DOI: 10.2478/orga-2023-0012

Can corporate Social Responsibility Contribute to Bankruptcy Prediction? Evidence from Croatia

Adriana GALANT, Robert ZENZEROVIĆ

Juraj Dobrila University of Pula, Faculty of Economics and Tourism "Dr. Mijo Mirković", Pula, Croatia,
adriana.galant@unipu.hr, robert.zenzerovic@unipu.hr

Background/Purpose: Companies are becoming aware of the fact that corporate social responsibility (CSR) is becoming the imperative of their sustainable business model despite the potential costs it could generate. Researchers are mostly focused on estimating the relationship between CSR and financial performance where most of the findings indicate their positive relationship. This paper expands existing research and focuses on the relationship between CSR and the risk of bankruptcy using the data from 102 midsize and large companies from non-financial sectors using the data for four years. Research expands existing studies on the EU level according to the fact that most of the existing studies are performed among US companies.
Method: Descriptive statistics and SEM-PLS methodology was used to compare and analyze financial data with data collected from 7 groups of stakeholders.
Results: Research results indicate that the relation between CSR and the risk of bankruptcy is negative.
Conclusion: Becoming a socially responsible company is in the best interest of all stakeholders because CSR activities contribute to financial stability and maintenance of going concern assumption.

Keywords: *Corporate social responsibility, Bankruptcy prediction, Altman Z' score, SEM-PLS methodology*

1 Introduction

One of the leading motives for starting a business is to generate profit and maximize it considering available resources. Therefore, business activities should be directed toward accomplishing that objective. However, the reality is sometimes different and businesses can face different problems with generating profit as well as paying their liabilities as they come due. Such problems can happen due to different reasons and can be short as well as long termed. If the company is facing financial problems for a larger period, then the risk of bankruptcy is rising, making the company's going concern assumption questionable.

To reduce the risk of bankruptcy, companies' managers should focus on restructuring the company and directing the limited resources into activities that will result in increased financial performance. Nowadays customers are becoming more aware of products and services provided by companies that are socially responsible so corporate social responsibility (CSR) is becoming an imperative of a sustainable business model which will provide that companies continue to operate as a going concern. The relationship between CSR and financial performance has been the focus of researchers for some time. Although various outcomes of this relationship (positive, negative, mixed, or no relationship,) could be found in literature, the positive relationship dominates (Van Beurden and Gössling, 2008, Lu et al., 2014, Wang et al., 2016, Bartolacci et al., 2020; Velte, 2021). Therefore, it could be assumed that CSR activities can be used to improve a company's financial per-

Received: 23rd February 2023; accepted: 26th June 2023

formance.

If CSR activities improve financial performance, can we suppose that such activities reduce the risk of a company's bankruptcy? The relationship between CSR activities and the risk of bankruptcy is the focus of this paper. This study's main objective is to test this relationship's direction. In other words, whether being socially responsible reduces the risk of bankruptcy. The analysis is conducted on the sample of Croatian medium and large-sized companies operating in the non-financial sector.

The previous evidence on the relationship between CSR and the risk of bankruptcy on a global level is weak and therefore additional research is required. Literature suggests that most results indicate that socially responsible governance is related to a lower risk of bankruptcy (e.g. Cooper and Uzun, 2019, Pizzi et al., 2020). However, the majority of previous studies have been conducted on a sample operating in most developed and/or larger countries of the word. Therefore, this study aims to fulfilling the research gap by analyzing the sample of companies operating in a small economy. Considering the relatively recent transition in the market economy and entrance into European Union, Croatia represents an interesting environment for conducting such research. Due to such historical features, the business environment in Croatia is favorable for the development of CSR activities (Vrdoljak Raguž and Hazdovac, 2014).

The contribution of this paper is twofold. Firstly, it develops ongoing discussions about the relationship between CSR and the probability of bankruptcy by confirming that being socially responsible is related to a lower risk of bankruptcy. Additionally, to the best of the authors' knowledge, this is the first research on the relationship between CSR and the probability of bankruptcy for Croatian companies which allows us to draw conclusions for companies doing business in a small new EU member country.

The paper is organized as follows. The first section contains a brief literature review according to which the research hypothesis is developed. The description of the research methodology and results of model testing are following, while the discussion and conclusions are presented at the end.

2 Literature review

2.1 Corporate social responsibility

The CSR concept is becoming the focus of research for many authors. In literature, different definitions of CSR could be found. Despite a lot of attempts in defining the CSR concept, there is no clear consensus on what CSR is among practitioners, academics, and other interested parties (Sheehy, 2015). Carroll (1979, p. 500) distinguished four parts of CSR, and said that "CSR encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time". A large number of CSR definitions rely on stakeholder theory, which "takes into account the individuals or groups with a 'stake' in or claim on the company" (Melé, 2008, p. 62). In line with stakeholder theory, Hopkins (2006, p. 299) defined CSR as "a process that is concerned with treating the stakeholders of a company or institution ethically or in a responsible manner", i.e. treating key stakeholders in line with international norms. Some other definitions focus on actions that are not obligatory by the law. McWilliams and Siegel (2001, p. 117) emphasized that "CSR means going beyond obeying the law". Due to a large number of different CSR definitions, several authors have tried to systematize them and identify some common dimensions. Based on an analysis of 37 CSR definitions, Dahlsrud (2008) concluded that they are consistent over five dimensions: stakeholder, social, economic, voluntariness, and environmental dimension. Similarly, Crane et al. (2013) identified six core characteristics of CSR: voluntary, internalizing or managing externalities, multiple stakeholder orientation, alignment of social and economic responsibilities, practices and values, and beyond philanthropy.

Different CSR definitions have also been presented by different organizations. For example, the European Commission has defined it as "as a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis." (European Commission, 2001). The World Bank (2005) defines CSR as "the commitment of business to contribute to sustainable development working with employees, their families, local communities, and society at large to improve their quality of life that are both good for business and good for development". There is also the definition of World Business Council for Sustainable Development which defines CSR as "the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as the local community and society at large" (Dahlsrud, 2008, p. 7).

2.2 Corporate social responsibility and financial performance

Regarding the effects of CSR on a company's financial performance, two opposing views can be found in the literature. The first view, related to the neo-classic economic perceptive, posits that the only social responsibility of a company is to maximize the profits for shareholders while respecting the regulation (Friedman, 1970, Henderson, 2005). According to this view, investments in CSR activities are not suitable since they are not directly related to increasing profits. The second view is more positive

and in favor of CSR activities. For example, in line with stakeholder theory, which was first introduced by Freeman (1984), larger groups of stakeholders need to be taken into consideration while running a business if a company wants to assure long-term survival and financial success. As summarized by Brooks and McGuire (2022, p. 3) the value of a company can be increased by CSR activities through: "increased sales due to better brand evaluation, premium prices for responsibly sourced goods, enhanced employee morale and productivity, improved companies' image and reputation capital and better access to valuable resources."

Nonetheless, the shareholder and stakeholder view should not be seen as opposed business models. Moreover, they should be regarded as complementary concepts. The effect of CSR activities on financial performance is in the focus of research for a while, and although there is not one common conclusion about this effect, the literature suggests that the positive effect dominates (Van Beurden and Gössling, 2008, Lu et al., 2014, Wang et al., 2016, Bartolacci et al., 2020; Velte, 2021). Therefore, by considering stakeholder issues, shareholders' value is maximized as well.

2.3 Bankruptcy prediction models

Bankruptcy represents a business situation that all companies want to avoid. Therefore, it is important to be aware of the level of bankruptcy risk so that adequate actions can be undertaken. Throughout history, a large number of models for bankruptcy prediction have been developed using various quantitative methodologies from simple regression modeling to very complex methods. According to Zenzerovic and Perusko (2006), financial ratios as an instrument for assessing a company's creditworthiness began to be used at the beginning of the 20th century. Research conducted in the 30s of the 20th century confirmed that the value of financial ratios of financially healthy companies and those approaching bankruptcy differ significantly. The early studies concerning ratio analysis for bankruptcy prediction were univariate. These studies focused on individual ratios and sometimes compared the ratios of failed companies with those of successful firms (Gissel et al., 2007). The beginnings of using quantitative methods for predicting bankruptcy go back to the 1960s. At that time, discriminant analysis took a prominent place in research. In the 1970s, along with the application of discriminant analysis, researchers began to implement linear probability models and logit/probit analysis to predict bankruptcy. The development of information technology in the 1980s enables the use of more complex and sophisticated quantitative methods, and mathematical programming and simulation techniques have been implemented. The first among them was the decision tree technique, i.e. recursive partitioning. They were followed by more advanced quantitative methods in which multi-nominal logit models and dynamic time series models stand out. In the last 30 years, bankruptcy forecasting has been approached through the implementation of various advanced methods, among which the most significant are: neural networks, survival analysis, genetic algorithms, multidimensional scaling, expert systems, chaos theory, catastrophe theory, etc.

Throughout history, many complex models have been presented to scientific society and many of them are developed behind the scene by various financial and consulting companies. Firstly, they included only quantitative variables from financial statements and other accounting sources of information focusing on determining the limited number of most significant ones. But the development of information technology along with quantitative methods allowed researchers and practitioners to test many qualitative variables without taking care of their numbers. Machine learning and the availability of data allow further development of this challenging area of accounting analysis.

Despite many models developed one of them takes a particular place in history and practice. It is an Altman Z-score model with two additional versions. Edward I. Altman made the most significant contribution to the development of bankruptcy prediction models (Altman, 1968). In his famous article from 1968, he published the results of the first multivariate study of the relationship between financial indicators and the probability of bankruptcy. Unlike previous research such as Beaver's univariate model, which emphasized the importance of certain indicators for predicting bankruptcy, Altman considered that the use of only one indicator for predicting bankruptcy can lead to a wrong interpretation if it is "tuned" or equated to some other indicators that show the probability of bankruptcy differently.

The results of the research were obtained from an empirical study conducted on a sample of 66 manufacturing companies whose securities were publicly traded. The sample was divided into two equal groups. The first group included manufacturing companies that filed for bankruptcy in the period from 1946 to 1965. The size of the assets of this group of business entities varied from 700 thousand to 25.9 million dollars with an average of 6.4 million. The second group included financially stable companies from the same industry and approximately the same size of assets. The collected financial statements for business entities from both groups referred to the same reporting period. Based on the collected financial information, 22 financial indicators were calculated, and the weights for each of them were determined by implementing the statistical analysis method called multivariate discriminant analysis. Given that the importance of indicators varies, five indicators have been singled out that best discriminate financially healthy from business entities facing the start of bankruptcy proceedings. The developed model for predicting bankruptcy, known as Z-score, is shown by Equation 1 (Altman, 1993).

$$Z = 0.012X_1 + 0{,}014X_2 + 0{,}033X_3 + 0{,}006X_4 + 0{,}999X \quad (1)$$

where is:

Z – the value of the discriminant function,

X1 – working capital / total assets,

X2 – retained earnings / total assets,

X3 – profit before interest and taxes / total assets,

X4 – the market value of equity / total liabilities (book value)

X5 – sales revenue / total assets.

Through further statistical analysis of the derived model, Altman determined the critical values of the discriminant function based on which financial stability is assessed. If the value of the discriminant function of a company exceeds the critical value of 2.99, it is considered financially stable. On the other hand, the value of the discriminant function of a company lower than the critical value of 1.81 indicates a serious risk of bankruptcy. Values within the interval from 1.81 to 2.99 represent the so-called "grey zone" i.e. threatened financial stability with potential for recovery.

After performing the discriminant function, Altman proceeded to test its accuracy on a sample of business entities and found that the accuracy decreases as the time horizon of the prediction increases. The precision of the function, that is, the model, shows the highest precision one year before the bankruptcy, when it amounts to a high 95%. Two years before the bankruptcy, the accuracy of the model drops to 72%, while three years before the bankruptcy, the prediction accuracy is equal to the theoretical probability. Generally, models are considered to have discriminatory power when their prediction accuracy is 25% higher than the theoretical probability. Since the models for assessing the probability of bankruptcy are dichotomous variables, they have discriminatory power when the accuracy of their prediction exceeds 62.5% (the theoretical probability of 50% increased by 25%, or 12.5).

Since the aforementioned model for predicting bankruptcy was derived using data from manufacturing business entities whose securities are listed on the stock exchange, Altman made two corrections in later research. The first correction included the adjustment of the model for predicting bankruptcy for those business entities whose securities are not listed on the stock exchange, that is, which are owned by a smaller number of persons. Accordingly, in the numerator of the variable X4, the market value of the principal was replaced by its book value, and the weights were also adjusted, so the new model is shown in Equation 2 (Altman, 1993):

$$Z' = 0{,}717X_1 + 0{,}847X_2 + 3{,}107X_3 + 0{,}420X_4 + 0{,}998X_5 \quad (2)$$

When interpreting the corrected model, it is necessary to pay attention to the critical values. The new critical values according to which the degree of financial stability is assessed are 2.90 and 1.23.

The second modification of the model is the result of an effort to adapt the model to the prediction of bankruptcy of non-manufacturing business entities. The variable X5 was therefore excluded from the model because it differs significantly between different activities. By changing the model, there was a change in the critical values, which are now 2.60 and 1.10. The new model is shown in Equation 3 (Altman, 1993).

$$Z'' = 6{,}56X_1 + 3{,}26X_2 + 6{,}72X_3 + 1{,}05X_4 \quad (3)$$

2.4 Corporate social responsibility and bankruptcy

Besides the analysis of the relationship between CSR and financial performance, which is mostly measured by accounting-based (e.g. Return on assets ROA, Return on Equity ROE), market-based (e.g. stock return) or accounting and market based (e.g. Tobin's Q) indicators (Galant and Cadez, 2017), this research makes a step forward by analyzing the relationship between CSR and probability of bankruptcy. The main argument behind the relationship between CSR and the probability of bankruptcy is related to financial performance since financially stable companies should have a lower risk of bankruptcy (Brîndecsu-Olariu, 2016).

Cooper and Uzun (2019) tested the relationship between CSR and bankruptcy on a sample of US publicly traded companies and found that companies with stronger CSR are less likely to bankrupt compared to ones with weaker CSR. Using a similar sample, Lin and Dong (2018) found that companies with positive prior CSR engagement exhibit a lower risk of bankruptcy when they are in deep financial distress and that such companies tend to recover faster from difficulties. Brooks and McGuire (2022) confirmed the previously negative relationship between CSR and the risk of bankruptcy, documenting that probability for a company to go bankrupt within the next three years is lower when a company increases its CSR investments. Additionally, for a sample of US companies, Boubaker et al. (2020) concluded that implementation of CSR practices results in less distress and default risk. Zheng et al. (2019) concluded that CSR activities decrease the risk of financial distress by improving the relationship between companies and their stakeholders.

Using a sample of Italian companies that voluntarily adopted a legality rating (reward for ethical behavior), Pizzi et al. (2020) showed that experience in CSR practices is lowering the risk of bankruptcy. In a sample of Australian companies, Al-Hadi et al. (2019) showed that positive CSR practices reduce financial distress, and consequently risk of bankruptcy.

Kamalirezaei et al. (2020) analyzed the relationship between CSR and bankruptcy probability in a sample of companies listed on the Teheran Stock Exchange and found that the highest CSR is related to a lower probability of bankruptcy (i.e. inverse relationship).

Yet, not all studies reported that CSR results in a reduced risk of bankruptcy. Habermann and Fischer (2021), using the sample of US companies, found no effect between the level of CSR and the probability of bankruptcy during times of economic growth, and that increase in CSR activities during economic growth leads to an increase in the probability of bankruptcy.

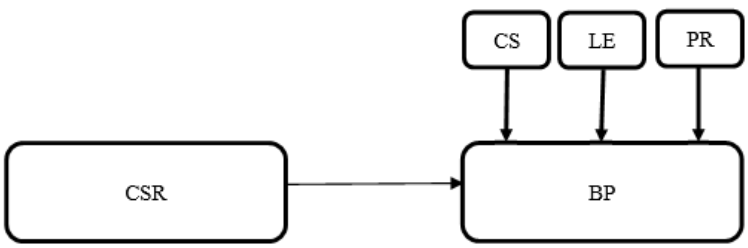
2.5 Research hypothesis

Based on the presented literature review it can be seen that focus on the relationship between CSR and bankruptcy is relatively new and that research results for European countries are limited because the majority of studies are focused on US companies. Therefore, the following hypothesis is defined in order to be tested:

H1: The relationship between corporate social responsibility (CSR) and the probability of bankruptcy is negative.

3 Methodology

For purposes of testing the defined hypothesis, the following model was proposed:



CSR – Corporate social responsibility
BP – the probability of bankruptcy
CS – company size, LE – companies leverage, PR – profitability

Figure 1: Structure of suggested model

To test the hypothesis two data sets have been collected: CSR data and financial data. Data on CSR have been collected using an online questionnaire developed by Turker (2009). The questionnaire included a different number of statements regarding 7 groups of stakeholders: employees (8 statements), customers (6 statements), competitors (4 statements), NGOs (4 statements), government (4 statements), society (5 statements) and natural environment and future generations (8 statements). Responders were asked to assess their agreement with each statement on a scale that ranged from 1 (I fully disagree) to 5 (I fully agree). For purposes of collecting data, the questionnaire was translated into Croatian. The data were collected in the second half of 2016 and the first half of 2017 as a part of research conducted for a doctoral thesis.

In the final model, the variable CSR was measured using 7 variables, one for each stakeholder group. The stakeholder group variable was calculated as the mean value of all statements for that stakeholder group.

The financial data were collected from companies' financial reports and obtained from a Financial agency – an institution that collects financial data for all companies operating in Croatia. Financial data were collected for the period between 2017 and 2020 from a sample of 102 medium and large companies.

Variable bankruptcy prediction was measured using Altman Z'-score from Equation 2.

In the model, three control variables have been included: leverage (LEV) calculated as the ratio between total liabilities and total assets, companies' size (CS) measured as the natural logarithm of total assets and profitability (PRO) measured as the ratio between EBIT and total asset called return on total assets (ROTA).

All financial variables (Altman Z' score, leverage, profitability, and size) were calculated for 4 years (2017 -2020), and the mean value for these 4 years was used in model testing.

Model was tested using Smart-PLS model and Smart-

PLS softver (Ringle et al., 2015). Model testing included evaluation of the measurement model and measurement of the structural model. Measurement model evaluation focused on variable CSR since it includes several items, while other variables are single items and there is no need to evaluate them. Evaluation of the measurement model included evaluation of internal consistency, convergent validity, and discriminant validity of variable CSR. Internal consistency was evaluated with composite reliability and Cronbach's alpha which should be higher than 0,7. Indicator reliability was evaluated by considering the outer loadings of indicators which should be above 0,7. Convergent validity was evaluated by considering AVE values which should be higher than 0,5. Discriminant validity was assessed by evaluating the HTMT criterion, cross-loadings, and Fornell-Larcker criterion. After establishing internal consistency, convergent validity, and discriminant validity in measurement model evaluation, the structural model evaluation was performed. The structural model included the evaluation of collinearity (VIF values between 0,2 and 5), path coefficients significance (using bootstrapping), and f2 evaluation. Additionally, the predictive relevance of the models was assessed using blindfolding, and SRMR values were estimated to evaluate model fit. (Hair et al., 2017).

4 Results

Descriptive statistics of data used in the analysis are presented in Table 1. As can be seen from the data in the table, on average companies included in the sample have threatened financial stability with the potential to recover (Z' score between 1,23 and 2,90), profitable (positive profitability), and moderately indebted (51% of total asset is financed from liabilities). As for CSR variables, companies' representatives see themselves as socially responsible (mean values closer to highest values). From Table 1 it can be seen that companies exhibit the highest social responsibility toward the customers and the lowest toward NGOs.

The correlation matrix of variables used in this research is presented in Table 2. Research results indicate that there is a positive correlation between CSR activities toward all considered stakeholders and Altman Z'-score (only for the ones toward government is not statistically significant). There is also a positive significant correlation between profitability and Altman Z'-score and a negative significant correlation between leverage and Altman Z'-score.

Table 1: Results of Measurement Model

Variable	N	Mean	Min	Max	Standard deviation	Kurtosis
LN total asset	102	20,00	17,16	24,28	1,51	0,10
Leverage	102	0,51	0,03	3,54	0,39	36,44
Profitability	102	0,07	0,00	0,28	0,05	3,14
Altman Z'-score	102	2,67	-1,69	16,56	2,33	14,81
CSR employees	102	3,94	1,13	5,00	0,67	3,00
CSR customers	102	4,62	2,00	5,00	0,53	6,73
CSR Society	102	4,24	1,20	5,00	0,64	5,60
CSR competitors	102	4,18	2,25	5,00	0,61	0,86
CSR government	102	4,58	1,00	5,00	0,60	13,00
CSR natural environment and future generations	102	4,22	1,00	5,00	0,69	4,99
CSR NGOs	102	3,44	1,50	5,00	0,71	0,18

Source: Authors' calculation

Table 2: Correlation matrix

	EMP	CUS	SOC	COM	GOV	ENFG	NGO	Z score	PRO	LEV	CS
EMP	1,00										
CUS	0,67***	1,00									
SOC	0,66***	0,61***	1,00								
COM	0,70***	0,63***	0,66***	1,00							
GOV	0,59***	0,65***	0,58***	0,58***	1,00						
ENFG	0,67***	0,62***	0,71***	0,71***	0,61***	1,00					
NGO	0,56***	0,43***	0,55***	0,55***	0,46***	0,57***	1,00				
Z score	0,20**	0,22**	0,20**	0,20**	0,13	0,18*	0,17*	1,00			
PRO	0,14	0,16	0,02	-0,06	0,11	-0,01	0,19*	0,30**	1,00		
LEV	-0,05	0,09	-0,08	-0,07	0,02	-0,05	-0,05	-0,45***	-0,13	1,00	
CS	-0,20**	-0,30***	-0,06	-0,24	-0,06	-0,02	0,02	-0,10	-0,31***	-0,09	1,00

Source: Authors' calculation

Table 3: Measurement model evaluation results

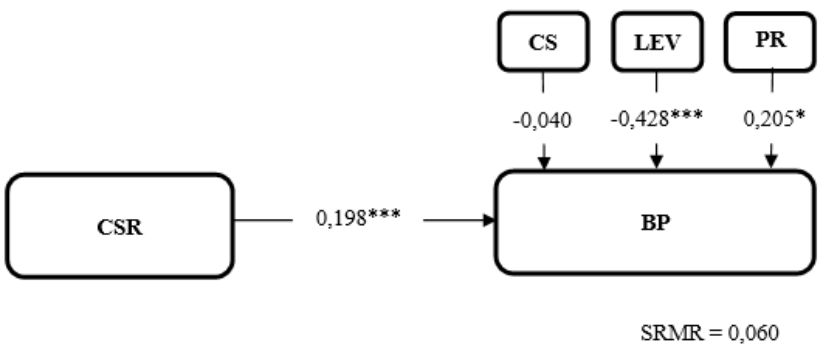
Latent variable	Indicator	Convergent Validity		Internal consistency reliability		Discriminant validity
		Loading	AVE	Composite reliability	Cronbach's Alpha	HTMT confidence interval does not include 1
CSR	EMP	0,860	0,665	0,933	0,916	Yes
	CUS	0,821				
	SOC	0,843				
	COM	0,848				
	GOV	0,766				
	ENFG	0,848				
	NGO	0,714				

Source: Authors' calculation

As described before, the proposed model was tested in two phases. The first phase included the evaluation of the measurement model, while the second phase included the evaluation of the structural model. The results of measurement model evaluation are presented in Table 3. The table includes the results only for latent variable CSR, since other variables are single items, and there is no need to evaluate them. As evident from the table, internal consistency reliability is established since both composite reliability and Cronbach's Alpha are above 0,70. Convergent validity is also established since all indicator's outer loadings are higher than 0,70 and the average variance extracted (AVE) is higher than 0,50. Discriminant validity was assessed by analyzing cross-loadings, the Fornell-Larcker criterion, and the HTMT ratio. There are no cross-loadings, the Fornell-Larker criterion has been met, the HTMT value is below 0,90 and the confidence intervals of the HTMT statistics do not contain 1. Therefore, discriminant validity has been met. After confirming the reliability and validity of

the measurement model, the structural model was analyzed. The results of structural model testing are presented in Figure 2. Before analyzing the path coefficients, the collinearity was examined, and there are no issues with it since predictor constructs' tolerance (VIF) values are above 0,20 and below 5. The analysis of the path coefficient (0,198) shows that there is a positive, statistically significant, relationship between CSR and the probability of bankruptcy. This result indicates that higher CSR results in a higher Altman Z' score (lower bankruptcy probability). As for the results of testing the effects of control variables, they have shown a significant positive effect of profitability on the Altman Z'-score (0,205), a significant negative effect of leverage on the Altman Z'-score (-0,428), and negative but statistically non-significant effect of company size on Altman Z'score (-0,040).

Model effect size has also been analyzed, and it suggests that there is a medium to large effect of leverage on Altman Z' score (f2=0,254) and a small effect of CSR (f2=0,054) and profitability (f2=0,053) on Altman Z'-score. The blindfolding procedure was used to assess the predictive relevance, and it resulted in Q2 higher than 0 (Q2= 0,228) indicating that the exogenous constructs have predictive relevance for Altman Z'-score (bankruptcy prediction) (Hair et al., 2017). Model fit was explored using SRMR measure, and for the estimated model it is 0,060 which is below 0,08, indicating good fit.



CSR – Corporate social responsibility
BP – the probability of bankruptcy
CS – company size, LE – companies leverage, PR - profitability

Source: Authors' calculation

Figure 2: Structural model results

5 Discussion and conclusions

The majority of companies are established according to the going concern assumption, meaning they plan to operate for an unlimited time in the future. The precondition for doing so is to achieve and sustain financial stability and profitability so managers need to focus on activities that are in line with it. Nowadays, social responsibility and sustainability activities are becoming more important, as well as the possibility of using these activities to increase profitability. Numerous researchers have analyzed the effects of social responsibility and sustainability activities on profitability, and although the conclusions are not unique, the positive relationship dominates. Considering the positive effect of socially responsible activities (CSR) on companies' profitability, it is reasonable to assume that such activities also have a positive effect on reducing the risk of bankruptcy since better financial results can be related to lower bankruptcy risk.

Since it is reasonable to assume the positive effect of CSR activities on reducing the risk of companies' bankruptcy, this research aimed to estimate the direction of the relationship between CSR and bankruptcy risk using a sample of companies doing business in Croatia. The main hypothesis of this research was that the relationship between CSR and bankruptcy is negative, i.e. that a higher level of CSR activities results in a lower level of bankruptcy risk. Analysis was conducted on a sample comprising 102 companies from Croatia using the SEM-PLS method. Results of the analysis have shown that higher values of CSR activities result in higher Altman Z' -score, i.e. lower bankruptcy risk. The defined hypothesis was confirmed on the sample of companies operating in Croatia and it can be concluded that CSR activities are in the best interest of a company.

There are several contributions of this research. First of all, it contributes to ongoing research about the financial benefits of being socially responsible by showing that high-

er levels of CSR activities are related to lower bankruptcy probability. Additionally, the research was conducted on a sample comprising companies from a small country, which represents a significant contribution since the majority of previous studies have been focused on large countries with a long tradition in a market economy.

Results of this study could be of interest also for practitioners since they have shown that CSR activities lead to better financial position and lower bankruptcy risk. Obtained results can also serve as a good tool for promoting CSR activities and sustainability.

An increasing number of Croatian companies apply CSR business practices (Grilec et al., 2022). Starting from Carroll's pyramid of CSR (Carroll, 1991), Čarapić and Leko-Šimić (2009) have shown that the most applied aspect of CSR by Croatian companies is the philanthropic aspect, i.e. donations, sponsorships, and activities in the environment protection. Mutavdžija et al. (2021) have also confirmed the focus on philanthropic responsibilities by Croatian companies during the COVID-19 pandemic and after natural disasters (two strong earthquakes) that hit one part of Croatia in 2020. According to Osmanagić Bedenik & Labaš (2011), Croatian companies' most important CSR practices are related to investments in development, motivation, education, and employee satisfaction. Croatian companies are aware of CSR business practice benefits and the results of this research could contribute to the wider implantation of such business practices.

The main limitations of this research are related to data, i.e. relatively small sample size and response bias. The sample comprised 102 companies from one country. Future research could be focused on larger samples from different countries. Response bias could be related to data on CSR since these data were collected using an online questionnaire in which companies' representatives were asked to self-assess different statements regarding the CSR activities of the companies they work for. Despite of mentioned limitations, research results represent valuable findings that could be broadened using a similar methodology.

Literature

Al-Hadi, A., Chatterjee, B., Yaftian, A., Taylor, G., & Monzur Hasan, M. (2019). Corporate social responsibility performance, financial distress and firm life cycle: evidence from Australia. *Accounting & Finance, 59*(2), 961-989. https://doi.org/10.1111/acfi.12277

Altman, E. I., (1968), Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy, *The Journal of Finance, 23* (4):589 – 609. https://doi.org/10.2307/2978933

Altman, E. I., (1993), *Corporate Financial Distress and Bankruptcy*, John Wiley & Sons Inc., Second Edition, United States.

Bartolacci, F., Caputo, A., & Soverchia, M. (2020). Sustainability and financial performance of small and medium sized enterprises: A bibliometric and systematic literature review. *Business Strategy and the Environment, 29*(3), 1297-1309. https://doi.org/10.1002/bse.2434

Boubaker, S., Cellier, A., Manita, R., & Saeed, A. (2020). Does corporate social responsibility reduce financial distress risk? *Economic Modelling, 91*, 835-851.

Brîndecsu-Olariu, D. (2016). Profitability ratio as a tool for bankruptcy prediction. *SEA–Practical Application of Science, 4*(11), 369-372. https://doi.org/10.1016/j.econmod.2020.05.012

Brooks, L. L. Z., & McGuire, J. B. (2022). Corporate social responsibility and future bankruptcy. *Meditari Accountancy Research*, (ahead-of-print). https://doi.org/10.1108/MEDAR-12-2020-1141

Carroll, A. B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of management review*, *4*(4), 497-505. https://doi.org/10.2307/257850

Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business horizons, 34*(4), 39-48. https://doi.org/10.1016/0007-6813(91)90005-G

Cooper, E., & Uzun, H. (2019). Corporate social responsibility and bankruptcy. *Studies in Economics and Finance*, *36* (2), 130-153. https://doi.org/10.1108/SEF-01-2018-0013

Crane, A., Matten, D., & Spence, L. J. (2013). Corporate social responsibility in a global context. Chapter in: Crane, A., Matten, D., and Spence, LJ,'Corporate *Social Responsibility: Readings and Cases in a Global Context, 2*, 3-26. https://ssrn.com/abstract=2322817

Dahlsrud, A. (2008). How corporate social responsibility is defined: an analysis of 37 definitions. *Corporate social responsibility and environmental management, 15*(1), 1-13. https://doi.org/10.1002/csr.132

European Commission (2001). Green paper-promoting a European framework for corporate social responsibility. COM (2001), 366(18.07). 2001. https://www.europarl.europa.eu/meetdocs/committees/deve/20020122/com(2001)366_en.pdf

Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach* (Pitman, Boston, MA).

Friedman, M. (1970, September 13). The social responsibility of business is to increase its profits. *The New York Times Magazine*. https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html

Galant, A., & Cadez, S. (2017). Corporate social responsibility and financial performance relationship: A review of measurement approaches. *Economic research-Ekonomska istraživanja, 30*(1), 676-693. https://doi.org/10.1080/1331677X.2017.1313122

Gissel, J. L., Giacomino, D., & Akers, M. D. (2007). A

review of bankruptcy prediction studies: 1930 to present. *Journal of Financial education*, 1-42. https://epublications.marquette.edu/cgi/viewcontent.cgi?article=1025&context=account_fac

Grilec, A., Pandža Bajs, I., & Ruždjak, M. (2022). Društveno odgovorne aktivnosti i primjena koncepta održivosti u modnoj industriji. *Poslovna izvrsnost, 16*(1), 73-89. https://doi.org/10.22598/pi-be/2022.16.1.73

Habermann, F., & Fischer, F. B. (2021). Corporate social performance and the likelihood of bankruptcy: evidence from a period of economic upswing. *Journal of Business Ethics*, 1-17. https://doi.org/10.1007/s10551-021-04956-4

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M.(2017). *A primer on partial least squares structural equation modelling (PLS-SEM).* SAGE publications.

Henderson, D. (2005). The role of business in the world of today. *Journal of Corporate Citizenship, (17)*, 30-32. https://www.jstor.org/stable/jcorpciti.17.30

Hopkins, M. (2006), What is corporate social responsibility all about?. *Journal of Public Affairs, 6*: 298-306. https://doi.org/10.1002/pa.238

Kamalirezaei, H., Anvary Rostamy, A. A., Saeedi, A., & Khodaei Valeh Zaghard, M. (2020). Corporate social responsibility and bankruptcy probability: Exploring the role of market competition, intellectual capital, and equity cost. *Journal of Corporate Accounting & Finance, 31*(1), 53-63. https://DOI:10.1002/jcaf.22417

Čarapić, H. & Leko-Šimić, M. (2009). Corporate Social Responsibility in Croatia: Nonprofit Activities for Profitable Goals. Apas Papers 191, *Academic Public Administration Studies Archive - APAS*. http://www.apas.admpubl.snspa.ro/handle/2010/216

Lin, K. C., & Dong, X. (2018). Corporate social responsibility engagement of financially distressed firms and their bankruptcy likelihood. *Advances in accounting*, 43, 32-45. https://doi.org/10.1016/j.adiac.2018.08.001

Lu, W., Chau, K. W., Wang, H., & Pan, W. (2014). A decade's debate on the nexus between corporate social and corporate financial performance: a critical review of empirical studies 2002–2011. *Journal of cleaner production, 79*, 195-206. https://doi.org/10.1016/j.jclepro.2014.04.072

McWilliams, A., & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of management review*, *26*(1), 117-127. https://doi.org/10.2307/259398

Melé, D. (2008). Corporate social responsibility theories, In Crane, A., McWilliams, A., Matten, D., Moon, J. & Siegel, D. (Eds.), *The Oxford handbook of corporate social responsibility* (47-82), New York, USA: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199211593.001.0001

Mutavdžija, M., Buntak, K., & Zlatić, S. (2021). Značaj društveno odgovornog poslovanja u vrijeme pandemije COVID-19 u Republici Hrvatskoj, in Radivojević, M., Imamović, M. & Skopljak, L. (Eds.). *Proceedings of international University Travnik in Travnik*, XXI. International Online conference, The Impact of COVID-19 pandemics on globalisation and global economic/legal/media matters with an emphasis on the Western Balkan countries, 10(21), 293-301.

Osmanagić Bedenik, N., & Labaš, D. (2011). Role of corporate social responsibility (CSR) in business planning and practice of Croatian companies. *Market-Tržište*, *23*(2), 143-164. https://hrcak.srce.hr/78922

Pizzi, S., Caputo, F., & Venturelli, A. (2020). Does it pay to be an honest entrepreneur? Addressing the relationship between sustainable development and bankruptcy risk. *Corporate Social Responsibility and Environmental Management, 27*(3), 1478-1486. https://doi.org/10.1002/csr.1901

Ringle, C. M., Wende, S., and Becker, J.-M. (2015). "SmartPLS 3." Boenningstedt: SmartPLS GmbH, available at: http://www.smartpls.com

Sheehy, B. (2015). Defining CSR: Problems and solutions. *Journal of business ethics, 131*, 625-648. https://doi.org/10.1007/s10551-014-2281-x

The World Bank (2005). Opportunities and Options for Governments to Promote Corporate Social Responsibility in Europe and Central Asia, Evidence from Bulgaria, Croatia, and Romania, available at: https://documents1.worldbank.org/curated/en/257431468093573048/pdf/358740rev0CSR0in0Europe01PUBLIC1.pdf, accessed: 08.05.2023.

Turker, D. (2009). Measuring corporate social responsibility: A scale development study. *Journal of business ethics, 85*, 411-427. https://psycnet.apa.org/doi/10.1007/s10551-008-9780-6

Van Beurden, P., & Gössling, T. (2008). The worth of values–a literature review on the relation between corporate social and financial performance. *Journal of business ethics, 82*(2), 407-424. https://doi.org/10.1007/s10551-008-9894-x

Velte, P. (2021). Meta-analyses on corporate social responsibility (CSR): a literature review. *Management Review Quarterly*, 1-49. https://doi.org/10.1007/s11301-021-00211-2

Vrdoljak Raguž, I., & Hazdovac, K. (2014). Društveno odgovorno poslovanje i hrvatska gospodarska praksa. *Oeconomica jadertina, 4*(1), 40-58. https://hrcak.srce.hr/130001

Wang, Q., Dou, J., & Jia, S. (2016). A meta-analytic review of corporate social responsibility and corporate financial performance: The moderating effect of contextual factors. *Business & society, 55*(8), 1083-1121. https://doi.org/10.1177/0007650315584317

Zenzerovic, R. i Perusko, T. (2006). Kratki osvrt na modele za predviđanje stečaja. *Economic research - Ekonomska istraživanja, 19* (2), 132-151. https://hrcak.srce.

hr/21495
Zheng, Y., Wang, Y., & Jiang, C. (2019). Corporate social responsibility and likelihood of financial distress. *Quarterly Review of Business Disciplines, 6* (3), 219-236. https://digitalcommons.bryant.edu/finjou/84

Robert Zenzerović is a full professor at the Juraj Dobrila University of Pula, Faculty of Economics and Tourism, where he teaches Business Accounting, Accounting Information Systems, Auditing and Business Analysis, Strategic Management Accounting, and Forensic Accounting. The author's focus of interest is auditing, business analysis and forensic accounting topics. He has published one book, two book chapters, and forty articles, and was a member of the management team of the Faculty of Economics and Tourism, working for four years as a vice dean and three years as a dean. The author is also active in the business community, in which he has served as a member of various supervisory and auditing boards.

Adriana Galant is a lecturer at the Juraj Dobrila University of Pula, Faculty of Economics and Tourism, where she teaches accounting-based courses. She received her PhD in business economics (major accounting) from the University of Ljubljana, School of Economics and Business. Her research interests include corporate sustainability reporting, financial reporting and financial analysis.

Ali lahko družbena odgovornost podjetij prispeva k napovedi bankrota? Evidence Hrvaške

Ozadje in namen: Podjetja se zavedajo, da družbena odgovornost podjetij postaja imperativ njihovega trajnostnega poslovnega modela kljub morebitnim stroškom, ki bi jih lahko povzročila. Prejšnje raziskave s tega področja so večinoma osredotočene na ocenjevanje razmerja med družbeno odgovornostjo podjetij in finančno uspešnostjo, kjer večina ugotovitev kaže na njun pozitiven odnos. Pričujoča raziskava razširja obstoječe raziskave in se osredotoča na razmerje med družbeno odgovornostjo podjetij in tveganjem bankrota z uporabo podatkov pridobljenih na 102 srednje velikih in velikih podjetij iz nefinančnih sektorjev. Raziskava se osredotoča na področje EU, kar tudi doprinaša k obstoječim raziskavam, saj je večina obstoječih študij narejena med podjetji iz ZDA.
Metode: Opisna statistika in metodologija SEM-PLS je bila uporabljena za primerjavo in analizo finančnih podatkov s podatki, zbranimi od sedmih skupin deležnikov.
Rezultati: Rezultati raziskave kažejo, da je povezava med družbeno odgovornostjo in tveganjem bankrota negativna.
Zaključek: Postati družbeno odgovorno podjetje je v interesu vseh deležnikov, saj dejavnosti družbene odgovornosti prispevajo k finančni stabilnosti in ohranjanju predpostavke delujočega podjetja.

Ključne besede: *Družbena odgovornost podjetij, Napoved bankrota, Rezultat Altmana Z, Metodologija SEM-PLS*