Evaluation and Prediction of the Business Continuity Risks

N A Kazakova[1], M P Bobkova[2] and A E Sivkova[3]

[1]Doctor of econ. sciences, professor of Basic Department of Financial and Economic Security at Plekhanov Russian University of Economics, Stremyanny lane 36, Moscow, 117997, Russia

[2]Leading specialist of the Student Research Center for financial studies, postgraduate student of Basic Department of Financial and Economic Security at Plekhanov Russian University of Economics, Stremyanny lane 36, Moscow, 117997, Russia

[3]Senior lector of the Basic Department of financial control, analysis and audit of the Moscow Main Control Department, postgraduate student of Basic Department of Financial and Economic Security at Plekhanov Russian University of Economics, Stremyanny lane 36, Moscow, 117997, Russia

E-mail: kazakova.na@rea.ru, bobkova.mp@rea.ru, sivkova.ae@rea.ru

Abstract. The practice of applying international audit standards and assurance tasks requires continuous improvement of methodological tools. In the digital economy, when modern software and technology platforms are being actively introduced in business, audit and consulting sphere, science-based methods for assessing and predicting the business continuity of audited companies with the possibility of their implementation in a computer environment are in demand. Assessing the potential bankruptcy probability is an integral part of the audit report and analytical report while performing related services. The purpose of this study is to develop the auditor's analytical tools for assessing and predicting the business continuity of audited companies, as well as performing audit assignments using the Due Diligence financial methodology. The proposed methodology for assessing and forecasting of the company's business continuity risks includes four stages: financial results assessment; solvency assessment; identification, calculation and financial risks of the company's business continuity assessment; forecasting changes in the level of risk of business continuity using the developed calculator for calculating risk factors indicators. Recommended areas of this technique application: audit and consulting activities, improve of the using tools practice for implementing international audit standards for self-regulatory organizations of auditors and audit companies; development of the Due Diligence methodology to justify the choice of companies – borrowers and companies - participators in tenders and exchanges, as well as in systems of internal audit, internal control, financial control of business processes.

1. Introduction

The International Audit Standard 570 (revised) "Going concern" (ISA 570) interprets going concern as the organization's ability to continue its business and evaluate risks (events or conditions) that may affect this ability [1]. However, the standard does not consider the technique and methodology of applying analytical procedures to assess and predict such risks. Audit and consulting companies and auditors, as a rule, use their own methods based on various indicators, data base and analytical methods. The accuracy of the results largely depends on the experience of the auditor, the specifics of

the audited company, the specifics of the audit engagement, the data base and its reliability, as well as the software and technology resource.

The results of the current study consist of the proposed development and justification of applied tools for assessing and predicting the risks of the company's business continuity, taking into account the possibility of customizing them to the specifics of the audited company and the goals of various users, as well as the usage of them in the computer environment of the company.

2. The relevance and scientific development of the research topic

The economic category of business continuity was the subject of the research by such scientists as E. Leote, G.V. Simon, R.N. Anthony E.S. Hendricksen, M.F. Van Breda, S.M. Bychkova, I.N. Rich, M.V., Miller, Y.V. Sokolov, N.N. Khakhonova et al. [2,3,4]. The study of their works showed that there is a direct relationship between business continuity and financial insolvency, leading the business to bankruptcy. Scientists have developed a number of techniques to identify bankruptcy risks, including the fraudulent activities or intentional misrepresentation of financial information. The most famous methods among them are Altman, Tuffler and Beaver models [5]. These methods have a number of advantages, which make their use possible in assessing and predicting business continuity according to ISA 570: the ability to determine the risk zone; the optimal composition of indicators calculated according to the financial statements.

In addition, for the purposes of the current study, the Due Diligence financial methodology is of interest. Nowadays, this methodology is widely used in audit consulting in order to assess the investment attractiveness of companies for potential investors. Due Diligence methodology involves the analysis of the current and future financial condition of the organization, an assessment of the sustainability of income based on a study of the main risks and financial indicators according to the financial statements, in order to assess "whether it is reasonable to expect continued operations and understand how changing circumstances and trends can affect the future of the company" [6,7]. The Due Diligence methodology is open, does not contain a unified list of stages and financial ratios, has no specific recommendations for use in various industries and for specific purposes of assessing the financial solvency of an organization [8].

3. Statement of the problem

The study consists of the developed author's methodology for assessing and predicting the business continuity of audited companies as an integrated analytical toolkit for the auditor. The initial information for the application of the analytical tools of the audited companies' business continuity is the annual financial statements, the forecast reporting of the audited company and public statistical information in industry terms [9]. As a methodological tool, the conceptual approaches of ISA 570 "Business Continuity" and ISO 31000: 2018 "Risk Management" [10] were used.

The result of the study is forecasting and assessing the level of continuity risk of the audited company using the developed calculator for calculating risk factors, as a mathematical tool for diagnosing the impact of changes in factors on the risks of the audited company continuity.

4. The theoretical part

The proposed methodological approach for assessing and forecasting the risks of the company's business continuity consists of four stages: assessment of financial results; solvency assessment; identification, calculation and assessment of financial risks of the company's business continuity; forecasting changes in the level of business continuity risk using the developed calculator for calculating risk factors indicators.

Based on the results of the first two stages, a qualitative analysis and selection of the most significant risk factors that can lead to a violation of the continuity of activity are carried out [11]. The selection of representative indicators for each group of risk factors is based on principles such as the relevance of the assessment for the characteristics of the company; the availability of an information base and the ability to calculate selected indicators, ensuring comparability of the indicators'

dynamics; and the preference for using dynamic indicators [12-19]. The procedure for evaluating indicators is based on a three-point scale, where 0 points - minimum risk, 1 point - acceptable risk; 2 points - critical risk. The average industry statistics or inflation rate are used as criteria values in assessing risk indicators. Conformities are offered for risk zones: the minimal risk zone - the indicator rate of change is greater than 1, the acceptable risk zone - the indicator rate of change is 1, the critical risk zone - the indicator rate of change is less than 1. A normative approach based on the use of indicator's average values (for industry, region, national or global economy, depending on the specifics of the company) and is recommended if there is a similar indicator in official statistical databases [20]. The final assessment and determination of business continuity financial risk level is carried out on the basis of the following scale: up to 8 points - low risk; 9-16 points – medium risk; 17 - 24 points – high risk. The result is compared with a bankruptcy indicator, calculated according to well-known forecast models that match the industry specifics of the audited company. The most significant risk factors indicators identified at the previous stage are included in the calculator for forecasting and evaluating financial indicators for positioning changes in the business continuity level of risk. It is designed to diagnose the impact of changing factors on the audited company business continuity risks.

5. Practical results of the implementation of the author's methodology

The testing of the methodology for assessing and predicting the business continuity of the audited companies was carried out at the group of companies of the large Russian construction holding "Stroytransgaz", which implements projects in the field of energy, oil and gas, petrochemical and other industrial sectors, civil engineering, transport and sports infrastructure.

Table 1. The results of the financial risk assessment of "Stroytransgaz" business continuity.

Risk factors	Risk assessment indicators	Values for the period		Indicators change for the period (+/-)	Risk trend	Risk degree
		2016	2017			
Risks of untimely settlement of obligations	Autonomy ratio	0.07	0.08	+0.01	↓	2
	Financial leverage ratio	13.55	10.97	-2.59	↓	2
	Ratio of accounts receivable and accounts payable	0.66	0.84	+0.18	↑	1
	Accounts payable turnover	0.66	1.04	+0.38	↓	1
	Accounts receivable turnover	1.00	0.86	- 0.14	↑	1
	Current liquidity ratio	1.17	1.23	+0.06	↓	0
Risks of lost profits	Revenue dynamics, billion rubles	19.2	25.7	+6.5	↓	1
	Cost dynamics, billion rubles	18.0	22.8	+4.8	↓	1
	Net profit dynamics, billion rubles	0.3	0.6	+0.3	↓	0
	Return on sales, %	-1.70	6.06	+7.76	↓	0
	Return on equity, %	8.73	20.15	+11.42	↓	0
	Return on investment, %	5.83	9.07	+3.24	↓	2
Final risk assessment						11

Based on the results of the first and second stages of the methodology, the following conclusions were made. Dynamics of financial indicators for the period 2015-2017 indicates that in 2017 there was an increase in revenue compared to the previous year by 6.5 billion rubles. (by 34%); cost growth amounted to 4.8 billion rubles (or 27%); and the share of cost in revenue is the lowest for the last three years - 88.7%. However, this is a rather high level of cost for the construction industry, which is associated with the high cost of raw materials. In 2017, profit amounted to 1.6 billion rubles, before which the company had losses from sales.

For the construction industry in the Russian Federation, the industry average value of sales profitability is about 7%. In 2017, the indicator almost reached the industry average value. Based on the analysis of solvency, it was revealed that the company's balance sheet is not liquid, however, the current liquidity conditions are met. As a result, the most significant risk factors were determined according to which the conditions of business continuity depend. Among them are: the risks of late obligations' settlement and the risks of lost profit. The results of the financial risk assessment of "Stroytransgaz" business continuity are presented in table 1.

The final risk score was 11 points, which, according to the established scale, corresponds to the average level of financial risk of the "Stroytransgaz" business continuity.

Checking the comparability of the assessment results with the results obtained using the forecast models of Altman, Tuffler and Beaver showed their identity: according to the Altman model, the value of the bankruptcy probability integral indicator was 1.86; according to the Tuffler model - 0.51; according to Beaver's model, the bankruptcy probability is up to 5 years, which corresponds to the average level of financial risk of the company's business continuity.

At the final stage of the implementation of the author's methodology, a developed calculator for forecasting and evaluating financial indicators is used to position the change in the level of business continuity risk (table 2).

Table 2. Tabular presentation the results of the calculator work to position the change in the level of continuity risk on the data of the company "Stroytransgaz".

Financial indicators	Forecast	2017	2016	Comparison of 2017 with 2016		Comparison 2017 with the forecast	
				Abs.	%	Abs.	%
Revenue, billion rubles	27.50	25.74	19.22	6.5	34%	1.8	7%
Cost of sales, billion rubles	24.50	22.82	17.98	4.8	27%	1.7	7%
Gross profit (loss), billion rubles	3.00	2.92	1.24	1.7	136%	0.1	3%
Selling expenses, billion rubles	0	-	-	-	-	-	-
Management expenses, billion rubles	1.05	1.36	1.57	-0.2	-13%	-0.3	-23%
Profit (loss) from sales, billion rubles	1.95	1.56	-0.33	1.9	577%	0.4	25%
Return on sales, %	7.09	6.06	-1.70	7.8	456%	1.0	17%
Financial leverage ratio,%	6.31	10.97	13.55	-2.6	-19%	-4.7	-42%
Current liquidity ratio, %	1.40	1.23	1.17	0.1	5%	0.2	14%
Ratio of payables and receivables, %	1.15	1.20	1.52	-0.3	-21%	-0.0	-4%

The calculator uses the reporting (actual) and planned data involved in the calculation and assessment of key financial risk factors - untimely settlements on liabilities and lost profits in their relationship with financial results.

Based on the planned revenue growth of "Stroytransgaz" by 7%, the financial indicators are calculated and defined as the most significant in assessing risk factors. In the forecast period, profit from sales will grow by 25%, the industry average level of profitability (7%) will be achieved. At the

same time, the financial leverage indicator will decrease by 42%, but still remain quite high, i. e., the company remains at high risk of losing financial independence and financial stability. The forecast current liquidity ratio is 1.4, which indicates possible difficulties in repaying current liabilities and requires additional analysis of cash flows from operating activities. The ratio of forecast payables and receivables is 1.15, which, on the one hand, is an indicator of unbalanced and unsettled settlements with debtors and creditors, and on the other hand, is associated with the specifics of the construction industry. At the same time, a positive factor should be noted - a decrease in the imbalance of settlements by 4%, which indicates an improvement in the financial planning system at "Stroytransgaz".

6. Conclusion

The developed methodology and the results of its testing allow us to identify the most significant risk factors for a particular company, which determine the level of financial solvency of the business, the balance of its financial calculations; evaluate the impact of changes in financial indicators on the risks of the company's business continuity The developed tools can be recommended for use in the audit as analytical procedures to determine the level and risk factors for the audited companies continuity activities; in financial consulting, as the development of Due Diligence methodology to justify the choice of counterparty companies; in the system of internal audit and internal control in companies of various sectors of the economy.

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