this trend also covers the point of the entire post-Soviet period 1990-2018. Only in comparison with the period of radical reforms, the risk here is lower, and growth is normalized at about zero. This may indicate that the general trend of degradation of the Russian economy during the presidency of Vladimir Putin and D. A. Medvedev did not stop, and the "vertical of power" in the 2000s and "nationalization of the elite" in the 2010s demonstrates the preservation of an institutionally degraded society, not its development.

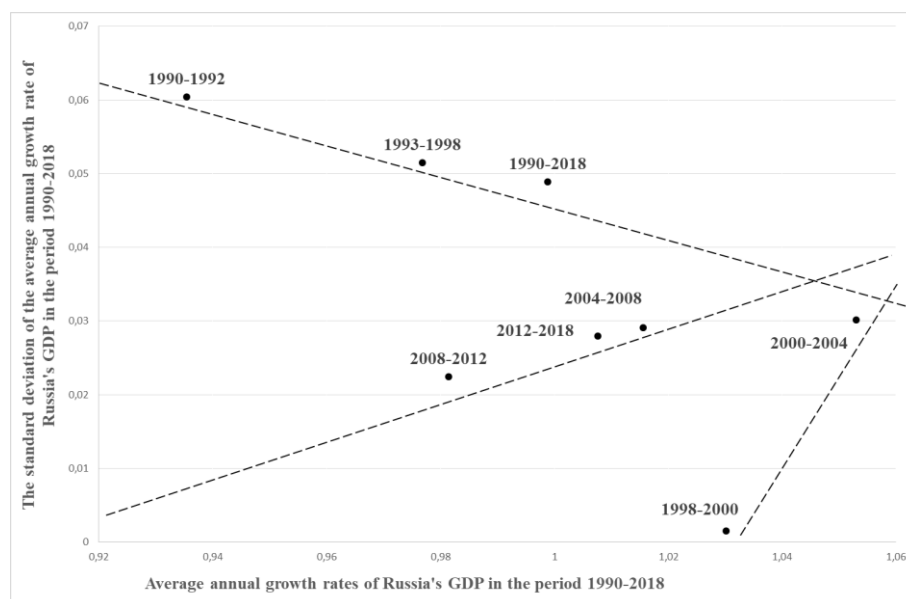


Figure 7. Analysis of Russia's economic development during the period of activity of individual governments while excluding the influence of the factor of world oil prices.

A significant value of the correlation coefficient between actual and residual growth is observed in 1993-1998 and in 2004-2008, and quite high (although not significant due to the small number of years in the period) in 1990-1993. This means that only in these periods the growth of the economy depended on other factors, while in the rest of them it depended only on oil. Given that during periods of global economic crises, there is no correlation between the residual and actual growth rates, it can be argued that the residual factors are not exogenous in nature (since oil prices depend on the global environment), but endogenous in nature, and even more precisely it is a targeted impact. Another thing is that these factors affected the economy for different purposes. In the period 1990-1998, the economy was being deliberately destroyed, while 2004-2008 saw an attempt to reduce the risks of oil growth. When evaluating governments by this criterion, periods can be divided into periods of managed and unmanaged development.

The deviation of the actual and residual growth rates (Fig. 8) takes minimum values in the period of dependence 2000-2004 and 2012-2018, when other factors other than oil did not affect the economy. In the period 2004-2008, this deviation is significantly higher due to the targeted impact on growth. In these 3 periods, the actual growth and risks generated by non-oil factors are balanced. In other periods, the balance of growth and risks generated by non-oil factors is not observed: the periods 1993-2000 and 2008-2012 are affected by the world economic crises of 1998 and 2009, and 1990-1998 by shock therapy.

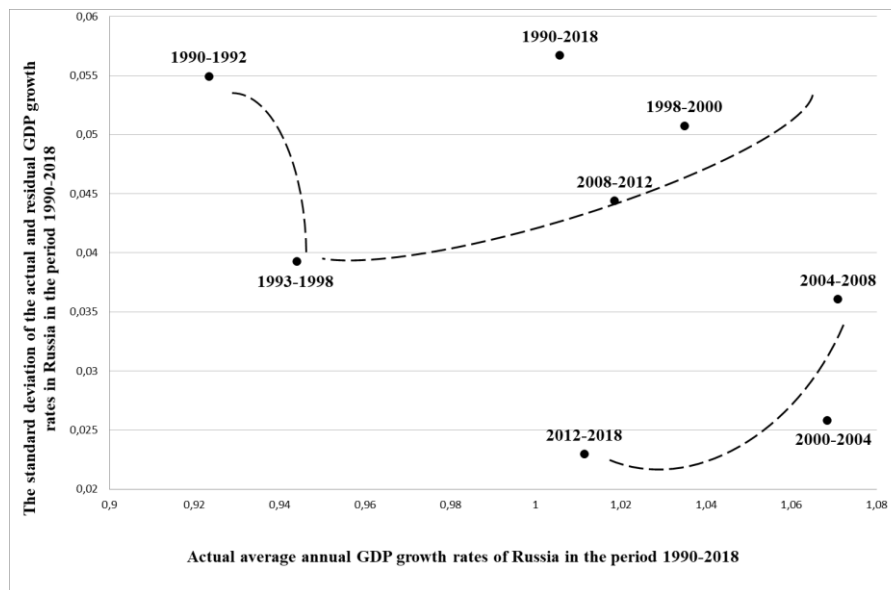


Figure 8. The ratio of the actual GDP growth rate and the standard deviation of the actual and residual GDP growth rates of Russia in 1990-2018.

Figure 9 shows 3 groups of periods: periods of favorable market conditions 2000-2008 and 2012-2018, when the risks of residual growth are significantly higher than the actual ones, crisis periods 1998-2000 and 1998-2012, when, on the contrary, the residual risks are significantly lower than the actual ones, and post-reform periods 1990-1998, when the residual and actual risks are approximately equal, i.e. the actual risks are generated by non-oil factors. In general, the actual risks over the post-Soviet period are significantly higher than the residual ones.

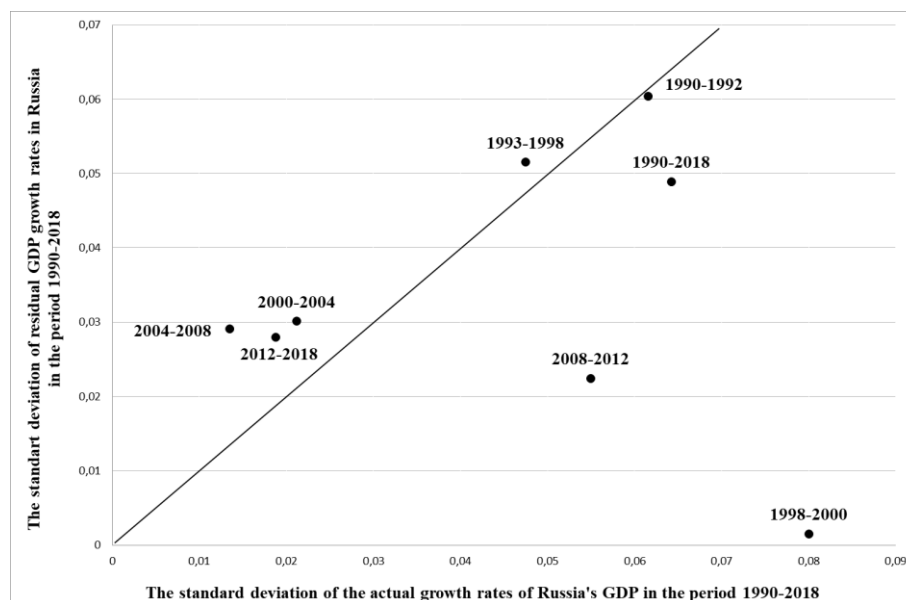


Figure 9. Ratio of standard deviations of actual and residual GDP growth rates in Russia in 1990-2018.

When comparing the actual risk with the variability of the difference of the residual and the actual growth (Fig. 10) it also shows that only favorable market conditions in 2000-2008 and in 2012-2018 residual risks are higher than the actual, but only during the targeted impacts on the risk of 2004-2008 the difference is significant.

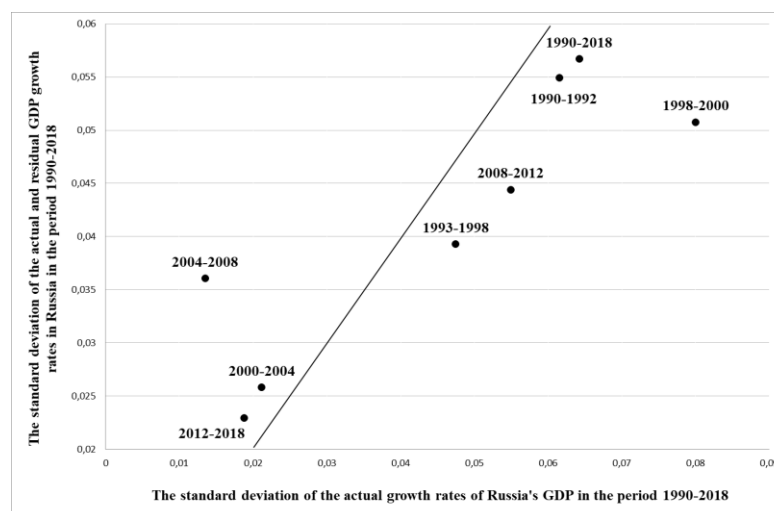


Figure 10. Ratio of the standard deviation of the actual GDP growth rate and the standard deviation of the actual and residual GDP growth rates of Russia in 1990-2018.

The axis bisector in figure 11 divides the periods of economic growth into 2 groups: in periods below the 2004-2012 bisector, the opportunities for economic growth under the influence of oil prices were greater than under the influence of other factors, and in other periods it was the opposite. For periods of decline, the rule is the opposite: in 1990-1992, other factors dominated, while in 1993-1998 it was oil. And if in the favorable period of 2004-2008 the government deliberately restrained economic growth in order to create a financial safety cushion and stimulate energy exports by curbing domestic energy consumption, in the period of 2008-2012 the economy was under the influence of another non-oil exogenous factor, namely the global crisis of 2009.

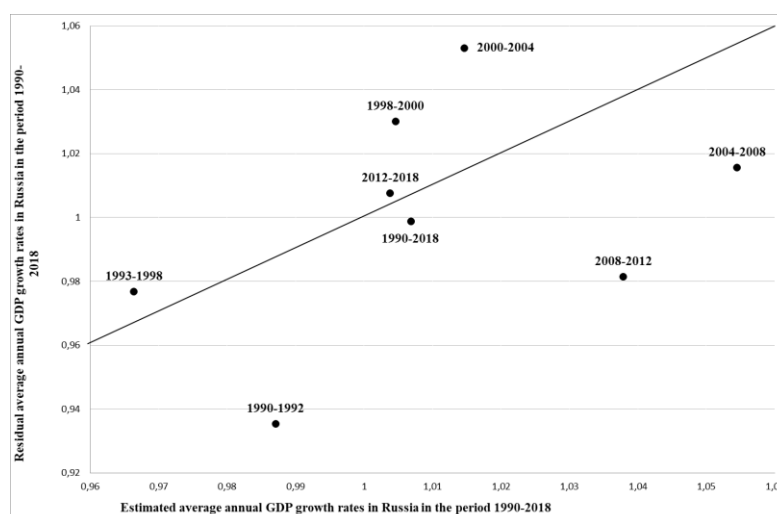


Figure 11. Ratio of average annual estimated and residual GDP growth rates in Russia in the period 1990-2018.

The amount of fluctuation in the estimated and residual growth rates relative to each other shows how the risks of oil and other factors interact with each other: they increase or decrease the overall risk. The general trend of this indicator's influence on growth is shown in Figure 12: the lower the fluctuation in the estimated and residual growth rates, the higher the growth. At the same time, we can compare the periods to see phase transitions to a less favorable combination of factors: the most favorable period of 2004-2008 is characterized by a purposeful impact on leveling oil risks, the periods 2000-2004 and 2012-2018 are not affected by other negative and positive factors, the periods 1993-2000 and 2008-2012 have negative factors, and in the period 1990-1992 there was a mutual strengthening of oil and other negative (in this case, institutional) factors. This conclusion is also confirmed by the presence of a significant negative correlation between the estimated and residual growth rates in the most favorable periods of 2000-2008 and 2012-2018 (see table 2).

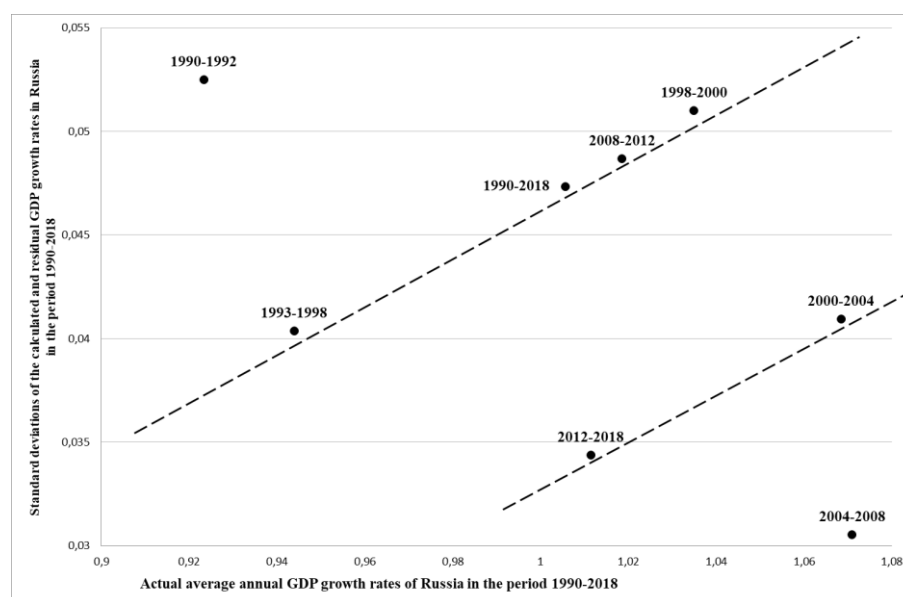


Figure 12. Ratio of actual GDP growth rates and standard deviations of estimated and residual GDP growth rates in Russia in the period 1990-2018.

In Fig. 13 the bisector of the coordinate axes divides the periods into 2 groups: the periods 1990-1998 and 2004 to 2008 are characterized by a high risk of residual growth, the other by higher oil risks, while in 1998-2000 the residual risk close to zero.

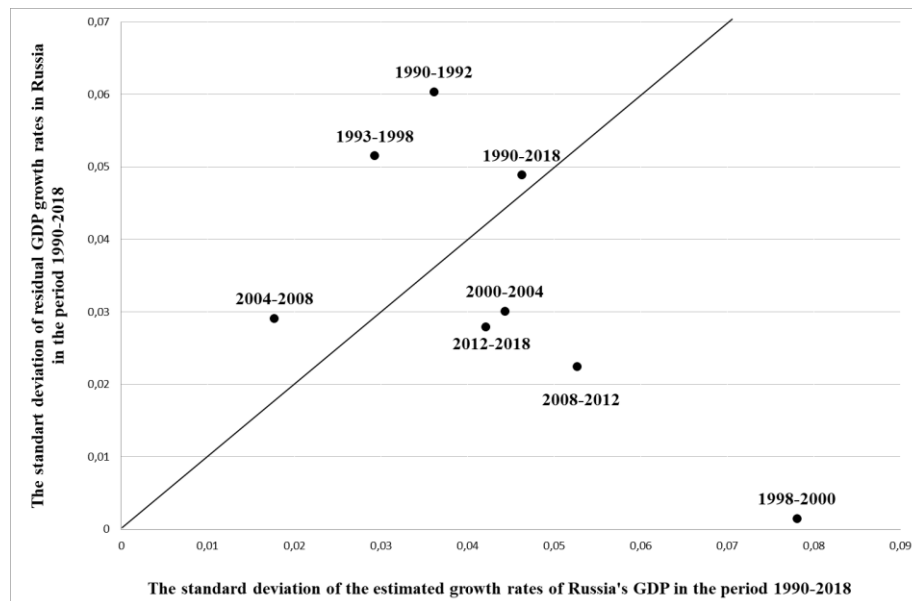


Figure 13. Ratio of standard deviations of estimated and residual GDP growth rates in Russia in 1990-2018.

A comparison between the actual risk and the variability of the difference between the estimated and residual growth (Fig. 14) also shows that only under favorable market conditions in 2000-2008 and in 2012-2018 ratio oil and other risk were above the actual, but during the period of purposeful impacts on the risk of 2004-2008 both indicators are minimal.

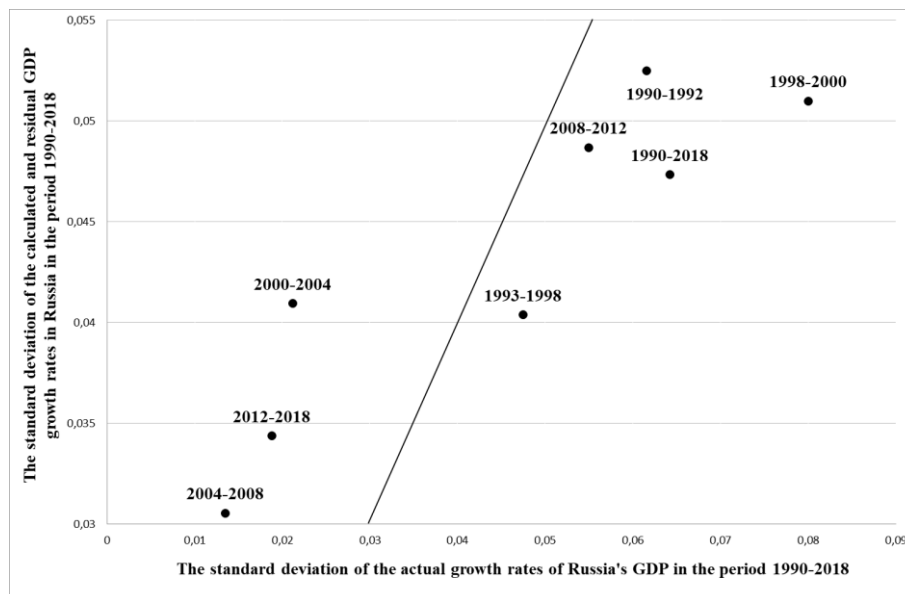


Figure 14. The ratio of the standard deviation of the actual GDP growth rate and the standard deviation of the estimated and residual GDP growth rates of Russia in the period 1990-2018.

6. Conclusions

This article attempts to apply the methodology of multi-criteria assessment of the activities of governments or other economic periods, previously proposed by the authors in a number of works [23, 24]. The method allows us to identify the impact of production, institutional and market factors of economic development in relation to two groups of economic development parameters: economic growth and development risk.

The results of applying the research methodology to the assessment of actual data on the economic development of post-Soviet Russia allow us to obtain objective assessments of the activities of individual governments, free from voluntarism and ideological bias of experts.

7. References

- [1] Maddison A 2006 The World Economy Vol 1 A Millennial Perspective Vol 2 Historical Statistics OECD (Paris)
- [2] 2012 Mysteries of Economic Growth: Driving Forces and Crises - Comparative Analysis under scientific. ed. Baltserovich L, Zhontsy A M.: THOUGHT 510
- [3] Freinkman L M, Dashkeev V V, Muftyakhetdinova M R 2009 Analysis of institutional dynamics in countries with economies in transition (Moscow: IET) 252 p
- [4] Sokolova N G 2011 Model of the social structure of society in the study of the quality of life of the population of the territory Economy of the region *Ekaterinburg: Publishing house of the Institute of Economics of the Ural Branch of the Russian Academy of Sciences* **3(27)** pp 89-94
- [5] Galiakhmetov R A, Pushina N N 2011 Improving the system of executive power in the region for managing the real sector of the economy on the basis of program-targeted management *Vestnik IzhSTU named after M.T. Kalashnikov* Vol 21 **4** pp 120-123
- [6] Kaufmann D, Aart K, Pablo Z-L 1999a Aggregating Governance Indicators World Bank Research Working Paper 2195
- [7] Kaufmann D, Aart K, Pablo Z-L 1999b Governance Matters World Bank Research Working Paper 2196
- [8] Myasoedov M 2009 How do the economic programs of democrats and republicans differ - and why do the former manage the economy more successfully? *Macroeconomics* URL: <http://welfare-economy.com/article.php?idarticle=140>
- [9] Krugman P 1994 The Myth of Asia's Miracle *Foreign Affairs* Vol 73 **6** p 77
- [10] Blinder A S, Yellen J L 2001 The Fabulous Decade: Macroeconomic Lessons from the 1990s (New York: The Century Foundation Press)
- [11] Easterly W, Ross L 2003 Tropics, Germs, and Crops: the role of endowments in economic development *Journal of Monetary Economics* **50** 1
- [12] Helantera A and Ollus S-E Why Russia is not Finland Comparative analysis of competitiveness URL: <https://iq.hse.ru/news/177844707.html>
- [13] Skufyina T P Cycle-like fluctuations of economic development in the period of the USSR: search for causes *Modern problems of science and education* **5** URL: <http://www.science-education.ru> (date of access: 07/02/2020)
- [14] Baranov A O 2016 Macroeconomic Analysis of Key Results economic development of Russia in the post-Soviet period *ECO* **6** pp 23-41 URL: <https://cyberleninka.ru/article/n/makroekonomicheskiy-analiz-osnovnyh-itogov-ekonomicheskogo-razvitiya-rossii-v-postsovetskiy-period> (date of access: 03.07.2020)
- [15] Akindinova N V, Bessonov V A, Yasin E G 2018 Russian economy: from transformation to development [Text]: Dokl. to 19th Apr. int. scientific. conf. on the problems of economic and social development Nat. issled. University Higher School of Economics (M.: Ed. House of the Higher School of Economics) URL: <https://www.hse.ru>
- [16] Acemoglu D 2009 Introduction to Economic Growth *Princeton University Press*
- [17] Total economy database. <https://www.conference-board.org>
- [18] Statistics: History of oil prices. <https://ruxpert.ru>

- [19] Consumer price index <https://www.officialdata.org>
- [20] Kalganova L A 2010 European and Russian models of public administration: comparative analysis *Problem analysis and public administration design* Issue 2 pp 25-50
- [21] Saveliev M Yu 2015 Multicultural institutionalism: General economic theory of civilizations The political economy of traditionalism. Network Society Project: [monograph] (Izhevsk: Assoc. according to methodol. ensuring business activity and societies) development "Mitra" 488 p
- [22] Saveliev M Yu 2016 Problems of creating a general theory of organizations *Bulletin of the Udmurt University. Series "Economics and Law"* 4 pp 57-67

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