Fisnik Morina
ORCID https://orcid.org/0000-0003-1071-0439
University "Haxhi Zeka", Faculty of Business – Peja, Republic of Kosovo

Besfort Ahmeti
ORCID https://orcid.org/0000-0002-5123-5331
University "Haxhi Zeka", Faculty of Business – Peja, Republic of Kosovo

Leonita Gashi
University "Haxhi Zeka", Faculty of Business – Peja, Republic of Kosovo

DETERMINANTS OF FINANCIAL FAILURE RISK: AN ECONOMETRIC STUDY USING THE Z-ALTMAN AND SPRINGATE MODELS

Abstract: Objective: The main objective of this study is to identify the determinants of financial failure in production and trading enterprises in Kosovo. Financial failures represent the loss of a business, which can cause significant losses for the business owner, employees, and all those who benefited from the business. Therefore, identifying the determinants of financial failure in a timely manner will help prevent such failures. The secondary objective of this study is to produce adequate results and information that will contribute to the existing literature on financial failures and creditor risk in enterprises in Kosovo.

Research Methodology: To achieve this study's objectives, we will review a wide range of literature from recent years and the scientific works of different authors. In addition, we will use secondary data to produce results. These data are published in the annual financial reports of the Ministry of Finance and the General Auditor's Office in Kosovo. The sample for this scientific work includes 50 enterprises in the production and trading sector, and the study covers a three-year period (2020-2022). The risk of bankruptcy of these enterprises is analyzed through the Z-Altman model and the Springate model, which will show the level of failures in these enterprises.

Research findings: From the results generated by this study, we can conclude that the return on assets and return on equity have a positive effect on reducing the risk of financial failure. Additionally, variables such as capital, firm size, liquidity, and solvency have a positive correlation and impact on exposure to the risk of financial failure. On the other hand, variables such as long-term liabilities and short-term liabilities increase the risk of financial failures in trading and production enterprises in Kosovo.

Practical implications: This study provides detailed empirical evidence on the determinants of financial failure risk in production and trading enterprises in Kosovo. Despite the limitations of this study, it can serve as a good source of information for other researchers who will analyze the risk of financial failure of enterprises in different sectors of the economy.

Originality: The paper contains original and real econometric data and results that accurately and consistently demonstrate the effect of various financial factors on the risk of financial failure in production and trading enterprises in Kosovo.

Keywords: Kosovo, Z Altman, Springate, financial failure, production, trade

DETERMINANTY RYZYKA FINANSOWEGO: BADANIE EKONOMETRYCZNE Z WYKORZYSTANIEM MODELI Z-ALTMANA I SPRINGATE'A

Streszczenie (abstrakt): Cel: Głównym celem niniejszego badania jest identyfikacja czynników warunkujących niepowodzenia finansowe przedsiębiorstw produkcyjnych i handlowych w Kosowie. Niepowodzenia finansowe oznaczają utratę firmy, która może spowodować znaczne straty dla właściciela firmy, pracowników i wszystkich osób, które skorzystały z działalności. Dlatego też wczesne zidentyfikowanie czynników warunkujących niepowodzenie finansowe pomoże zapobiec takim niepowodzeniom. Drugorzędnym celem tego badania jest uzyskanie odpowiednich wyników i informacji, które wniosą wkład do istniejącej literatury na temat niepowodzeń finansowych i ryzyka kredytowego w przedsiębiorstwach w Kosowie.

Metodologia badań: Aby osiągnąć cele niniejszego badania, dokonamy przeglądu szerokiej literatury z ostatnich lat oraz prac naukowych różnych autorów. Ponadto do uzyskania wyników wykorzystamy dane wtórne. Dane te publikowane są w rocznych sprawozdaniach finansowych Ministerstwa Finansów i Urzędu Audytora Generalnego w Kosowie. Próba do niniejszej pracy naukowej obejmuje 50 przedsiębiorstw sektora produkcyjno-handlowego, a badanie obejmuje okres trzech lat (2020-2022). Ryzyko upadłości tych przedsiębiorstw analizowane jest za pomocą modelu Z-Altmana i modelu Springate'a, które pokażą poziom niepowodzeń w tych przedsiębiorstwach.

Wyniki badań: Z wyników niniejszego badania wynika, że zwrot z aktywów oraz zwrot z kapitału własnego pozytywnie wpływają na zmniejszenie ryzyka niepowodzenia finansowego. Dodatkowo zmienne takie jak kapitał, wielkość firmy, płynność i wypłacalność mają dodatnią korelację i wpływ na ekspozycję na ryzyko niepowodzenia finansowego. Z drugiej strony zmienne takie jak zobowiązania długoterminowe i zobowiązania krótkoterminowe zwiększają ryzyko niepowodzeń finansowych w przedsiębiorstwach handlowych i produkcyjnych w Kosowie.

Implikacje praktyczne: Niniejsze badanie dostarcza szczegółowych dowodów empirycznych na temat czynników warunkujących ryzyko niepowodzenia finansowego w przedsiębiorstwach produkcyjnych i handlowych w Kosowie. Pomimo ograniczeń niniejszego badania, może ono stanowić dobre źródło informacji dla innych badaczy, którzy będą analizować ryzyko niepowodzenia finansowego przedsiębiorstw w różnych sektorach gospodarki.

Oryginalność: Artykuł zawiera oryginalne i rzeczywiste dane oraz wyniki ekonometryczne, które trafnie i spójnie obrazują wpływ różnych czynników finansowych na ryzyko niepowodzenia finansowego przedsiębiorstw produkcyjnych i handlowych w Kosowie.

Słowa kluczowe: Kosowo, Z Altman, Springate, niepowodzenie finansowe, produkcja, handel

Introduction

The concept of financial failure or financial losses is a well-known concept; most people may face or have faced this kind of failure. Financial failures do not only affect businesses but can also affect the country or the location where the businesses operate. Financial failures may arise from a variety of reasons, as highlighted by Weir (2018), who stated that failures were caused by factors such as excessive debt, lack of funds, external forces, weak governance, poor skills, failure to pay taxes, and more, all of which can be linked to the

decisions that people have or have not made. To keep a business away from financial failures, one must take care and carefully manage the entire business, especially manage risk. This has been stated by Bragg (2021) in his book, who emphasized that a well-managed business must factor in risk in its daily operations to avoid unexpected losses. Enterprise risk management describes the concept of risk management, how to identify risks, and how to prioritise responses to these risks.

Financial failures are predictable, and two of the most commonly used models for predicting financial failure are Z-Altman and Springate. The Altman Z Score is used to predict the probability that a business will fail within the next two years. The equation depends on the data found in the income statement and the balance sheet of a business. Thus, it attempts to take readily available data. Given the simplicity with which necessary data can be found, the Z score result is a valid measure for a person approaching the budget reports of an organization. The Springate model is a development of the Altman model in 1968. The Springate model uses 19 financial reports, and after retesting, Springate finally selected four reports used in determining the criteria for companies that included the category of healthy companies or potentially bankrupt companies. Springate is a model that can be used to predict the potential (indication) of bankruptcy.

Literature Review and Meta-Analysis

Financial risk arises through numerous financial transactions, including sales and purchases, investments and loans, and other business activities. It can result from legal transactions, new projects, mergers and acquisitions, debt financing, high costs, or through management activities, interested parties, competitors, foreign governments, or atmospheric conditions. When financial prices change dramatically, it can increase costs, reduce income, or otherwise have a negative impact on an organisation's profit. Financial fluctuations can make planning and budgeting, pricing of goods and services, and capital allocation more difficult (Horcher).

Corporate failure often occurs when a firm experiences serious loss or becomes unable to meet obligations that are disproportionate to its assets. Corporate failure can result from one or a combination of internal and external factors, such as managerial errors due to insufficient or inappropriate experience in the industry, risk-seeking behaviour, lack of commitment and motivation to lead the company effectively, refusal or failure to adapt managerial and operational structures of the firm to new realities, ineffective or inappropriate corporate policies, economic climate, changes in legislation, or industry decline (Ouenniche, 2017).

Predicting or projecting future financial performance is a key element in many business and financial decisions. Projections used in valuation, capital project appraisal, and financing alternatives appraisal will be important inputs in the decision-making process (Alexander, 2007). Predicting the financial distress situation of companies is critical for rating agencies, managers, investors, bankers, and also for the shareholders of the company itself and even more so for the economy of countries in general (Alaka, 2018).

Table 1 presents a meta-analysis that includes empirical findings from various studies by different authors who have analysed the determinants of financial failure risk of companies in different sectors of the economy.

Table 1. *Summary of the existing literature related to the determinants of the risk of financial failure*

Authors	Year	Variables	Methods	Findings
(Zizi, 2020)	2016-2019	Liquidity, Capital, Return on Investment (ROI), Management Reports, Profitability Reports.	Descriptive statistics, Correlation, Logistic Regression, Linear Regression.	The research results conclude that creditors should properly assess the financial condition of borrowing firms. As for investors, decision-makers, and forecasters, they should avoid investing in companies with high default risk. Likewise, managers should act proactively and take corrective measures to avoid financial failure.
(Ikpesu, 2019)	2010-2017	Financial distress, Firm size, Liquidity, Profitability, Leverage, Revenue growth, Stock price.	Panel stationarity test, descriptive statistics, correlation, regression analysis.	The econometric findings of the study showed that leverage, liquidity, profitability, firm size, revenue growth and share price are the specific determinants of financial failure of firms in the manufacturing sector in the country. To ensure the smooth operation and continued survival of firms, corporate managers must design policies that will determine the appropriate level of liquidity, leverage, profitability, and revenue growth..

(Hasanah Azhar, 2021)	2013-2017	Liquidity, Profitability Ratio, Leverage Ratio, Solvency Ratio, Efficiency Ratio.	Descriptive statistics, regression tests.	The results of the study show that liquidity, profitability, leverage, solvency and efficiency ratios are significantly negatively related to corporate failure and bankruptcy. The leverage ratio is also determined to be the strongest indicator of insolvency, followed by profitability, liquidity, solvency and efficiency ratios.
(Ahmed, 2021)	2006-2017	Financial performance, Credit risk, Interest rate, Liquidity risk, Bank size, Leverage.	Dynamic models, GMM model.	The results of the study show that financial risk management significantly reduces the financial performance of commercial banks in Pakistan. The study suggested that managers should adopt risk management and hedging strategies to manage financial risks of commercial banks in Pakistan. They need to carry extra cash while using trade credit.
(Susanti, 2020)	2014-2018	Return on assets, Leverage, Liquidity.	Panel regression analysis, Multiple linear regression.	The findings of the research show that profitability, leverage, and liquidity variables have an effect on financial difficulties.
(Lestari, 2021)	2010-2019	Return on assets, Return on equity, Debt ratio, Debt to equity ratio, Interest.	Purposive sampling techniques, Panel regression analysis.	The results of the research show that the debt ratio has a positive effect on the return on assets and return on equity. The debt-to-equity ratio has a positive effect on return on assets, but it has a negative and significant effect on return on equity. Interest coverage ratio has no effect on return on assets and return on equity, and cash coverage ratio has no effect on return on assets and return on equity.

(Ismajli, 2012)	2011-2021	Work experience, Level of knowledge.	ChiSquare test, and Cramer's V.	The findings of the research show that the unfavorable business environment, the lack of adequate economic policies and the neglect of the compilation of the business plan endanger the increase of the possibility of success in business. Likewise, lack of cash flow, lack of commercial analysis, high interest rates risk the financial failure of the business.
(Günay VAN, 2021)	2017 - 2020	Operating profit margin, asset turnover, acid test ratio, net profit margin, financial leverage.	Altman-Z Score Model, Generalized Logit Model.	According to the results of the research analysis, an increase in operating profit margin, asset turnover, net profit margin and acid test ratios increases the probability that the company is in a safe zone. Meanwhile, increasing the financial leverage ratio reduces this probability.
(Nyamwanza, 2020)	2015-2017	Debt ratio, Return on assets.	Modeli i regresionit linear.	The research findings showed that debt financing has significantly and statistically negatively affected the company's return on assets. The study recommends that companies conduct a detailed cost-benefit analysis as well as debt financing analysis to ensure optimal benefits especially for small and private limited companies in an unstable economy.
(Boyacioglu, 2009)	1997-2004	Capital, asset quality, management quality, earnings, liquidity and sensitivity to market risk.	Multivariate discriminant analysis, group mean analysis and logistic regression analysis.	The results of the study show that the multi-layer perceptron and learning vector quantization can be considered the most successful models in predicting the financial failure of banks.

Source: Data processed by authors (2023)

The above meta-analysis table contains a summary of several works by different authors related to the topic of the determinants of the risk of financial failures. From the analysis of their empirical results, a conclusion is reached that the debt ratio has a positive effect on the return on assets and return on capital. Also, the research confirms that the interest rate and the exchange rate are two of the important determinants of business failure. Likewise, the research finds that managers should act effectively in cash management and take corrective measures to avoid the occurrence of financial failure.

Research methodology and econometric model specification

This study gives a a theoretical and practical look at the factors determining the risk of financial failure for some of the enterprises of the real sector of the Kosovo economy. The purpose of this study is to learn more about the determinants of the risk of financial failures for manufacturing and commercial enterprises in Kosovo. To achieve the objectives of this study, we have applied these two dependent variables and six independent variables. The risk of financial failure is taken as the dependent variable, which will be measured through two Z-Altman and Springate models, while the independent variables are ROA, ROE, liquidity, solvency, firm size and capital.

Many authors such as Amoah (2015), Bunyaminu (2019), Dias (2017), Jaafar (2018), carried out studies that included similar concepts of topics such as the importance of financial risk determinants, but there were also many studies by other authors who have analysed the determinants of the risk of financial failure from which they gave even more support to the findings of the research.

To conduct this research, we have relied on extensive literature and the scientific works of various authors. For the extraction of results, we utilized secondary data, which were published in the annual financial reports of the Ministry of Finance and the Office of the Auditor General. In this scientific research, 40 enterprises of the production and trade sector are included as a sample, and the time period included in this study will be three years (2019-2021). The risk of financial failure of manufacturing and commercial enterprises in Kosovo will be measured through two models, namely: the Z-Altman model and the Springate model, which will show the level of failure of these enterprises.

The research questions of this study are:

1. What impact do liquidity and solvency have on the risk of financial failure?
2. How have financial performance indicators affected the risk of financial failure?
3. What is the effect of capital and firm size on the risk of financial failure?

The main hypotheses of this study are:

H1*: Return on assets has a positive effect on reducing the risk of financial failure.*

H2*: Return on capital has a positive effect on reducing the risk of financial failure.*

H3*: There is a positive correlation and impact between liquidity and the risk of financial failure.*

***H4**: There is a positive correlation and impact between solvency and the risk of financial failure.*

***H5**: There is a statistically significant relationship between capital and the risk of financial failure.*

***H6**: There is a statistically significant relationship between firm size and the risk of financial failure.*

Table 2. Description of the variables included in the econometric model

Variables	Acronyms	Measurement	Evidence	Data source
Z Altman	ZA	X1 = Working capital / Total assets, X2 = Retained earnings / total assets, X3 = Net profit before interest and taxes (NPBIT) / Total assets, X4 = Market value / Total liabilities, X5 = Sales / Total Assets.	(Archer, 2017), (Ari, 2012), (Altman, 2006), (Bayar, 2014)	Annual Reports of commercial and manufacturing enterprises of Kosovo (2019 – 2021)
Springate	SG	X1 = Working capital / Total assets, X2 = Net earnings before interest and taxes (EBIT) / Total assets, X3 = Net Profit Before Taxes (NPAT) / Current Liabilities, X4 = Sales / Total Assets.	(Horcher), (Kapoor, 2010), (Rama, 2020), (Hossein, 2012), (Peter, 2011).	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Return on Assets	ROA	Net income/total assets	(Nirajini, 2018) (Ani, 2013) (Jewell, 2012) (Bucevska, 2015) (Ghulam Hussain Khan Zaigham, 2019)	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Return on Capital	ROE	Net income/share capital	(Sumarau, 2019) (Alexiou, 2019) (Gui-Diby, 2014) (Klammer, 2017)	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Liquidity	LIQ	Current assets - Inventory / Current liabilities	(Crom, 2011) (Eleonora, 2019) (Ghafeer, 2015)	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)

Solvency	SOL.	Net income + amortization/ all liabilities	(Rama, 2020) **(R.Kajananthan, 2014)**	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Capital	CA	Overview of the financial position for commercial and manufacturing enterprises in Kosovo	(Radhika Butalia, 2020)	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Firm size	FS	Log (Total assets) from the statement of financial position for commercial and manufacturing enterprises in Kosovo	(Syed Danial Hashmi, 2020) **(Karlsson, 2021)**	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Long-term liabilities	LTL	Overview of the financial position for commercial and manufacturing enterprises in Kosovo	(Hajisaaid, 2020)	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)
Short-term liabilities	SHTL	Overview of the financial position for commercial and manufacturing enterprises in Kosovo	(Bonga, 2019) **(Levišauskait, 2010)**	Annual Reports of commercial and manufacturing enterprises of Kosovo (2020 – 2022)

Source: Data calculation by the authors (2023)

The research is reflected with two econometric models which are linear models specified as follows:

$$Z\ Altman_{it} = \beta_0 + \beta_1\ (ROA)_{it} + \beta_2\ (ROE)_{it} + \beta_3\ (Liquidity)_{it} + \beta_4\ (Solvency)_{it} + \beta_5\ (Capital)_{it} + \beta_6\ (Firm\ size)_{it} + \beta_7\ (Long\text{-}term\ liabilities)_{it} + \beta_8\ (Short\text{-}term\ liabilities)_{it} + \gamma_{it}$$

$$Springate_{it} = \beta_0 + \beta_1 (ROA)_{it} + \beta_2 (ROE)_{it} + \beta_3 (Liquidity)_{it} + \beta_4 (Solvency)_{it} + \beta_5 (Capital)_{it} + \beta_6 (Firm\ size)_{it} + \beta_7 (Long\text{-}term\ liabilities)_{it} + \beta_8 (Short\text{-}term\ liabilities)_{it} + \gamma_{it}$$

Ku:

ROA – *Return on assets*

ROE – *Return on capital*

LIQ – *Liquidity*

SOL – *Solvency*

CA – *Capital*

FS – *Firm size*

LTL – *Long-term liabilities*

SHTL – *Short-term liabilities*

γ – *stochastic variables (other factors not considered in the model)*

i – *code and t – time period.*

The term return on assets (ROA) refers to a financial ratio that shows how profitable a company is relative to its total assets. An investment is an asset acquired for the purpose of generating income or appreciation. The longer the maturity, the greater the risk and the greater the investment's returns. Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE is considered the return on net assets.

Solvency is the ability of a company to meet its long-term debts and financial obligations. Solvency can be an important measure of financial condition, as it is a way of demonstrating a company's ability to manage its operations in the foreseeable future. The quickest way to assess a company's solvency is by checking its shareholders' equity on the balance sheet, which is the sum of a company's assets minus its liabilities. Liquidity refers to the efficiency or ease with which an asset or value can be converted into cash without affecting its market price. The most liquid asset of all is money itself. A current liability is a financial obligation that must be paid within one year. Long-term liabilities are financial obligations of a company that must be paid more than one year into the future.

Econometric analysis and study findings

In this part of this study, the empirical results are presented, which were analysed through econometric panel models ranging from linear regression, random effect, fixed effect, Hausman Taylor regression, GEE model and Nelson E - GARCH analysis results.

Table 3. Empirical results for the first econometric model

Variables	Linear Regression	Random Effects – GLS Regression	Fixed – Effects Regression	Hausman Taylor Regression	GEE Model
Z Altman	-	-	-	-	-
ROA	.0383049*** (0.001)	.0415106*** (0.000)	.0432494*** (0.002)	.043714*** (0.000)	.416603*** (0.000)
ROE	.0435511** (0.007)	.0048382 (0.183)	.0051403 (0.205)	.0052393 (0.171)	.004863 (0.163)
Liquidity	.0566798** (0.005)	.0622451*** (0.001)	.0699565*** (0.001)	.0649504*** (0.000)	.062573*** (0.000)
Solvency	.2948972** (0.012)	.1822793 (0.107)	.0353473 (0.787)	.1544795 (0.163)	.1754335 (0.106)
Capital	0.479584 (0.004)	0.896774 (0.144)	0.240254 (0.234)	0.119687 (0.077)	0.936541 (0.121)
Firm size	0.475874 (0.013)	0.619854 (0.029)	0.1078574 (0.006)	0.7635854 (0.008)	0.6365874 (0.020)
Long Term Liabilities	- 0.387468 (0.002)	- 0.4078547 (0.158)	- 0.4698574 (0.181)	- 0.458968 (0.104)	- 0.4165874 (0.133)
Short Term Liabilities	0.3874751 (0.000)	0.6284711 (0.146)	0.8712411 (0.202)	0.7554141 (0.091)	0.6445141 (0.124)
Const.	3.232429*** (0.000)	2.307984*** (0.000)	2.40701*** (0.000)	2.808233*** (0.000)	2.314041*** (0.000)
R Square	0.7476	0.7146	0.7589	0.7654	0.7456
Adj. R^2	0.7077	0.6994	0.7264	0.7412	0.7365

Source: Authors' data processing in STATA (2023)

Clarification: *p-values shown in brackets: *** indicates statistical significance at the 1% level; ** indicates significance statistical significance at the 5% level, and * indicates statistical significance at the 10% level.*

According to the results of the regression tests, all the variables included in this model econometrically significant at the 1%, 5% and 10 levels, as well as for interpretation purposes to be based on the Linear Regression model. According to the data presented in the table above, we can notice that a part of the variables are statistically significant at the 95% and 90% confidence level. The coefficient of parameter b 0 = 41.51066 is significant

and this coefficient is taken into account if the factors of others are constant, then the value of Z Altman will be of 41.51 units.

If ROA increases by 1 unit keeping other factors constant, then Mr. Altman will grow up to 3.83 units. This statement is correct since the significance value (P-value = 0.000 < 0.05)is in the range of statistical significance. From this, we can conclude that the return on assets has positively influenced the reduction of the risk of financial failure and this shows that companies have no risk of financial failure, therefore from this, we note that the basic hypothesis is rejected, and the first alternative hypothesis is accepted.

ROE is another independent and main variable. If it increases by 1 unit while holding constant other factors, then Z-Altman will increase by 0.043 units. This statement is correct since the value of significance (P-value = 0.007 < 0.05) is below the interval of statistical significance. From this result, we can conclude that with the increase in return on capital, companies are financially good, have sufficient available capital and with the increase of the capital this affects in reducing financial failures for companies. Therefore, this basic hypothesis is rejected and the second alternative hypothesis is accepted.

Another independent variable is liquidity. If liquidity increases by 1 unit by holding other factors constant, then Z-Altman will increase by 0.056 units. This statement is correct since the significance value (P-value = 0.005 < 0.05) is in the range of statistical significance. From here we can show that there is a positive correlation and impact between liquidity and the risk of financial failure, therefore the basic hypothesis is rejected while the third alternative hypothesis is accepted.

Likewise, if solvency as an independent variable increases by 1 unit, keeping other factors constant, then Z-Altman will increase by 0.294 units. This statement is correct since the value of significance (P-value = 0.012 < 0.05) is in the range of statistical significance. From here you can to show that there is a positive correlation and impact between solvency and risk financial failure, therefore the basic hypothesis is rejected, while the fourth alternative hypothesis is accepted.

Another independent variable is capital and if it increases by 1 unit holding constant other factors, then Z-Altman will increase by 0.479 units. This statement is correct since the value of significance (P-value = 0.004 < 0.05) is below the interval of statistical significance. It can be said that there is a statistically significant relationship between capital and the risk of financial failure f. This statement is correct because the significance value was below the reliability level, therefore, the basic hypothesis is rejected, while the fifth alternative hypothesis is accepted.

Moreover, if firm size increases by one unit holding other factors constant, then Z-Altman will increase by 0.475 units. This statement is correct since the significance value (P-value = 0.013 < 0.05) is below the statistical significance range. As a result of this there is a statistically significant relationship between firm size and the risk of financial failure because the size of the firm can affect the aspect of facing the firm with any risk, be it internal risk or external risk.

Another independent variable is long-term liabilities. If they increase by 1 unit by holding all other factors constant, then Altman's Z will decrease by 0.387 units. This statement is correct since the significance level is below the interval of statistical significance since that (P-value = 0.002 < 0.05). From here we can conclude that with the increase in long-term liabilities, the risk of financial failure will also increase.

If short-term liabilities increase by 1 unit while keeping other factors constant, then Z-Altman values will decrease by 0.387 units. The statement is correct because the level of significance is below the level of statistical significance (P-value = 0.000 < 0.05). From this result, we can conclude that even though long-term liabilities have a maturity longer than one year to cover expenses, this gives the company enough time to ensure an increase in the return on assets. Therefore, in a certain situation, long-term liabilities can also have negative effects that companies fail to secure protection against the risk of financial failure.

Table 4. Empirical results for the second econometric model

Variables	Linear Regression	Random Effects – GLS Regression	Fixed – Effects Regression	Hausman Taylor Regression	GEE Model
Springate	-	-	-	-	-
ROA	.288098** (0.006)	.0284947** (0.006)	.0275838** (0.029)	.0279088** (0.007)	.0284956** (0.004)
ROE	.5407219 (0.001)	.0474491 (0.056)	.0045928 (0.027)	.0037481 (0.008)	.0047454 (0.040)
Liquidity	.0604397*** (0.001)	.0771794*** (0.000)	.09372*** (0.000)	.0806197*** (0.000)	.0771574*** (0.000)
Solvency	.4580112*** (0.000)	.2974612** (0.004)	.1093563 (0.373)	.2786914** (0.007)	.297693** (0.003)
Capital	0.2885467 (0.001)	0.3102541 (0.001)	0.5623541 (0.005)	0.2358474 (0.093)	0.3102547 (0.006)
Firm size	0.728985** (0.004)	0.6895474** (0.009)	0.5956857 (0.100)	0.7098547 (0.007)	0.6895474** (0.006)
Long Term Liabilities	- 0.665421 (0.011)	-0.127857 (0.032)	-0.670854 (0.037)	-0.149857 (0.009)	-0.1278547 (0.019)
Short Term Liabilities	- 0.112454*** (0.003)	- 0.1002145** (0.013)	- 0.498745 (0.433)	- 0.989658** (0.016)	- 0.100254** (0.009)
Const.	1.917857*** (0.000)	1.925676*** (0.000)	2.081337*** (0.000)	2.282447*** (0.000)	1.925629*** (0.000)

R Square	0.7489	0.6019	0.5896	0.6857	0.7054
Adj. R^2	0.7164	0.5393	0.5786	0.6785	0.6895

Source: Authors' data processing in STATA (2023)

Clarification: *p-values shown in brackets: *** indicates statistical significance at the 1% level; ** indicates significance statistical significance at the 5% level, and * indicates statistical significance at the 10% level.*

According to these results, all the variables included in this econometric model are significant at the 1%, 5% and 10% level, and for the purposes of interpretation, we will be based on the Linear Regression model. According to the data presented in the table above, we can observe that some of the variables are statistically significant at the 95% and 90% confidence level. The coefficient of the parameter b0= 1.91 units is significant and this coefficient is taken into account that if other factors are constant, then the value of Springate will be 1.91 units.

If ROA increases by 1 unit holding other factors constant, then the value of Springate will increase by 0.28 units. This statement is correct since the significance value (P-value = 0.006 < 0.05) is in the range of statistical significance. From this we can conclude that the return on assets has had a positive effect on reducing the risk of financial failure, since the higher values of Springate show that the manufacturing and commercial companies in Kosovo during the next two years do not have a high risk of financial failure. Therefore, from this we observe that the basic hypothesis is rejected and the first alternative hypothesis is accepted.

If ROE increases by 1 unit holding other factors constant, then the value of Springate will increase by 0.54 units. This statement is correct since the significance value (P-value = 0.001 < 0.05) is below the interval of statistical significance. From this result we can conclude that with the increase in return on capital, the companies are in good financial condition, have sufficient capital available and with the increase of capital, this affects the reduction of the risk of financial failure for the manufacturing and commercial companies in Kosovo. Therefore, from this basic hypothesis is rejected and the second alternative hypothesis is accepted.

Another independent variable is liquidity, so if liquidity increases by 1 unit while keeping other factors constant, then the value of Springate will increase by 0.06 units. This statement is correct since the significance value (P-value = 0.001 < 0.05) is in the range of statistical significance. From this we can conclude that there is a positive correlation and impact between liquidity and the risk of financial failure, the basic hypothesis is rejected while the third alternative hypothesis is accepted.

Likewise, if solvency as an independent variable increases by 1 unit, keeping other factors constant, then the value of Springate will increase by 0.458 units. This statement is correct since the significance value (P-value = 0.000 < 0.05) is in the range of statistical significance. Since solvency is the ability of a company to meet its long-term debts and financial obligations, then an increase in solvency also increases the value of the Springate

coefficient, which means that the higher values of this model indicate that commercial and manufacturing enterprises in Kosovo in the next period they have no risk of financial failure. Therefore, the basic hypothesis is rejected and the fourth alternative hypothesis is accepted.

If capital increases by 1 unit holding other factors constant, then the value of Springate will increase by 0.28 units. This statement is correct since the significance value (P-value = 0.001 < 0.05) is below the interval of statistical significance. From this we can conclude that commercial and manufacturing enterprises in Kosovo with higher capital are in good financial condition and that the risk of financial failures for the following periods is lower. Consequently, from this result, the basic hypothesis is rejected and the fifth alternative hypothesis is accepted.

Moreover, if firm size increases by 1 unit holding other factors constant, then the value of Springate will increase by 0.72 units. This statement is correct since the significance value (P-value = 0.004 < 0.05) is in the range of statistical significance. As a result, we can emphasize that there is an important statistical relationship between the size of the firm and the risk of financial failure, because the size of the firm can affect the aspect of the firm's coping with any risk, whether it is an internal risk or an external risk.

If long-term liabilities increased by 1 unit holding other factors constant, then the value of Springate will decrease by – 0.66 units. Statement i is correct because the level of significance is (P-value = 0.011 < 0.05). If current liabilities increase by 1 unit holding all other factors constant, then the value of Springate will decrease by -0.11 units. This statement is in the range of statistical significance since (P-value = 0.003 < 0.05). Therefore, we can conclude that with the increase in short-term liabilities, the risk of financial failure will also increase.

Econometric Results of Nelson'S E – Garch Model

In this part of the econometric analysis, the empirical results of Nelson's E-Garch model are presented. Through this econometric model, it will be analyzed how the various determining factors have influenced the volatility of financial failure in manufacturing and commercial enterprises in Kosovo. The measurement of the risk of financial failure in this analysis is also carried out through two models such as: Z-Altman and Springate. Table 5 presents the econometric results for the question of how return on capital has influenced the volatility of financial failure of manufacturing and commercial enterprises in Kosovo. According to the findings of the study, we can conclude that the return on capital has a positive effect on the increase of the Springate coefficient and the statement is correct since the level of significance is at the level of statistical significance (P-Value=0.002 < 0.05). The leverage effect is present in the independent variable return on equity (ROE) in the dynamic time lag L1 and L2.

Table 5. Econometric results of Nelson's E – Garch model between Springate and ROE

Springate	Coef.	Std. Error	Z	P > |z|	95% Conf. Interval	95% Conf. Interval
ROE	.0020691	.0026337	0.79	0.002	-.0030928	.0072311
_cons.	1.936323	.0944847	20.49	0.000	1.751137	2.12151
ARCH L1.	1.409376	.2598464	5.42	0.000	.9000859	1.918665
EARCH L1.	-.1516683	.1897009	-0.80	0.424	-.5234752	.2201385
E-GARCH (L1)	- .2472826	.2184846	1.13	0.008	-.1809394	.6755045
E-GARCH (L2)	- .0914449	.1672397	0.55	0.000	-.2363389	.4192287
_cons.	-.0333758	.1873359	-0.18	0.859	-.4005473	.3337958

Source: Data processing by the authors in the STATA program (2023)

In the constant (L1) and (L2) we have a negative and significant correlation since (P-Value = 0.008 < 0.05). So, when the return on capital in 2021 increases by 1 unit, then the volatility of the risk of financial failure in 2022 is reduced by - 0.24 units. The statement is correct since the level of significance is at the level of statistical significance (0.008 < 0.05). This economic phenomenon shows that the manufacturing and commercial enterprises in Kosovo follow an efficient capital investment management strategy, since with the increase in return on capital, the enterprises in Kosovo provide more capital and reduce the volatility of financial failure. Therefore, we can consequently emphasise that a reduction in volatility will also affect the reduction of the risk of financial failure for these manufacturing and commercial enterprises in Kosovo.

Table 6. Econometric results of Nelson's E – Garch model between Springate and ROA

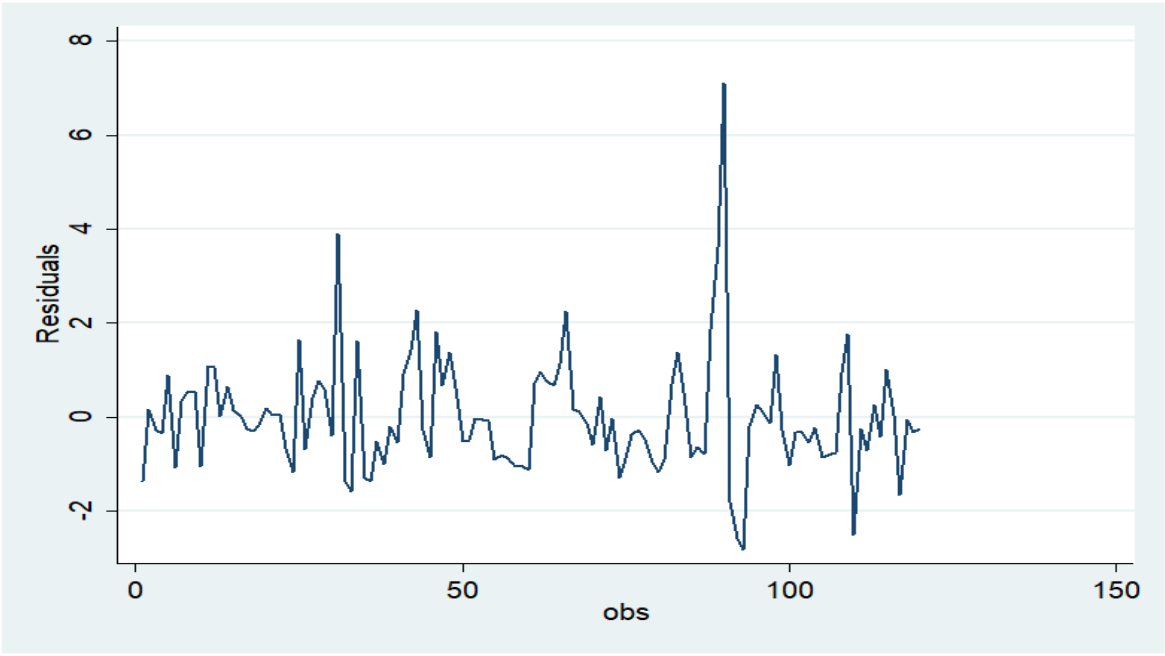
Springate	Coef.	Std. Error	Z	P > |z|	95% Conf. Interval	95% Conf. Interval
ROA	.0246327	.0055585	4.43	0.000	.0137382	.0355272
_cons.	1.958903	.1077738	18.18	0.000	1.74767	2.170136
ARCH L1.	.0699703	.0280364	2.50	0.013	.0150201	.1249206
EARCH L1.	-.0926878	.02282	-4.06	0.000	-.1374141	-.0479614
E-GARCH (L1)	- 1.850758	.0111929	165.35	0.000	1.82882	1.872696

E-GARCH (L2)	-1.010522	.0159456	-63.37	0.000	-1.041774	-.9792689
_cons.	-.0176102	.0291581	-0.60	0.546	-.074759	.0395387

Source: Data processing by the authors in the STATA program (2023)

The leverage effect exists in constant (L1) and (L2). In the constant (L1) we have a negative and significant correlation (P-Value = 0.000 < 0.05). From this we can say that when the return on assets in 2021 increases by 1 unit, then the volatility of financial failure will decrease in 2022 by -1.85 units. So, on the basis of this econometric result, it can be concluded that the manufacturing and commercial enterprises in Kosovo have effectively managed the investments in assets and this has influenced that these enterprises for the period of one year have a reduction in the volatility of financial failure. Such an effect also results in the constant (L2). This constant has a positive and significant correlation since the significance value is below the level of statistical significance. Consequently, when the return on assets with a dynamic time lag (L2) increases by 1 unit, then the value of the volatility of financial failure will decrease. The statement is correct since the significance value is (P-Value= 0.000 < 0.05). From this we can conclude that the manufacturing and commercial enterprises in Kosovo, even in longer periods of time, effectively manage investments in assets and this made them reduce the risk of financial failure.

Figure 1. Volatility of time series data for Springate, Z Altman and ROA variables, ROE



Source: Data processing by the authors in the STATA program (2023)

Referring to the above figure, we can observe that the time series data for Springate, Z Altman variables and financial performance variables have accumulation of volatility,

because the periods when manufacturing and commercial enterprises in Kosovo are associated with high risk, then during this period time, manufacturing and commercial enterprises are characterized by a high volatility of financial failures. In continuation of Nelson's E-GARCH analysis, the second model of the study, which is Z-Altman as a dependent variable and other independent variables, will be analyzed if they have a positive or negative impact on the volatility of the risk of financial failure in manufacturing and commercial enterprises in Kosovo.

Table 7. Econometric results of Nelson's E – Garch model between Z-Altman and ROA

Z-Altman	Coef.	Std. Error	Z	P > |z|	95% Conf. Interval	95% Conf. Interval
ROA	.0395419	.0116619	3.39	0.001	.016685	.0623989
_cons.	2.199405	.1434047	15.34	0.000	1.918337	2.480473
ARCH L1.	.6065216	.2238699	2.71	0.007	.1677448	1.045299
EARCH L1.	.2467767	.1588021	1.55	0.000	-.0644698	.5580231
E-GARCH (L1)	-.6071758	.1879532	3.23	0.001	.2387943	.9755573
_cons.	.0405914	.0941191	0.43	0.666	-.1438787	.2250614

Source: Data processing by the authors in the STATA program (2023)

From the econometric results, we can conclude that the return on assets positively affects the increase of the Z-Altman coefficient, with the increase of ROA by 1 unit, the Z-Altman value will increase by 0.039 units. The statement is correct since the level of significance is (P-Value=0.001 < 0.05).

The leverage effect exists in the constant (L1). In the constant (L1) we have a negative and significant correlation (P-Value = 0.001 < 0.05). From this, we can say that when the return on assets in 2021 increases by 1 unit, then the volatility of financial failure in 2022 is reduced by - 0.60 units. So, on the basis of this econometric result, it can be concluded that the manufacturing and commercial enterprises in Kosovo have effectively managed the investments in assets and this has influenced that these enterprises for this period of one year have a reduction in the volatility of financial failure. According to this econometric analysis, we can conclude that the manufacturing and commercial enterprises in Kosovo in shorter periods of time manage investments in assets in a more effective way and this led to a reduction in the exposure to the risk of financial failure.

Table 8. Econometric results of Nelson's E – Garch model between Z-Altman and ROE

Z - Altman	Coef.	Std. Error	Z	P > |z|	95% Conf. Interval	95% Conf. Interval
ROE	.0027689	.0030433	0.91	0.363	-.0031959	.0087338
_cons.	2.472097	.1170114	21.13	0.000	2.242759	2.701436
ARCH L1.	.8280229	.2441262	3.39	0.001	.3495444	1.306501
EARCH L1.	.097829	.1586778	0.62	0.538	-.2131738	.4088318
E-GARCH (L1)	-.8297068	.2118883	3.92	0.000	.4144134	1.245
E-GARCH (L2)	-.469221	.1463182	-3.21	0.001	-.7559994	-.1824427
_cons.	.1064483	.1420695	0.75	0.454	-.1720027	.3848993

Source: Data processing by the authors in the STATA program (2023)

From the above table we can notice that in the constant (L1) we have a negative and significant correlation since (P-Value = 0.000 < 0.05). So, when the return on capital in 2021 increases by 1 unit, then the volatility of the risk of financial failure in 2022 is reduced by -0.82 units. The statement is correct since the level of significance is below the level of statistical significance. In the constant (L2) we have a negative and significant correlation, which means that with the increase in capital return Z Altman will decrease, the statement is correct since (P-Value=0.001 < 0.05). This economic phenomenon shows that the manufacturing and commercial enterprises in Kosovo in longer periods of time follow an efficient capital investment management strategy, since with the increase in return on capital, enterprises in Kosovo provide more capital and this affects the reduction of exposure. of these enterprises to the risk of financial failure.

Discussion

A financial crisis can have many reasons. In general, a crisis can occur if institutions or assets are overvalued and can be exacerbated by irrational investor behaviour. Corporate failure often occurs when a firm experiences serious loss or becomes insolvent with liabilities that are disproportionate to its assets. Mistakes are inevitable, but when businesses learn from these mistakes, then these enterprises are a step towards success. By embracing failure, not simply "getting over it," these enterprises will outperform the competition in the sector in which they operate.

The main hypothesis of this study states that the return on assets has a positive effect on reducing the risk of financial failure. Therefore, based on the econometric results of this study, we verified that the return on assets had a positive effect on reducing the risk of

financial failure. This result is also in line with foreign authors such as Lestari (2021), who in his research also proves that the return of assets has a positive effect on the reduction of financial failure. Also Ahmed (2021), among other things, argues that if businesses try to properly manage financial failures, this could have an impact in their asset returns; they would be higher and that the high percentage of ROA can be concluded as the efficient use of assets in a company to obtain profit. A company that has a high percentage of ROA has an excellent opportunity to increase its profit.

On the other hand, Jaafar (2018) emphasises that the higher the firm's debt level, the higher its tendencies to be exposed to bankruptcy risks. The estimated results of the study – specifically the Z-Altman model, show that a higher ROA score means that the company has a higher chance of avoiding bankruptcy. Günay VAN (2021), in his study carried out in 2021, gives another support to our research because according to the results of the analysis, an increase in the ratios of operating profit margin, asset turnover, net profit margin and acid test increases the probability that the company is in a safe zone and avoids future failures.

Conclusions and Recommendations

Through this research it was proven that no one is immune to financial problems and poor planning or going through a tough time in terms of a business can often really tip the scales. Various researchers involved in this topic have expressed the view that building a business from the ground up is costly, contributing to financial failure. At some point in the life of any company, the business may need to seek outside capital to grow. This need for financing creates a financial risk for both the business and any investor or stakeholder invested in the company.

Financial risk is a type of risk that can result in the loss of capital for stakeholders. For governments, this can mean they are unable to control monetary policy and default on bonds or other debt issues. Corporations also face the possibility of defaulting on the debt they take on, but they can also experience failure in a venture that causes a financial burden on the business. Financial risks are everywhere and come in many shapes and sizes, affecting almost everyone. You should be aware of the presence of financial risks. Knowing the risks and how to protect yourself will not eliminate the risk, but it can mitigate their harm and reduce the chances of a negative outcome. Financial risk can be neutralised by carrying the right amount of insurance, diversifying your investments, keeping sufficient funds for emergencies and maintaining various streams of income.

Therefore, based on the findings of our study, for manufacturing and commercial enterprises we recommend that:

- The risk can be identified using analysis tools; therefore, it would be necessary for the firms to reach their identification;
- The risk of financial failure may arise from uncontrollable or unpredictable external forces; therefore, it is preferable to analyse every decision made so as not to cause large financial losses;

- Enterprises should stop taking on debts to avoid worsening financial problems and
- Enterprises should be encouraged to make more informed decisions about the risks they may encounter and should also be a step in evaluating the value (risk-reward ratio).

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Contact details

Besfort Ahmeti, besfort.ahmeti@unhz.eu