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Innovation- and Investment-Based Development to the Russian Insurance System

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ABSTRACT

The paper investigates the investment strategy of insurance company operations in the financial market. Currently, economic development is complicated by recurrent financial crises, with their consequences having a negative impact on the condition of industries and enterprises. Similar conditions of activities require the creation of a protective mechanism against the effects of financial risks, which can be offered by insurance market. Given the features of the insurance activities, it makes sense to create insurance funds and reserves that would become the basis for compensation. In this regard, security for such funds is a most important task which can be largely solved by the investment-innovative activity. The choice of this area enhances stability in the insurance fund forming, as well as the accumulation of funds in order to expand business and to implement legislation as to increasing the authorized capital and improving the insurance reserves requirements. Most insurance companies do not have a clear strategy of investment and innovation, which greatly complicates the management and development activities. The research allowed to develop and validate theoretical and methodical aspects of investment activities of Russian insurance organizations and to identify areas and methods to improve the efficiency of financial investments using innovative approach.

JEL Classification: G22, E20, G32, O30.

Keywords: Insurance, investment, innovation, efficiency analysis, financial risks.

1. INTRODUCTION

Currently, economic development is complicated by recurrent financial crises with their consequences having a negative impact on the condition of industries and enterprises. Similar conditions of activities

require the creation of a mechanism to protect from the effects of financial risks, which can be offered by insurance market. Russian insurance market is characterized by a significant growth in the volume of insurance premiums, but not all the challenges of creating a reliable basis for conducting insurance business in the conditions of innovative development are solved.

Given the features of the insurance activities, it makes sense to create insurance funds and reserves that as a basis for compensation. In this regard, security for such funds becomes the most important task, which can be largely solved by the investment-innovative activity. The choice of this area enhances stability in the formation of an insurance fund, accumulation of funds in order to expand business and to implement the legislation as to increasing authorized capital and improving insurance reserves requirements.

2. LITERATURE REVIEW

Modern scientific literature mainly represents research into conducting of insurance activities, while little attention is paid to investments and innovations in the insurance sector. These studies are there in the works of Russian and foreign economists: A.P. Arkhipova, S.S. Gavrilova, A.A.Gvozdenko, I.P. Denisova, E.F. Dyuzhikova, Y.M. Zhuravlev, Y.A. Spletuhova, L.A. Orlanyuk-Malitskaya, V.A.Sukhov, K.E. Turbina, V.V. Shakhov, S.Y. Yanova, D.D. Hampton, D. Bland and others. They point out that insurance not only pays the damages but also represents one of the most stable sources of financial resources for the investment. Innovations are reviewed by A.V. Baryshev, I.A. Borisenko, S.D. Ilyenkov, N.P. Makarenko, V.P. Solovyov, A.V. Surin, V.A. Ukolov, N.Y. Schumpeter, and other economists.

3. OBJECTIVES, METHODOLOGY AND RESEARCH DESIGN

The aim of the study is to develop and validate theoretical and methodical aspects of investment activities of Russian insurance organizations and to identify areas and methods to improve the efficiency of financial investments using innovative approach.

The study used a scientific methodology which provides a systematic and comprehensive approach, as well as the economic-mathematical, economic-statistical methods, abstract logic, calculation and constructive methods, methods of synthesis and analysis, comparison and grouping methods, and others.

The study involved following steps:

- the first stage: theoretical study of foundations of insurance activity in the Russian Federation, the study of aspects of innovational insurer investment, the identification of the factors, that influence investment activity of insurance companies;
- the second phase: the development of innovative methods to analyze the investment activity of Russian insurance companies; identification of stages to analyze the efficiency of investment activity; evaluation of investment of insurance companies on the basis of presented methods.

4. DISCUSSION OF THE RESEARCH OUTCOMES

Scientific novelty is in the development and substantiation of theoretical and methodical positions on the effective management of investments of insurance companies in the Russian Federation and on the identification of innovative directions in the development of the insurance activity.

Investment activity of the insurance companies should be understood as activities related to the investment of temporarily free funds of the insurance company and the insurers' funds (in the regulations permitted by law) in various financial assets in order to obtain investment income.

The insurer investment activity is strongly influenced by two groups of factors. The external factors include factors that both directly and indirectly affect the volume and profitability of insurance companies' investments. These factors include economic factors (inflation, exchange rate, the volume of money in circulation, the level of household income, the insurance share in GDP), the political situation in the country and the world, the legal regulation of the insurance and investment activities, the reputation of the insurance company, the level of demand for insurance services. The internal factors have a direct impact on the investment policy of insurance companies. They include investment potential of the insurance company, the amount of investment resources (own funds and insurance reserves), the structure of the insurance portfolio, the profitability of insurance operations, qualification of staff of the insurance company.

The study proposes an innovative method of analysis of insurance companies' financial investments, taking into account the specifics of the insurance business. The procedure involves two components: (1) an overview of the investment activities of insurance companies; (2) analysis of investment activity in the context of investment directions.

The overall analysis comes down to the calculation of the following factors:

1. The ratio of investment grade (K_{IH}):

$$K_{IH} = \frac{CK}{I_p} \quad (1)$$

where, CK – equity of insurance organization;

I_p – risky (venture) investments of the insurance organization.

The ratio shows how the risky investments of the insurance company are protected by its own capital, which will cover the losses. The value of this ratio in the insurance organizations should strive to one.

2. Investment activity coefficient (K_{IA}):

$$K_{IA} = \frac{I_{CK}}{A_{CK}}, \quad (2)$$

where, I_{CK} – a total investment of the insurance company;

A_{CK} – asset balance sheet of the insurance company for the reporting period.

The indicator shows what percentage of the assets of the insurance company is taken by investment. From the magnitude of this ratio, we can tell what type of investment policy was chosen by the insurance company.

3. The safety factor of equity in terms of investments made by the insurance company (K_{BCK}):

$$K_{BCK} = \frac{I_H}{CK},$$

where I_H – the insurance company's investments in property;

CK – own equity of the insurance organization.

The ratio shows whether the insurance company is taking into account inflation, and which part of its assets it invests in real estate. The high value of this indicator reflects the solidity of the insurance company.

The analysis of the efficiency of investment activity in the context of areas of investment should be based on the types of insurance companies' investments, namely:

1. Real estate investment.
2. Investments in stocks.
3. Investments in debt securities.
4. Investments in authorized capitals.
5. State and municipal securities.
6. Deposits.
7. Other investment.

Investment activity of the insurance companies should be assessed in a certain sequence:

Stage 1: Analysis of investment activity of Russian insurance companies on the basis of consolidated data;

Stage 2: Analysis of the diversification of investment portfolios of insurance companies;

Stage 3: Analysis of the overall performance of investment activities of insurance companies.

Stage 4: Analysis of the efficiency of investment activity of Russian insurance companies.

Stage 5: The integral coefficient calculation of efficiency of investment activity and constructing of the ranking table based on the analysis.

The analysis of the efficiency of investment activity revealed the little impact of investments in real estate on the state of insurance companies, which is due to the small volumes of investments. Investments in equity securities are highly visible, as all the insurance companies in recent years had a significantly negative efficiency coefficient of investments in shares. Of course, this phenomenon is caused by the financial market crisis. Nevertheless, we cannot say that this investment instrument is not profitable; it is evident from the increasing value of the coefficient in the last two years. In addition, the average value is positive, which also shows that, despite the crisis, the investment in shares are generally beneficial in terms of increasing of total capital.

Investments in bonds are not always profitable for the insurance companies. This is evident from the average values of the analyzed period, which are not only positive but also negative. It is primarily based on a relatively low yield of the investment into bonds, which does not exceed 13.9%.

Investments in the authorized capital have no significant influence on the profitability of the total capital in the majority of insurance companies, as values do not exceed 1,761%, which, nevertheless, has a greater effect than investing in real estate.

When assessing the dynamics of the effectiveness of investments in bank deposits as a whole, a slight increase can be noted, which is caused by stabilization of the economic situation in the country and the

increase in interest rates on deposits in 2016. Estimates indicate that other investments bring only negative results for some companies, while other organizations have no such investments at all. Other investments have little influence on the investment efficiency, which is due to insignificant levels of such investments. In addition, such investments are often negative in the conditions of crisis.

The values of the average integral efficiency factors per module range from 0.499% to 10.881%, which generally characterizes investment activities of the insurance companies as very important in terms of impact on the profitability of total capital.

Evaluating the investment activities of Russian insurance companies, we can draw the following conclusions:

- most companies are characterized by positive impact of the investment activity on the profitability of total capital and activity in general;
- during the crisis, most companies proved not ready for certain changes regarding diversification of the investment portfolio, which is why investment activity was not effective;
- significant insurer investments in securities carry higher risks, which, however, were repaid during the reporting period by the high profitability;
- investments may significantly affect the profitability of the company's total capital (changes to 15%), which justifies the need of greater attention to the investment management.

The effective management of investments and insurance companies' innovation demands the establishment of the Insurance Innovation and Investment Center (IIIC), a specialized body with legal rights and obligations to manage the insurer innovations and investments and accountability of all structures and authorities responsible for supervision of insurance business and financial markets.

The functions of the investment-innovative Insurance center on innovation should be:

1. Development of innovations (based on analysis of information about technological developments in the country and the world, about the state of the insurance sector and identification of customer main needs).
2. Expert assessment of innovations developed.
3. Evaluating the effectiveness of investing in innovation.
4. Innovations in the insurance market (in activities of insurance companies).
5. Evaluation of the results of innovations.

Within the innovative development of insurance companies' investment activity, the investment resources should be transmitted to the management of Insurance Innovation and Investment Center (IIIC).

Key financial functions of the IIIC are as follows:

1. To implement asset management of insurer investment resources on the basis of the contract which would mandatorily prescribe conditions and insurer wishes in the management of its financial assets.
2. To decide on purchase and sale of financial assets.

3. To exercise sale transactions under the current legislation.
4. To timely provide supervisory authorities and insurance companies with complete and accurate information about financial assets.

Creation of the Insurance Innovation and Investment Center has a number of advantages:

- it will help to avoid difficulties of insurance companies related to placement of independent funds in the market, as well as the development and implementation of innovations;
- individual approach to the client within the framework of the choice of an appropriate investment strategy depending on the size of invested funds, risk, investment period and profitability of the insurer's wishes;
- the possibility of obtaining a higher income compared to the independent management of financial assets;
- the income of IIIC depends on the income received from the investment of a particular insurance company and discussed at the conclusion of the fiduciary management agreement.

Innovation activity of insurance companies largely depends on the state policy in the field of innovation. On the level of innovation, Russia takes the 35-th place (out of 40 possible) in the final table of the Information Technology and Innovation (ITF).

The low level of innovative development of Russian economy poses a problem in relation to innovation in insurance. The research of IBM Institute for Business Value "Insurance 2020: Innovation is the old models", has shown that the insurance industry is hardly inclined to innovation. The process of creating and implementing innovations in the insurance sector is constrained by a number of factors. The main ones are: imperfection of the legislation in this area; the opacity of the insurance business; weak capitalization, frequent loss-making of insurance activities, or lack of adequate volume of own funds; reluctance to engage in their own development, when it is possible to use the old proven methods of work in the insurance market; lack of decent competition.

In our opinion, it is necessary to carry out the following innovative measures to promote IIIC-based insurance:

1. Improvement of license revocation procedure. Information support of this process should be delegated to IIIC through the collection of information on the Internet portal.
2. Transfer of financial statements of insurance companies into international standards with the help of IIIC, which in this case can provide advice free of charge. This is to ensure that Russian insurance companies that enter international markets were its full participants, and that the reporting objectively reflect the activity and financial situation of companies. IFRS are recognized worldwide as an effective tool to provide clear and understandable information about the company.
3. Publication of data on complaints about insurance companies that enter the Central Bank of Russia, in the public domain on the Internet portal of investment-innovative Insurance center on a monthly basis.

4. Regular assessment of the insurance companies' reliability and ratings from investment-innovative Insurance center, since rating "Expert RA" is a paid service, and attribution of ratings from the various sites is not objective.
5. Increasing the profitability of the insurance business due to: entering the international market; increasing the reinsurance of foreign risks in the insurance companies of Russia; increasing the profitability of invested funds on the basis of the investment-innovative Insurance center activities.
6. Enhanced monitoring of the insurance companies activities through the implementation of field-tests by the relevant authorities on a bigger scale and in unscheduled mode. The check results should be placed in the public domain on the Internet portal of IIIC.
7. Development of the Russian market of Internet security based on the Insurance Investment-Innovation Centre that can become a conductor of a unified approach to the Internet-insurance in Russia with the appropriate regulatory framework. Internet security market must be legal, must respect the principles of confidentiality in respect of insurers of personal data. The advantages of Internet sales are speed, simplicity, and accessibility of the service, as well as the lower price of the insurance policy due to the absence of non-agent sales network. For online insurance to be successfully developed, there must be continuous investments in the development of software and web sites infrastructure. It is also necessary to develop services that enable to settle the losses of insured persons through the Internet.
8. Creation of a unified information system. Without the effective management of different types of enterprise content, the innovative development of the organization is impossible. Electronic Document Management System automates the entire chain of processing documents from the insurance policy to dealing with an insurance case and setting compensation. A single financial document management system allows affiliates to collect financial records and send it to the accounting department of the central office where it is processed. The application of this system will reduce the financial management and accounting expenses.
9. The development of various types of insurance. With all the variety of insurance types, there are no types that reflect the needs of individuals and legal entities in insurance to date. And even if such types exist, there is no clear mechanism for their realization, as well as there is no urgent need for the community (e.g., life insurance).
10. Increasing the level of trust to the insurance companies on the basis of activities of IIIC.

Reasonable measures will increase in the volume of insurance services, increase the stability and financial soundness of Russian insurance companies. With the help of the IIIC Internet portal it has been planned to collect and process the data related to various aspects of activities such as interaction with insurers; interaction with financial markets; interaction with a client base of insurers; asset management and insurance companies, etc.

To process the large volumes of data, we see merit in using neural network technologies that involve the creation of a multi-layer network structure consisting of identical processing elements - interconnected neurons. Such a system reacts differently to different situations and to certain data provided, depending on the logic embedded during its training.

The main advantages of using the neural networks to do an analysis or forecast in the insurance are the following: the ability to learn; the ability to solve tasks using an incomplete input of information; simple use of trained neural network; ability to connect to databases, automating of input process, initial data processing and consolidation; the ability to increase the capacity of neuro-system.

Based on the significant qualitative differences in the information, flowing to IIIC from insurers, insured persons, and financial markets, there is a need to use different interfaces and data processing algorithms. For these purposes, the use of cloud technologies is advisable, as they provide an upon-demand ubiquitous and easy access to the network to a common pool of configurable computing resources that can be rapidly provided with minimum operating costs and calls to IIIC.

The proposed development of the insurance companies, based on the establishment of the Investment-Innovative Insurance center, largely determines the application of certain information technologies, since this structure will largely be used over the Internet. In this case, on the one hand, it is the optimization of data received from different sources; on the other hand, there is a need to use the technologies that simplify the requests to the center from the insurance companies and their clients.

In order to implement neural network technology for the Russian insurance companies by the IIIC, the use of cloud technologies can be suggested.

Insurance companies as the customers of cloud computing can significantly reduce infrastructure costs of information technology (in the short and medium term) and to respond flexibly to the changes in computing needs, using the properties of elasticity of cloud services computing.

As a business model of service, we suggest using “software as a service”, a model in which the insurance companies can use the application software from the developer (IIIC), that works in the cloud and is accessible from various client devices and software interfaces.

From the point of view of the insurance companies, these characteristics allow to obtain services with high availability and low risk of failure and to ensure rapid scaling due to the elasticity of the computer system without the need to create, maintain and upgrade its own hardware infrastructure.

The convenience and flexibility of access for the clients of insurance companies are provided by the wide availability of services and support by different classes of terminal devices (PCs, mobile phones, internet tablets) (Figure 1).

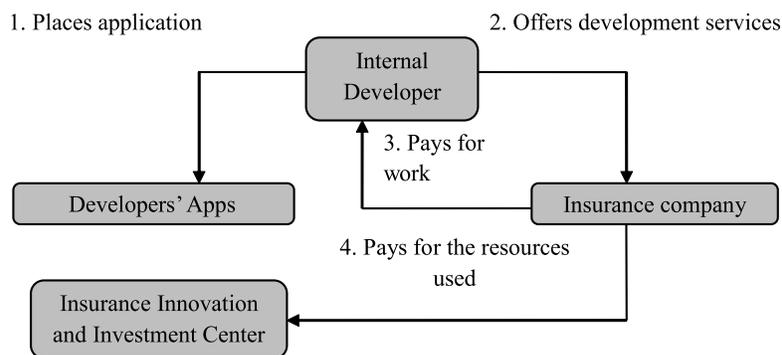


Figure 1: The model of informational interaction between IIIC and insurance companies

IIIC will control and manage the basic physical and virtual infrastructure of the cloud. In our opinion, the business model “software as a service” is able to provide continuous improvement of neural network technologies of data processing; access to the latest innovations in the field of the same name area; a unified format to access the data and services of the company for its customers and other stakeholders.

When using cloud computing, the insurance companies will significantly reduce capital expenditures: to build data centers, to purchase of server and network equipment, the hardware and software solutions to ensure the continuity and efficiency, as these costs are absorbed by the IIIC. In addition, long-term construction and putting into operation of the large objects of the infrastructure of information technologies and their high initial cost are limiting the ability of insurers to respond flexibly to market requirements, while cloud technologies allow to almost instantly respond to the increasing demand for computing power.

Thus, the creation of a hybrid cloud IIIC web portal will allow:

- to implement the access of insurance companies to the neural network technologies;
- to significantly increase the efficiency of innovative activity of insurance companies with the help of neural network technology;
- to significantly increase the efficiency of investment activity of insurance companies based on neural network technology;
- to provide the customer with easier online access to the service of insurance companies;
- to form a common information space with common standards for all insurance companies;
- to ensure the “transparency” of the activities of all insurance companies participating in the project.

Shared access to the neural network technology by the insurance companies will be implemented in a hybrid cloud IIIC Internet portal. The public part of the hybrid cloud will serve policyholders with the standardized approaches to delivering services that simplify access to insurance services and increase their volume. In addition, the consolidation of data from various insurance companies into IIICs will reduce the time to switch to international financial reporting standards.

5. CONCLUSION

Our study has led to a number of evidence-based recommendations to ensure development in the Russian insurance system based on innovation and investment.

The concept of “investment activity” in relation to the insurance companies has been defined. The factors influencing the investment activity of insurance companies have been given. We have offered an innovative method to analyze the efficiency of investment activity of Russian insurance companies. The method allows calculating the increase of profitability of total capital of the insurance companies, which can be obtained from the investment of temporarily free funds in various financial assets. We have defined the measures of innovative and investment development of the insurance business, through the establishment of the Insurance innovation and investment center. We have presented a scientific and practical approach to information support of innovation and investment development of insurance companies in Russia, based on neural networks and cloud computing.

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