The role of financial infrastructure in the regional reproduction process

*Ajdar*Ajupov[1,*], *Diana* Kurmanova[2], *Nailya* Bagautdinova[1], and *Liliya* Kurmanova[2]

[1]Kazan Federal University, Institute of Management, Economics and Finance, 420008, Kazan, Russia
[2]Bashkir State University, Ulitsa Zaki Validi, 32, Ufa, 450024, Russia

Abstract. The article considers modern conditions of financial support of reproductive processes. Due to the high concentration of financial market infrastructure in the central and "raw" regions of the country and the hypertrophied development of the financial sector, the timely and full implementation of regional programs for social and economic development is complicated, which indicates a high differentiation of regions in terms of financial provision and development of financial infrastructure. Clustering of the aggregate of the regions of the Russian Federation on the basis of selected economic indicators having a significant range of the coefficient of variation has been carried out, and the need for the development of the regional infrastructure of the financial market is substantiated.

1 Introduction

The financial system and financial and credit institutions provide an investment component of reproduction processes in economy. The creation of a stable, flexible and effective financial infrastructure is the most important objective for functioning of national economy and its regions that defines topicality of the conducted research. Increase in a share of the financial sector in the gross value added of the branches consuming financial services promotes effective redistribution of the financial capital and development of green economy. According to estimates of analysts, growth of capital investments by 1% provides increase in the produced gross internal product by 0,3-0,4% [1].

2 Theory

Imposition of economic sanctions concerning Russia became an essential barrier in attraction of average and long-term means by the Russian banks in the foreign capital markets. According to estimate of the Ministry of Finance of the Russian Federation, the short-received volume of the western capital is about USD 40 billion [2]. The volume of direct foreign investments is estimated by the Bank of Russia of 2,6 times lower than the 2013 level [3]. Today inflow of the capital to Russia in the form of portfolio and direct investments, deposits and credits doesn't even partly cover the requirement of the country for investment [4]. Available sources of loans became much more expensive. Rating

* Corresponding author: Ajdar.Ajupov@kpfu.ru

downgrade of Russia, its regions and business by the leading international agencies up to "speculative" level with the adverse forecast was one more step of pressure [5]. Attraction of foreign investments is limited by external political and economic factors.

Search of internal sources of economic growth based on the development of a national financial system and its regional infrastructure is necessary in the conditions of external financing restriction. However, the activity of credit institutions in transformation of internal savings into investments with the smallest transaction expenses continues to remain low. Access to funding of the Bank of Russia is limited for regional credit organizations, despite expansion of a number of the banks allowed to participation in credit auctions. The sharpest shortage of "long-term money", especially in regions, for financing of investment projects and the high price of the credit for economic agents is observed [6]. The monetization coefficient characterizing the saturation of national economy by money in comparison with the main developed countries in the Russian Federation is the lowest 0,47 (tab. 1).

Table 1. Condition of monetary units, GDP and monetization coefficient of economy of the states [7].

State	**Monetary aggregate M2 (M3) as of 01/01/2014, in billions of US dollars**	**GDP for 2013, billions of US dollars**	**Monetization factor of the economy (2/3)**
1	2	3	4
Australia	1 357.4	1 520.6	0.89
Great Britain	3 909.0	2 440.0	1.6
Germany	3 172.3	3 399.6	0.93
Canada	1 656.7	1 821.4	0.91
China	18 785.0	8 230.0	2.28
USA	11 011.6	15 684.8	0.7
France	2 784.0	2 612.9	1.06
Switzerland	831.9	632.2	1.32
Japan	11 163.6	5 960.0	1.87
Russian Federation	947.3	2 014.8	0.47

According to Rosstat (Federal Service of State Statistics), in the financial sector of Russia in 2013 5% of GDP was produced. In the countries with the developed markets in the financial sector about 28% of GDP is produced [8]. At the regional level the share of financial activity in structure of gross value added of regions varies on federal districts from 1,0% (Central Federal District) up to 0,3% (other regions of Russia) that testifies about regional heterogeneity of investment space, high differentiation of regions on the level of financial security and development of a financial infrastructure, saving of an "export" model of national economy development. As a result, the main volume of capital investments is concentrated in export branches and raw regions. The modern period of functioning of the domestic financial market represents a transformational stage which isn't yet finished, and comprises a complex of the interactions connected with the "institutional lag" of economic development leading to restrictions of national economy growth, specific nature of the functioning mechanism of a market system in the country.

3 Results

Using a correlation and regression method based on the component analysis, the grouping of Russia regions on certain economic signs was made for an estimation of heterogeneity degree of regional territories in which economic processes are developed. Data of Federal State Statistics Service (Rosstat) was used as values of the basic economic indicators for 01.01.2013.

Interrelations of resulting sign – the gross regional product (GRP) as key indicator of economic development (Y) and some factor signs, which can be used as financial security indicators of reproduction processes, were investigated. As factor indicators were selected the following variables: average monthly salary, rub (X1); the volume of contributions (deposits) of natural persons in Savings bank of the Russian Federation per capita, rub (on ruble and currency accounts) (X2); specific weight of the profitable organizations in the total number of the organizations, percent (X3); investments into fixed capital per capita, rub (X4); specific weight of population at working-age in the total number of the population, percent (X5); financial investments of the organizations, million rubles (X6). The component analysis of data was carried out by means of the STATGRAPHICS Plus 5.0 software product. For this purpose, we load the constructed selection into software product interface, then using the Principal Components function, we receive the following results (fig. 1).

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Analysis Summary

Data variables:
     Average nominal salary
     Finantial investment
     Investment in fixed capital
     Population
     Volume of deposits
     Weight of profitable companies

Data input: observations
Number of complete cases: 78
Missing value treatment: listwise
Standardized: yes

Number of components extracted: 2

         Principal Components Analysis
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Component                Percent of   Cumulative
 Number     Eigenvalue   Variance    Percentage
    1       3,21964       53,661       53,661
    2       1,13932       18,989       72,649
    3       0,875418      14,590       87,240
    4       0,426585       7,110       94,349
    5       0,248665       4,144       98,494
    6       0,090366       1,506      100,000
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Fig. 1. Results of the first iteration of component of data analysis.

Obtained data demonstrate that already the first three components describe 87,24% of dispersion of initial data, the fourth component defines only 7% of the general dispersion of signs, and, therefore, it is inexpedient to include an additional component into studied model. On this step of a research, it is possible to define the most significant signs for carrying out the subsequent cluster analysis: X1, X3 and X6 since their specific weight on the module has the maximum value in all three components. Factors X2, X4 and X5 have small value of specific weight, and, therefore, within this research aren't significant. The data provided by results of the correlation analysis show the calculated values of main components. For example, for the first main components the equation of classification looks like the following: 0,454381*X1 + 0,502995*X6 + 0,525862*X4 + 0,0340465*X5 + 0,460997* X2 + 0,22433* X3, and values of variables in the equation are standardized. Further we will construct 2D - diagram for the set selection. In fig. 2 it is visible that the studied objects were grouped in three classes.

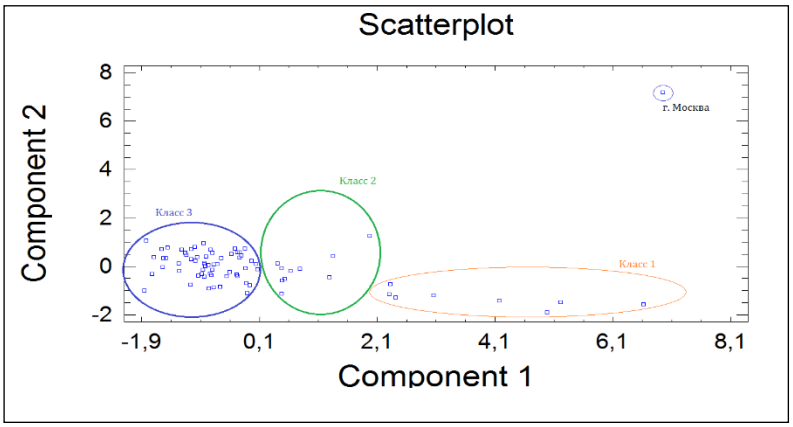

Fig. 2. Graphical representation of regions classification.

As a result, we define the objects belonging to classes. Moscow stands as separate "private house", doesn't belong to any class.

Table 2. Selected groups of regions based on the results of the iteration.

Class 1	**Continuation- class 3**	**Continuation- class 3**
Chukotka Autonomous District	Samara Region	Saratov region
Tyumen region	Kaluga region	Tambov Region
Magadan Region	Republic of Bashkortostan	Oryol Oblast
Sakhalin Oblast	Novgorod region	Penza region
Kamchatka Krai	Krasnodar region	Chuvash Republic
The Republic of Sakha (Yakutia)	Kemerovo Region	The Republic of Buryatia
Komi Republic	Yaroslavl region	Mari El Republic
Murmansk region	Nizhny Novgorod Region	Kurgan region
	The Republic of Karelia	Bryansk region
Class 2	Lipetsk region	Pskov region
St. Petersburg	Omsk Region	The Republic of Mordovia
Moscow region	The Republic of Khakassia	Kirov region
Khabarovsk region	Udmurt republic	Stavropol region
Krasnoyarsk region	Jewish Autonomous Region	Altai region
Arhangelsk region	Novosibirsk region	Republic of Adygea
Tomsk Region	Voronezh region	Altai Republic
Primorsky Krai	Chelyabinsk region	Ulyanovsk region
Leningrad region	Kursk Region	Ivanovo region
Amur region	Volgograd region	The Republic of Dagestan
Kaliningrad region	Ryazan Oblast	Karachay-Cherkess Republic
	Astrakhan Region	Kabardino-Balkaria Republic
Class 3	Smolensk region	Tyva Republic
Republic of Tatarstan	Vologda Region	Republic of Kalmykia
Belgorod region	Tula region	The Republic of Ingushetia
Sverdlovsk region	Vladimir region	Chechen Republic
Perm Region	Tver region	Zabaykalsky Krai
Orenburg region	Kostroma region	Republic of North Ossetia-Alania
Irkutsk Oblast	Rostov region	

Regions of the Russian Federation are characterized by the strongest asymmetry on the level of economic development and influence of financial factors on economic processes. For confirmation of results we calculate coefficient of informational content (Kinf) which value gives the grounds to claim that the constructed model is reliable for 81,88%:

$$K_{inf} = \frac{0.3136 + 0.64 + 0.5329}{0.3126 + 0.0626 + 0.1936 + 0.64 + 0.0729 + 0.5329} = 0.8188$$

Using the results of the carried-out analysis three groups of regions are selected on the basis of financial security factors of economic development which can be characterized as provided above an average (Class 1), average income (Class 2) and insufficiently provided (Class 3). Moscow didn't enter into one cluster, "leading region" is considerably torn off from the Class 1 that testifies that the level of use of financial factors in ensuring of reproduction processes in this region is highest.

The group of the regions carried to "Class 1" includes only 8% of total of regions, which differ in rather high level of financial security of regional development. Generally it is regions where considerable oil and gas income due to development of oil and gas branches of economy is formed. From here, ones have the high income of the population and savings capacity of the region, considerable financial investments (investment potential) and high specific weight of the profitable organizations (financial potential). In the 2nd cluster are the regions with an average potential of development, their share makes 13%.

Considerable part of subjects of Russia (78% of total of regions) are carried in the 3rd cluster, they insufficiently provided with financial resources, with the low level of development of the regional financial market and an insignificant set of financial instruments. In the third cluster regions differ among themselves in many parameters. The variation range on GRP per capita is 4,8 times (The Republic of Tatarstan 376889 rub and the Chechen Republic of 78934 rub), on the average monthly salary – 2 times (The Irkutsk region and the Republic of Dagestan accordingly to 25881 rub and 13660 rub), on the volume of deposits of the population – 8,2 times, on investments into fixed capital per capita – 6,6 times. Calculation of statistical parameters of the Class 3 for the listed above indicators demonstrates that this group is non-uniform on the key economic indicators (Fig. 3).

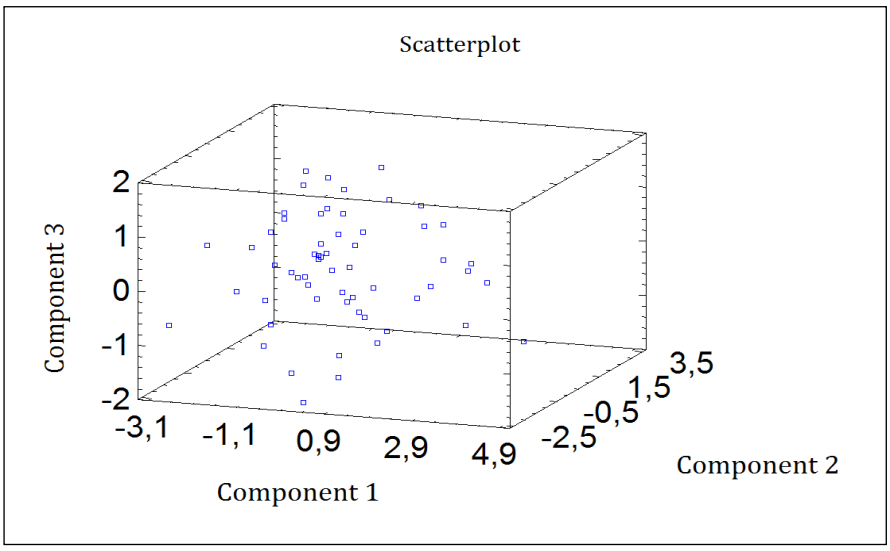

Fig. 3. Variation range of indicators of subjects of the Class 3.

The high gap in the third group, gave the grounds to carry out grouping inside cluster 3 and formation of subclusters that is visually presented in fig. 4.

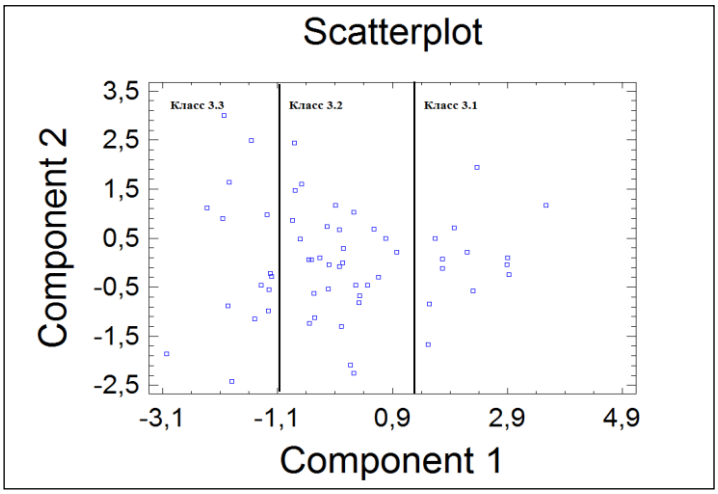

Fig. 4. Saturation of subjects on Class 3 subclasses.

Table 3. Grouping of subjects classified in Class 3 into subclasses.

Class 3.1	The Republic of Khakassia	Mari El Republic
Republic of Tatarstan	Udmurt republic	Pskov region
Belgorod region	Jewish Autonomous Region	The Republic of Mordovia
Sverdlovsk region	Novosibirsk region	Kirov region
Perm Region	Chelyabinsk region	Stavropol region
Irkutsk region	Kursk Region	Altai region
Samara Region	Volgograd region	Altai Republic
Kaluga region	Ryazan Oblast	
Republic of Bashkortostan	Astrakhan Region	**Class 3.3**
Novgorod region	Smolensk region	Kostroma region
Kemerovo Region	Transbaikal region	Kurgan region
Krasnodar region	Tula region	Bryansk region
Nizhny Novgorod Region	Vladimir region	Republic of Adygea
Voronezh region	Tver region	Republic of North Ossetia-Alania
	Rostov region	Ivanovo region
Class 3.2	Ulyanovsk region	The Republic of Dagestan
Orenburg region	Saratov region	Karachay-Cherkess Republic
Vologda Region	Tambov Region	Kabardino-Balkaria Republic
Yaroslavl region	Oryol Region	Tyva Republic
The Republic of Karelia	Penza region	Republic of Kalmykia
Lipetsk region	Chuvash Republic	The Republic of Ingushetia
Omsk Region	The Republic of Buryatia	Chechen Republic

4 Conclusions

Regional development of financial infrastructure has actual significant for the country with considerable territories in national borders and acts as a factor of financial safety, providing conditions not only redistributions on the basis of centralization, but also market accumulation in regions of sufficient financial resources.

The realized procedure of splitting non-uniform set of the Russian Federation regions on a number of economic signs indicates about growing interregional differentiation on the level of economic development, an essential gap between "economic poles" of the country, strengthening of social stratification and differentiation of standard of the population living. As a result of insufficiently developed financial infrastructure in regions "there is the strongest discrepancy between scale of the existing problems of regional social and economic policy and the financial resources allocated for their decision" [7].

Infrastructure development of regions becomes the defining factor and a condition of financial security of social and economic development of territories, providing interrelation of regional reproduction processes with nationwide. Security of regions with financial infrastructure is a basis of functioning of national economy as sets of its territorial branches therefore a criterion of infrastructure regional development of the financial market becomes important.

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