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Analytical Toolkit for Assessing Financial Security Risks of Companies in the Russian Construction Sector

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ABSTRACT

The construction sector today accounts for the largest volume of public procurement, bankruptcies and corporate fraud. Practice shows that the methods used to identify unscrupulous companies are not effective enough, which determines the **relevance** of the development of integrated risk assessment tools for financial security. In this regard, the **purpose** of the study was to substantiate the risk-factor approach to assessing and diagnosing financial security risks using a comprehensive analytical toolkit developed based on the concepts of industry analysis, professional auditing standards and financial reporting. The **scientific novelty** of the study is to integrate methods of assessment of financial security risks, the application of basic data processing technologies and flexible situation modeling with the possibility of adjusting models to a specific situation, taking into account identified industry risks. The **theoretical significance** of the study is represented by the concept of financial security as an aggregate result of the action of identified risk factors in the conditions of a highly turbulent economy, which served as a navigator for the development of an analytical tool that ensures consistency of the interpretation of the results at the stages of industry analysis, assessment of the likelihood of bankruptcy by logit-model and diagnosis of corporate fraud risks based on indicators of probability of distortion of financial statements. The **practical value** of the toolkit is the application of the international classification of financial risks, the selection of adequate, statistically significant indicators, calculated on the empirical basis of the financial statements of companies in the construction industry, downloaded from the Spark-Interfax information resource, which also proves the relevance of the results obtained and the possibility of using for the selection of organizations – potential participants in public procurement, in the audit practice, related audit services, arbitration practice, investment and banking to identify unscrupulous borrowers.

Keywords: financial security; risks; construction companies; public procurement; audit; the likelihood of bankruptcy; corporate fraud; risks of financial reporting misstatement; modeling

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INTRODUCTION

In the first quarter of the 21st century, in the context of the worldwide prevalence of the concept of sustainable development, industry analysis should provide an assessment of the qualitative and quantitative characteristics of companies that contribute to the interests of different stakeholders. At the same time, financial security is a comprehensive characteristic of the company and a sign of its high business reputation and reliability.

The prospects of sustainable development of the construction industry of Russia are related to the availability of long-term financial resources, as indicated in their work by Russian scientists A. G. Aganbegyan [1], V. V. Ivanter et al [2], S. D. Bodrunov [3]. However, high geopolitical risks and growing uncertainty in the development of the world economy increase the importance of analytical tools to identify risks, diagnose them and reduce threats to the financial interests of stakeholders. Moreover, practice shows that the methods used to identify dishonest companies with high financial security risks are not sufficiently effective. In this regard, the development of analytical tools for assessing and forecasting the financial security risks of companies of the construction sector of Russia is of high relevance and significance due to the presence of high industry risks, their impact on the performance of the public procurement system, relations with counterparties and the need to confirm their business reputation.

For this survey, we have selected construction companies that are subject to compulsory audit and belong to large groups that are focused on sustainable development, including financial security. The source of the data was an empirical database of the financial statements of companies of the construction industry, downloaded from the information resource Spark-Interfax, as well as the Internet resources of Rosstat and the Moscow Exchange. The objective of the study was to develop tools for the comprehensive assessment of the financial security of companies based on a risk-factor approach that is consistent with the concepts of professional audit[1] and financial reporting standards,[2] which provides confidence for stakeholders.

METHODOLOGY OF RESEARCH

The concept of financial security of a company is quite multifaceted, and still has no unambiguous definition. A set of the most prevalent features of financial security in the works of foreign and Russian scientists can be identified by summarizing the findings of the analysis of scientific and practical work on the subject, organizing the process of its diagnosis and control using financial reporting and approaches to business analysis in the assessment of various decisions by stakeholders. These characteristics manifest in the influence of the business environment's uncertainty, stability, sustainable development, solvency, turnover, and ability to ensure an effective strategy, to respond quickly to changes, and to be a competitive and devoted company [4, 5]. Crises and sanctions, structural restructuring, re-profiling, increased sectoral, financial and non-financial risks significantly affect the financial security of companies.

In our research, the financial security of a company is considered as a qualitative and quantitative characteristic of its activities, related to the ability to manage business risks affecting financial viability, to ensure financial stability, adequacy of own and attracted funds for carrying out operational, financial and investment activities, and to maintain a high business reputation among steakholders [6].

[1] International Audit Standard 200 "Main Objectives of an Independent Auditor and Conduct of Audit in accordance with International Auditing Standards". URL: https://www.consultant.ru/document/cons_doc_LAW_317258/ (accessed on 10.04.2023).

Information of the Ministry of Finance of the Russian Federation PZ-9/2012 "On disclosure of risks of business activities of the organization in the annual accounting statements".

The hypothesis of the study is that among the risk factors of the activities of construction companies can be distinguished two groups related to financial security, financial insolvency (probability of bankruptcy) and corporate fraud. In this regard, economic and mathematical models for their diagnosis and evaluation should be based on identified industry risks for each group. At the same time, the quality of evaluation is influenced by the relevance of the indicators and methods used, as indicated in their work by the scientists I. Ya. Lukasevich, N. A. Lvova, D.V. Sukhorukova [7], S. Bharath, T. Shumway,[3] K. G. Palepu, P. M. Healy, V.L. Bernard, E. Peek [4].

Foreign scientists Aswath Damodaran,[4] Reeves Martin, Wilan Tenzie, Douglas Ellis[5] also consider it important to consider sectoral and sectoral risks affecting the level of costs and operational efficiency, which are highly likely to turn into financial insolvency risks.

The financial security risk assessment toolkit proposed by us is implemented as a set of analytical procedures,[6] aimed at achieving the objective and includes: industry analysis, identification of financial security factors and risks[7]; assessment and forecasting of risk of probability of bankruptcy using a logistical model[8]; diagnosis of corporate fraud risks on the basis of indicators that assess the probability of distortions of financial statements.[9]

The reliability of the results obtained should be confirmed by the correspondence of the industry analysis hypothesis, risk diagnosis and assessment of the financial stability and sustainability of construction companies as an aggregate result of the action of identified risk factors in the conditions of a highly turbulent economy.

RESULTS OF THE STUDY

Industry analysis: identification of factors and risks of financial security of the construction sector in Russia

Construction is a basic, socially significant industry for the development of other sectors, so it can be seen as one of the drivers of growth of the Russian economy as a whole, as stated in the development strategies of many industries of Russia for the long-term. The contribution of the industry to GDP is about 7%, its importance and market activity is confirmed by the dynamics of the stock indices of the construction companies (MOEXRE, MERETR, MerETRN, Meretrr) on the Moscow Exchange, whose values are characterized by high volatility, and from the end of 2021 their growth replaced by a decline as a result of the deterioration of macroeconomic stability and sanctions, due to high political and market risks. However, a steady and sustained growth is expected in April 2022 and, according to experts, in the end of 2023 to mid-2024.[10]

According to SPARK-Interfax, in the structure of the industry about 400 thousand companies.[11] Of these, about 100 organizations are involved in large public infrastructure and housing projects. Of these, 20% are among the largest construction holdings and state-owned companies, accounting for 13% of total contracts. However,

[3] Bharath S., Shumway T. Forecasting Default with KMV–Merton model. URL: http://ssrn.com/abstract=637342

[4] Aswath Damodaran. Strategic Risk Taking: A Framework For Risk Management. URL: http://pages.stern.nyu.edu/~adamodar/ (accessed on 10.04.2023).

[5] Tensy Whelan, Elise Douglas. The price of social responsibility. URL: https://hbr-russia.ru/biznes-i-obshchestvo/etika-i-reputatsiya/854831 (accessed on 10.04.2023).

[6] MSA 520 "Analytical procedures" (introduced on the territory of the Russian Federation by the Order of the Ministry of Finance of the Russian Federation from 09.01.2019 No. 2).

[7] MSA 315 (revised) "Identification and assessment of risks of significant distortion" (introduced in the territory of the Russian Federation by the Order of the Ministry of Finance of the Russian Federation from 27.10.2021 No. 163).

[8] MSA 570 (revised) "Continuity of activities" (introduced in the territory of the Russian Federation by the Order of the Ministry of Finance of the Russian Federation from 09.01.2019 No. 2).

[9] MSA 315 (revised) "Identification and assessment of risks of significant distortion" (introduced in the territory of the Russian Federation by the Order of the Ministry of Finance of the Russian Federation from 27.10.2021 No. 163).

[10] URL: https://www.finam.ru/publications/item/developery-rastut-na-nizkix-stavkax-rynok-zhdet-smyagcheniya-ot-cb-20220913–181500/ (accessed on 10.04.2023).

[11] Spark Interfax Information Resource. URL: https://spark-interfax.ru/ru/statistics (accessed on 10.04.2023).

mainly construction companies represent small and medium-sized, providing 25% of the employees in the industry.

According to a study conducted by the Institute of Statistical Research and Knowledge Economy of HSE,[12] entrepreneurial activity in the construction industry in 2022 outperformed other industries (compared with 2021 it grew from –4.2 to 1.0), resulting in construction becoming the second after trade industry — the leader in number of operating (13%) and established (22.7%) companies in the country. As a result, the fastest-growing economic activity in 2022 with a relative growth rate of 29.2 organizations was specialized construction.

The construction industry is characterized by significant fluctuations in financial position, high level of insolvency (financial failure) — 25% of organizations are in default, insolvent and are in pre-bankruptcy condition.[13] According to SPARK-Interfax analysts (*Fig. 1*), there is an increase in the number of liquidated construction companies.

Assessment risk-factors — shortage of orders, high tax burden; dependence on other industries, rising prices of materials, which is one of their significant factors due to the high material intensity of construction activities.

Cooperation is characterized by high cyclist, dependence on public procurement, the influence of administrative barriers associated with obtaining permits to build facilities, connecting communications, etc.[14] The state is a key stakeholder and the main investor in construction, so the industry is highly dependent on government contracts.

Furthermore, studies[15] show that construction is leading in facts and the amount of misrepresentation of financial statements, ranked second (25%) in the cases of corporate fraud identified after corruption (47%). This is due to factors such as: industry structure, gaps in legislation, benefits for the industry, substantial amounts of operations, significant cash turnover, large shadow component, corruption in receiving public procurement. According to the experts of the Analytical Centre under the Government of the Russian Federation, the largest amount of public procurement is in the construction sector, and the stability of construction companies and the sector as a whole depends on government orders and the degree of business reputation of companies [8].

Foreign surveys, in particular the ACFE (Association of Certified Fraud Examiners)[16] report also confirm that the construction industry has a high level of fraud with financial reporting (16%). For construction companies engaged in large government projects, audit verification of the accuracy of their reports is important in assessing their reputational risks, as well as in further monitoring the efficiency of the use of budget funds.[17]

Assessment and forecasting of risks of bankruptcy probability using the logistic model

The choice of logistical regression analysis to predict the likelihood of bankruptcy is justified by the fact that the 20th-century models of multiplicative discriminatory

[12] Research of the HSE "Complex scientific and methodological and informational-analytical support of development and implementation of the state scientific, scientific and technical policy". URL: https://issek.hse.ru/mirror/pubs/share/823666252.pdf (accessed on 10.04.2023).

[13] HSE experts: construction remains the most problematic and unpredictable of the basic industries. URL: https://erzrf.ru/publikacii/stroitelnaya-otrasl-v-period-pandemii-obzor-delovogo-klimata-ot-ekspertov-vshe (accessed on 10.04.2023).

[14] HSE experts: construction remains the most problematic and unpredictable of the basic industries. URL: https://erzrf.ru/publikacii/stroitelnaya-otrasl-v-period-pandemii-obzor-delovogo-klimata-ot-ekspertov-vshe (accessed on 10.04.2023).

[15] Global survey of economic crime and fraud 2020. Fighting fraud: a never-ending battle. URL: https://www.pwc.com/fraudsurvey (accessed on 10.04.2023).

[16] URL: http://www.acfe.com/ (accessed on 10.04.2023). Report to the Nation's 2018 global study on occupational fraud and abuse. URL: https://s3-us-west-2.amazonaws.com/acfepublic/2018-report-to-the-nations.pdf (accessed on 10.04.2023).

[17] URL: https://finance.rambler.ru/realty/44283822-reyting-delovoy-reputatsii-uchastnikov-zakupok-poyavitsya-v-stroyotrasli/ (accessed on 10.04.2023).

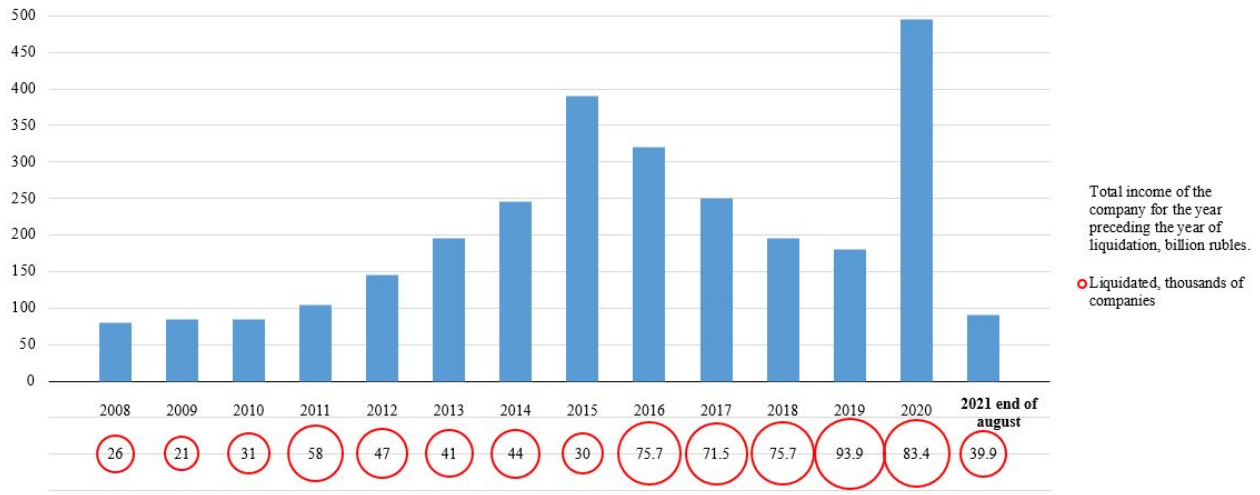

Fig. 1. **Dynamics of Liquidation of Construction Companies (2008–2021)**

Source: Compiled by the authors.

analysis today, in a dynamic, volatile economy, no longer provide a reliable and unambiguous result [9]. Many scientists, including J. Olson, A. M. Voiko [10], V. V. Rabdanova [11], A. V. Kazakov, A. V. Kolyshkin, Ju-Ha, Tehong, G. A. Haidarshin and others [12], justify the usefulness of using logit models. In selecting indicators for building a logistics model, we have used approaches to identifying and classifying risks and relevant indicators recommended by international standards. According to the results of the sectoral analysis, the main risk factors for the bankruptcy of construction companies are: high market risks (loss (ineffective) activities due to the increase in cost of construction and assembly works and the reduction in revenue (increases in the prices of construction materials and contracts, tax burden, incomplete construction, economic sanctions, increases in construction insurance rates); high liquidity risks associated with increased debt burden to banks and creditors' debt. The ratio of credit and receivables characterizes the balance of the impact of credit risks and liquidity risks. To assess the impact of market risks, the profitability of sales, assets, equity (as an indicator of investment attractiveness), the turnover of assets and the equity ratio are used to determine whether the company is able to carry out its current activity. To assess the ratio of equity to assets, an autonomous ratio has been introduced, which has a low value for construction companies due to the high debt burden.

Overall, the 10 indicators selected (X_1 — current ratio; X_2 — ratio of accounts payable to accounts receivable; X_3 — return on sales; X_4 — return on assets; X_5 — return on equity; X_6 — asset turnover ratio; X_7 — working capital ratio; X_8 — equity ratio; X_9 — urgent liquidity ratio; X_{10} — absolute liquidity ratio) give the optimal characterization of the risks that determine the level of financial well-being and probability of bankruptcy. The effective indicator for the model (Y) is the fact of a company's bankruptcy, which takes value 0 if the company is financially stable and 1 if it is bankrupted. The closer the value to 1, the higher the probability.

The logit model is based on financial statements for three years (2017–2019) for 20 construction companies, including 10 currently operating (non-bankrupt) and 10 companies under bankruptcy procedure (bankruptcy, two years prior to the commencement of the insolvency procedure). Thus, 40 observations were included in the sample. The R Project for Statistical

Computing was used to construct the logit regression.

In the outcome, the statistical analysis confirmed the absence of multi-collinearity between the selected indicators (|r| < 0,8), but taking into account the importance of the Student's t-criterion, the model included 6 indicators: $X_{1\_}$ current liquidity ratio; X_4 — return on assets; X_5 — return on equity; X_6 — assets turnover ratio; X_9 — urgent liquidity ratio; X_{10} — absolute liquidity ratio, and the model for predicting the likelihood of bankruptcy of construction organizations has the following kind (1):

$$y = 27,97x_1 - 113,67x_4 - 30,97x_5 + 1,30x_6 - \\ - 58,54x_9 - 70,36x_{10} + 30,86. \quad (1)$$

The model was tested using the ROC analysis,[18] which confirmed its predictability: the AUC value was 0.67. As a result, the formula (2) is used to estimate the likelihood of bankruptcy:

$$P = \frac{1}{1+e^{-\left(\begin{array}{l}27,97x_1-113,67x_4-30,97x_5+1,30x_6- \\ -58,54x_9-70,36x_{10}+30,86\end{array}\right)}}. \quad (2)$$

Return on assets, absolute and immediate liquidity ratios and profitability of own capital have the greatest influence on the probability of bankruptcy of construction companies. Overall, an increase in asset profitability per base unit reduces the likelihood of bankruptcy by 113.67%. The degree of influence of each factor indicator of the model and, accordingly, risks on the result — the probability of bankruptcy of the company is estimated using the calculated limit effects, the results are presented in the *Table 1*.

Thus, the built logit model characterizes the degree of influence of market risks (return on assets, asset turnover ratio, equity profitability) related to market prices, sales volumes and competitiveness, their share account for the greatest cumulative influence on the probability of the company's bankruptcy, as well as liquidity risk (liquidity ratios), related to the ability of a company to repay its obligations in a timely manner.

In addition, non-financial risks: management risks and external risks caused by the international situation, economic policy, business environment, business reputation of the company, which also affect financial performance and probability of bankruptcy, influence the company's financial viability.

Corporate fraud risk diagnosis based on indicators that assess the probability of financial reporting misstatements

Diagnosis of the probability of distortion of financial reporting indicators as a risk factor for financial security in the form of concealment of corporate fraud is best provided by the information base (financial reporting) for conducting analytical procedures unlike other types of corporative fraud (asset theft, corruption). Unfortunately, existing diagnostic methods are still not sufficiently effective. Our approach is based on the application of modeling methods based on results of empirical studies of performance of construction organizations, as well as the expansion and refinement of analytical indicators that signal the risks of conducting business operations that distort financial statements.

This study examines distortions involving actions or omissions of a company's management or its financial service staff that result in the distortion of the performance of financial reporting for the purpose of obtaining specific economic and other benefits, even though the distortion of financial statements has historically also been classified as errors of incompetent formulation [13]. In this regard, it should be clarified that data distortions can occur both for the purpose of improving and deteriorating financial performance and, accordingly, may be related to different types of bankruptcy

[18] Logistic regression and ROC analysis — mathematical apparatus. Loginom. URL: https://loginom.ru/blog/logistic-regression-roc-auc (accessed on 10.04.2023).

Table 1

Generalized Assessment of the Impact on the Probability of Bankruptcy of the Identified Financial Risks

Financial risk group	The cumulative effect of the risk factor (in %) on the probability of bankruptcy (– decrease, + increase) when the indicator changes by one base unit	Priorities of influence
Market risks	–143.34	1
Liquidity risks	–100.9	2

Source: Compiled by the authors.

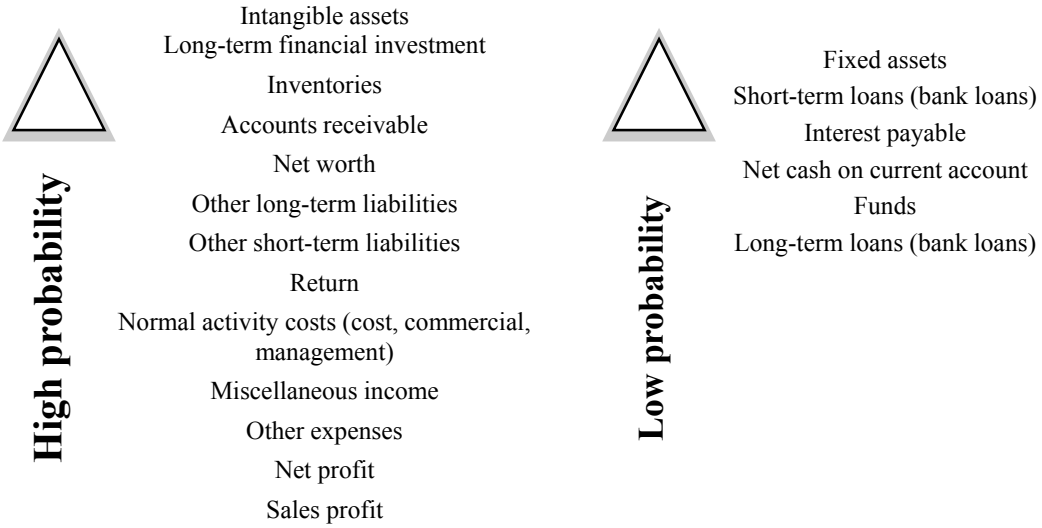

Fig. 2. **Distribution of Items in the Financial Statements of Construction Companies Depending on the Risk of Misstatement**

Source: Compiled by the authors.

on the basis of the "reality/fiction" criterion: real, technical, fictitious, deliberate. In the presence of such distortions in the dynamics, the indicators will vary greatly, and there is a possibility of widespread dispersion of the values of the resulting indicator, which mainly leads to the underestimation of significant financial indicators.

The research by M. Beneish [14], M. Roxas [15], V. P. Suyts and I. I. Anushevsky [16], E. D. Nikulin and A. A. Sviridov [17] uses the concept of the quality of financial statements as a criterion of its reliability, as well as approaches to the simulation of the probability of distortion of financial reporting, based on the risks of exposure of various financial statement items to deliberate distortions.

Fig. 2 shows the distribution of the financial statements of construction organizations according to the risk of probability of distortion, as confirmed by a number of previous studies [18].

To build a model for diagnosing corporate fraud risks based on indicators that estimate the likelihood of distortions of financial statements, data from the information system of Spark-Interfax for 10 construction companies for the period from 2017 to 2021, five of which are operational and five have started bankruptcy proceedings, was used. For bankrupt companies, the reporting data were taken for four years prior to the start of the insolvency procedure, for existing organizations — for 2017–2021. The decrease in the number of organizations analysed

compared to the previous phase of our study is due to the impact of the high demographic mobility of construction organizations, as well as the limited information, in particular, the lack of representative data on the flow of funds in the information resource Spark-Interfax.

25 analytical indicators have been calculated to assess the risk of distortions in financial statements, including shares, growth rates and the ratio of high risk to low risk for distortion in financial statement items (*Fig. 2*). After the multi-collinearity test, some of the indicators were deleted. As a result, 11 factor variables were used to construct the model: X_1 — fixed asset ratio; X_2 — share of other non-current and working assets in assets; X_3 — inventory ratio; X_4 — share of receivables in assets ratio; X_5 — share of financial investments in assets; X_6 — share of cash in assets; X_7 — share of equity in liabilities; X_8 — share of borrowed capital (paid) in liabilities; X_9 — share of free liability; X_{10} — other revenue ratio; X_{11} — fixed asset growth rate.

A performance indicator is the fact of misstatement of financial statements (Y), which may be 0 or less when the company is honest, and 100 or more if the company shows signs of misstatement in the financial statements.

Because of the linear regression equation based on the t-Student criterion, the following factors were identified as insignificant: X_9 — hare of free liability in liabilities, X_{10} — ratio of other revenue and X_{11} — rate of growth of asset. As a result, an eight-factor model was developed to assess the probability of distortion in the financial statements of construction organizations (3):

$$Y = 39,27x_1 + 40,94x_2 - 101,79x_3 - 79,74x_4 + \\ + 142,72x_5 + 34,31x_6 - 16,93x_7 - 21,50x_8 + 78,87. \quad (3)$$

According to the model, the share of financial investments in assets has the greatest influence on the distortion of the financial statements of construction companies. An increase of one base unit increases the likelihood of financial statements being distorted by 142.72%.

At the same time, both long-term and short-term financial investments are financial statements with a high risk of distortion, which can occur through the acquisition of low-quality financial assets, the introduction of funds into the authorized capital of other entities with implicit affiliation with the analyzed entity.

The next important factor is the share of stocks in assets, an increase of 1 base unit which would reduce the probability of distortion by 101.79%. Empirical studies show that entities pursuing the objective of fictitious or deliberate bankruptcy seek to underestimate stocks by selling fictional stocks or overestimating valuation reserves [18].

Increasing the share of receivables by 1 base unit reduces the likelihood of distortion by 79.74%. Among the most significant indicators of the model, the probability of distortion in the financial statements is influenced least by the share of borrowed capital in liabilities and share of equity in obligations. By increasing by one unit, the risk of distortions decreases by 21.5% and 16.93%, respectively, as demonstrated by the fact that borrowed capital represented by bank loans and equity, excluding undistributed profits, are indicators with a low probability for distortion.

Given that bankrupt companies were included in the sample of entities that distorted financial statements, the distortion of unallocated profits was not apparent, as those entities tended to attempt to artificially reduce profits, including with a view to the occurrence of insolvency.

The coefficients confirming the reliability of the built model are presented in the *Table 2*.

A multiple correlation factor (R), equal to 0.83, indicates a close relationship between the factors. The determination coefficient (R-quadrat) shows that 69% of the variation of the dependent variable is taken into account

Table 2

Statistical Coefficients Confirming the Reliability of the Constructed Model

Indicator	Value
Multiple R	0.83
R-square	0.689
Fisher Estimated value F	11.38
Fisher Critical value F	2.98

Source: Compiled by the authors.

in the model and is due to the influence of the included factors. The statistical significance of this model is also confirmed by the calculated Fischer criterion (11.38), which exceeds its critical value (2.98).

Thus, the equation and the regression coefficients are statistically significant, so the model can be recommended for use. To confirm the reliability of the model, factor indicators were also calculated and performance indicators evaluated on the example of two companies not included in the original sample: ALFASTROY LLC is a financially stable company with no signs of bankruptcy and WEYSTONE LLC is going bankrupt. The probability indicator of distortion of financial statements (*Y*) was –7.43 and 111.87, respectively, which fully confirmed the working capacity of the developed model.

It should be noted that entities at high risk of bankruptcy are not identified with entities that distort reporting, but the hypothesis is used that the proportion of entities which distort financial reporting in the aggregate of companies that are actual and potential bankrupts is significantly higher than the aggregate of existing entities. The disclosure is that individual entities deliberately distort financial statements, accumulate debt, and conduct fictitious transactions or unprofitable procurement, resulting in a deterioration in the financial position of the entity.

Regular monitoring of financial reporting risk indicators and their dynamics using regression models enables the timely identification of companies underestimating their financial performance in order to commit fictitious or deliberate bankruptcy. It should be noted, however, that each of the indicators included in the model does not individually characterize the exposure of the analyzed entity to the risk of distortion of financial statements, and only as a combination of these indicators are highly likely to indicate the presence of possible distortions in the financial reporting.

CONCLUSION

The results of the survey present a risk-factor approach to the conceptual disclosure and quantitative assessment of financial security of companies, based on the development of industry analysis methodology and the use of the concept of International Audit Standards and Assurance Tasks. The scientific novelty of the study is the integration of financial security risk assessment methods, the application of basic data processing technologies, including mathematical and statistical modeling methods. The reliability of the methodology is confirmed by the correspondence of the hypothesis at the stage of industry analysis and indicators of assessment of financial security risks as an aggregate result of the action of identified risk factors. The method's practical value depends on the fact that the likelihood of corporate fraud (distortion of financial statements) and bankruptcy is evaluated based on professional audit standards' recommendations. This

verifies the toolkit's applicability for defining the hypothesis during the audit and other processes meant to evaluate the continuity of activities and financial reporting distortions, as well as for the empirical selection of potential participants in public procurement for the privilege of performing construction work on public assignments. This toolkit has a wide range of applications in related audit services, arbitration practices, as well as in the investment and banking sector to identify unfair borrowers.

At the same time, it should be noted that the complexity of the analytical toolkit is due to the use of indicators calculated based on financial statements, as well as the orientation of the models developed to the industry specificities of construction companies. In this regard, further research will be aimed at expanding the information base of industry analysis, the composition of financial security risk indicators, as well as the study of behavior and risk assessment of companies of other socially significant sectors of the Russian economy.

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