ESTIMATION OF BANKRUPTCY RISK BASED ON AUDIT OPINIONS: CASE STUDY IN ROMANIA

Moțoc Mădălin-Mihai✉

"Alexandru Ioan Cuza" University of Iași, Romania

ABSTRACT

In a world focused on growth, capital accumulation and continuous economic development, it is important to build safety levers to ensure that investors see a return on their investments. Media outlets, brokers, financial institutions and the business environment are now referring, more than ever, to investment policies not only of companies, but also of individuals with sustainable economic capital. Platforms such as Forex, e-Toro, Capital.com, Libertex, cryptocurrency trading platforms and free access to the Stock Exchange now make it extremely easy for third-party investors, with promises of significant returns in a very short period of time. But are all these exhortations and "marketing guns" directed at individuals' finances devoid of speculative interest? The purpose of this paper is to identify a model of bankruptcy risk estimation that is based on the opinions of audit companies regarding the reasonableness of annual financial statements and their associated fraud risk. This paper presents an empirical approach to the insolvency phenomenon, based on the opinions of the auditors who classify the audited companies as having an associated fraud risk. The study was conducted at the level of companies on the main trading market of the Bucharest Stock Exchange. The results show that an audited company as having classified by auditors as an associated fraud risk is at least one step closer to bankruptcy, as opposed to companies without an assessed risk of associated fraud. The ability of audit companies to contribute to bankruptcy risk estimation models by flagging fraud risk, based on analysis of financial statements, represents a recurring problem in the specialized literature. This paper brings added value in establishing viable models of bankruptcy risk for big companies on the market.

Key words: economic fraud; audit; risk of fraud; bankruptcy risk model.

JEL codes: G33, M42

INTRODUCTION

Globalization and opening of a free market provided large incentives for Romanian companies that were established after 1989. However, it allowed the development not only of emerging markets and the "import" of successful business models from abroad, but also the "import" of the negative aspects of a free economy, thus introducing concepts such as economic fraud on the Romanian market, financial and fiscal evasion, deception, embezzlement and money laundering. The development of a bankruptcy risk detection model is now a recurring, constant area of study in Romanian university research.

Creating a profile of companies that are at risk of bankruptcy is essential for investors. It is a tool that helps create an overview of an individual company, in order to determine the return on investment and future financial developments based on the past economic situation. The paper mainly deals with establishing

Moțoc Mădălin-Mihai https://orcid.org/0000-0002-7564-0999
✉ madalin.mm995@gmail.com

the profile of a company heading towards bankruptcy starting from the economic evolution in the last three consecutive financial years of the most representative companies in the Romanian economy (listed on the Bucharest Stock Exchange).

Although the establishment of a financial profile of companies at risk of bankruptcy takes into account the distinct treatment of the main groups of financial indicators, this type of analysis is usually lengthy and requires a very large volume of data processing. The Z functions aim at synthesizing the financial information of the companies and detecting a risk of their bankruptcy based on log-linear functions for calculating the profitability of a business, by activity sectors (industry, trade and services).

The most representative Z scores were developed during the 1960s through 1980s, by well-known researchers in the field of economics such as Beaver [1966], Altman [1968], Eisenbeis [1977], Ohlson [1980], Taffler [1983], Robertson [1984] and Jones [1987]. These methods of early detection of non-productive firms had as their main target the economic entities in the industrial sector, predominant in number in the total number of entities from that period. Z-scores are based on an immediate recoverability of receivables held by creditors, receiving the principle of recoverability of the investment to the detriment of the principle of giving the debtor a second chance.

This study focuses on Romanian companies listed on the Bucharest Stock Exchange. The reason these were chosen is, on the one hand, the increase of the stock market capital registered by the Bucharest Stock Exchange (in 2019 the BET index registered an increase of 35% and the BET-TR index registered a 47% increase, the maximum of the last 10 years). In addition, there has been an increase in the number of small and medium investors on the capital market (with a cumulative capitalization of 41.5 billion euros in September 2021). There is a lack of academic research that takes into consideration the Bucharest Stock Exchange, and the risk of fraud and insolvency which may occur is the main reason for selecting Romanian companies for this study. Data was processed with the help of the official communiqués of the Bucharest Stock Exchange.

This study is based on bankruptcy theory – more precisely, the normative theory of bankruptcy law de-

veloped by researcher Mooney [2004], together with the theory of economic fraud prevention that can lead to insolvency, developed in two branches: 1) obtaining a profile of the persons who commit economic fraud, specifically looking at the work of Bierstaker [2009] and Mahlmann [2010]; and 2) the financial profile of companies that are prone to economic fraud that can lead to insolvency and thus bankruptcy, specifically focusing on theories from Coenen [2008], Singleton [2010] and ACFE (Association of Certified Fraud Examiners) [2011].

CASE STUDY ON ESTABLISHING A FINANCIAL PROFILE OF COMPANIES THAT ARE AT RISK OF BANKRUPTCY

A generally valid theory underlying efforts to detect the risk of bankruptcy is that it is possible to detect, combat and rehabilitate a business that creates the opportunity and the possibility of economic fraud, in order to clearly deceive the economic interests of third parties (natural or legal).

This study attempts to define a new model of bankruptcy risk detection – one that expands upon previous models and is adapted to the current economic context, including the social, political and legal changes that the COVID-19 pandemic has brought forth – changes that will probably represent a "new normal". The fundamentals of this paper's model are based on a series of hypotheses from researchers and practitioners such as Beaver, Altman and Conan-Holder, who are renowned for the applicability of the bankruptcy risk methods they have developed. The study also draws upon the models of the Central Bank of France and Banca Comercială Română, as external entities which finance the operation and investment activities of companies and therefore seek to detect a potential risk of bankruptcy. In addition, the models developed by researchers at Alexandru Ioan Cuza University of Iasi (especially the publications of Mironiuc, Robu, Chersan and Berheci) were also taken into consideration.

The study was carried out over a period of three consecutive financial years (2018, 2019 and 2020), in order to provide a representative model that would take into account aspects such as insolvency law, the num-

ber of entities listed on the Bucharest Stock Exchange, the complexity of the current business environment, the opening of European markets (by increasing the value of exports). The chosen study model dealt with two consecutive financial years; however, significant changes in the annual financial statements could result from unfortunate events within a company that might (erroneously) lead to a conclusion that an entity went bankrupt from one financial year to another. In addition, a broader time-span was needed in order to put the economic COVID-effects of 2020 into comparative perspective.

Thus, we consider that the analysis of the annual financial statements over a period of three consecutive financial years is representative of the proposed model. The bankruptcy risk case study deals with the main groups of economic-financial indicators, taking into account the audit opinions issued by the certified members of Romania's Authority of Public Supervision of Statutory Audit Activity (ASPAAS) on the chosen sample. The goal was to observe notable differences in the companies' annual financial statements that could lead to the assumption of a faster declaration of insolvency, for companies with/without associated risk of fraud. The basis of the study were the financial statement audit results issued for the year 2020.

Most empirical studies in this field focus on identifying a profile of the perpetrators of fraud. Researchers such as Bierstaker [2009] and Mahlmann [2010] compiled a profile of actors who commit economic fraud and Coenen [2008], Singleton [2010] and ACFE (Association of Certified Fraud Examiners) [2011] compiled a financial profile of companies that are prone to fraud risk. This was done using a series of microeconomic indicators that are defined as signal-indicators for the occurrence of economic fraud (or fraud risk).

Using the established models in foreign literature (mainly the researchers mentioned above) but also in Romanian literature [Mironiuc and Robu 2011], who compiled a profile of fraud risk), this study aims to update the previously-mentioned models and increase the period of analysis to two to three financial years, also taking into account other groups of indicators and analyzing their impact on companies at risk of associated fraud. The starting point of the study is the

sampling of companies listed on the Bucharest Stock Exchange (see below). Subsequently, by analyzing the audit reports attached to the annual financial statements, the companies were classified into those with risk of associated fraud and those without risk of associated fraud. The purpose of this study is to observe the values of the main groups of financial indicators and to analyze the differences between the two sampled categories (with and without risk of fraud) in order to determine the risk of insolvency in the following financial years.

This study aims to prove that entities with an associated risk of fraud face difficulties in managing their business, and that the risk of insolvency and then bankruptcy is higher in the case of companies with associated fraud risk.

Taking into account the type of audit results and opinions issued, the sample companies were divided into two categories: those with a risk of associated fraud, and those without such a risk. The study started with considerations based on a multiple regression analysis through which the following research hypotheses were established:

- H_0: companies classified by authorized auditors as having an associated risk of fraud are not prone to the risk of bankruptcy;
- H_1: companies classified by authorized auditors as having an associated risk of fraud are at risk of bankruptcy in the following financial years.

In addition to classifying the sample into the two associated risk categories (with and without the associated risk of fraud), the study also took into account the auditors' classification of their general audit opinion: unreserved opinion, opinion with reservations and contrary opinion.

The list of entities that drafted the audit letters included both Big-Four member companies and third-party legal entities that are accredited by the ASPAAS. They draw up audit commitments in accordance with national rules [Law no. 162/2017 regarding statutory audit]. Due to the fact that not all audit reports made express reference to the type of associated risk (risk of stock fraud, recognition of expenses and income, inventory risk, risk of information manipulation by management, etc.), the study did not include the category of risk to which the audit letters referred.

The sample companies in the study were divided into three distinct categories: industry, trade and services. Among the entities for which all the necessary information could found, 47 companies were characterized as industry, 10 belonged to the field of trade, and 7 were focused on services. The analysis and assessment of bankruptcy risk took into account the international directives on accounting and financial audits. The study is based the legislative requirements of the ISA 240 rules approved by the European Commission (ISQC1), the standards issued by the IFAC through the Council for International Standards on Auditing and Insurance (IAASB), Accounting Law 82/1991, OMFP 1802/2014, OMFP 2844/2016 and Law no. 162/2017 regarding statutory audits. The target population chosen for the study was selected from companies listed on the Bucharest Stock Exchange, which is the main capital market that is approved and regulated by law in Romania, and is under the auspices of the National Securities Commission. The Bucharest Stock Exchange includes the following sections:

1. Spot regulated market – the main section of the Bucharest Stock Exchange;
2. Alternative Trading Market (ATS – Alternative Transaction System, or CAN – New Companies and Shares, or AeRO – Alternative Exchange in Romania) – a section of the Bucharest Stock Exchange that aims to attract funds from investors by newly established companies as a part of the share capital.

The selection of companies from those listed on the Bucharest Stock Exchange was also influenced by the rigor of the listing criteria. Therefore, companies listed on the AeRO market were excluded for two reasons: 1) legislative – because the legal obligation to audit annual financial statements applies only to the spot market; 2) risk – due to the fact that a newly established company is much more likely to file for bankruptcy or commit fraud of an economic nature due to lack of experience and summary checks performed by the market.

In July 2021, the Bucharest Stock Exchange had 509 entities, out of which 215 were located on the main trading market (listed and unlisted) and 294 were listed on the AeRO market. Of those listed on the main trading market, 90 companies were tradable (of which 81 were listed and 9 unlisted), 14 were suspended and

111 were delisted. Thus, in the present research, the information provided by companies listed on the main regulatory market of B.V.B. was used. It is tradable companies that are pertinent to the study, so the selection was made taking into account the following considerations/criteria:

1. Exclusion of 9 unlisted companies from the sample. They do not meet the statutory audit conditions and have been removed from the list due to the high risk of fraud that may be committed, either due to low performance or high risk of trading such shares, at the same time, the criterion of marketability being not met (i.e. they are traded very rarely and are not of interest).
2. Removal of 9 companies in the financial-banking field, insurance, reinsurance, investment funds, operating and financial leasing companies and investment funds. Their criteria for calculating and interpreting financial indicators are different and cannot be interpreted in a uniform way.
3. Removal of 8 companies for which not all the necessary data were found for the calculation of the financial indicators used in the analysis. The entities in this case could not or did not want to provide their financial balances of 2020.

Thus, taking into account the criteria mentioned above, the sample used in this study includes 64 companies out of 90 tradable companies (9 were removed by criteria 1, 9 were removed by criteria 2; and 8 were removed by criteria 3).

The issue of fraud that leads companies to insolvency is a recurring issue among scientific researchers specializing in economic fraud. At the Alexandru Ioan Cuza University of Iasi, Robu and Mironiuc [2011] discussed the issue of insolvency fraud in a study conducted on American companies listed on the Stock Exchange (NYSE – New York Stock Exchange). This study proposes an update of the model developed by the two professors, applying the reasoning they developed to Romanian companies listed on the Stock Exchange. Choosing seven measures in this study was made taking into consideration previous studies analysed by Mironiuc and Robu [2011] that used five financial ratios (overall liquidity rate, global indebtedness rate, financial leverage, general solvency ratio and return on assets) in the determination of fraud risk, classified

as sufficient at the moment of the study. In Romania, the insolvency regulations were modified by Law no. 85/2014 [Godîncă-Herlea 2018] regarding insolvency procedures and Law no. 55/2020 regarding insolvency procedure due to the COVID-19 pandemic. Romanian legal representatives have concerns that the current regulation insolvency laws present some issues regarding recuperability of debts by trade receivables [Godâncă-Herlea 2018] and the low profitability of companies which declare insolvability [Piperea 2017]. Therefore, this study extended the financial ratios, adding trade receivables rate and net sales margin in order to determine the risk of insolvency more accurately.

In order to assess the risk of bankruptcy, it is necessary to analyze the main components of fraud risk, excluding from the statistical analysis any elements that do not constitute an essential criterion in applying the principle of continuity for a company's activity. Thus, by analyzing the Kaiser-Meyer-Olkin statistical test [1974], this study included the following categories of indicators, explaining also the importance for choosing them, followed by their formula:

1. Overall liquidity rate – the lack of liquidity in a company over a long period of time represents the first signal of insolvency. The calculation formula is: current assets/current debts.
2. Global indebtedness rate – to determine a company's ability to cover current and long-term debts and to avoid the inability to pay debts at maturity. Also a signal indicator that announces a possible inability to make future payment. The calculation formula is: total debts/total liabilities.
3. Financial leverage – shows the use of borrowed capital to make an investment or a project. In this case it helps to determine the destination of the borrowed capital; whether it is being used for future investments or for the payment of other debts (with commercial creditors, employees, to the state, etc.). This indicator also shows the efficiency with which a company is being managed. The calculation formula is: total debts/(total liabilities – total debts).
4. General solvency ratio – it mainly shows the possibility for investors and creditors to recover their debts held by a company when it declares insolvency (insolvency). The calculation formula is: total assets/total debts.

5. Trade receivables rate – also known as 'debtors turnover ratio' or the 'accounts receivable turnover ratio', it is used to determine the efficiency by which a company is managing the credit that is being extended to its trade receivables and evaluates how long it takes for the company to collect outstanding debts. The calculation formula is: net credit sales/average accounts receivable.
6. Return on assets – shows how to use assets to create added value both in the current financial year and in the previous ones, while also providing forecast information on a company's profitability based on the assets it owns. The calculation formula is: net profit/(total liabilities – total debts).
7. Net sales margin – shows whether a company that is providing goods/services applies a sufficient sales margin to cover its costs and for sustainable development based on the reporting of a profit at the end of the period, destined after its development. The calculation formula is: net income/total sales.

The importance of using this type of statistical tool is to correlate the indicators to observe the general influence they have on explaining the risk of bankruptcy. Following the analysis, the results are presented in Tables 1 and 2.

Table 1. Testing the mean and standard deviation in determining the risk of bankruptcy – the KMO test and the Bartlett test

Specification	Descriptive Statistics		
	mean	*SD*	*N*
Overall_liquidity_rate	2.6598	3.71435	64
Global_indebtedness_rate	1.0773	2.13099	64
Financial_leverage	1.3958	9.13078	64
General_solvency_ratio	5.1622	9.39431	64
Trade_receivables_rate	.1873	1.12747	64
Return_on_assets	−.0273	.14122	64
Net_sales_margin	−.1275	.40965	64

Source: Author's own processing in SPSS 20.

The Bartlett Test and the KMO Test are statistical procedures for determining the relevance of data chosen for a study; in this case, for determining the risk of bankruptcy. The KMO sample adequacy test is a statistical test that shows the proportion of variance of the

Table 2. Testing the adequacy of data in determining the risk of bankruptcy – the KMO test and the Bartlett test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.614
Bartlett's Test of Sphericity	approx. χ^2	247.775
	df	21
	sig.	.000

Source: Author's own processing in SPSS 20.

data chosen for research that may be caused by underlying factors. A test value of more than 0.5 shows that the variables chosen in the study are relevant in determining the risk of fraud, and a value of the indicator below 0.5 shows that the way to determine the sample is not correct.

The Bartlett Test tests the hypothesis that the matrix of data chosen for the study is an identity matrix (relevant), and the importance of this test derives from the fact that the variables chosen for the study could not be related and therefore are not relevant in establishing a working hypothesis.

In the case of the variables chosen for this study, the value of the KMO data adequacy test was 0.614, which was above the threshold value of 0.5. This supports the relevance of the data chosen for the study and implicitly, its relevance in detecting the risk of bankruptcy. Exceeding the threshold value supports the significance of the components in explaining the risk of bankruptcy; three have a significant impact in testing the hypothesis, according to Tables 3 and 4.

The communalities show the value of the variance from the perspective of each variable that is accounted for. Initial communalities are estimates of the variance of each variable accounted for by all components or factors. For the extraction of the main components, this is always equal to 1.0 for correlation analyses. Extraction communalities are estimates of the variance of each variable accounted for by components. The communalities in this table are all high, indicating that all extracted components represent variables well. The main components that characterize the risk of bankruptcy are extracted according to Benzecri's criterion and can be seen in Table 4.

According to Table 4. Benzecri's criterion establishes three main components in determining the risk of bankruptcy. The main criterion for determining the primary components is the value of the eigenvector, which must exceed the value of 1. As can be seen. Component 1 explains 38.47% of the variation of the

Table 3. Testing the correlation of variables in determining the risk of bankruptcy – the KMO test and the Bartlett test

Specification	Communalities	
	initial	extraction
Overall_liquidity_rate	1.000	.957
Global_indebtedness_rate	1.000	.474
Financial_leverage	1.000	.951
General_solvency_ratio	1.000	.956
Trade_receivables_rate	1.000	.692
Return_on_assets	1.000	.866
Net_sales_margin	1.000	.703

*Extraction Method: Principal Component Analysis.

Source: Author's own processing in SPSS 20.

Table 4. Testing the influence of key components in determining the risk of bankruptcy – the KMO test and the Bartlett test

	Total Variance Explained								
Component	initial eigenvalues			extraction sums of squared loadings			rotation sums of squared loadings		
	total	% of variance	cumulative %	total	% of variance	cumulative %	total	% of variance	cumulative %
1	2.693	38.469	38.469	2.693	38.469	38.469	2.533	36.179	36.179
2	1.893	27.041	65.509	1.893	27.041	65.509	2.032	29.030	65.209
3	1.012	14.457	79.966	1.012	14.457	79.966	1.033	14.758	79.966
4	0.680	9.719	89.686						
5	0.475	6.785	96.470						
6	0.199	2.845	99.315						
7	0.048	0.685	100.000						

[*]Extraction Method: Principal Component Analysis.

Source: author's own processing in SPSS 20

risk of bankruptcy. Component 2 explains 27.04% of the variation. and Component 3.14.46%. Their sum shows that 79.97% of the variation of the components chosen in the study is explained by these three components. a significant value in the study.

The graphical representation of the characteristics of the main components is also visible in Figure 1.

The Figure 1 presented suggests the influence of the main components in determining the risk of bankrupt-cy. With a downward trend. the graph shows in a more suggestive way the variation of the indicators chosen for the study in explaining the risk of bankruptcy.

The first three components exceed the threshold value of 1, which demonstrates through a linear combination the influence of the variables (especially the first three) in determining the final result. To highlight the variables that fall under each category of components with significant impact in determining the risk of
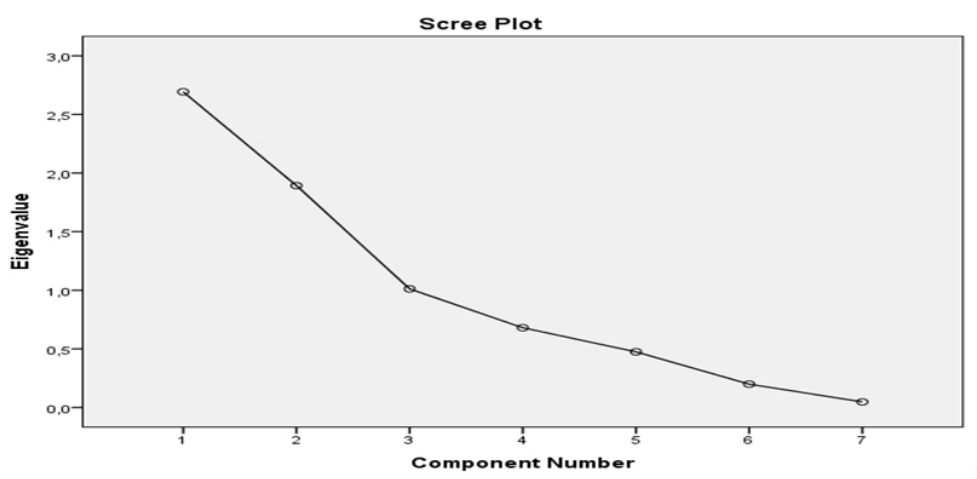

Fig. 1. Testing the influence of the main components in determining the risk of bankruptcy – the KMO test and the Bartlett test

Source: Author's own processing in SPSS 20.

bankruptcy, a structure matrix was calculated on each variable introduced in the study. The influence of the indicators in the component structures of the Bartlett test can be found in Table 5.

The significant influence of the three main components is given by the high values of the structure vectors. Thus, the higher the value of the indices, the more the indicator influences the structural components. Component 1 is characterized by the influence mainly of the rate of return on assets (0.862), the net sales margin (0.745) and the general liquidity rate (0.478). The significant influence of these indicators indicates that the risk of bankruptcy is mainly higher in the case of entities whose return on assets is lower, non-profit and illiquid. Also, the significant value (compared to the other remaining variables) of the overall solvency ratio shows a significant influence of a firm's solvency in applying the business continuity principle. The influence of this indicator also proves the inability of creditors to recover their debts when declaring the inability to make payments and implicitly, the probability of a chain effect that can lead to several insolvencies.

The general liquidity rate and the general solvency rate mainly explain Component 2. The very high values of these indicators (0.886 for the overall solvency ratio and 0.854 for the overall liquidity ratio) suggest that a lack of liquidity and an increase in total debt are the main impediments that can lead an entity to bankruptcy.

The cost of borrowed capital is one of the main reasons for financial failure, negatively influencing the carried forward result and the value of equity, which entails the loss of investment attractiveness from third parties, the impossibility of attracting new funds and the declaration of insolvency. In addition. the recoverability of trade receivables has the ability to influence the structure of the secondary component, demonstrating that the lack of an effective policy to recover outstanding debts from debtors can lead to bankruptcy.

Financial leverage is the main feature of the third component. Long-term indebtedness and a lack of equity to cover the value of borrowed capital is an impediment not only to a company's ability to continue operations, but also to the possibility of recovering the receivables held by creditors. An important indicator in granting a new line of financing, financial leverage is an essential tool for creditors and investors.

The analysis on the main economic-financial indicators was based on a pre-established model developed in 1999 by Beneish. updated in 2007 by Penman and in 2011 by Romanian researchers Mironiuc and Robu [2011]. The updated model considers the addition of new variables in the analysis, given the complexity of the current business environment, increasing consumption, telework, development of e-commerce platforms, market opening and interculturalization through globalization. The model proposed by Beneish in 1999 was for two consecutive financial years, but this study

Table 5. Testing the structure matrix of the influence of variables on the main components in determining the risk of bankruptcy – the KMO test and the Bartlett test

Component Matrix[a]

Specyfication	Component		
	1	2	3
Overall_liquidity_rate	0.478	0.854	0.001
Global_indebtedness_rate	−0.642	−0.070	−0.237
Financial_leverage	0.076	−0.152	0.960
General_solvency_ratio	0.412	0.886	0.030
Trade_receivables_rate	−0.760	0.307	0.140
Return_on_assets	0.862	−0.339	−0.085
Net_sales_margin	0.745	−0.377	−0.079

[a] 3 components extracted; *Extraction Method: Principal Component Analysis.

Source: Author's own processing in SPSS 20.

considers two financial years to be insufficient to determine a risk of bankruptcy – this is due to changes in insolvency law and to general legislative trends at the level of The European Union to give second chances to insolvent debtors. Therefore, this study is carried out over a period of three consecutive financial years (2018–2020).

CONCLUSIONS

The results of the study showed that companies on the Bucharest stock market with an associated risk of fraud have lower results on all groups of analyzed indicators, as follows:

1. Liquidity indicators: a lower capacity to cover operating expenses, lack of liquidity and facing a lack of financing from financial and commercial creditors. At the same time. the attractiveness for investors in these companies is low, followed in this case by a stock market capitalization which, during the three financial years under study, had decreasing trends for most companies in this category.

2. Financial risk indicators: a lower calculated value of the financial leverage indicator than companies without risk of fraud, with a reduced overall autonomy and a global indebtedness rate that far exceeded theoretical threshold cases. The term 'autonomy rate' also shows that entities at risk of fraud were indebted above the theoretical threshold, thus using all the financial leverage they had for financing the business.

3. Financing indicators: the net profit margin was at higher values than in the case of companies without associated risk, but this is because companies at risk did not fully recognize their expenses for the period, thus manipulating the result for the year. The financing of fixed assets was not possible for these companies, the general solvency did not present values to stimulate attractiveness for creditors, and the rate of financial independence was lower than in the case of risk-free companies. Risky entities did not have funding levers and were unable to survive in the market in the event of legislative, economic, social, political or other changes.

4. Structural indicators: although the share of assets is similar for both categories and the proportions seem similar, debt recovery policy is not easy for companies at risk of associated fraud, the financing rate of stocks is low, cash is more limited and the equity rate compared to fixed assets does not encourage investors because the recoverability of their claims in case of insolvency is very low. Also, the share of stocks is lower and presents non-performing or conserved fixed assets, aspects that refer to an inefficient management of these companies as a whole.

5. Profitability indicators: the rate of economic return, the rate of financial profitability and the net sales margin were lower throughout the analysis period of the two groups in the sample. The lower values in the case of entities with associated fraud risk confirm once again the lack of attractiveness on the market, an aspect also proven by the analysis of the stock market capitalization in the period 2018–2020.

6. Turnover indicators: this category of indicators showed an inefficient management of the assets available to companies at risk of associated fraud, a lower rate of current assets, a weak debt recovery policy that can lead to a lack of liquidity in the following periods.

By conducting this study, it was proven that entities with an associated risk of fraud face difficulties in managing their business. Thus, starting from the two hypotheses established at the beginning of the analysis, in this case the H_1 hypothesis is confirmed, by which companies at risk of fraud create the premises for a subsequent inability to pay translated into insolvency and then bankruptcy. Bankruptcy risk detection models base their calculations on the same types of economic and financial indicators.

The ability to rapidly determine whether a company is at risk of bankruptcy is a focus of researchers in the field (Altman, Conan and Holder [1979], Beaver, Taffler, Robertson, Anghel, Băileşteanu, Ivoniciu, Statev etc.), and is of increasing interest since the development multinationals. Bankruptcy risk detection models must follow a consistency adapted to the development of consumer markets, business and trading methods. Given that most established models were developed before the advent of the Internet, it is necessary to update them, respecting the changes that

have occurred in the meantime in the structure of enterprises and the consumer market, which is constantly expanding.

In terms of quantitative studies, the volume of the analyzed sample may constitute a limitation of research. The meta-analysis evaluates the empirical studies of only some scientific articles in the economic field and not in the legal field (which can treat the problem of insolvency fraud from another perspective), also only on a single research topic specific to this field (of economics and precisely insolvency fraud). Another limitation of the study is related to the limited access to databases containing specialized articles in the full-text variety and the limited access for 9 companies, for which not all the necessary data were found for the calculation of the financial indicators used in this study.

REFERENCES

Albrecht, W., Zimbelman, M. (2010). Fraud examination at the end of an entity. ACL, Birmingham.

Altman, E.I. (1968). Financial Ratios Discriminant Analysis and the Prediction of Corporate Bankruptcy. J Finance, 23, 589–609.

Apostol, C., Țaicu, M. (2009). Accepțiuni și controverse privind performanța firme, în Istrate. [In:] C. Toma (Ed.), Informarea financiar-contabilă în condiții de criză. Alexandru Ioan Cuza University of Iasi, Iași.

Beaver, W. (1966). Financial ratios as predictors of failure. J. Account. Res. (Supp.), 4, 71–102.

Berheci-Grosu, M., Robu, I-B., Istrate C. (2015). Exploratory study regarding the impact of IFRS on the audit opinion in the case of Romanian listed companies. Audit Financiar, 13, 127, 81–93.

Chersan, C-I., Robu, I-B., Carp, M., Mironiuc, M. (2012). A circular causality analysis on the determinants of the audit fees within the NYSE-Quoted Companies. IBIMA Publishing, 1–17. DOI:10.5171/2012.896676

Conan, J., Holder, M. (1979). Variables explicatives de performances et controle de gestion dans les P.M.I. Paris Dauphine University, Pari [PhD thesis].

Eisenbeis, R. (1977). Pitfalls in the application of discriminant analysis in business, finance and economics. AFA 32(3), 875–900.

Godîncă-Herlea, V. (2018). Legea nr. 85/2014. un drum către maturitate. Insolvency Magazine, 3, 20–24.

Higgins, C., Stubbs, W. (2014). Regulatory standards vs. non-regulatory guidelines: Financial stakeholders' perspectives on auditors reporting. CPA Australia.

International Standards of Auditing – Materiality in planning and performing an audit. no. 320/2009. Retrieved from https://www.ifac.org/system/files/downloads/a018-2010-iaasb-handbook-isa-320.pdf [accessed 30.08.2021].

International Standards of Auditing – The auditor's responsibility relating to fraud in an audit of financial statements. no. 240/2009. Retrieved from https://www.ifac.org/system/files/downloads/a012-2010-iaasb-handbook-isa-240.pdf [accessed 30.08.2021]

Kaiser, H.F., Rice, J. (1974). Educational and Psychological Measurement. Sage Publication, California.

Mărculescu, A.-M., Viașu, J. (2010). Percepția publicului privind detectarea și raportarea erorilor și fraudelor în procesul de audit (The public perception for detecting and reporting errors and fraud in audit process). Studia Universitatis "Vasile Goldiş" Arad. Seria ŞtiinŃe Economice Anul 20/2010 Partea a II – a. Arad, 257–261.

Mironiuc, M., Robu, I-B. (2012). Fraud audit mission: identifying a profile of the risk of fraud using the „Red Flags" technique. Financial Audit Magazine, 9, 22–29.

Neagu, N. (2010). Accession blues: modest successes and major difficulties in Romania. J Financ Crime, 17, 47–60.

Nwogugu, M. (2015). Failure of the Dodd-Frank Act. J Financ Crime, 22, 520–572.

Ohlson, J.. Garman, M. (1981). Valuation of risky assets in arbitrage-free economies with transactions costs. J Financ Econ, 9(3), 271–280.

Parkinson, M-M. (2016). Corporate governance during financial distress – an empirical analysis. Int. J. Law Manag., 58, 486–506.

Peltier-Rivest, D., Lanoue, N. (2012). Thieves from within: occupational fraud in Canada. J Financ Crime. 19, 54–64.

Pettersen, H-G. (2010). Shadow economy. tax evasion and transfer fraud – definition. measurement and data problems. Int. Econ. J., 24, 4, 421–441.

Piperea, G. (2017). Caracterele sacrificial. colectiv. concursual si necesar in procedura insolventei (The sacrificial. collective. contestual and necessary characters in the insolvency procedure). Judicial Courier, 398, 398–408.

Stănoiu, A. (2020). „Stânga-mprejur" sau cum a rămas ANAF fără colții de argint în procedura insolvenței („Left-right" or how ANAF remained without silver fangs in insolvency proceedings). Tax Magasine, 4(309), 1–9.

Taffler, R. (1983). The assessment of company solvency and performance using a statistical model. Account. Bus. Res., 13(52), 295–308.

Taffler, R. (1984). Empirical models for the monitoring of UK corporations. JBF, 8(2), 199–227.

Toma, C. (2012). Rolul auditului financiar în creșterea calității informațiilor financiare (The role of financial audit in increasing the quality of financial information). Revista Audit financiar, 10, 95, 11, 5–13.

Veli, V.. Repousis. S. (2019). An investigation of the fraud risk and fraud scheme. J. Money Laund. Control., 22, 53–61.

Wilks, J.. Zimbelman, M. (2010). Decomposition of Fraud-Risk Assessments and Auditors Sensitivity to Fraud Cues. J. Account. Res., 21(3), 719–745. DOI: 10.1506/HGXP-4DBH-59D1-3FHJ

Yusof, N., Lai, M-L. (2014). An integrative model in predicting corporate tax fraud. J Financ Crime, 21, 424–432.

SZACOWANIE RYZYKA UPADŁOŚCIOWEGO NA PODSTAWIE OPINII Z AUDYTU: STUDIUM PRZYPADKU W RUMUNII

STRESZCZENIE

W świecie skoncentrowanym na wzroście. akumulacji kapitału i ciągłym rozwoju gospodarczym ważne jest budowanie dźwigni bezpieczeństwa, aby zapewnić inwestorom zwrot z inwestycji. Media, brokerzy, instytucje finansowe i otoczenie biznesowe obecnie bardziej niż kiedykolwiek odwołują się do polityki inwestycyjnej nie tylko przedsiębiorstw, ale także osób fizycznych o zrównoważonym kapitale ekonomicznym. Platformy takie, jak Forex, e-Toro, Capital.com, Libertex, platformy handlu kryptowalutami i bezpłatny dostęp do giełdy sprawiają, że jest to niezwykle łatwe dla inwestorów zewnętrznych, dając jednocześnie obietnicę znacznych zwrotów w dość krótkim czasie. Celem artykułu jest identyfikacja modelu szacowania ryzyka upadłości opartego na opiniach firm audytorskich na temat zasadności rocznych sprawozdań finansowych i związanego z nimi ryzyka oszustwa. W artykule przedstawiono empiryczne podejście do zjawiska niewypłacalności, oparte na opiniach audytorów, którzy klasyfikują badane spółki jako obciążone ryzykiem oszustwa. Badanie zostało przeprowadzone na poziomie spółek z głównego rynku obrotu Giełdy Papierów Wartościowych w Bukareszcie. Wyniki pokazują badaną firmę sklasyfikowaną przez audytorów jako niosąca ze sobą ryzyko oszustwa, jest co najmniej o krok bliżej bankructwa w przeciwieństwie do firm bez oceny ryzyka związanego z oszustwami. W literaturze specjalistycznej powracającym problemem jest możliwość udziału firm audytorskich w modelach szacowania ryzyka upadłości poprzez oznaczanie ryzyka oszustwa na podstawie analizy sprawozdań finansowych. Artykuł wnosi wartość dodaną w tworzeniu realnych modeli ryzyka upadłości dla dużych firm na rynku.

Słowa kluczowe: oszustwa gospodarcze. rewizja. ryzyko oszustwa. model ryzyka upadłości