On Managing the Risks of the Russian Crowd-lending Market

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ABSTRACT

In 2021–2023, the volume of investments in the crowd-lending market showed more than threefold growth, but the corresponding volume of unfulfilled obligations doubled. Global and Russian experience confirm that the crowd-lending market has great potential, which depends on effective risk management. The purpose of the study is to propose measures to regulate the risks of the Russian crowd-funding market. Research hypothesis: the mechanism of operation of the crowd-lending market is similar to the exchange-traded corporate bond market, which suggests the possibility of adapting individual regulatory mechanisms of the corporate bond market to the crowd-lending market. The scientific novelty of this research lies in the fact that it is the first time an analysis of the Russian crowd-lending market by level of credit risk has been conducted. The comparison of the regulatory mechanisms of the exchange-traded corporate bond market and the crowd-lending market is also original. Furthermore, new measures for managing the risks associated with the Russian crowd-lending market have been proposed. Research methods: grouping, FOREL clustering, comparative analysis. Main results: 1) in the Russian crowd-lending market, 2 groups of participants were observed annually: with zero and moderate risk, groups with high credit risk were present sporadically. When using FOREL clustering, it was revealed that the group of investment platform operators with zero and moderate credit risk is heterogeneous; 2) the common features and differences between the regulation of the exchange-traded corporate bond market and the crowd-lending market are discussed; 3) risk management measures in the crowd-lending market are proposed (quarterly reporting by the platform operator on the share of outstanding obligations in the total volume attracted investments with the establishment of a recommended threshold value for such an indicator; the introduction of a representative of borrowers among the participants of the investment platform to protect their rights and interests; the inclusion of the procedure for dealing with overdue debts in the rules of the investment platform).

Keywords: investment platform operator; P2P-lending; loan; corporate bonds exchange market; clustering; overdue debt

INTRODUCTION

The structural changes in the financial market due to digitalization have various manifestations. One of the most significant is the emergence of new institutions, such as banking ecosystems and fintech companies. These institutions are different from traditional financial market players in that they do not involve financial intermediation. Instead, they act as information systems for market participants, allowing them to conclude investment contracts.

Investment platforms are used by investors to manage their investments. Operators of these platforms facilitate the attraction of funds, but do not directly participate in the transformation of risks and deadlines. Instead, they contribute to the redistribution of capital by providing a platform for investors to find suitable investment opportunities.

According to the Bank of Russia, 78 legal entities are listed in the register of investment platform operators as of 31.12.2023, which is 56% more than two years ago as of 31.12.2021. Among the operators of investment platforms are individuals engaged in various investment methods provided for by law, including loan provision activities. At the same time, the volume of attracted investments using the platform by providing loans has more than tripled over the past 3 years: 2021–8.07 billion rubles, 2022–12.16 billion rubles, 2023–26.25 billion rubles[1]. And this is despite the fact that there is a legal limit on the amount of an individual's investment within one calendar year using investment platforms of no more than 600 thousand rubles[2].

Unlike other investment methods on investment platforms, crowd-lending involves lending by attracting funds from a large number of individuals, carried out on a digital platform, without the participation of a financial intermediary.

Based on this definition, we believe that crowd-lending includes so-called P2P lending (from an individual to an individual), P2B lending (from an individual to a legal entity), and B2B lending (from a legal entity to a legal entity). The term P2P lending also refers to peer-to-peer or peer-to-peer lending, which emphasizes the absence of a financial intermediary in lending. But this concept is broader than crowd-lending, as it also includes offline lending outside of investment platforms. The relative novelty of investment platforms and crowd-lending as financing mechanisms for the Russian financial market, as well as the absence of a legal definition in regulatory acts, contributes to the controversy surrounding these terms. Alternative points of view are presented in the works of A. Golikova [1], O. L. Chulanova [2], A. A. Grakhov [3], I. V. Pashkovskaya [4] and others.

Crowd-lending is interesting because it is an alternative to bank lending to small and medium-sized businesses. It also operates on the principles of repayment, urgency, and payment, but differs in that funding is carried out primarily at the expense of individuals (bank funding includes funds from individuals and legal entities). There is also no insurance of individuals' funds on the platforms (banks have insurance of individuals' deposits). Therefore, the main factor in the operation of crowd-lending platforms is trust, which simultaneously appears to be its consumer advantage (A. N. Zubets [5]) and vulnerability (I. D. Kotlyarov [6], E. V. Popov et al. [7]). There are also specific advantages of crowd-lending, such as speed of operations, flexibility, simplicity and transparency of the process (E. Maier [8]). It should be noted that these advantages are more pronounced due to the features of the organization of digital platforms, such as "the ability to scale activities …, minimizing costs by involving external users in the process of creating added value" (V. P. Bauer, V. V. Eremin, M. V. Ryzhkova [9]).

In the crowd-lending market, there are separate mechanisms for attracting and placing funds, which are implemented without

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[1] Calculated by the author on the basis of annual reports of investment platform operators.

[2] Article 7. Paragraph 1 of Federal Law No. 259–FZ dated August 2, 2019 "On Attracting Investments using Investment Platforms and on Amendments to Certain Legislative Acts of the Russian Federation".

a financial intermediary through investment platforms. Operators of investment platforms conclude contracts for the provision of investment attraction services and investment assistance (placement of funds). As a rule, legal entities and individual entrepreneurs (mainly SMEs) attract funds by submitting an application for financing. In case of passing the examination, an application in the form of an investment proposal is placed on the platform and fundraising from several investors in the form of loans is launched. Upon completion of the fundraising, the platform transfers the money to the borrower. Investors (creditors) in crowd-lending are legal entities and individuals whose mechanism of funds placement depends on the business model of the platform.

Each of the participants in crowd-lending is exposed to different risks. Among the risks of the crowd-lending platform operator are: the risk of inconsistency between the urgency of loans and investment proposals (gap risk) (S. A. Barykin [10]), the risk of bankruptcy (T. G. Bondarenko [11]), the risk of incorrect assessment of the borrower's solvency, including due to a lack of information about the borrower (V. K. Shaidullina [12]).

Individuals who attract investments face investment risk, that is, the risk that the project will not be funded or will result in a cash flow below the planned volume, for example, due to errors in project management. In addition, individuals who attract investments are carriers of credit risk, since they may fail to fulfill the terms of the investment attraction agreement for various reasons (incorrect assessment of solvency, dishonesty, opportunistic behavior, and others). The risk of default is significant for them. In [13], the authors found out that the borrower's creditworthiness, debt-to-income ratio, and FICO (Fair Isaac Corporation) rating play an important role in loan defaults during crowd-lending, as well as the fact that higher interest rates charged to high-risk borrowers are not enough to compensate for the high probability of default. In article C. Serrano-Cinca et al. [14] found that the factors explaining the default of a person attracting investments

on a crowd-lending platform are the purpose of the loan, annual income, current housing situation, credit history and debt. The pricing mechanism on the platforms is also one of the default factors. Thus, it was shown in [15] that loans financed at advertised prices are more likely to lead to default than loans whose prices are formed as a result of an auction.

At the same time, investors (creditors), who are mainly individuals, may face the risk of non-repayment of their invested funds [16]. This is also confirmed by the calculations carried out in [17]. The researcher determined the average credit risk for P2P lending based on calculating the average probability and evaluating the results obtained according to a binary scenario ("paid" and "default"), and it turned out to be higher than that of traditional banks. At the same time, this risk falls directly on the lending platform participants. The paper [18] talks about the attractiveness of P2P lending for unscrupulous borrowers, which is also a risk for owners of financial resources involved in credit transactions. The article [19] noted that crowd-lending platforms decentralize credit risks, shifting them to investors (creditors), that is, the risk that the borrower will eventually default on his loan obligations falls on investors (creditors), and not on the platform as an institution. At the same time, investors (lenders) face serious problems choosing who to provide their funds to on a fee basis, and the issue of matching the income offered to investors to the risk profile of crowd-lending projects becomes important [20].

Thus, one of the most significant risks of crowd-lending is credit risk, the absence or low efficiency of which management can lead to undermining the overall confidence in this financing mechanism. However, the question arises: how to manage credit risk in crowd-lending if its source is individuals who attract investments and need to be protected from risk; investors are individuals, and the crowd-lending platform is not responsible for the risks of borrowers?

In foreign literature, credit risk management is mainly assigned to investors (creditors). In particular, in the article [21], a system

for making investment decisions for each individual loan is proposed for lenders, which makes it possible to optimize risk and profitability in P2P lending using an artificial neural network and logistic regression to assess the internal rate of return and the probability of default. The expediency of using a portfolio approach by creditors is substantiated in [22]. The researchers proposed a two-stage scoring approach that integrates credit scoring (predicting the probability of default) and profit scoring (predicting profitability) to make decisions for lenders about the allocation of funds in the crowd-lending market. We believe that the use of scoring, portfolio, and other evidence-based approaches may pose significant difficulties for a wide range of individual investors.

It is also recognized that the activities of investment platform operators are of some importance for managing credit risk. For example, the article [23] shows that investment platform operators can improve payment discipline on platforms by introducing a mechanism for assessing borrowers' reputation, since there is a reputation effect where borrowers with a better history can receive loans with a higher probability and lower costs. In [24], it was found that the availability of audit mechanisms for the crowd-lending platform has a direct impact on reducing credit risk.

The problem of prudential risk management of participants in crowd-lending platforms has been relatively little studied. Perhaps this is due to the small size of this market, the level of its development, the stage of formation and formation, the attitude towards self-regulation of this market, or other reasons. At the same time, prudential regulation of crowd-lending is practically in demand, since in such a financing mechanism, lenders, mainly individuals, are exposed to credit risks, for whom organized legal protection or self-organization to develop common risk management tools is quite difficult, and also since the operator of the investment platform, not being a financial intermediary, does not perform risk transformation functions.. In other words, effective risk management

of crowd-lending is impossible without the participation of the state regulator.

The aim of the study is to suggest measures to manage the risks associated with the Russian crowd-lending market. In order to achieve this goal, several tasks have been completed:1. To conduct a quantitative analysis of the Russian crowd-lending market in terms of credit risks;2. To compare the regulatory mechanisms of the exchange-traded corporate bond market and the crowd-lending market;3. To develop prudential regulation measures for crowd-lending market participants.

Research hypothesis: the mechanism of operation of the crowd-lending market is similar to the exchange-traded corporate bond market, which suggests the possibility of adapting/transferring risk management mechanisms of corporate bond market participants to the crowd-lending market.

The scientific novelty of this research lies in the following:

• for the first time, an analysis of the Russian crowd-lending market has been conducted in terms of credit risk, based on clustering and grouping.

• the comparison of the regulatory mechanisms of the exchange-traded corporate bond market and the crowd-lending market is original and has not previously been found in scientific publications;

• the proposed measures to regulate the risks of the Russian crowd-lending market are also new, different from those considered in the studies of other authors.

The theoretical significance is determined by the deepening of scientific ideas about the disintermediation of financial markets, about regulating the risks of financial market participants in the absence of financial intermediaries who performed the functions of capital transformation, timing, and risks. The results of the study can be used as a theoretical basis for further scientific work on the problems of P2P lending and crowd-lending.

The practical significance of this study lies in its potential to use the proposed measures to regulate crowd-lending and thereby regulate

the activities of investment platform operators in Russia.

MATERIALS AND METHODS

The article uses various methods of analysis. For a quantitative analysis of the Russian crowd-lending market in terms of credit risks, the FOREL method was used, which allows clustering of objects without a predetermined number of clusters. The mechanisms of regulation of the exchange-traded corporate bond market and P2P lending have been compared using methods of analysis, synthesis, grouping, and generalization.

The information base for the study included scientific articles and papers by Russian and international scholars on crowd-lending issues, as well as relevant regulatory legal acts from Russian legislation.

The empirical base of the study is based on the annual reports of all operators of investment platforms providing loans[3] and included in the relevant register of the Bank of Russia on 17.06.2024, for 2021–2023.

The article is structured as follows. Section 2 provides a quantitative analysis of the Russian crowd-lending market in terms of credit risks. Section 3 provides a comparison of the regulatory mechanisms of the exchange-traded corporate bond market and P2P lending. Section 4 is devoted to measures of prudential regulation of crowd-lending market participants. Section 5 presents a discussion of the results and conclusions.

RESULTS AND DISCUSSION
The Russian Crowd-lending Market

The intensive growth of the Russian crowd-lending market raises questions about the risk management of crowd-lending participants, primarily about credit and default risks. The volume of unfulfilled obligations in the Russian crowd-lending market reached the following values: 2021–245.9 million rubles, 2022–266.9 million rubles, 2023–493.96 million rubles[4] (a twofold increase in 3 years). A high proportion of unfulfilled obligations in the total volume of attracted investments negatively affects the attractiveness of the platform for new investors, leads to a loss of funds and trust from individual creditors, ultimately leading to the bankruptcy of the operator of the investment platform or its takeover by a more successful competitor.

This article proposes to carry out a quantitative analysis of the Russian crowd-lending market in terms of credit risks, namely: to group and cluster the Russian crowd-lending market according to the indicator "the share of unfulfilled obligations in the total volume of attracted investments of an individual crowd-lending investment platform operator,%". This will allow us to determine the structure of this market by the level of credit risk.

The indicator values were obtained for all crowd-lending platforms included in the register of investment platform operators of the Bank of Russia as of 17.06.2024, and in accordance with Federal Law No. 259-FZ dated 02.08.2019 "On Attracting Investments using Investment Platforms and on Amendments to Certain Legislative Acts of the Russian Federation", which have made their annual reports publicly available. A total of 72 annual IPR reports were analyzed. At the same time, IPOs dealing only with crowd investing, which were excluded from the period from 2020 to 2024, were not included in the information base, from the register of the Central Bank, who did not publicly disclose information about their annual report, as well as submitted completely zero reports. In particular, during the period under review, 8 legal entities were excluded from the IPR register (2021–1, 2022–4, 2023–3), 17 IPR submitted zero reports for different years, and 14 IPR reports were not found in the public domain.

The grouping of the Russian crowd-lending market by the level of credit risk was carried out in accordance with the gradation of credit risk

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[3] In other words, crowd investing platforms were excluded from the sample.

[4] Calculated by the author on the basis of annual reports of investment platform operators.

Grouping of the Russian Market for Lending by the Level of Credit Risk

No.	Risk level	The volume of attracted investments using the platform through the provision of loans, million rubles			The number of crowd-lending platforms, units		
		2021	2022	2023	2021	2022	2023
1	Lack of credit risk	351.14	1177.0	2213.27	7	7	12
2	Moderate credit risk (probability of financial losses ... in the amount of 1–20%	15712.75	10781.37	50276.0	13	13	14
3	Significant credit risk (probability of financial losses in the amount of 21–50%)	0	194.39	17.6	0	2	1
4	High credit risk (probability of financial losses ... in the amount of 51–100%	74.25	3.78	0	1	1	0
5	There is no possibility of a refund.	0	8.12	0	0	1	0

Source: Compiled by the author.

levels set out in the Regulation of the Bank of Russia dated June 28, 2017 No. 590–P "On the procedure for the formation of reserves by credit institutions for possible losses on loans, loans and equivalent debt" (*Table 1*).

An analysis of the data in *Table 1* shows that in 2021, Russian crowd-lending platforms were divided into three groups according to the level of credit risk: zero risk, moderate risk, and high risk. The group with moderate risk was the largest (both in terms of the number of platforms and the volume of attracted investments). In 2022, as a result of the external events that affected the Russian economy, the situation changed. Platforms with all levels of credit risk have become available on the crowd-lending market. The moderate-risk group, however, retained its advantage. For 2023

According to the level of credit risk, Russian crowd-lending platforms were again divided into three groups: zero risk, moderate risk, significant risk, and moderate risk groups. An analysis of the dynamics of each risk group over three years shows that in groups with zero and moderate risks, the volume of attracted investments is growing, accounting for the crowd-lending platforms included in them. This allows us to cautiously conclude that the main increase in crowd-lending platforms is made up of legal entities with a "moderate" or lower credit risk level.

Despite the practical value of such a grouping of crowd-lending platforms, the use of gradations of credit risk applied to the banking sector seems acceptable, but still does not take into account that individuals,

Statistical Metrics of the Sample for the Indicator "The Share of Unfulfilled Obligations in the Total Volume of Attracted Investments by an Individual Operator of an Investment Platform Involved in Crowd-lending" on the Russian Crowd-lending Market for 2021–2023

Metrics	2021	2022	2023
Arithmetic mean	6.52	12.60	3.66
Average squared deviation	16.61	30.78	7.22
Median	1.58	1.66	1.00
Minimum value	0.00	0.00	0.00
Maximum value	74.86	100	34.96

Source: Compiled by the author.

not credit organizations, are exposed to credit risks in crowd-lending, and, therefore, the gradation of credit risk proposed for banks may not correspond to the specifics of the activity, crowd-lending platforms.

Therefore, the determination of the structure of the crowd-lending market by the level of credit risk was carried out in the second way — using clusterization. The possibilities of using clusterization to structure the object of research were mentioned in the work of Yu. S. Evlakhova, N. A. Amosova [25].

For clustering, the FOREL method is used, which allows you not to lay a certain number of clusters in advance. The obtained values of the indicator "the share of unfulfilled obligations in the total volume of attracted investments of an individual operator of an investment platform engaged in crowd-lending,%" are ranked in ascending order, and each resulting sample was checked for outliers (anomalies). First of all, the sample of each year was checked for symmetry.

It was determined that this condition is fulfilled for the sample of each year, that is, each of the presented samples is symmetrical. To find outliers in symmetric samples, a rule was used to determine the outlier. As a result, outliers (anomalies) were found in the samples, which were the maximum values of the indicator in each year. *Table 2* shows some statistical metrics of the sample.

An analysis of the data in *Table 2* allows us to come to the following conclusions. First of all,

during the analyzed 3 years, the range of values of the indicator underwent serious changes, starting from zero and reaching a maximum of 100. Both the arithmetic mean and the median show the same dynamics: in 2022, they are significantly higher than the levels of 2021 and 2023. However, the median, which does not depend as much as the arithmetic mean on the inclusion of abnormally large or small values of the trait in the sample, was not much higher in 2022 than in 2021.

Next, the Euclidean metric was used to determine the distance between the values of the indicator. Input parameters for FOREL clustering: F = 2, R = 2. The clustering results are presented in *Table 3*.

An analysis of the data in *Table 3* shows the annual change in the number of clusters. In comparison with the grouping shown in *Table 1*, the heterogeneity of crowd-lending platforms in terms of credit risk within the moderate risk group becomes obvious.

Thus, the structure of the Russian crowd-lending market in terms of credit risk can be described as follows. Using the credit risk gradation developed for the banking sector, two groups were observed in the Russian crowd-lending market in each of the years under review: with zero risk and with moderate risk. Groups with higher credit risk were also present in the analyzed period, but with different gradations of high risk and in different numbers. When using the FOREL

Clustering of Russian Crowd-lending Platforms by Credit Risk Level, 2021–2023

Cluster number	Value range	Number of crowd-lending platforms, units
2021		
1	(0–0)	7
2	(0.12–3.44)	7
3	(4.98–5.64)	2
4	(7.93–8.12)	2
5	(16.46 or more)	1
2022		
1	(0–0)	7
2	(1.2–3.16)	10
3	(24.91)	1
4	(28.81 or more)	2
2023		
1	(0–0)	12
2	(0.01–1.52)	5
3	(3.98)	1
4	(4.42–5.41)	3
5	(6.26–7.56)	2
6	(9.69 or more)	2

Source: Compiled by the author.

clustering method, which, unlike the previous grouping, does not involve a predetermined number of clusters, a different, more detailed picture of the structuring of the Russian crowd-lending market was obtained. It shows that the maximum values of credit risk from a statistical point of view are sampling anomalies, and the groups of operators with zero and moderate credit risk are heterogeneous. We believe that in the future, structuring techniques and the results of calculations can be useful for managing the credit risk of crowd-lending platforms.

A Comparison of Regulatory Mechanisms for the Exchange-traded Corporate Bond Market and the Crowd-funding Market

Let's discuss why we consider it possible to compare the regulatory mechanisms of the exchange-traded corporate bond market and the crowd-lending market. First of all, in each case there is a borrower (a legal entity on the corporate bond market, a legal entity or an individual entrepreneur on the crowd-lending market) who applies for funds not to a financial intermediary, but to a wide range of people who have excess funds and want to invest them. Indeed, in the exchange-traded corporate bond market, such creditor investors are a wide range of legal or individual bondholders. In the crowd-lending market, investors are lenders, mainly individuals. One of the differences is the fact that in the bond market, the credit relationship between the borrower and the lender is securitized and formalized with a security (bond) and, accordingly, a purchase and sale agreement. There is no securitization in the crowd-lending market, and the loan relationship is formalized by a three-way agreement to attract/place investments. Otherwise, there are many similarities: borrowers issuing bonds, as well as those seeking funds in the crowd-lending market, seek to attract investors by managing the profitability, liquidity and risks of their projects.

Next, let us compare the regulatory mechanisms of the exchange-traded corporate bond market and the crowd-lending market in terms of such parameters as: requirements for the borrower, the borrower's assessment procedure, access to financing, the number of intermediary institutions, control over the borrower's activities, default management and restructuring mechanisms, disclosure of information by the borrower, and the secondary market (*Table 4*).

Comparison of Regulatory Mechanisms for the Exchange-traded Corporate Bond Market and the Crowdlanding Market

№	Comparison criterion	Exchange-traded corporate bond market	Crowd-lending market
1	Availability of requirements for the borrower	The requirements for the borrower are present and are specified in the bond listing rules approved by the exchange	The requirements for persons attracting investments are present and are specified in Federal Law No. 259-FZ
2	Availability of the borrower's assessment procedure	The borrower's assessment is carried out — the issuer's assessment (KYC) on a number of corporate and financial parameters	It is not regulated by law. Each IPO independently establishes the procedure and methods for assessing the borrower
3	Admission to financing	There is an admission of bonds to trading	There is an admission of the application for financing
4	Number of intermediary institutions and their functions	Intermediaries: exchange, rating agency, auditor, organizers, underwriter, central securities depository, market maker. The functions of the exchange are to establish requirements for the issuer (borrower), evaluate the issuer (borrower), and monitor information disclosure by issuers whose securities are included in the quotation list	Intermediary: operator of the investment platform Functions: implementation of investment attraction activities, development and implementation of investment platform rules, disclosure of information about the investment platform and IPR
5	The bodies of control over the borrower's activities	The regulator (central bank), the representative of the bondholders	Missing
6	Default management and restructuring mechanisms	There are different types. The concept of a representative of bondholders and a general meeting of bondholders is used. Restructuring mechanisms: overcoming default, changing the terms of the securities issue	There are no overdue debt policies in individual IPOs
7	Disclosure of information by the borrower	Information is disclosed before and after the placement of securities. The disclosure method is publication in the news feed of an accredited news agency	The borrower provides information about himself and his investment proposals to the operator of the investment platform. The IPO is required to provide all investors with information about borrowers and their investment proposals in the investment platform (except for closed investment proposals)
8	Secondary market	Yes	Not at the level of the entire market. Some platforms provide an opportunity for an investor (lender) to promptly receive funds by ceding (selling) the lender's (investor's) claim rights to the borrower to a third party, organizing a secondary market of claim rights

Source: Compiled by the author on the basis of the Federal Law of the Russian Federation of August 2, 2019 No. 259-FZ "On attracting investments using investment platforms and on amending certain legislative acts of the Russian Federation" and the Federal Law of the Russian Federation of April 22, 1996 No. 39-FZ "On the Securities Market".

Thus, the common features of the regulation of the exchange-traded corporate bond market and the crowd-lending market are: the existence of requirements for borrowers, a process for assessing borrowers (whether legally established or not), access to financing, and intermediary institutions (as a link rather than a financial intermediary, as defined in financial intermediation theory), as well as disclosure of information by borrowers.

Let's list the differences in the regulation of these markets:

a) the number of intermediary institutions and their functions; we believe that this difference is due to the level of complexity of the market and its scale, therefore, there are seven or more intermediaries in the bond market, and one in the crowd-lending market.;

b) the bodies of control over the borrower's activities: the regulator controls the issuer's bond market (through state registration of securities issues and state registration of the report on the results of the issue, as well as the accompanying verification of the reliability of information), as well as a representative of the bondholders, who represents the interests of bondholders to the issuer and other persons; in the crowd-lending market, the supervisory authorities: there are no loans for borrowers;

c) default management and restructuring mechanisms are present in the bond market, but they are not available in the crowd-lending market. As indicated in [26], there are two ways to protect creditors in the Russian crowd-lending market: obtaining a power of attorney from each of several hundred or thousands of individual creditors to represent their interests in court or to redeem overdue IPR debt, and conducting collection procedures by the crowd-lending platform itself.

As for the secondary market that exists in the corporate bond market and is absent from the crowd-lending market, we believe that with the growth of the crowd-lending market and the introduction of appropriate legislative changes, the formation of a secondary market for claims rights is quite possible.

Proposed Risk Management Measures for Crowd-lending Market Participants

First and foremost, we support the concept that crowd-lending investment platform operators should have control over which borrowers are granted access to their platform. This idea could be implemented in various ways. For instance, a system for assessing the credibility of borrowers on the crowd-lending platform could be introduced. [23]; the use of collateral and guarantees by borrowers (Yu. S. Ezrokh [26]). In contrast to the one proposed by us, it is recommended to introduce a quarterly IPR report on the share of unfulfilled obligations in the total volume of attracted investments[5], while setting the recommended threshold value for such an indicator. The size of the threshold value of the share of unfulfilled obligations in the total volume of attracted investments is difficult to imagine on the basis of available observations. The paper suggests two approaches to assessing the credit risk of crowd-lending platforms, but further recommendations should be based on the analysis of a larger number of observations. At the same time, when conducting quarterly monitoring and having the recommended threshold value, the operator of the investment platform, we believe, will strive to comply with it, which means it will improve the risk assessment of the investment project and borrowers, trying to avoid obviously unprofitable projects.

Two other proposals on risk management measures stem from a comparison of the regulatory mechanisms of the exchange-traded bond market and the crowd-lending market. We consider it very useful to reduce risks in the crowd-lending market by introducing the concept of a representative of bondholders and a general meeting of bondholders, which in terms of crowd-lending can be interpreted as the concept of a representative of investors (creditors) of the crowd-lending platform. The main function of the representative of investors (creditors) of the crowd-lending platform is to protect the rights and legitimate

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[5] Currently, this IPR indicator is required to be indicated in the annual report.

interests of creditors (investors) — individuals. A representative of investors (creditors) of a crowd-lending platform should only be a legal entity specializing in law. In order for a representative of investors (creditors) of a crowd-lending platform to become a mandatory participant in crowd-lending, he should be legally introduced into the circle of participants in the investment platform, indicating his presence as a prerequisite for the implementation of crowd-lending activities.

Finally, the issues of managing overdue debts and defaults need to be resolved. In case of default of the operator of the investment platform, we support the proposal of Yu. Reinhimmel[6] spoke about the appropriateness of appointing an interim administration, which will be responsible, among other things, for debt management to creditors (investors), and the termination of the powers of all management bodies of the platform.

As for the borrower's default, the literature identifies a variety of risk factors that are important for the occurrence of default, including: the level of creditworthiness, debt-to-income ratio and rating of the borrower, as well as the purpose of the loan, annual income, current housing situation, credit history and debt, and even the pricing mechanism used on the crowd-lending platform. But it is obvious that the first step should be the work of the operator of the investment platform with overdue debts, which should be fixed as legally binding (for example, in the form of an appropriate Policy or Procedure, etc.) and legislatively included in the rules of the investment platform, the requirements for which are listed in Art. 4 of Federal Law No. 259-FZ.

DISCUSSION AND CONCLUSIONS

The Russian crowd-lending market has great prospects both as an alternative mechanism for attracting investments in small and medium-sized businesses, and as an attractive investment object for individuals. However, the growth of funds raised and the investment attractiveness of crowd-lending to a certain extent depend on risk management, primarily credit risk.

An analysis of the structure of the Russian crowd-lending market by the level of credit risk leads to the following conclusions. When grouping the operators of investment platforms according to the scale of credit risk levels used for the banking sector, it was determined that:

a) IPR groups with zero and moderate risk are recorded annually, in dynamics for 2021–2023, the volume of attracted investments attributable to these platforms has increased (for the zero-risk group — more than 6 times, for the moderate-risk group — more than 3 times);

b) IPO groups with significant, high credit risk are found sporadically in the market structure. The share of such assets in the structure of the crowd-lending market is low, but it tends to grow against the background of unfavorable economic conditions (as shown by 2022). Thus, in 2021 this share amounted to 0.46%, in 2022–1.72%, in 2023–0.03%.

The clustering carried out in FOREL's work made it possible to determine that IPR groups with zero and moderate risk are heterogeneous, which may be important for risk management.

Risk management in the crowd-lending market is complicated by two circumstances. Firstly, the source of credit risk is the borrower, a legal entity or individual entrepreneur, and the investor, an individual, is at risk. At the same time, the crowd-lending platform is engaged in organizing investment attraction, rather than financial intermediation with its transformation of terms, capital and risks. Secondly, investment and credit relations are intertwined in the crowd-lending market, which makes it difficult to apply traditional risk management mechanisms for these relations. One example where investment and credit relations are intertwined is the corporate bond market. Despite the fact that there are financial intermediaries in the corporate bond market, the mechanisms of its regulation can be used in the search for regulatory analogies for the crowd-lending market.

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A comparison of the regulatory mechanisms of the exchange-traded corporate bond market and the crowd-lending market made it possible to identify common features and areas in which regulation can be adapted to the crowd-lending market. These areas include the organization of control over the borrower's activities, default management and the development of restructuring mechanisms.

On this basis, the article develops different risk management measures for participants in the crowd-lending market. Thus, it is proposed to adapt the concept of a representative of bondholders to the crowd-lending market, which can be interpreted as a representative of investors (creditors) of the crowd-lending platform. As for the mechanisms of restructuring and default management, it is difficult and impractical to fully adapt them to the crowd-lending market in modern conditions. At the same time, this area in the crowd-lending market needs regulation, the development of requirements for financial indicators, and a risk management system. The first step may be to require each IPO to develop a policy or procedure for dealing with overdue debts (by the way, an analysis of Russian IPO websites has revealed isolated cases of such a document).

In general, we believe that it is important for operators of investment platforms to monitor the activities of borrowers, as they are responsible for selecting and evaluating borrowers in order to provide them with access to the platform.

The purpose of this article is to propose measures to manage the risks of the Russian crowd-lending market based on a quantitative analysis of credit risks in this market, as well as by comparing regulatory mechanisms in the exchange-traded corporate bond market and the crowd-lending market. The results obtained confirm the achievement of the research goals. At the same time, the conclusions drawn allow us to formulate future directions for research, such as the development of a secondary crowd-lending market, the establishment of requirements for financial indicators and a risk management system, as well as the promotion of disintermediation in the financial market with risk management in mind.

ACKNOWELDGEMENTS

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Conflicts of Interest Statement: The author has no conflicts of interest to declare.

The article was submitted on 26.08.2024; revised on 26.09.2024 and accepted for publication on 22.02.2025.
The author read and approved the final version of the manuscript.

Translated by N. I. Sokolova