ORIGINAL PAPER

DOI: 10.26794/2587-5671-2019-23-5-101-114
UDC 338.24(045)
JEL G17, G21, C23, D02

Theoretical and Methodological Foundations of Designing a Balance Model for Reproducing Investment Potential of Institutional Sectors in the Regional System

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ABSTRACT

Reproducing investment potential of institutional sectors of the economy of any territorial system becomes a challenging issue in the light of recent trends: lack of financial resources for modernization and development of the real sector of economy, failure to successful implementing the planned strategic programs for economic development of territorial systems at macroeconomic, regional and municipal levels. A systematic approach to the formation and reproduction of these resources is required. In this regard, the main purpose of the work was to develop methodological foundations of designing a balance model for reproducing the investment potential of institutional sectors in the regional system. The analysis of the advantages and disadvantages of the existing approaches showed that a systematic representation of the reproduction processes of the investment potential of institutional sectors in the territorial systems requires a detailed mapping of the movement processes of financial resources between the sectors, as well as spatial features of the movement of their investment resources between the regional systems. Proposed in the work, the theoretical and methodological approach uses the basic principles of the system of national accounts: "double entry", according to which one sector initiates the movement of financial flows, and the other accepts them; financial account structure of institutional sectors. Moran's spatial autocorrelation and autoregression method was also applied. Thus, it provides to assess the investment resource endowment of the sectors and their sufficiency to solve the most important development problems, to determine the main uses of these resources by institutional sectors, and the riskiness of their investment activities. Such an approach provides an opportunity for state authorities and a financial regulator to assess the system of investment interconnections between institutional sectors that has developed in the regions, the problems and threats of financial development of these sectors, and to find reserves to solve them.

Keywords: investment potential; balance model of reproduction; institutional sectors; interregional interconnections; spatial autocorrelation

For citation: **Naumov I.V. Theoretical and methodological foundations of designing a balance model for reproducing investment potential of institutional sectors in the regional system.** ***Finance: Theory and Practice.*** **2019;23(5):101-114. DOI: 10.26794/2587-5671-2019-23-5-101-114**

INTRODUCTION

Relevance of the study

Investment resources play a key role in the development of the economy in any territorial system. They establish the baseline not only for the real productive sector of the economy, but also for the general government sector and provide it with the necessary resources for the most important strategic programs for the socio-economic development of territories. They play a key role in developing the household sector and provide its representatives with the required material benefits and opportunities for self-realization in society. Reproducing the investment potential of the institutional sectors of the economy of any territorial system becomes an urgent problem in view of recent trends. Among them are: lack of financial resources for upgrading and developing the real sector of economy, active capital outflow from domestic economy and ongoing speculative financial policies, increasing budget deficits in public administration and failure to successful implementation of the planned strategic programs for economic development of territorial systems at macroeconomic, regional and municipal levels.

Investment resources develop financial foundations for the institutional sectors of economy in the territorial system and, therefore, form the potential for its progressive socio-economic development. Given the economic and financial coherence of the institutional sectors, the relevance of the system theoretical and methodological approaches to reproduction processes of their investment potentials is growing. First, this will help identify negative trends in financial flows circulating between the sectors of financial, non-financial corporations, government, households and foreign institutions that lead to the degradation of their investment potential. Second, this will allow establishing the interregional flow features of investment resources in these institutional sectors. Third, a systematic approach will reveal the influence of internal and external factors on the reproduction processes of the investment potential of the sectors.

Thus, it is possible to determine the best way to regulate emerging negative trends in circulating and reproducing investment resources of institutional sectors for progressive socio-economic development of the territories. This paper is devoted to developing a theoretical and methodological approach to the reproduction processes of the investment potential of institutional sectors.

TOPIC RESEARCH REVIEW

The design method of equilibrium, balance models for developing socio-economic systems is the closest to the systematic approach of the study. The method uses the methodology to construct an intersectoral balance model, a system of national accounts or matrices of financial flows. This updated approach can most accurately reflect the financial flows between the sectors: financial corporations including banks, credit institutions, insurance organizations, pension funds and investment companies; non-financial corporations based on manufacturing enterprises of various industries, including trade and services. It also helps analyze the financial relationships between the public administration sector and households and identify key factors threatening the development of investment potential and the financial stability of the territorial system as a whole.

In 1923, a team of authors led by P. I. Popov were trying to balance the national economy of the USSR for 1923–1924 [1]. It was for the first time when they tried to build balance models reproducing the investment potential of interconnected institutional sectors, reflecting the features of financial flows between the sectors and revealing the threat of losing the existing investment potential of the socio-economic development of the sectors in the territorial system. The authors analyzed production and distribution of national products between agricultural, industrial, transport and construction enterprises for industrial and non-productive purposes (to meet the needs of the population), collective consumption (maintenance of state

and municipal institutions), export of goods to other countries and stocks. They built a balance model for the development of the economic regions of the USSR that reflected the links between private and state enterprises of various sectors of the national economy. The sectors can be attributed to non-financial corporations, state and municipal institutions (the state administration sector), population (the household sector) and world economy (the rest of the world sector).

The generated balance models did not directly relate the studied business entities to one or another institutional sector before the methodology of the system of national accounts.

Developed under the direction of P.I. Popov, the model made it possible to assess the supply of institutional sectors with goods of various industries in physical and monetary terms, but did not reveal the reproduction features of the investment potential of the financial corporations that included banks and other credit institutions, insurance organizations and other financial institutions. Credit resources of the banking sector were considered while compiling production tables for goods for each industry; however, the resources of financial corporations were not considered as a separate sector. Besides, the model does not reflect the relationship between economic regions in the field of production and consumption of goods or financial flows between the territorial systems. The first balance model of the national economy is also known by double calculation of gross product since individual industries penetrated into each other while exchanging goods [2].

The methodology of reproduction processes in the development of the investment potential of institutional sectors was further developing towards consolidated financial balances of production, distribution, redistribution and end use of the social product and national income, as well as **intersectoral balances**.

The intersectoral balance ("input-output") model developed by V.V. Leontief characterized the processes of formation and use of the aggregate social product by industry. Besides, it revealed the cost structure of its production and the distribution structure by industry; by linear economic and mathematical equations it reflected the intersectoral production relationships between institutional sectors in the country's economy and, moreover, made it possible to predict their change. Using this model, one can assess the investment potential of various sectors of the economy in territorial systems of various levels; unfortunately, it is impossible to analyze financial flows between institutional sectors — this is important when studying the problems of reproduction of their investment potential. Unlike other balance approaches to economic structure, the input-output method by V.V. Leontief helps reflect the relationship between individual territorial systems by means of regression analysis, especially the flows of goods and financial resources between them.

Until the 1960-s, balance models of the national economy did not disclose the features of financial flows between different sectors; they only reflected the processes of production and consumption of products and goods by various sectors of the economy, circulation of labor resources, balance of cash income and expenditure of the population. At the same time, territorial relationships were reflected in the balance sheets only between urban and rural settlements. Built in 1959 by M.R. Eidel'man [3], the intersectoral balance reflected the reproduction processes of the aggregate social product in 83 sectors of the national economy in physical and monetary terms. This made it possible to assess the flow features of the social product in monetary terms between non-financial corporations (material production sectors, forestry enterprises, housing and communal services, transport, communications, healthcare, culture, education, science), households (population), the government sector (state enterprises), and the sector of the rest of the world (especially import and export of goods). The balance sheet revealed the specifics of the

material and technical supply of industries, accumulation of production and non-production fixed and circulating assets, and increase in stocks and reserves of the aggregate social product, which made it possible to simplify the reproduction processes of the national economy and investment flows between the sectors. Unlike the previous ones, this balance revealed the development features of a larger number of sectors of the national economy and reflected a wide range of manufactured goods. For the first time selective statistical research methods were used for each product type while creating the balance of certain costs, raw materials, fuel and electricity (primary reporting of 20% of enterprises was processed). This had a negative affect on the accuracy of the balance of the national economy. Besides, the balance did not characterize the features of territorial interconnections in the reproduction processes of the social product and investment flows. Like previous balances of the national economy, Eidel'man's approach did not affect the features of social product developed by financial corporations.

The financial corporations sector, as well as other institutional sectors, was proposed by **the methodology of the system of national accounts (SNA)**, adopted in 1991 by statistical authorities to characterize ongoing economic processes and their results at the macroeconomic level. This methodology made it possible to present not only a balanced system of interconnections between sectors of financial, non-financial corporations, government, households, foreign institutions, but also detailed information about the resources of these sectors and their use, to reflect the processes of reproduction of their investment potential. The methodology eliminated double calculation that was characteristic of earlier balance models due to the use of the "double entry" principle. According to this principle, each operation is reflected in the accounts, on the one hand, as a resource, and on the other hand, as the use of this resource. The advantage of the SNA methodology was separating the financial institutions sector in the system of institutional sectors. This sector includes sub-sectors such as the Central Bank, deposit money corporations (commercial, clearing, mortgage, savings banks), financial intermediaries (investment funds), financial auxiliary corporations (stock exchanges, broker organizations operating in the stock market, as well as lottery organizations), insurance institutions and non-state pension funds [4]. Studying the methodological features of the SNA financial account showed that this methodology does not reflect the features of the resources circulating between sectors in derivative financial instruments (futures, options, factoring, forfaiting transactions), or considers payments of financial institutions to suppliers, contractors and buyers on business transactions, financial leasing issues, investments in tangible and intangible assets, or discloses interregional interconnections of institutional sectors. Because many manufacturing and financial institutions are legally registered in the central regions, the SNA regional tables developed by scientists do not fairly represent the interconnections between institutional sectors. Publishing SNA statistics with a large time lag also complicates the study, modeling and forecasting of the reproduction processes of the investment potential of institutional sectors.

Social Accounting Matrix (SAM) is a modern theoretical concept using the principles of the intersectoral balance methodology in the study of financial flows between institutional sectors and the reproduction of their investment potential. The foundations for using matrices of social accounts in the study of the reproductive process features of financial resources in institutional sectors were laid in the works by R. Stone [5], G. Pyatt and J. Round [6], E. Thorbecke, J. Defourny [7] and H. Khan [8], A.R. Belousov and E.A. Abramova [9], N.N. Mikheeva [10], Z.B.-D. Dondokov [11], S. Yu. Ermakova [12], N.G. Zakharchenko [13, 14].

The matrix developed as a result of using this methodology is a unique economic model. It is used to study economic activity on a national and regional scale based on in-

terconnected balances reflecting the flows of products and their financial equivalents between economic agents (institutional sectors) during various economic transactions. Unlike the standard intersectoral balance model, this methodology considers transfer payments between institutional sectors, as well as the distribution of factor payments within each sector. The main advantage of this methodology is the ability to study regional features in financial flows circulating between sectors and reproducing their investment resources, to assess the financial stability of the studied territories, and to optimize the management of financial flows in the region.

The main disadvantage of this methodology is that it does not allow to study interregional relations and the direction of financial flows, the investment potential diversion of sectors. This makes it difficult to use the methodology for building matrices of social accounts in the study of the reproduction processes of the investment potential of institutional sectors in the territorial system. The study of interregional relations in financial flows between institutional sectors is of primary importance when analyzing the reproduction processes of their investment potential. Transferring investment resources of a particular sector to another territorial system leads not only to a reduction in the investment potential of the sector of this territory, but also in the opportunities for the progressive economic development of this territorial system. On the other hand, such investment flows provides additional sources for developing the institutional sectors of the territory where they are moved to.

The study of interregional interconnections in financial flows will reveal the additional investment opportunities for the progressive economic development of financial and non-financial corporations, households, and government institutions that are created in territorial systems as a result of such flows. Therefore, when creating the theoretical and methodological approach to the balance model design for the reproduction of investment potential, special attention will be paid to the study and modeling of interregional relationships.

METHODOLOGY OF DESIGNING A BALANCE REPRODUCTION MODEL OF INVESTMENT POTENTIAL OF INSTITUTIONAL SECTORS

Designing a reproduction model of the investment potential of institutional sectors in the regional system involves a detailed study of financial flows between the sectors of financial and non-financial corporations, public administration institutions, household sector and foreign institutions, trends in the formation and use of these investment resources by the sectors, and studying internal and external factors environments that influence these processes. For the most accurate and comprehensive study of financial flows between institutional sectors reflecting the features of the formation and use of their investment potential, we propose a matrix approach whose methodological principles were briefly presented in our earlier works [15–17].

This approach based on the systematization of the primary data in the turnover balance sheet of credit institutions registered in the region, together with the accounts (on form No. 101) and the distribution of their financial transaction results by the assets and liabilities of institutional sectors using the basic principles of the SNA methodology (the principle of double entry, the structure of the institutional sectors of the national economy, the structure of their financial account) build a matrix of financial flows reflecting the features of the reproduction model of the investment potential of institutional sectors in the region. Let's take a closer look at these features.

The initial stage in designing a reproduction model of the investment potential of institutional sectors is the collection and systematization of accounting data of banks and other credit institutions registered in the region. Using this information as a basis for studying the reproduction processes of the investment potential is due to the fact that almost all op-

erations of non-financial corporations, enterprises of the public sector of the economy, households, insurance organizations, pension funds and investment companies are conducted through banks and credit institutions and are displayed in their turnover balance sheet on form No. 101. At this stage, data on the financial transactions of credit institutions are being systematized during the year, so that it is possible to analyze the dynamics of the reproduction processes of the investment potential of institutional sectors. The data on financial flows presented in this statement are already divided by assets and liabilities of the balance-sheet. Therefore, the main task at the next stage is to group them by financial instruments according to the structure of the SNA financial account. Namely on: investments in monetary gold; foreign currency; debt securities; stocks; derivative financial instruments; fixed assets and other tangible assets; transactions related to the placement of funds on deposits, loans and borrowings; payment of taxes and fees; payroll payments; payment of receivables and payables and settlements with suppliers and contractors.

The third stage suggests designing a matrix of financial flows by distributing credit institution transactions grouped by financial instruments between the institutional sectors according to the characteristics of balance accounts reflected in the regulation of the Central Bank of the Russian Federation dated 16.07.2012 No. 385P on accounting rules in credit organizations on the territory of the Russian Federation. When distributing the financial transactions of credit institutions between the sectors of financial and non-financial corporations, government, households and the rest of the world, we propose using the SNA basic principle, the principle of "double entry", according to which one institutional sector initiates financial flows and the other sector accepts them (*Fig. 1*). For example, in the emerging matrix of financial flows, transactions on banking institutions lending to institutional sectors should be displayed in the assets with a minus sign for the sector of credit institutions and a plus sign for the sector that receives borrowed funds. When the loans are returned, it is displayed in this matrix with the opposite signs. The corresponding liabilities reflect the formation of the investment potential of the financial corporations sector and its use by other institutional sectors.

The assets of a matrix of financial flows, on the contrary, reveals the features of the formation of the investment potential by the sectors of non-financial corporations, government, households, the rest of the world and its use by the financial corporations sector. As a result of this mapping of financial flows for all financial instruments, financial flows between these sectors are balanced in the matrix, and not the non-institutional sectors on their own, i.e. assets and liabilities. This is the main distinguishing feature of the proposed approach to designing balance reproduction models of the investment potential of institutional sectors. As a result of this approach, a closed system of financial flows between sectors for various financial instruments is built. Some institutional sectors generate financial flows, while others accept them.

The balance between the assets and liabilities of the matrix of financial flows (balanced matrix) characterizes the reproduction results of investment potential for each institutional sector. The negative final value of the institutional sector in the balanced matrix indicates no free investment resources in this sector and the directions of using its current investment potential, i.e. reflects those sectors where its financial resources were directed. The positive final value of the balanced matrix, on the contrary, helps identify additional investment opportunities for the sector development, provided as a result of attracting financial resources from other sectors.

Designed in this way, the model reveals the reproduction features of the investment potential of interconnected institutional sectors and helps assess the investment opportunities of the financial and non-financial corporations,

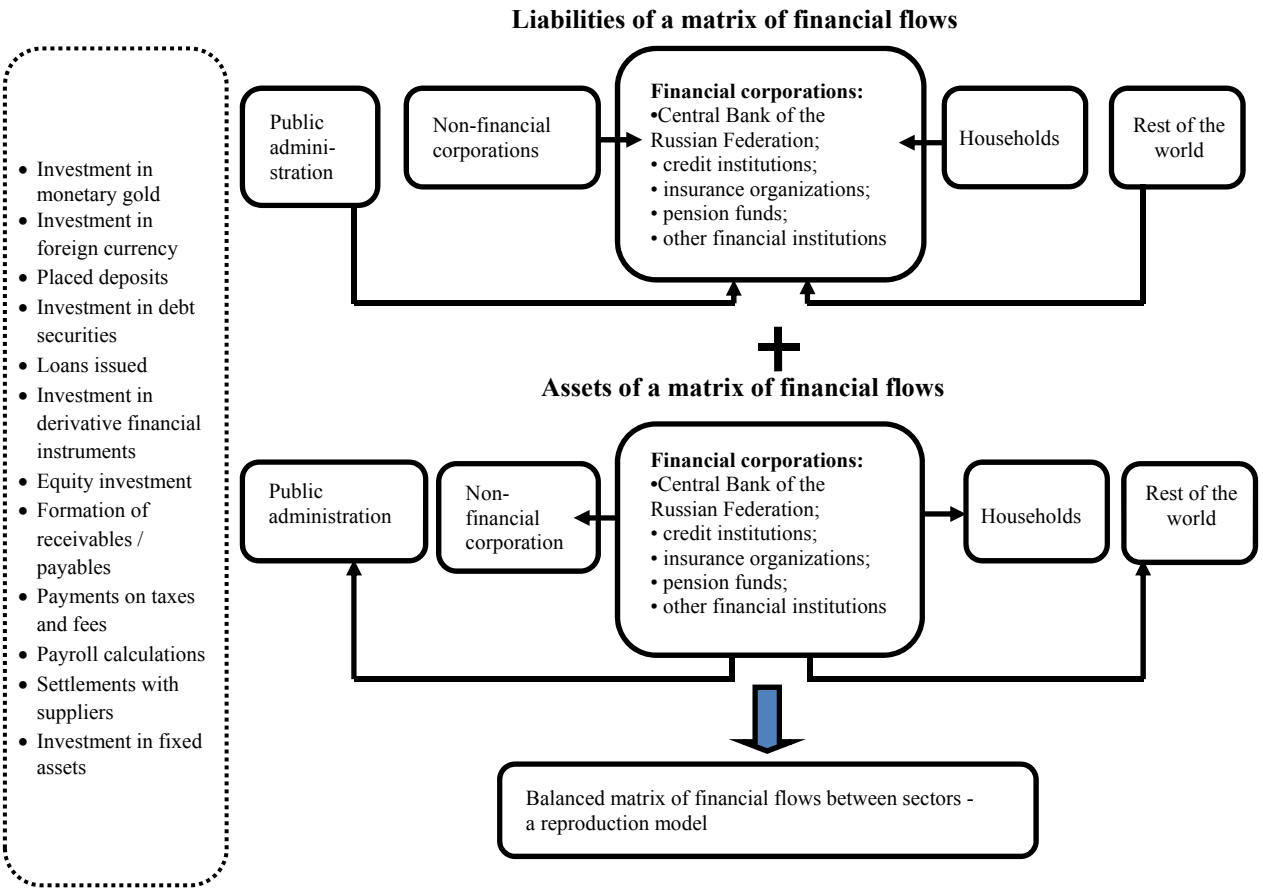

Fig. **Model of reproduction of the investment potential of institutional sectors in the regional system**

Source: compiled by the author.

households, government and foreign organizations, as well as the threats to the economic development of these sectors as a result of financial flows between them.

For example, a high balanced positive value in the reproduction model of investment potential in the financial corporations sector indicates a high concentration of unused investment resources of the sector in this region. They could be aimed at the recovering the economic sector of real production or financing important strategic programs for socio-economic development implemented by the government sector. A high negative value in the reproduction model in this sector is indicative of the emerging threats to the development of credit institutions, insurance organizations and pension funds in the region, as well as to find out the reasons (outflow of capital abroad, high debt load of institutional sectors, growing debt arrears to financial corporations, etc.). Negative values of reproduction of the investment potential of the household sector, nonfinancial corporations and government indicate the extensive use of the existing investment potential of these sectors and no free investment resources; in the case of high payables to other institutional sectors — the opportunity to lose financial stability.

As noted earlier, one of the drawbacks of existing methodological approaches to studying the reproduction processes of the investment potential of sectors using balance models is the lack of a spatial aspect. To solve this problem and to display **interregional relationships in the reproduction processes of the investment potential of institutional sectors** by a projected model, it is proposed to use the methods of spatial autocorrelation and autoregression by L. Anselin [18], R. Geary [19], A. Ge-

tis and J. Ord [20], P. Moran [21]. Modeling interregional relationships involves:

• designing a matrix of local autocorrelation indices of the studied regions I_{Li} [22] to search for closely interrelated territories by various financial instruments to reproduce investment potential for each institutional sector:

$$I_{Li} = N \times \frac{(x_i - \mu) \times \sum_i w_{ij} (x_j - \mu)}{\sum_i (x_i - \mu)^2}, \quad (1)$$

where N — is the number of regions;

W_{ij} — is a spatial weight matrix element for regions i and j;

μ — is an average value of an indicator;

x_i — is an analyzed indicator of one region;

x_j — is an analyzed indicator of the other region.

• analyzing spatial autocorrelation between regional systems by P. Moran's dispersion diagram allowing to divide the studied territories into four categories (HH, HL, LL, LH) depending on the level of reproduction of the investment potential of institutional sectors. According to this dispersion diagram, territories with a high concentration of investment resources in institutional sectors are located in the HL quadrant. However, we suggest relating to them only those territories whose local autocorrelation index value is above the upper limit of the spread of deviation of its values estimated for all regions:

$$I_{Li} > \left(\overline{I_{Li}} + \sqrt{\frac{\sum \left(I_{Li} - \overline{I_{Li}} \right)^2}{n}} \right). \quad (2)$$

To the territories closely related to the identified concentration centers of the investment potential of institutional sectors we suggest assigning regional systems in the HH and LH quadrants and with the values of local autocorrelation indices between the average and the upper scatter border. The matrix of local autocorrelation indices of the studied regions helps identify the interconnected areas, i.e. spatial units closely connected in the reproduction processes of investment potential, between which investment resources are mainly transferred. We suggest confirming the revealed interconnections between the territorial systems (spatial units) in the reproduction processes of the investment potential for each institutional sector by a correlation analysis using time series for the period from 1998 to 2017. This will help adjust the results obtained in the course of the spatial autocorrelation analysis and identify the regions truly connected in the reproduction processes and the investment potential flows of institutional sectors.

To understand the directions of the relationship between the territories in the flows of investment resources of institutional sectors, it is proposed to introduce a network approach: to design a map of spatial autocorrelation of regions with network lines representing interconnected territories by means of the local Moran's index (above the average level). Using this methodological approach will solve the problem of studying interregional relationships, typical of the methodological approaches considered before.

TEST RESULTS OF THE METHODOLOGICAL APPROACH TO DESIGNING A BALANCE REPRODUCTION MODEL OF INVESTMENT POTENTIAL OF INSTITUTIONAL SECTORS

We tested this approach when designing the balance reproduction model of investment potential of institutional sectors in the regions of the Ural Federal District for the period from 1999 to 2017. Built as a result of systematization of the turnover balance sheet on form No. 101 of regional banks and credit institutions of Sverdlovskaya, Chelyabinsk, Kurgan and Tyumen regions, the balance reproduction model of their investment potential helped confirm the previously identified trends in the reproduction of the investment potential of the sectors of the Sverdlovsk region during both crisis periods in the economy and its recovery periods.

Thus, the 1998–1999 economic crisis in Russia, the deterioration in the economic situation

in 2003–2004, the 2008–2009 financial crisis and stagnation of economic development in 2012–2017 were accompanied by a significant outflow of investment resources of institutional sectors abroad (the rest of the world sector).

Let's consider the reproduction features of the investment potential of the institutional sectors in the Ural Federal District in 2016 (*Table 1*) typical of the indicated periods of economic development. The outflow of financial resources of institutional sectors abroad was carried out in the form of investments in foreign currency (18.8 billion rubles), short-term loans up to 1 year (6.3 billion rubles), long-term loans for more than 3 years (4.2 billion rubles) and investments in shares (7.1 billion rubles). As a result, the investment potential of foreign institutions in 2016 increased by 17.7 billion rubles. A positive surplus in the reproduction of investment potential was also observed in the general government sectors (24.1 billion rubles) and financial corporations (84.1 billion rubles). The investment potential of the government sector of the Ural Federal District increased due to the sale of sovereign debt securities (federal loan bonds) in the amount of 29.2 billion rubles, shares (5.2 billion rubles) and state property (2.4 billion rubles), the attracted credit resources in the amount of 2.9 billion rubles, as well as mandatory payments of taxes and fees (1.5 billion rubles).

The investment potential of the financial corporations sector in the Urals Federal District was replenished in 2016 by attracting institutional funds to bank deposits in the amount of 46.2 billion rubles and the Central Bank of the Russian Federation (58.3 billion rubles), the repayment of loans (33.5 billion rubles) and as a result of settlements with suppliers (66.5 billion rubles).

In 2016, as in other recession periods, the financial corporations sector actively attracted funds from other institutional sectors in the form of deposits from operations with foreign currency. On the other hand, it slashed lending to households and non-financial corporations, investment in stocks of the real sector of the economy. As a result, during economic downturns, the investment potential of households and nonfinancial corporations drastically decreased (*Table 2*).

The biggest reduction in the investment potential of the household sector was noted in 2009 (by 48 billion rubles), 2015 (82.5 billion rubles) and 2016 (76.6 billion rubles). Over the past four years, there has been a tendency to shrink investment opportunities for the development of this sector. The developing crisis in the economy does not always directly affect the reproduction processes of the investment potential of institutional sectors; these trends show up with some delay, and non-financial corporations are the vivid example. The 1998 economic crisis affected the investment potential of this sector only in 2000 and contributed to its decrease by 30.9 billion rubles. The signs of a long economic recession that began in 2012 appeared in the development of the investment potential of non-financial corporations a little earlier, in 2011 (investment potential decreased by 27.1 billion rubles) and sharply increased in 2016 (by 49.3 billion rubles), and 2017 (by 137.1 billion rubles). The non-financial corporations sector, with the manufacturing sector of the economy being a part of it, has been actively losing its investment potential over the past two years; financial corporations have played a significant role in this process as they have drastically reduced lending, investment in stocks and debt securities of the real economy. Financial corporations have powerful investment potential that could be used to restore the real sector of the economy and implement the most important state strategic programs for socio-economic development. However, unfortunately, these resources are invested in foreign currency, stocks and debt securities of foreign issuers, as well as they are used for lending to foreign institutions, thereby contributing to the active outflow of capital abroad.

CONCLUSIONS

The presented theoretical and methodological approach to designing a reproduction model of the investment potential of institutional sectors helps use the basic principles of the system of national accounts ("double entry",

Table 1

Balance model of reproduction of the investment potential of the institutional sectors of the Ural Federal District in 2016, million rubles

Financial investment instruments	Financial corporations			Government Sector	(Non-financial corporations)	(Household)	(The rest of the world)
	(Central Bank of the Russian Federation)	(Banks and credit institutions)	Other financial organizations)				
1. Investment in gold	–186	–106	–24	–9	–9	179	155
2. Foreign currency	26	–11490	–682	–73	–84	–6488	18791
3. Placed deposits	58298	46226	–24571	–16884	–13875	–36868	–12326
4. Investments in debt securities	14858	–78720	19990	29181	22143	–4631	–2822
5. Loans issued	3023	33523	–2483	2989	594	–44416	6770
– urgent loans (up to 30 days)	0	24555	–25415	0	70	0	790
– short-term loans (up to 1 year)	2093	–30063	19815	–878	2937	–215	6312
– medium-term loans (for a period of 1 year to 3 years)	930	15202	2129	1842	–8237	–7696	–4171

End of Table 1

Financial investment instruments	Financial corporations			Government Sector	(Non-financial corporations)	(Household)	(The rest of the world)
	(Central Bank of the Russian Federation)	(Banks and credit institutions)	Other financial organizations)				
– long-term loans (over 3 years)	0	22 324	1 001	1 345	6198	–35 045	4 178
– on demand	0	1505	–13	681	–374	–1460	–340
6. Investment in derivative financial instruments	0	–8760	8 760	0	0	0	0
7. Equity investment	2	–32 000	1 652	5 215	2 522	15 470	7 139
8. Debts	9	–8779	5 132	–12	1180	2 406	65
9. Tax payments	0	–1530	0	1 530	0	0	0
10. Payroll payments	0	1680	0	–247	0	–1433	0
11. Settlements with suppliers	0	66 533	–1	0	–66 494	0	–38
12. Investment in fixed assets	0	–6576	314	2 443	4684	–865	0
BALANCE	**76031**	**0**	**8 086**	**24134**	**–49 339**	**–76 646**	**17 734**

Source: compiled by the author.

Table 2

Dynamics of reproduction of the investment potential of the institutional sectors of the Ural Federal District for the period of 1999–2017, million rubles

Year	Financial corporations		Government Sector	Non-financial corporations	Household	The rest of the world	Σ
	Central Bank of the Russian Federation	Other financial organizations					
1999	998	253	–740	–684	–32	206	0
2000	3270	–633	288	**–30872**	–1576	**29524**	0
2001	831	2156	2134	–4256	–3682	2817	0
2002	–2555	–3663	2201	45442	**–13588**	–27837	0
2003	7756	–3480	–727	22253	**–10636**	–15166	0
2004	–6306	1201	638	**–480**	–3070	**8018**	0
2005	5751	–4089	420	12445	–11035	–3492	0
2006	4860	2583	–5711	15685	–14933	–2483	0
2007	6648	–3543	–8815	14405	–6951	–1743	0
2008	**–17803**	–13053	**–26997**	73622	–851	–14919	0
2009	29088	–7093	13585	**–7790**	**–48073**	**20282**	0
2010	6798	8672	987	18671	**–25711**	–9417	0
2011	**–20287**	16489	9865	**–27125**	25169	–4111	0
2012	**–13515**	9720	**–9813**	**–1441**	6390	**8659**	0
2013	–6383	–40018	**–4489**	60252	692	–10054	0
2014	2784	–6257	**–13227**	52249	–33372	–2177	0
2015	1945	13922	**–9637**	48326	**–82491**	**27934**	0
2016	76031	8086	24134	**–49339**	**–76646**	**17734**	0
2017	174814	18446	20320	**–137091**	**–37954**	–38535	0

Source: compiled by the author.

according to which one sector initiates financial flows, and the other accepts them, the structure of the financial account of institutional sectors) in the matrix form and reflect the financial flows between the sectors of financial and non-financial corporations, general government, households and foreign institutions, as well as study the features of the development and use of the investment potential of these sectors. As a result of the methodology of spatial autocorrelation and autoregression applied by P. Moran's method, it is possible to determine the features of the investment potential spatial flow between regional systems, to establish the influence of the internal and external factors on its reproduction processes. This approach provides to assess the investment resource endowment of the sectors and their sufficiency to solve the most important development problems, to determine the main uses of these resources by institutional sectors, and the riskiness of their investment activities. In our opinion, this approach should be used for developing the concepts of industrial, social, investment policy at the federal and regional levels, for preparing budget projects of the appropriate levels and when implementing the Strategy for Spatial Development of the Russian Federation adopted in February 2019 for the period until 2025.

ACKNOWLEDGEMENTS

This article was supported by the RFBR grant No. 19–010–00660 "Scenario design of a model for reproducing the investment potential of institutional sectors in the regional system". Institute of economics, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia.

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The article was submitted on 15.08.2019; revised on 29.08.2019 and accepted for publication on 30.08.2019.
The author read and approved the final version of the manuscript.