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Methods of Lease Payments Calculating in Terms of Innovations Financing

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ABSTRACT

In modern economic conditions, the competitiveness of products or services in domestic and foreign markets depends significantly on the innovative activities of business entities. The use of worn out and outdated equipment is a constraining factor, which makes the efficient resource support for the national innovation system one of the central tasks for stable economic development. Leasing is one of the most effective financial instruments for solving the problem of retrofitting and upgrading of innovatively active enterprises. The main objective of the study is to develop a methodology for lease payments calculating, taking into account the process of property and financial risks insurance, which contributes to the effectiveness and attractiveness of investment activity from the point of view of both the lessee and the lessor. The article provides a comparative analysis of innovative development in Russia and abroad. The main resources of innovation financing are defined. The advantages of using leasing as a source of innovation financing are introduced. The authors reveal the practice of lease payments calculating taking into account the risk component. The main advantage of the introduced method is the inclusion of insurance against property and financial risks into lease payment in order to minimize the risks of non-fulfillment of the contract. In addition, the proposed methodology, unlike the existing approaches, makes it possible for the counterparties of the leasing agreement to manage the optimal final leasing payment throughout the entire financing process.

INTRODUCTION

The current stage of world community development is characterized by radical changes in the technological structure of production, which influences significantly both the economic potential and socio-economic relations. Changes in all spheres of economic activity and human life depend on innovations, which should be considered as a goal, process and result. These changes are called the innovation process (Yakovets, 1996). An important contribution to the development of the theory of innovation was made by foreign researchers. A systematic analysis of innovation for the first time was carried out by Schumpeter. The author regarded the entrepreneur as innovator who plays a significant role in the innovative processes activation. According to Schumpeter, entrepreneurs are people who conceive and implement innovations. The researcher says that *“Entrepreneurs are economic entities whose function is precisely the implementation of new combinations and which act as its active element”* (Schumpeter, 1961).

Sustainable economic growth of the countries, regions, and business entities, regardless of their forms of ownership and activities is based on innovations and innovative activities. In addition, they introduce the main source of the level and quality of life improvement (Kuznets, 1953). Kuznets (Ibid.) devoted his works to the problems of the correlation of innovation with economic growth. He was the first to introduce the scientific concept of “epochal innovations” that form the basis for the transition from one historical era to another. Currently, the development of the theory of innovation is connected to the research of the German scientist Mensch. Studying the correlation between the inventions and innovations, the scientist defined the following condition for the implementation of inventions, namely: social demand, the conformity of the human needs vector, social conditions, the objective and subjective possibilities of their satisfaction (Yakovets, 1996).

Both domestic and foreign researchers pay particular attention to financial issues of innovations. The development of innovations in foreign countries is facilitated by an increase in advanced technologies investments, mainly of a private character. In developed countries, the national system of financing research and development provide the investment availability for all enterprises engaged in innovative activities (Barnett, 1998). Global Innovation Index is one of the main indicators characterizing the country’s innovative activity. It is, calculated according to the methodology of the International Business School INSEAD, France (Figure 1).

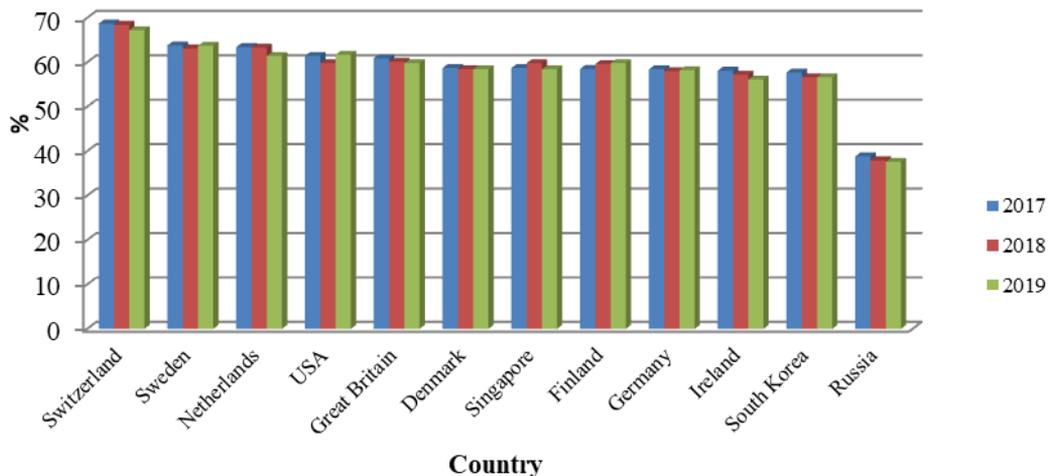


Figure 1. The dynamics of the Global Innovation Index

Source: <https://www.globalinnovationindex.org/analysis-indicator>

The top ten includes mainly European countries, as well as the USA and Singapore. Russia takes the 46th place in the ranking, having risen two positions since 2015 and it has been taking this position since 2018. At the same time, there is a trend for the slowdown in the growth rates of innovation indica-

tors. The comparative analysis shows that Russia lags behind the developed as well as some rapidly developing countries in almost all parameters characterizing the efficiency of resource use and the degree of impact of the results of scientific, technical and innovative activity on the economy and society. The results of the present study emphasize the necessity to find the most effective ways to enhance the activity of innovatively active enterprises.

It is worth highlighting that according to the analysis of the research projects financing in various countries, Sweden, the USA, and Finland are leaders in terms of national expenditures on research activity. An increase in expenditures on research projects in the structure of GDP is observed in such countries as Israel, Japan, and China. In Russia, this indicator remains almost unchanged for the analyzed period and amounts to a little over one percent of GDP. At the same time, the main source of financing in these countries is not state institutions, but various business structures, which comprise about 60% of the total financing of innovative projects. In Russia, the state remains the main financial source, and the share of private sector costs does not exceed 30%. In terms of innovative activity of economic entities, Russia lags behind the leading European countries. Among the industrial production enterprises, the share of organizations implementing technological innovations comprised 9.2% in 2016. Besides, the intensity of innovative processes in the Russian Federation (RF) has not changed over the past decade. No more than 9 to 10% of enterprises participate in the development and implementation of technological innovations. According to this indicator, the leading countries in Europe are Belgium (59.7%), Germany (58.9%), the Netherlands (53.0%), and Austria (52.5%) (Figure 2).

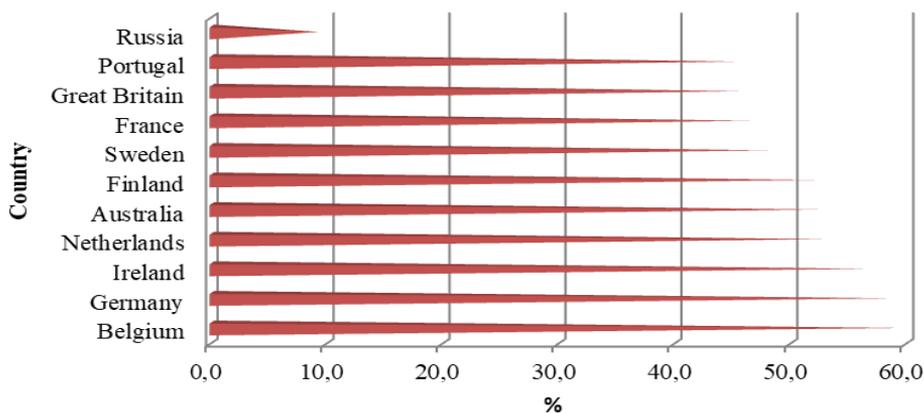


Figure 2. The share of organizations implementing technological innovations in the total number of industrial production enterprises, 2016, %

Source: <https://issek.hse.ru/mirror/pubs/share/221937467>

Innovation activity in Russia depends on the size of the enterprise. As a rule, large companies influence significantly the development and implementation of innovations. However, their expenses on the research and development differ significantly from the ones of large foreign corporations. The leading Russian companies that implement innovative projects are LUKoil, RusHydro, Russian Railways, Rosoborprom, etc. Besides, only PJSC Gazprom is introduced in the ranking of the world top hundred companies in terms of absolute expenses on the research projects. The comparative analysis of the statistical data of the innovative development in Russia and abroad showed that the level of innovative activity in our country is rather low due to several reasons.

The first reason is insufficient business potential for the innovations development. In the RF, about ten percent of industrial enterprises develop and implement innovations, while in the USA this indicator exceeds seventy percent. The second reason is the insufficient collaboration of state scientific organizations and business structures in terms of the development and implementation of innovations. The third reason is the low business demand for innovation, the avoidance to make own developments, the trend to purchase the equipment abroad. The fourth reason is associated with ineffective National Innovation System, namely: insufficient number of research organizations and design bureaus, reduction in the

number of personnel engaged in research and development, etc. The fifth reason is insufficient financial base for the innovative projects implementation. One of the most common ways of innovative projects financing is leasing, which market grows annually not only in the RF, but also in many other countries of the world. For example, in world practice, leasing financing is widely used in the sphere of innovative development projects. In the USA, the share of leasing is about 30% of the total investment; in the UK, it is about 20%. In our country, this financial instrument is just starting to increase volumes.

Currently, there are no statistic data showing how fully leasing potential is used as an instrument of resource support for the national innovation system. Of course, there is a leasing market for specialized innovative equipment, although there are no official statistics on either its volume or the novelty and uniqueness of domestic and imported lease equipment. However, it is possible to conduct an indirect analysis of the leasing involvement in the resource support process of the national innovation system studying the structure and dynamics of the total value of financial leasing contracts (Figure 3).

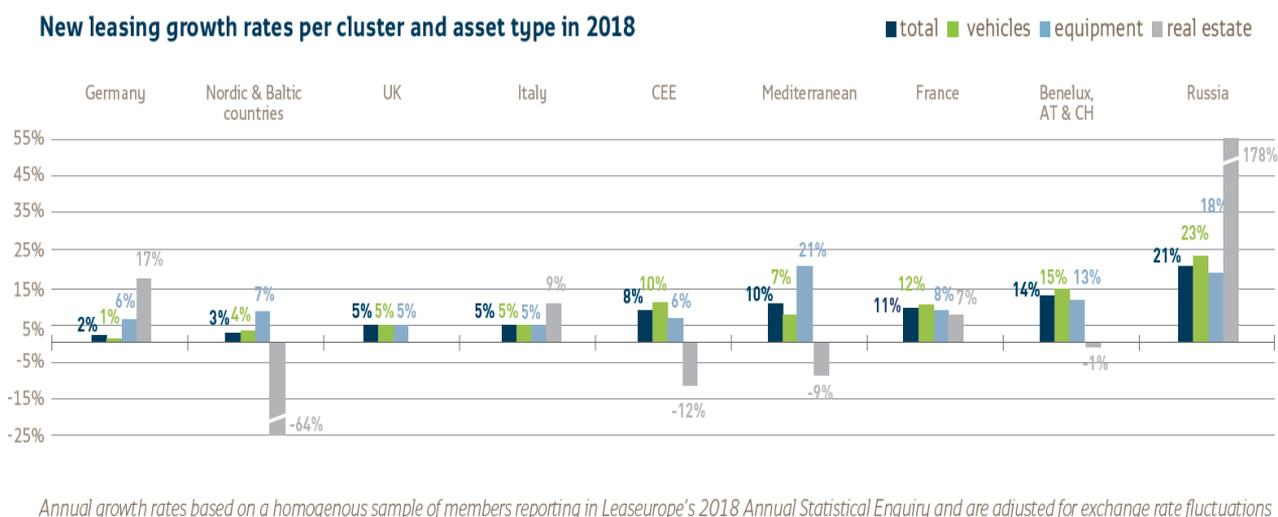


Figure 3. Leasing market, 2018

Source: http://www.leaseurope.org/uploads/documents/LeaseuropeFF_18.pdf

The growth in leasing business has been observed in many European countries over the recent years. About a third of the national markets of these countries show a double-digit growth. In particular, in the Netherlands, Poland, Russia and Bulgaria there was a significant increase in new business volumes. The main leasing sectors, including automobile, machinery and industrial equipment, as well as computers and business machines, have showed strength and influenced significantly the leasing market growth in all spheres.

Table 1. Indicators of leasing market development in the Russian Federation

Indicators	2012	2013	2014	2015	2016	2017	2018
New business volume (property value), billion rubles.	770	783	680	545	742	1 095	1 310
Growth rates, %	3.9	1.7	-13.2	-19.9	36.1	47.5	19.6
Amount of new leasing contracts, billion rubles.	1 320	1 300	1 000	830	1 150	1 620	2 100
Growth rates, %	1.5	-1.5	-23.1	-17	38.6	40.9	29.6

The volume of lease payments received, billion rubles	560	650	690	750	790	870	1 050
<i>Growth rates, %</i>	3.7	16.1	6.2	8.6	5.3	10.1	20.7
The share of leasing (new business volume) in GDP, %	1.1	1.1	0.9	0.7	0.9	1.2	1.3

Sources: <https://www.raexpert.ru/researches/leasing/2018/att>

Despite the positive dynamics in the leasing market development in Russia in the last three years, it should be noted that in 2018, the growth rate for some indicators decreased (Table 1). For example, the growth rate of new business volumes has decreased, as well as the total amount of new leasing contracts. One of the most significant indicators influencing the leasing market development as a whole is the volume of lease payments, which exceeded one trillion rubles in the RF in 2018. However, despite the general positive dynamics of this indicator, its rate is ambiguous. The most significant factors affect the leasing market development and the lease payments formation are the cost of borrowing, the informational opacity of activity of the leasing services consumers, the level of tax burden, and the legislation imperfection. The problem of the effective implementation of leasing in an innovative economy is revealed in the works of the following domestic and foreign researchers: (Bell and Thomas, 2013; Boorsma, 1995; Chekmareva, 2004; DeGraba, 1994; Dou et al., 2017; Gutman and Yagil, 1993; Jaworski et al., 2014; Li and Xu, 2015; Ling et al., 2012; Minhat and Dzolkarnaini, 2016; Nechaev and Antipina, 2015; Prilutsky, 1997; Vecchi and Hellowell, 2013 et al. However, a lot of problems are still unresolved. The potential of leasing in enhancing the innovative activity of enterprises is not sufficiently revealed. The issue of determining more effective methods for calculating the amounts of lease payments remains relevant. In Russia, the most famous method is the calculation of lease payments developed by Chekmareva, designed to calculate the total amount of lease payments and to schedule them. The same approach in determining the amount of lease payments was introduced in the methodological recommendations of the Ministry of Economy of the Russian Federation. Moreover, this technique, like the others, inadequately reflects the Russian economic conditions and interests of leasing participants. Analyzing the methods of Prilutsky, Goremykin, Kasimov, etc, the authors of present study highlight their drawbacks, i.e., connected with the limiting determination of the value of lease payments by means of the calculation of the lessor's expenses for leasing organization and conduction.

In accordance with well-known and recognized foreign studies, leasing pricing is carried out in a market-based manner and, therefore, leasing rental rates, lease payments and payment schedule are functionally interconnected with variables that determine the effectiveness of leasing for its participants. Moreover, lease rates, the amount of lease payments and payments schedule are the target values, which depend on the already known variables. Most foreign leasing valuation techniques are based on calculation of the cost of rent for a lessee and a leasing company as well as the comparison of these costs with alternative options for a project financing. The authors of the present study declare that the lack of adequate protection against certain risks in the process of a leasing project implementation may contribute to a refusal to invest. In this regard, it is recommended to take into account the risk component when calculating lease payments, which is not revealed enough in both the domestic and foreign methods. In addition, it is necessary to take into account the following factors: a) the average annual value of the property when determining the amount of payment for property risk; b) the acceleration coefficient of depreciation of fixed assets, which helps to reduce the amount of property tax on the leased asset; c) income tax during the leasing period, providing the possibility of repurchasing the leased asset at the end of the leasing period at the minimum residual value.

1. METHODS

1.1 The analysis of the main financing resources for innovative activities of business entities

An analysis of the economic literature of both domestic and foreign authors made it possible to classify the financing resources for innovative activities of business entities according to their forms (Atkinson and Ezell, 2012; Druker, 2014; Fraser and Simkins, 2012; Goodman, 2009; Yakovets, 1996 et al.) (Table 2)

Table 2. Classification of the main financing resources for innovative activities of business entities

<i>Financing Forms</i>	<i>Financing resources</i>
1	2
Own financial resources	Business entities' profit
	Depreciation expenses
	Funds paid by the insurance companies as a compensation for losses from natural disasters, accidents, etc.
Borrowings	Bond loans
	Bank loans
	Budgeting loans
Budget Financing,	Federal budget funds
	Regional (territorial) budget funds
	Local (municipal) and non-budgetary funds
Leasing financing	Financial Leasing
	Operational leasing
Venture capital financing	State subsidies
	Large companies and credit organizations' funds
	Financial investments of individual citizens ("Business Angels")
Project financing	Capital of large financial and industrial groups
	Financial resources of credit organizations
Short-term financing of "starting" investment opportunities for small businesses by means of the franchising system development	The financial resources of large enterprises with a well-known brand and recognition in a business world
Mortgage financing	State funds
	Mortgage loans provided by banks to the citizens and business entities
	Financial companies' profit from the mortgage loans' (liabilities) sale in the secondary market
Foreign investments	Foreign legal entities' and individuals' Capital
International investments	International Funds
	World Bank funds
	Funds of foreign insurance companies, etc.

The analysis of domestic practice of leasing application shows that this source of innovations financing is insufficiently involved (Figure 4).

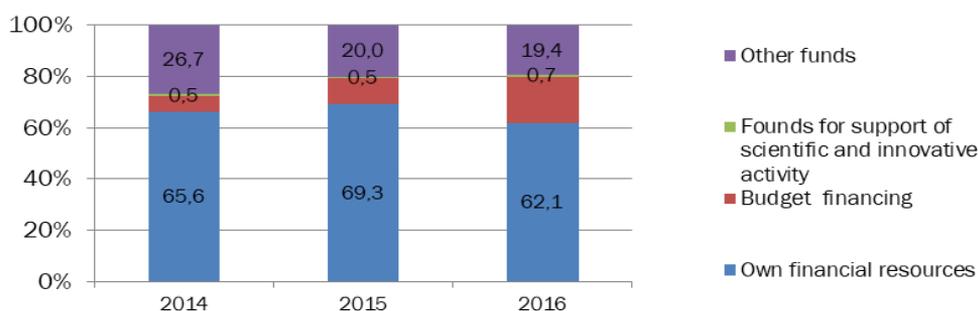


Figure 4. The expenditure on technological innovation according to the financing resources in the Russian Federation, %

There are no statistical data that would allow us to analyze the innovative projects financing using leasing. Leasing as a financing resource for technological innovations is classified as other funds, which share does not exceed 30%. This generally confirms the fact that this financial instrument is insufficiently involved. An analysis of domestic and foreign practice of leasing made it possible to highlight its main advantages, such as:

- not so tough requirements for the lessee compared with other financing resources;
- shorter time of application review for a lease agreement;
- flexible schedule for lease payments and the possibility to change it during the lease agreement;
- longer periods for leasing agreements financing;
- absence or simplification of requirements for additional security for lease agreements;
- the possibility to apply accelerated depreciation of fixed assets during the lease agreement process;
- the possibility to include taxes, insurance and other expenses into the lease payments;
- the opportunity to receive discounts from suppliers when making leasing transactions.

However, leasing as a form of innovative activity financing has its drawbacks. They are related to the fact that the lessee is not the owner of the leased asset. The leased asset can be a subject to recovery on the obligations of the leasing company. In addition, lease payments are subject to value added tax. Nevertheless, the identified drawbacks of leasing do not detract from all the advantages. In this connection, this form of innovative activity financing is increasingly important both in domestic practice and abroad.

1.2 The analysis of economic indicators applied in lease payments calculation

In the framework of the lease agreement concluded, the parties shall establish the total amount of lease payments, the form, the accrual method, the frequency of contributions payment, as well as the methods of payment. At the same time, practically, various methods are involved to calculate the amount of lease payments, which form the basis for lease agreement. The analysis of domestic and foreign literature on the issue of economic indicators applied for the lease payments calculating made it possible to summarize them in a table (Table 3).

Table 3. Indicators involved in the process of lease payments calculating

<i>Indicator number</i>	<i>Indicators value</i>
1.	Lease assets value
2.	Depreciation allocation
3.	compensation of the lessor's fees for borrowed funds
4.	Commission
5.	Payment for the additional services provided by the lessor
6.	Redeemable property value
7.	Taxes in accordance with applicable legislation (VAT, transport tax, property tax, etc.)
8.	Insurance premia

1.3 The algorithm for lease payments calculating

The analysis of the algorithms for lease payments calculating by means of various methods allowed us to develop a general block diagram, in which the calculation of property insurance and financial risks are mandatory taken into account (Figure 5).

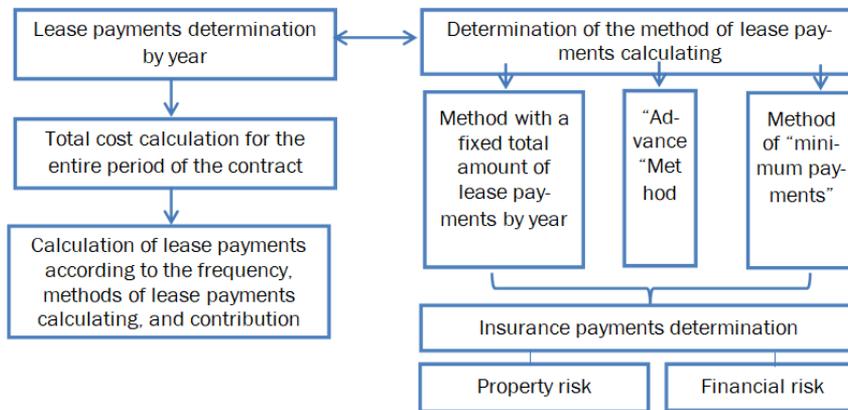


Figure 5. Block diagram of lease payments calculating taking into account the risk component

In accordance with the RF legislation, the calculation of the total amount of lease payments includes the following aspects:

- depreciation expenses that are due to the lessor in the current year,
- payments for credit resources used by the lessor for the acquisition of property that is an object of the lease agreement,
- commissions to the lessor for the provision of property under a lease agreement,
- payments for additional services provided by the lessor to the lessee under the lease agreement,
- value added tax paid by the lessee for the lessor's services.

One of the most important problems of the development of lease operations as a type of investment activity is the lack of full guarantees of the return on investment. Therefore, in the framework of lease payments calculating, special attention should be paid for risk insurance.

2. Results

One of the most effective methods of protection and guarantees of investment is the use of an insurance system, which effectiveness depends on insurance coverage. At the same time, in our country, the participants of the lease agreement do not pay enough attention to it. In the framework of lease agreement, it becomes necessary to minimize, first of all, property and financial risks. More common is the practice to insure the leasing subject, for example, equipment, and vehicles against classic property risks, including fire, natural disasters, illegal actions of the third parties. In addition, the insurance company may refund additional costs for clarification of the insurance event causes. The lessor's risks have their own specifics, so not all insurance companies agree to provide property insurance services. In addition, the lessor can insure the financial risks connected with the default of lease payment on a due date or lessee's bankruptcy. In this case, the insurance company may refund the lost profits to the lease company. The insurance cost is calculated individually in each case. The insurance tariff depends on the value of the leased property, the degree of its depreciation, operating conditions and the selected insurance program. The cost of the insurance is also influenced by the financial and economic indicators of the lessee's activity.

The increase in the demand for leasing insurance in our country largely depends on the understanding by all the participants of the lease agreement that insurance payments provide guarantee of the obligations fulfillment by the parties. The specificity of the refund mechanism for lease operations insurance is that the lessee pays the cost of the leased property by installments within the lease payments. The amount of debt to the lessor decreases closer to the expiration of the lease contract. Depending on the insurance contract conditions, in case of the loss of the property, the insurer must pay the insurance indemnity to the lessor for lease payments under the lease agreement, as well as the lessee must obtain the insurance amount, taking into account the normal depreciation of the property (not accelerated).

Analysis of the insurance of lease operations in the RF is reduced mainly to property insurance of the leased asset against various types of damage (fire, theft, water damage and other risks of sudden and unforeseen external influences). Rarely, the liability insurance for damage to the third parties' property may be included. At the same time, the mechanism of insurance against financial risks, such as non-return of property, non-payment or delay in payment, is not developed. The insurance of lease agreements not only against property, but also against financial risks will make this type of investment activity more attractive both for the lessee and for the lessor.

2.1 Methods of lease payment calculating taking into account the insurance process

Depending on the cost of the lease agreement, a sufficiently large number of counterparties can participate in the process of its conclusion. In this regard, it is necessary to determine the successive stages that determine the mechanism of interaction between the counterparties of the lease agreement and the formation of the amounts of lease and insurance payments, if both the funds of credit institution and the state budget are involved into the agreement. The authors pay attention to the large agreements in which public authorities can participate both as guarantors and as lenders. In addition, we include such participants as a fiscal authority and an insurance company in the proposed mechanism.

2.1.1 The mechanism of interaction of a lease agreement counterparties and the formation of lease and insurance payments

The process of interaction of the lease agreement counterparties and the formation of the lease and insurance payments is presented in the block diagram (Figure 6).

The main stages of interaction between counterparties of the lease agreement and the formation of the lease and insurance payments are the following:

1. The provision of credit funds by a credit institution, as well as regional and federal budgets.
2. Payment for the acquired property for the lessee.
3. Sending leased property to the lessee.
4. Insurance of property being leased against property risk.
5. Insurance of property being leased against financial risk.
6. Transfer of a lease payment, which is distributed to the following counterparties of a lease agreement:
 - 6.1. remuneration for a lease company;
 - 6.2. repayment of credit funds including the amount of interest;
 - 6.3. insurance payments on property and financial risk;
 - 6.4. payment for the additional services provided by a third-party organization.
7. Payment of taxes by the lessor from the amount of the lease payment (VAT, income tax).
8. Payment of tax by the lessee on the value of the leased property (property tax).

The introduced mechanism for the interaction of counterparties of a lease agreement involves the use of a technique, which would help the counterparties to make the necessary calculations of lease payments taking into account the risk component.

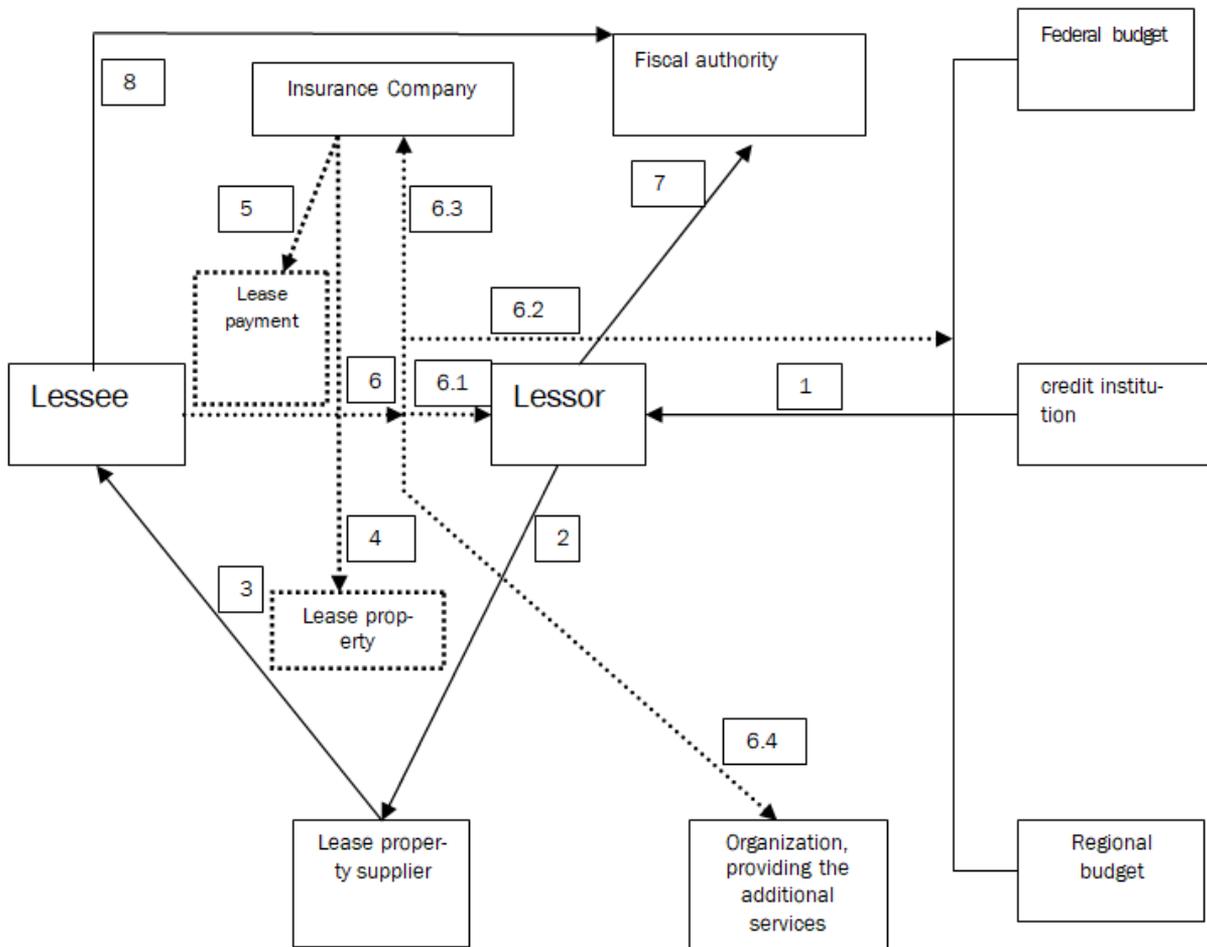


Figure 6. Block diagram of interaction of the lease agreement counterparties and the formation of the lease and insurance payments

2.2 Stages of lease payments calculating using the insurance mechanism.

The analysis of the existing approaches to the methods of lease payments calculating showed that methods of calculating based on variable methods of calculating depreciation taking into account the insurance payments for both property and financial risks are not applied. The introduced methodology is based on methodological recommendations on the lease payments calculating, approved at the legislative level. At the same time, the main advantages of the developed method for lease payments calculating include the following: Firstly, the calculation of the insurance payments for leased equipment for property risk insurance will be based on the average annual value of the property, calculated by means of the linear depreciation method. Using the base obtained by means of the reduced balance method with C_a for the insurance contributions calculation, the insurance will be calculated from a significantly underestimated, and not from the real value of the leased property. Secondly, according to the presented method, the leased property will be reflected in the lessee's balance, which meets the classical requirements of the leasing financing. Thirdly, in the model of lease payment calculating for financial lease, we will implement the method of depreciation calculation through the sum of the number of years of useful life taking into account C_a . Fourthly, the calculation of insurance payments for leased equipment against financial risk will be made from the amount of the lease payment increased by the insurance contribution for property insurance.

2.2.1 Calculation of the insurance payment against property risk.

Firstly, we calculate the amount of depreciation expenses by means of the linear method:

$$DE_t = B\beta \quad (1)$$

Where:

DE_t - is the depreciation expenses;

B - is the Book Value of a leased property;

β - is depreciation rate in terms of the linear method of depreciation.

Therefore, at the beginning of the first year of operation ($t = 0$), the residual value of the leased property will be:

$$R_0^i = B \quad (2)$$

At the end of the first year of operation:

$$R_0^f = R_0^i - B\beta = B(1 - \beta) \quad (3)$$

At the beginning of the second year ($t = 1$), the residual value will be equal to the residual value at the end of the first year, such as:

$$R_1^i = R_0^f = B(1 - \beta) \quad (4)$$

At the end of the second year and at the beginning of the third year, the residual value will comprise:

$$R_1^f = R_2^i = B(1 - \beta) - B\beta = B(1 - 2\beta) \quad (5)$$

Summarizing the formulas (1) to (5) for the residual value at the beginning of the t -th year R_t^i and at the end of it R_t^f , we will get the following:

$$R_t^i = B(1 - t\beta), \quad t = \overline{0, Q-1} \quad (6)$$

$$R_t^f = B[1 - (t+1)\beta], \quad t = \overline{0, Q-1} \quad (7)$$

Where: Q - is the depreciation period of leased property.

Moreover, the average annual value of the leased property is the arithmetic average of the residual values, such as:

$$I_t = \frac{R_t^i + R_t^f}{2}, \quad t = \overline{0, Q-1} \quad (8)$$

After the rearrangement of formula (8), we obtain:

$$I_t = B[1 - (0,5 + t)\beta], \quad t = \overline{0, Q-1} \quad (9)$$

Next, we calculate the insurance payment for property risk in the t -th year:

$$IP_{1t} = I_t * \alpha_1 \quad (10)$$

Where: IP_{1t} is the amount of insurance payment on property risk in the t -th year;

α_1 is the rate of property risk insurance.

In this case, the insurance payment for property risk for the entire period of the lease contract will comprise:

$$IP_1 = I * \alpha_1 \quad (11)$$

2.2.2 Calculation of the lease payment using the reduced balance method and the acceleration coefficient

Next, we calculate the lease payment using the reduced balance method and the acceleration coefficient. Basing on formulas (2) to (7), taking into account the application of the reduced balance method, the average annual value of leased property will comprise:

$$I_{L_t} = B(1 - \beta C_a)^t (1 - 0,5\beta C_a), \quad t = \overline{0, Q-2} \quad (12)$$

Where: I_{L_t} - is an average annual value used for the lease payment calculating,
 C_a is the acceleration coefficient.

The average annual value of the leased property in the last year should have the value of zero. In this regard, the average annual value of leased property in the last year will comprise:

$$I_{L_{Q-1}} = 0,5B(1 - \beta C_a)^{Q-1} \quad (13)$$

In this case, the lease payment in the t-th year will be:

$$L_t = \left\{ B \left[(1 - \beta C_a)^t \beta C_a + (1 - \beta C_a)^t (1 - 0,5\beta C_a) (\sigma + \mu) \right] + AS \right\} (1 + \eta), \quad t = \overline{0, Q-2} \quad (14)$$

This formula is valid until the penultimate year, inclusively.

For the last year, the calculation should be carried out according to the following formula:

$$L_{Q-1} = \left\{ B \left[(1 - \beta C_a)^{Q-1} + 0,5(1 - \beta C_a)^{Q-1} (\sigma + \mu) \right] + AS \right\} (1 + \eta) \quad (15)$$

Where: L_{Q-1} is lease payment in the last year.

The total amount of the lease payment, taking into account formulas (14) and (15), will comprise:

$$L = \sum_{t=0}^{Q-2} L_t + L_{Q-1} \quad (16)$$

2.2.3 Calculation of the insurance payment against financial risk

Next, we calculate the insurance payment against financial risk. The insurance payment against financial risk in the t-th year:

$$IP_{2_t} = (IP_{1_t} + L_t) * \alpha_2 \quad (17)$$

Where: IP_{2_t} is the amount of the financial risk insurance payment in the t-th year;
 α_2 - is the rate of financial risk insurance.

This formula is valid until the penultimate year, inclusively. For the last year, the calculation should be carried out according to the following formula:

$$IP_{2_t} = (IP_{1_t} + L_{Q-1}) * \alpha_2 \quad (18)$$

In this case, the amount of the insurance payment against financial risk for the entire period of the lease contract will comprise: $IP_2 = \left(IP_1 + \sum_{t=0}^{Q-2} L_t + L_{Q-1} \right) * \alpha_2 \quad (19)$

2.2.4 Calculation of the amount of the final payment, which includes the lease payment and the sum of the insurance payments against property and financial risks

We calculate the amount of the final payment, including the lease payment and the sum of the insurance payments against property and financial risks. The final payment in the t-th year comprises:

$$ISP_t = IP_{1_t} + L_t + IP_{2_t} \quad (20)$$

Where: ISP_t – is a total amount of payment in the t-th year.

This formula is valid until the penultimate year, inclusively. For the last year, the calculation should be carried out according to the following formula:

$$ISP_t = IP_{1_t} + L_{Q-1} + IP_{2_t} \quad (21)$$

The total amount of payment for the entire period of the lease agreement comprises:

$$ISP = \left(\sum_{t=0}^{Q-1} I_1 * \alpha_1 \right) + \left(\sum_{t=0}^{Q-2} L_t + L_{Q-1} \right) + \left(\left(IP_1 + \sum_{t=0}^{Q-2} L_t + L_{Q-1} \right) * \alpha_2 \right)$$

or

$$ISP = IP_1 + L + IP_2 \quad (22)$$

The total amount of the lease payment can be minimized, for example, reducing the values of the property risk insurance (α_1), and depreciation rate β .

$$ISP = IP_1 + L + IP_2 \rightarrow \min \quad (23)$$

Therefore, the presented mechanism of the interaction between the lease agreement counterparties and the method of forming the amounts of lease and insurance payments contribute to more efficient lease application as a tool for innovative projects financing. In this context, the implementation of the mechanism of lease agreements insurance will improve the effectiveness and attractiveness of investment activity both for the lessee and for the lessor.

2.3 The practice of lease payments calculating taking into account the risk component

We are testing the introduced methodology for lease payments calculating on the following conditions: a) the company acquired an object worth 1,000,000 rubles under a lease agreement for a period of 5 years; b) the insurance rate for leased property is 10%; c) The insurance rate for lease payment is 5%; d) When calculating the base property insurance premiums, a linear method of depreciation is applied for a period of 5 years. At the same time, the annual rate of depreciation is 20%. According to the contract, the reduced balance method with an acceleration coefficient of 3 is applied for lease payment calculating. The loan interest is 16%. Commission is 5%. The amount of additional services for the entire period of the lease contract is 50,000 rubles (Table 4).

Table 4. Calculation of insurance and lease payments in terms of the application of linear method of depreciation expense and the reducing balance method with an acceleration coefficient of 3.

Insurance amount calculation							
1	2	3	4	5	6	7	8
Year	Initial cost for property insurance calculating, thousand rubles	Depreciation rate (real)	Depreciation (real), thousand rubles	The residual value for property insurance calculating, thousand rubles.	The average annual cost for property insurance calculating, thousand rubles.	Insurance rate for leased property	Amount of insurance payment, thousand rubles
			Art. 2 * Art.3	Art. 2 - Art. 4	(Art. 2 + Art. 5) / 2		Art. 6 * Art. 7
1	1 000	0,20	200	800	900	0,1	90
2	800	0,20	200	600	700		70
3	600	0,20	200	400	500		50
4	400	0,20	200	200	300		30
5	200	0,20	200	0	100		10
Total							250

IP1

Lease payment calculating													
9	10	11	12	13	14	15	16	17	18	19	20	21	22
Initial (residual) value at the beginning of the reporting period, thousand rubles	Depreciation rate	Amount of depreciation expenses, thousand rubles.	The residual value at the end of the reporting period, thousand rubles	The average annual cost, thousand rubles	Loan interest	Total loan interest, thousand rubles	Commission rate	Total commission rate, thousand rubles.	Additional services, thousand rubles.	Total revenue, thousand rubles.	VAT rate	VAT, thousand rubles	Lease payment, thousand rubles.
	Art. 3 * C _a =3	Art. 9 * Art. 10	Art. 9 - Art. 11	(Art. 9 + Art. 12) / 2		Art. 13 * Art. 14		Art. 13 * Art. 16		Sum of Art. 11 + 15 + 17 + 18		Art. 19 * Art.20	Sum of Art. 11 + 15 + 17 + 18 + 21
1 000	0.60	600	400	700	16	112	5	35	10	757	20	151.4	908.4
400	0.60	240	160	280		44.8		14	10	308.8		61.76	370.56
160	0.60	96	64	112		17.92		5.6	10	129.520		25.904	155.424
64	0.60	38.4	25.6	44.8		7.168		2.24	10	57.808		11.562	69.37
25.6		25.6	0	12.8		2.048		0.64	10	38.288		7.658	45.946
		1 000				183.936		57.48	50			258.284	1549.7
		DE				LI		CR	AS			VAT	LP
Insurance 2 amount calculation										Total amount of LP with 2 insurance amounts			
23			24			25			26				
Assessment base			Coefficient of lease payment insurance			Total lease payment insurance, thousand rubles			Total payment, thousand rubles.				
Art. 8 +Art. 22			0.05			Art. 23 * Art. 24			Art. 8 + Art. 22 + Art. 25				
998.4						49.92			1048.32				
440.56						22.028			462.588				
205.424						10.271			215.695				
99.37						4.969			109.641				
55.946						2.797			58.743				
1799.7			89.985			1894.9							
						IP2			LP + IP1 + IP2				

Thus, the introduced method allows us to calculate the amount of lease payments depending on the average annual value of the property, which can be varied by means of the reduced balance method due to the applied acceleration coefficient. Unlike the linear method of depreciation calculation, which is im-

plemented in most methods, the present one allows the counterparties of the lease agreement to manage the optimal final lease payment throughout the entire financing process.

3. DISCUSSION

The method of lease payments calculating that is introduced in the present study differs significantly from the ones implemented in domestic and foreign practice. Among the most famous methods in the RF the authors highlight the method by Chekmareva, which forms the basis of the Methodological recommendations for lease payments calculating developed and approved by the Ministry of Economy of the Russian Federation; the technique by Prilutsky; method of lease payments calculating introduced by Olkhovskaya et al. (Chekmareva, 2004; Prilutsky, 1997). In Russia, the most popular method is introduced by Chekmareva, which main advantage is the ability to calculate the cost of leasing at any stage the lease agreement. The percentage expression of credit resources payment and commission rates provides an equal-share distribution of their costs for all lease payments. This method of calculating the amount of pre-schedule completion of a financial lease agreement is introduced through the identification of the lease value at the moment of the validity of the lease agreement. Currently, this method has lost its relevance, since it does not reflect the market relations of the lessee and the leasing company. The interests of the lessee are practically not taken into account in the calculations. The methodology involves only summing up the costs of the leasing company for the organization and provision of leasing, as well as its margin. In this case, the method of margin calculating is not determined.

Russian companies widely use the methodology by Prilutsky, which generally has the same drawbacks as other methods, which are limited to determining the amount of lease payments through the lessor's expenses for the lease organization and conduction. In this regard, the use of this technique to assess the cost of investments through leasing is limited.

The method of lease payments calculating introduced by Olkhovskaya ensures the breakeven of the lessor's activity. The method is based on determining the amount of lease payments on the basis of the annuities formula, which expresses the interrelated impact of all the conditions of the lease agreement. The calculations can be performed both for the entire leasing term and for particular time intervals. This method justifies the breakeven of lease for the lessor, although the effectiveness of lease for the lessee is not taken into account. It should be noted that foreign experts apply the methodology of lease payments calculating which is almost identical to the one introduced by Olkhovskaya.

Various approaches are applied to lease study and lease payments calculating in foreign practice (Dou et al, 2017; Minhat and Dzolkarnaini, 2016; Li and Xu, 2015; Bell and Thomas, 2013; Vecchi and Hellowell, 2013; Ling et al., 2012; Boorsma, 1995, etc.). It is worth highlighting that the methods of lease payments calculating have been studied by foreign authors for more than forty years. Their works have much in common, i.e., similar approaches to the lease issues study. For example, these works are characterized by a market approach to the issue of lease problems solution; while in Russia the method of lease payment calculating based on summing the lessor's costs prevails. In addition, the analyzed methods almost do not include the insurance mechanism, which contributes to the reduction of the risk component and, as a result, to the increase of lease payments. Most methods are based on a linear depreciation method.

The method introduced by the authors of the present study, unlike the existing approaches, allows us to calculate comprehensively the amount of lease payments, taking into account the payments against property and financial risks by means of the reduced balance method and the acceleration coefficient. The sequence of introduced method implementation should be the following: Firstly, the calculation of the insurance payment against property risk based on the calculation of the average annual value of the property; Secondly, the amount of the lease payment is calculated by means of the reduced balance method and the acceleration coefficient; Thirdly, the calculation of the insurance payment against financial risk; Fourthly, the final payment is calculated, which includes the lease payment and the insurance payments against property and financial risks and allows the counterparties of the financial agreement to manage the final payments by means of a controlled acceleration coefficient during the implementation of the lease agreement.

CONCLUSION

Thus, the proportion of non-state resources of innovative activity financing will increase gradually, although the state will mainly provide financial support for basic research and innovative infrastructure development. The government bodies of the countries that have chosen an innovative development are moving from the direct financing of innovative activities to indirect methods of regulation; to the means of stimulation and intensification of the development of innovative private business; and to search for more effective financial resources. Leasing allows organizations, including those engaged in innovative activities, do without credits, use new advanced equipment and technologies in production. In addition, it provides the access to advanced equipment.

Currently, a large number of countries participate in the leasing services market. Half of them are developing countries, where leasing is developing at an accelerated pace, especially in the segments of industrial equipment, vehicles, etc. Leasing market development is an objective fact for the internationalization of production and the financial sector. As it already known, the leasing market makes it possible to import equipment to the countries with very limited resources. Leasing refers to the reliable forms of investment in terms of financial obligations fulfillment. It does not only facilitate the investment of industrial equipment imports, but also provides the technology rendering from industrialized countries to the developing ones.

The United States is a leading country among the developed countries of the world in terms of leasing market development. The leasing market in the United States exceeds the markets in the countries of Western and Eastern Europe as well as the CIS countries both in extent and level of development. The widespread use of leasing in the United States and in the developed countries of Western Europe is explained with more favorable economic conditions. These countries provide significant support to the business, which mainly develops through investments by means of the leasing mechanism (Li and Xu, 2015).

The effectiveness of leasing for the innovative projects financing in our country depends on the solution of numerous problems, namely: technical problems, related to the necessity to improve the legislation in this area or law enforcement problems; systemic problems that concern not only leasing, but also other financial instruments used for innovation; problems connected to the “youth” of the leasing market in many countries of the world. The dynamics of leasing market extent may be influenced by the implementation of the proposed method of lease payments calculating through risks minimizing when using insurance mechanisms at all stages of a lease agreement, as well as the possibility for the counterparties to manage lease payments transaction throughout the entire financing process. The purpose of the further research in this area is to improve the introduced methodology by means of the implementation of various depreciation methods for basic funds, for example, by means of the method based on the sum of the years number; the writing-off of the value fixed assets in proportion to the output, works or services provided.

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