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How Particular Firm-Specific Features Influence Corporate Debt Level: A Case Study of Slovak Enterprises

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Abstract: Debt financing is related to borrowing funds from enterprises and investors through bonds, banks, or financial institutions. Interest in debt financing has been rapidly growing in recent years and is now considered one of the most common ways an enterprise can increase its capital to run its business. However, the use of a large amount of debt is associated with the management of corporate indebtedness, requiring the tracking of the entire financial performance of the company. The chief objective of this study was to determine and assess the indebtedness level of enterprises operating in the Slovak Republic using 12 crucial debt ratios and then to clarify whether there are statistically relevant dissimilarities in corporate debt as a result of the firm size and its legal form, representing relevant company-specific features having an impact on corporate indebtedness. Subsequently, a more elaborate analysis addressing statistically relevant dissimilarities between separate indebtedness ratios in relation to the size of the company and its legal form was carried out by deploying the nonparametric Kruskal–Wallis test. We leveraged the Bonferroni correction to specify where stochastic ascendancy occurs. The Kruskal–Wallis test result revealed statistically significant dissimilarities in the values of debt ratios as a result of the firm size and the legal form of the company, which confirmed previous results indicating the most relevant determinants shaping corporate debt. Recognizing the repercussions of firm size and legal form on the corporate debt policy plays an important role, as these company-specific features may be perceived as proxies for the default likelihood or for the volatility of corporate assets, making the regulatory process of creditors and stakeholders straightforward. The findings confirmed the theories of numerous researchers who claimed that firm size and legal form are critical aspects of corporate debt.

Keywords: indebtedness indicators; corporate debt; financial performance; firm size; legal form

MSC: 62P20



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Citation: Gajdosikova, D.; Lăzăroiu, G.; Valaskova, K. How Particular Firm-Specific Features Influence Corporate Debt Level: A Case Study of Slovak Enterprises. *Axioms* **2023**, *12*, 183. <https://doi.org/10.3390/axioms12020183>

Academic Editor: Joanna Olbrys

Received: 4 January 2023

Revised: 4 February 2023

Accepted: 8 February 2023

Published: 10 February 2023



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1. Introduction

In recent years, debt financing has become a phenomenon in the corporate world. Debt financing is necessary to secure an enterprise with a lack of funds that has to finance not only investment but also operating activities [1]. Corporate financing is one of the most important decisions, which involves determining the suitable mix of equity and debt [2]. It is also important for the enterprise to keep its capital structure under observation, which determines the correct and coherent mix of equity and debt financing [3]. Every enterprise functioning in the market should make the right decision in identifying the capital structure required for the future achievement of the established corporate goals [4].

There are many reasons why an enterprise prefers to finance its corporate activities through debt financing over equity financing, and vice versa. In general, the size of the enterprise, its legal form, the volume of profit, the sector in which the company operates,

in addition to the macroeconomic environment, the legislative business framework and the credit policy of the banks shape the choice of financing form.

The performance of an enterprise that is affected by debt financing should be monitored not only by new business ventures but also by significantly developed companies. Many firms operating in the market incline toward debt as start-up capital to initiate or sustain their business [5]. Debt indicators are used to regulate the structure of the financial sources of the company, the main task of which is to quantify the extent of using not only foreign capital but also equity to finance the business activities [6]. A significant volume of foreign capital consolidates the enterprise's indebtedness, bringing about unpredictability for both the enterprise's creditors and its owners [7]. On the other hand, although using a significant proportion of a firm's own funds makes a firm stable, its equity financing is more expensive [8].

The chief objective of this study was to determine and assess the indebtedness level of companies operating in the Slovak Republic between 2015 and 2019 using 12 crucial debt ratios, and then to clarify whether there are statistically relevant dissimilarities in corporate debt due to the size of the company and its legal form, which are the most important determinants of corporate indebtedness. The monitored period did not include the COVID-19 pandemic period because the monitoring aimed to evaluate the situation during the previous 5-year horizon and determine whether there were statistically significant dissimilarities in the corporate debt level due to the size of the company and its legal form. The Kruskal–Wallis test was employed to clarify whether there were statistically significant dissimilarities between calculated debt ratios associated with company size and legal form, which are, following the results of several international studies [9–15], the most crucial firm-specific characteristics of corporate debt level. The originality of the study is the depiction of corporate indebtedness on a sample of 3509 companies from various economic sectors, so the study is groundbreaking in Slovakia due to the robustness of the dataset and the number of variables examined. The results support the claims made by several authors [10–16], who contended that company size and legal form constitute the crucial drivers that influence corporate debt. Consequently, the principal practical implication of the study is the conclusion that company size and legal form shape the corporate indebtedness in Slovakia, which is a crucial metric in terms of debt financing. The considerable amount of corporate indebtedness jeopardizes not only the financial stability of the firm but also its performance, which represents the most relevant theoretical outcomes of the study.

This paper has the following sections: The Section 2 contains a literature review necessary to acquaint the readership with the essential theoretical background of the problem. Section 3 specifies the methods used for satisfying the goal in this study; that is, the implementation of debt analysis demonstrates the existence of statistically relevant dissimilarities in debt indicators as a result of the company size and legal form. Section 4 gives a picture of the outcomes configured by the assessment of predetermined debt indicators and their ensuing statistical validation. Section 5 is focused on the interpretation of the obtained outcomes, which are correlated with additional research. In the last section in this paper, the most significant research outputs are recapitulated in addition to the study's inherent limitations and subsequent research challenges.

2. Literature Review

Determining the optimal debt level together with the exemplary financial structure constitutes a challenging task from the perspective of an enterprise's financial management. The decision to provide capital for a business by deploying equity and/or debt depends on several factors. The company's existing capital structure shapes corporate financial decisions [16]. The best capital structure is a mix of equity and debt that optimizes the value of the enterprise while minimizing the weighted average cost of capital (WACC) [17]. In recent years, many studies have formulated notions of established capital structures, clarifying the consequences of providing capital for financial performance [18], the ramifica-

tions of corporate debt not only on the overall value [19] but also on the costs of capital [20], etc. Several theoretical and empirical investigations have sought to clarify such issues. Modigliani and Miller [21] were the pioneers in theoretically examining the impact of capital structure on company value. In their theory of capital structure, they argued that the mix of financing sources an enterprise chooses for its business is not relevant to its financial performance based on perfect market assumptions and the absence of taxes, transaction costs, and bankruptcy costs. However, this theory of capital structure is not very realistic, so the authors had to abstract from tax assumptions, which later developed a theory of the benefits of debt [22].

In general, the use of debt provides a dominant advantage for the enterprise, which is tax shields. Although debt can increase the value of an enterprise [23], interest payments are a tax-deductible item that reduce its tax base [24]. Debt financing is a cheaper option than equity financing, although taking on too much debt will mean that the cost of debt may later be higher than the cost of equity for enterprises [25]. By increasingly acquiring debt, the probability increases that the enterprise will not pay its debt, and it should not owe more. Due to the insufficient planning of capital structure, a company may face problems with financing its activities as well as suboptimal use of its funds. The enterprise must have an exemplary capital structure that neutralizes the upsides of the tax savings at the expense of a possible bankruptcy [26].

Debt financing is associated with borrowing funds from enterprises and investors using bonds, banks, or financial institutions [27]. Interest in debt financing has been rapidly growing in recent years and is now considered one of the most common ways an enterprise can increase its capital to run its business. Debt financing is pivotal in increasing the future productivity of an enterprise [28]. This type of financing is used by enterprises when internal resources are not enough to carry out business activities, and they are forced to borrow outside the company [29]. Debt financing takes many forms. The substance of debt is the repayment of funds within a specified period, together with the agreed fees for services, which mainly include interest and loan fees [30]. Some interest expenses need to be repaid before the debt is due, although the principal of the loan is repaid later [31].

Monitoring firm indebtedness is associated with the use of a large amount of debt. Nowadays, indebtedness is a common occurrence not only in developed but also in gradually developing economies. The concept of indebtedness carries a negative connotation but also sometimes positive connotations, and it is necessary to realize that the more the enterprise is in debt, the greater the risk to the business itself, which will later struggle to obtain debt financing [32]. For this reason, it is essential to regularly monitor individual debt indicators through debt analysis, the aim of which is to express and quantify the extent of the foreign capital deployment to finance the demands of an enterprise [33]. The share of foreign capital deployment by the enterprise can significantly affect its profitability and the development of equity. This share is closely related to the liquidity of the enterprise. The volume of debt corresponds not only to the obligation to repay them in the future but also to the need to create adequate funds necessary for repayments [34]. The debt indicators provide information on three crucial factors assessing the enterprise's financial situation: the level and the nature of the debt, and the ability to bear it [35]. These indicators are the most widely used worldwide, which provide a quick and inexpensive perspective of the overall financial performance of an enterprise [36].

3. Materials and Methods

Our comprehensive debt analysis was based on the financial data collected from the ORBIS database, which supplies information on more than 400 million large-scale private and public enterprises. In the monitored period, 2015–2019, the search resulted in 17,299 business entities operating in the Slovak Republic. Not all enterprises were suitable for the calculation of the most significant indebtedness criteria. Therefore, the data obtained from the database had to be modified. Companies that did not supply all the input data required for debt analysis throughout 2015–2019 were removed from the generated

database of financial data. All outliers that would decrease the informative results of the debt analysis were also removed from the database (the interquartile range method was used to remove the bad data from the dataset and improve the accuracy of the calculation). After the final adjustment, the database covered 3509 companies.

The ORBIS database offers financial data on businesses based on various conditions, such as firm size characteristics. One of the following conditions must be fulfilled for an enterprise to be considered very large, large, and medium: operating revenue \geq EUR 100 million/ \geq EUR 10 million/ \geq EUR 1 million, total assets \geq EUR 200 million/ \geq EUR 20 million / \geq EUR 2 million, and employees \geq 1000/ \geq 150/ \geq 15. Generally, small enterprises are often defined as those that do not meet these conditions. Based on the firm size characteristics, the final dataset contained 556 small, 2304 medium, 583 large, and 66 very large enterprises, which reflects the typical environment of the national economy.

The following categories of legal forms were also determined with the ORBIS database: Partnerships and private and public limited companies, together with other legal forms, constitute the ownership structures employed by firms operating in Slovakia. A private limited firm is one that has been legally integrated into additional legal identities. In this legal form, the shareholders are only partially responsible for any debts the company accrues. The difference between a public limited firm and a private limited one, which are often confused, is the option of selling the enterprise shares to the general public. In terms of fund raising, a company may benefit from this approach. Another type of legal entity is created by a small group of people involved in the ownership, business decision-making, and its earnings. The ORBIS database includes branches and solo traders as other legal forms. Considering the legal form categories, the final dataset contained 2849 private limited and 432 public limited companies, 224 partnerships, and 4 enterprises with other legal forms.

A necessary element for the assessment of the separate debt criteria was financial data (specified in thousands of euros) and the related descriptive statistics, particularly the average (avg.), median (med.), standard deviation (std. dev.), minimum (min.), maximum (max.), and coefficient of variation (CV), as presented in Table 1.

Table 1. Descriptive statistics covering distinct financial indicators (in thousand euros).

	Avg.	Med.	Std. Dev.	Min.	Max.	CV
FIAS	153.349	114.206	84.991	53.916	391.667	0.554
TOAS	387.125	306.239	144.134	110.857	687.040	0.372
OCAS	104.221	99.509	96.004	42.237	202.166	0.921
DEBT	122.408	167.222	93.903	0.000	571.167	0.767
NCLI	75.971	88.112	42.080	0.958	246.547	0.554
CULI	204.947	198.338	102.813	5.808	417.012	0.502
EBIT	34.407	19.461	33.078	−11.342	623.002	0.961
DEPR	8.689	9.691	4.865	−2.778	74.833	0.560
SHFD	106.207	86.281	99.872	1.323	697.483	0.940
INTE	5.695	8.124	2.903	0.589	26.167	0.510

Source: own elaboration. Note: FIAS, fixed assets; TOAS, total assets; OCAS, other current assets; DEBT, debtors; NCLI, noncurrent liabilities; CULI, current liabilities; EBIT, earnings before interest and taxes; DEPR, depreciation and amortization; SHFD, shareholder funds; INTE, interest paid.

The financial analysis in relation to the indebtedness of companies operating in the Slovak Republic throughout the time interval studied was performed by employing 12 key indebtedness indicators. Their calculation formulas are summarized in Table 2.

Table 2. Summarized formulas of indebtedness indicators.

Ratio	Formula	Ratio	Formula
Total indebtedness ratio	$TI = \frac{NCLI + CULI}{TOAS}$ (1)	Interest burden ratio	$IB = \frac{INTE}{EBIT + INTE}$ (7)
Self-financing ratio	$SF = \frac{SHFD}{TOAS}$ (2)	Debt-to-cash flow ratio	$DCF = \frac{NCLI + CULI}{EAT + DEPR}$ (8)

Table 2. Cont.

Ratio	Formula		Ratio	Formula	
Current indebtedness ratio	$CI = \frac{CULI}{TOAS}$	(3)	Equity leverage ratio	$EL = \frac{TOAS}{SHFD}$	(9)
Non-current indebtedness ratio	$NCI = \frac{NCLI}{TOAS}$	(4)	Financial independence ratio	$FI = \frac{SHFD}{NCLI+CULI}$	(10)
Debt-to-equity ratio	$DE = \frac{NCLI+CULI}{SHFD}$	(5)	Noncurrent assets coverage ratio	$NCAC = \frac{SHFD+NCLI}{FIAS}$	(11)
Interest coverage ratio	$IC = \frac{EBIT}{INTE}$	(6)	Insolvency ratio	$Ins = \frac{NCLI+CULI}{DEBT+OCAS}$	(12)

Source: Valaskova et al. [37].

The debt analysis was performed according to these methodological steps:

1. Firstly, debt indicators were separately assessed for enterprises operating in the Slovak Republic in the monitored period, 2015–2019. This time interval was chosen to cover the horizon before the COVID-19 pandemic, which has changed the financial structure of companies in almost all sectors.
2. Subsequently, normality tests (Kolmogorov–Smirnov and Shapiro–Wilk tests) were leveraged to clarify if a dataset was satisfactorily modeled by a normal distribution, being combined with the graphical evaluation of normality, while determining whether a sample had a non-normal distribution. The p -value was construed in relation to a significance level of 5%. We found that the test dataset was relevantly inconsistent with the normal distribution.
3. The Kruskal–Wallis test, a distribution-free procedure to the one-way ANOVA test, which builds up the two-samples Wilcoxon test when there are more than two groups, is used to determine that at a minimum one sample stochastically prevails over one other sample. The test result indicates a relevant dissimilarity between groups but does not identify which pairs of groups are distinct, so the Bonferroni correction was used to reduce the prospect of obtaining a statistically relevant outcome and for counteracting the multiple comparisons issue.

4. Results

The assessment of corporate debt can typically be performed on various debt ratios, which express the structure of the funding sources of the enterprise. The average values of the selected indicators during the monitored period are shown in Table 3.

Table 3. Descriptive statistics of indebtedness indicators.

Ratio	Avg.	Min.	Max.	Q25	Med.	Q75
Total indebtedness ratio	0.636	0.265	1.295	0.514	0.648	0.763
Self-financing ratio	0.364	−0.295	0.735	0.236	0.352	0.485
Current indebtedness ratio	0.464	0.006	1.110	0.325	0.462	0.606
Non-current indebtedness ratio	0.172	0.000	0.732	0.056	0.126	0.246
Debt-to-equity ratio	2.645	−4.111	9.558	1.113	2.000	3.599
Interest coverage ratio	10.732	−33.793	57.159	2.722	6.607	15.48
Interest burden ratio	0.142	−0.312	0.575	0.058	0.123	0.220
Debt-to-cash flow ratio	7.511	−11.012	26.424	3.872	6.204	10.271
Equity leverage ratio	3.645	−3.112	10.558	2.113	3.000	4.599
Financial independence ratio	0.759	−0.203	2.841	0.323	0.575	1.026
Noncurrent assets coverage ratio	1.188	−0.496	3.209	0.807	1.055	1.434
Insolvency ratio	2.957	−3.051	9.734	1.467	2.270	3.870

Source: own elaboration.

The total indebtedness ratio together with the self-financing ratio, which are correlated indicators, i.e., their sum must be equal to 1 or 100%, determine the level of coverage an enterprise needs by using equity and debt financing. In general, the total indebtedness ratio indicates the ratio of debt to the total assets of a company, which averaged 0.636 during

the period under review, meaning EUR 1 of the total assets of the company is covered by EUR 0.636 of total liabilities. The self-financing ratio is determined by the ratio of equity to the total assets of the company. The calculated average values showed that EUR 1 of the total assets of the company was covered by EUR 0.364 of shareholders' funds. In general, if an enterprise primarily uses debt for financing, it is crucial to focus on the debt structure by analyzing the partial complementary criteria of the financial structure: the current indebtedness ratio and the noncurrent debt ratio. These indicators show the share of short-term or extended liabilities of the company in its total assets. From the results of the financial analysis focused on corporate debt, we found that enterprises used 46.4% of short-term debt and 17.2% of extended debt to finance their activities in the period under review. The debt-to-equity ratio compares the total liabilities of an enterprise with its equity and assesses how much leverage the company uses. In the period under review, EUR 1 of shareholders' funds as covered by EUR 2.645 of corporate debt. Another criterion of indebtedness is the interest coverage ratio, which monitors the ratio of EBIT to interest paid. It is one of the most crucial debt ratios because it expresses how many times an enterprise can cover the interest on foreign capital after all costs associated with the business activities have been paid. During the period under review, the indicator averaged 10.732. The inverted indicator associated with the interest coverage ratio constitutes the interest burden ratio, which expresses the share of interest paid by the enterprise in the generated profit. This indicator averaged 0.142, and EUR 1 earnings before interest and taxes was covered by EUR 0.142 of interest paid. Another indicator that expresses the ability of an enterprise to bear its level of indebtedness is the debt-to-cash flow ratio, which declares the share of foreign resources to the achieved cash flow of the enterprise, or net profit plus depreciation. It is clear from the calculated values that enterprises required an average of 7.511 years to repay their debt if they employed all their generated cash flow to compensate it. Due to the combined use of equity and debt in financing business operations, each enterprise needs to monitor the equity leverage ratio. It is essential for any enterprise operating in the market to establish the accurate volume of its debt and the capacity to reimburse it within a predetermined period. The results showed that EUR 1 shareholders' funds were burdened by EUR 3.645 of the total company assets. The financial independence ratio determines the share of shareholders' funds to the total liabilities of an enterprise and assesses the level of organizational autonomy in relation to the financial resources of third parties. On average, EUR 0.759 of shareholders' funds accounted for EUR 1 of the entire liabilities of the company. The noncurrent assets coverage ratio puts the link of shareholders' resources and noncurrent liabilities to the noncurrent assets of the enterprise and determines the undercapitalization and recapitalization of the enterprise. The average value of the indicator in companies active in Slovakia in 2015–2019 was 1.188, which means that EUR 1 of the noncurrent assets of the enterprise was covered by EUR 1.188 of shareholders' funds and noncurrent liabilities. The last calculated debt ratio is the insolvency ratio, which determines the total liability ratio to shareholders funds. In the monitored 5-year period, the average ratio value was 2.957. Based on the average value of the ratio, the total liabilities of the enterprise were significantly higher than the level of its shareholders funds. Thus, EUR 2.957 of the total liabilities of the enterprise accounted for EUR 1 of shareholders' funds.

The chief aim of this elaborate debt analysis of companies active in Slovakia was to examine the occurrence of statistically significant dissimilarities between the separate indebtedness ratios with regard to the company size and its legal form and to clarify whether the average values of indebtedness ratios were similar for all firm sizes (firms that were small, medium, large, and very large) and legal forms (private limited and public limited firms, and partnerships) or whether the values of the indicators were dissimilar.

First, the normality of the data used for the statistical tests (see Section 3), had to be checked by deploying Kolmogorov–Smirnov and Shapiro–Wilk tests. Outliers typically raise the estimate of sample variance, which lowers the estimated F statistic for the ANOVA and reduces the likelihood that the null hypothesis will be rejected. Based on sample

means and sample variances, both of which are susceptible to outliers, the F statistic is calculated. In particular, a large outlier can increase the overall variance, lowering the F statistic and thus removing a meaningful difference. In this case, a nonparametric test may be more effective. The test outcomes rejected the null hypothesis that the data followed a normal distribution. Consequently, a nonparametric Kruskal–Wallis test was leveraged to find statistically significant dissimilarities between the calculated ratios with regard to the company size and the legal form, as the test does not presuppose a normal data distribution compared with a corresponding one-way ANOVA and can also be considered inconstant to outliers.

Table 4 summarizes the result of the Kruskal–Wallis test (a nonparametric test), which analyzed the statistically significant dissimilarities in the debt ratios in relation to the company size. For some debt ratios, the test *p*-value did not reach the predetermined level of significance; that is, the null hypothesis of the same median values of the debt criteria was excluded. Based on the outcome, there were statistically significant dissimilarities in the following debt ratios: current and noncurrent indebtedness ratios, interest burden, interest coverage, and debt-to-cash flow, noncurrent assets analysis, and insolvency ratios.

Table 4. The output of the Kruskal–Wallis test (firm size).

	TI	SF	CI	NCI	DE	IC
Kruskal–Wallis H	3.435	3.444	39.318	8.233	0.322	83.351
Asymp. Sig.	0.329	0.328	0.000	0.041	0.956	0.000
	IB	DCF	EL	FI	NCAC	Ins
Kruskal–Wallis H	55.268	19.967	0.323	5.103	50.033	77.492
Asymp. Sig.	0.000	0.000	0.956	0.164	0.000	0.000

Source: own elaboration.

Subsequently, a post hoc analysis was carried out because of the statistically significant differences between the seven indebtedness ratios. The post hoc analysis outcomes determined which distinct debt ratios associated with the company sizes were the most statistically significant. The outcomes of the pairwise size correlation are summarized in Table 5. The filled squares represent statistically significant dissimilarities in the debt ratios in relation to the firm size, and empty squares represent differences in indebtedness indicators that were not statistically significant. Please see Appendix A (Table A1) for the detailed post hoc test results.

Table 5. The output of the pairwise firm size comparison.

	CI	NCI	IC	IB	DCF	NCAC	Ins
Large-Very large	□	□	□	□	□	□	□
Medium sized-Large	□	□	■	□	■	□	□
Medium sized-Very large	□	■	□	■	□	□	□
Small-Large	■	□	■	■	■	■	■
Small-Medium sized	■	□	■	■	□	■	■
Small-Very large	□	■	■	■	□	□	■

Source: own elaboration.

Firm size is pivotal in securing loans. The larger the company, the less complicated it is to secure a loan. Leverage is positively associated with firm size. It is better for large enterprises to consider debt financing, which is significantly cheaper than equity financing. The debt financing of an enterprise is cheaper due to tax-deductible interest payments. The firm should produce adequate cash flows to cover interest payments on debt financing. Accordingly, large enterprises increasingly diversify the sources of financing

used. The size of the enterprise can also predict the likelihood of failure. Small and medium companies are more likely to be unsuccessful than large ones. This difference may be explained by the greater exposure of small and medium enterprises to temporary debt and thus to increased refinancing risk. Size may also be a substitution for the volatility of company assets, as small enterprises are more likely to be growing in swiftly developing and consequently intrinsically volatile sectors. An additional reason is the range of the wedge in the proportion of data asymmetry. Larger companies have typically less data imbalance, having increased permission to enter to debt markets with decreased expenses of borrowing. Thus, a positive association is expected between company size and leverage.

Table 6 shows the result of the Kruskal–Wallis test on the statistically significant dissimilarities in debt ratios concerning the company’s legal form. The null hypothesis related to the same median values was excluded for ten indicators. The exception was two debt ratios (the interest burden ratio and noncurrent assets coverage ratio) because of the higher *p*-value of the test relative to the degree of relevance, and there were no statistically significant dissimilarities in the median values of these indicators.

Table 6. The output of the Kruskal–Wallis test (legal form).

	TI	SF	CI	NCI	DE	IC
Kruskal–Wallis H	168.920	168.927	93.326	14.476	159.644	121.457
Asymp. Sig.	0.000	0.000	0.000	0.001	0.000	0.000
	IB	DCF	EL	FI	NCAC	Ins
Kruskal–Wallis H	3.518	20.438	159.646	154.382	1.429	42.642
Asymp. Sig.	0.172	0.000	0.000	0.000	0.490	0.000

Source: own elaboration.

Subsequently, a post hoc analysis was carried out. Its outcomes determined the debt ratios in which there were the most significant statistical dissimilarities concerning the legal form of the enterprise. The outcomes of the pairwise comparison of the enterprise legal form are detailed in Table 7. Similar to the previous determinant of indebtedness, the filled squares indicate differences in debt indicators that were statistically significant, whereas the empty squares represent differences in debt indicators that were not statistically significant. For a comprehensive output of the post hoc test findings, please refer to Appendix B (Table A2).

Table 7. The output of the pairwise comparison of the legal form.

	TI	SF	CI	NCI	DE
Partnerships–Private limited companies	■	■	■	□	■
Partnerships–Public limited companies	■	■	■	■	■
Public limited companies–Private limited companies	■	■	■	■	■
	IC	DCF	EL	FI	Ins
Partnerships–Private limited companies	■	■	■	■	■
Partnerships–Public limited companies	■	■	■	■	■
Public limited companies–Private limited companies	■	■	■	■	□

Source: own elaboration.

The legal form of the company has important consequences on performance and debt financing access. The legal form is easily identifiable from a suffix within the company name, so this offers outside lenders an inexpensive tool to differentiate low- from high-quality borrowers in situations when screening expenditures are sufficiently relevant. Public limited companies have better access to debt financing than private limited liability

companies, i.e., in obtaining equity debt financing from existing and new investors. The main upside of setting up a public limited company is having the opportunity to raise capital in conjunction with issuing public shares, which may increase access to capital to subsidize the enterprise relative to that of a private limited company.

5. Discussion

Enterprises must monitor the total debt ratio, which specifies the share of their debt to their total assets [38]. The larger the value of the entire indebtedness ratio, the more significant the risk associated with the operation of the enterprise due to the growing indebtedness. As with other financial indicators, the total debt ratio can be compared with the industry average or with other competing enterprises operating in the market [39]. Optimal indebtedness is considered to be a level that minimizes the capital costs by which the enterprise maximizes its value [40]. High indebtedness determines the risk of the reliance of the enterprise on debt financing as well as liquidity requirements due to the need to repay the debt. Optimal indebtedness is set in the range of 70–80% in developed market economies [41] and 30–60% in other economies [42]. In the past, the value of the entire indebtedness ratio, which is considered one of the most crucial debt ratios, was calculated in the Slovak market conditions (e.g., Stefko et al. [43] and Istok and Kanderova [44]). In the Slovak companies operating in the market, the indicator achieved an average value of 63.4%, and the indebtedness was considered optimal. The self-financing ratio is a supplementary indicator to the entire indebtedness ratio, the calculation of which indicates the monitoring of the capacity of the company to subsidize its business activities by using equity. The ratio should exceed 20–30%. However, from the calculated average values, we found that EUR 1 of the total assets of the company was covered by EUR 0.364 of shareholders' funds. Enterprises operating in Slovakia achieved an average self-financing ratio that was slightly above the set level and preferred debt to subsidize their business activities. As these ratios are complementary, if the entire indebtedness ratio increases, the self-financing ratio decreases, and vice versa. If the enterprise prefers debt financing, in particular, it is crucial to monitor the debt structure by analyzing the partial ratios of the financial framework [45]. The current indebtedness ratio provides information on the amount of debt that must be repaid by the enterprise within the current year, i.e., in the next 12 months [46]. This part of the debt is essential not only for the creditors of the enterprise but also for its investors, because it determines whether the enterprise is sufficiently liquid to repay its current liabilities [47]. The noncurrent indebtedness ratio is classified as a prolonged liability with a maturity of more than 12 months. The optimal value of the indicator is 0.5 or less, but the optimal level of the ratio may vary depending on the industry. The average indicator value was 46.4%, which meant that enterprises were in the optimal range. An important metric used in corporate finance is the debt-to-equity ratio, which describes how many years the company requires to repay its liabilities, assuming a constant annual cash flow generation [48]. This indicator is used to describe the extent to which an enterprise is in debt [49]. The optimal value of the debt-to-equity ratio in most industries is considered in the range of 0.5 to 1.5: the lower the ratio, the better, because a high value of the indicator is often related to higher risk [50]. The larger the corporate debt, the more relevant the value of the observed ratio. A value between 0 and 2.5 is optimal, but a higher value is unfavorable. The average indicator value in the Slovak enterprise environment surpasses the optimal value to a limited extent [51]. Another debt ratio is the interest coverage ratio, which indicates the ratio of EBIT to interest paid. The lower the value, the more the enterprise is burdened with interest costs. The interest coverage ratio is one of the most crucial debt ratios because it expresses how many times an enterprise can cover the interest on debt after all costs associated with the business activities have been paid [52]. A value of five is optimal, while the ratio value must not be less than three [53]. The indicator averaged 10.732, arguably, with a higher coverage ratio generally being better, although the ideal ratio may vary by industry. The interest burden ratio is an inverted indicator of the interest coverage ratio and expresses the share of interest paid

by the enterprise in the generated profit. In the long run, the value of the indicator must be less than 100% because a high value indicates that there is a sufficient level of profit to secure the debt, but it can also mean that the enterprise is not properly using its debt [54]. Another indicator that expresses the ability of an enterprise to bear its level of indebtedness is the debt-to-cash flow ratio, which determines for how many years a company can cover its debts, with a value of three to four being optimal. In the case of a negative value, the enterprise is unable to pay its debts [55]. Monitoring is crucial because firms rely on equity and debt combination to subsidize their business operations. A company optimizes the value of this ratio by building up the amount of debt. The value of four is the best possible when the business activity is 75% subsidized with debt [56]. The financial independence ratio determines the extended financial stability of a company. An enterprise can cover its business activities from its resources, and the ratio defines the degree of its financial independence. The indicator of coverage of noncurrent assets is the ratio of shareholders' capital and previous liabilities to noncurrent assets [57]. The essential characteristic during the evaluation of the financial health is the stability of the enterprise, which depends on the relationship between its assets and its financial resources, which is mentioned in the golden balance rule [58]. If the ratio is greater than one, the enterprise is overcapitalized, which means that the noncurrent assets are less than its financial resources. Conversely, if the ratio is less than one, the enterprise is undercapitalized, which jeopardizes its stability. Slovak enterprises were overcapitalized because the average ratio value was higher than one. An enterprise needs to keep track of the insolvency ratio, which typifies its entire financial stability [59]. The ratio is the measure of the financial health of the company, which indicates whether its cash flow is sufficient to meet its long-term liabilities. If the indicator is higher than one, the company liabilities are higher than its receivables, resulting in primary insolvency. If the ratio is less than one, when the receivables of the company are higher than its liabilities, it is considered secondary insolvency [60].

Corporate debt is impacted by drivers that shape the configuration of corporate capital to various degrees. A crucial determinant influencing corporate debt is its size. The results of the firm size on the debt ratios were determined by the Kruskal–Wallis test: there were statistically significant dissimilarities in relation to the size of the company for seven debt ratios (current indebtedness, noncurrent indebtedness, interest coverage, interest burden, debt-to-cash flow, noncurrent assets coverage, and insolvency). The most significant differences existed between small and medium, small and large, and small and very large companies [61]. Many authors have pointed out these dissimilarities in the values of debt ratios in relation to the firm size. Small companies have insufficient access to a bank loan or supplementary funds by share or bond issuing [62]. In general, small enterprises receive debt in smaller quantities, i.e., secure it at a more significant expense, than large ones, which results in a diminished interest in debt financing [63]. The efforts of small enterprises for more liquidity throughout periods of financial difficulties may also be the main reason for lower debt [64]. The increased indebtedness of large companies is chiefly a result of optimized debt diversification and the related reduced risk of its bankruptcy. Larger companies have more diversified economic activities than smaller enterprises, thus reducing the risk of such an enterprise experiencing financial difficulties. For this reason, larger enterprises have a better chance of obtaining a bank loan and thus borrowing more [65]. There is a positive link between firm size and its indebtedness as long-term liabilities (e.g., [66,67]). Large companies are likely to subsidize their operations with debt financing. Banking institutions consider large enterprises to be stable, less risky, and, therefore, generally more accessible to the loans [67]. There is a negative link between the short-term liabilities of an enterprise and its size. The larger the company, the smaller the proportion of its short-term liabilities with regard to total assets. The noncurrent assets of the enterprise are growing faster than the current assets, which are covered by short-term sources [68].

The legal form of a company is instrumental in deciding the financing of its operations through debt; thus, it can be considered another crucial determinant of indebtedness. The

impact of the legal form of the enterprise on the debt ratios was confirmed by the result of the Kruskal–Wallis test, based on which there were statistically significant dissimilarities in the debt indicator values (in addition to the interest burden ratio and noncurrent assets coverage ratio) [37]. Enterprises operating in the Slovak market can be classified into three types of legal forms: partnerships, private limited companies, and public limited companies. Partnerships are usually made up of a few individuals, which are involved not only in the ownership of the enterprise and its decision making but also in its profits. Sometimes, everyone can bring a specific specialization to the business to expand the capacity of the company to operate in the market [69]. Another type of legal form is the private limited company, which are legally incorporated into other legal identities. The vested interest in such a legal form is the reduced liability for debts owed by the company [70]. A public limited enterprise, which is frequently misinterpreted as a private limited company, is different in the potential of the enterprise selling shares to the public. This option may be useful for an enterprise in raising funds [71]. The legal form of the enterprise is an essential driver shaping its options for the form of financing [72]. There are significant differences in corporate indebtedness between private and public limited companies. Private limited companies have a significantly higher leverage effect than public limited companies, which persists even after taking into consideration other determinants of indebtedness, which are firm size, concreteness, cost-effectiveness, growth prospects, and company fixed effects. In general, economic conditions influence the choice of debt financing. Private limited companies rely on debt financing in good financial terms, while public limited companies prefer equity financing during this period. Private limited companies depend more on extended debt throughout periods of economic expansion, which may be affected by lower costs, as extended debt is an inexpensive source of financing. However, in times of decline, private limited companies shift to short-term debt, which they use to a greater extent than public limited companies [73].

The virtual economy will reconfigure how particular company-specific features influence corporate debt levels by integrating mobile payment technologies based on artificial-intelligence-based decision-making algorithms, biometric authentication, deep-learning-based object detection technologies, and live shopping analytics throughout the economic infrastructure of the metaverse [74–78]. Remote big data management tools, immersive 3D and spatial computing technologies, remote sensing data fusion techniques, and Industry 5.0 wireless networks will articulate the virtualized financial infrastructure [79–83]. Deep-learning- and machine-learning-based image classification algorithms, virtual marketplace dynamics data, customer identification technology, geospatial big data analytics, and remote sensing data fusion techniques will enable enterprise financial performance in the metaverse economy [84–88]. Cognitive algorithmic processes, decision intelligence and modeling tools, and sensing and computing technologies will shape enterprise financial management through deep-learning-assisted smart processes [89–93], multisensor fusion technologies, visual and spatial analytics, data mining and virtual navigation tools, and dynamic routing and image processing computational algorithms can optimize corporate debt financing in metaverse commerce [94–97]. Virtual data modeling tools, image processing computational algorithms, and predictive customer analytics will be pivotal in enterprise indebtedness in the metaverse economy [98–101].

6. Conclusions

Each enterprise needs to know its financial circumstances to keep pace with others in the market. By employing financial analysis, financial performance is established, and the chief task is to evaluate not only the strong points and deficiencies of the company, but also its financial health level. For the analysis, ratios are employed that furnish more elaborate information with regard to the situation of the enterprise to clarify the level of indebtedness or the reason that led to financial difficulties. Several studies have been conducted on debt financing choices, but their conclusions have generally been contrasting. The main advantage of debt financing for an enterprise is its relatively lower price compared with fi-

ancing a business activity through equity. On the contrary, the major disadvantage of debt financing is the potential increase in debt. The increased level of corporate indebtedness may compromise the financial stability and operations of the company.

Corporate indebtedness is shaped by various determinants, which influence the configuration of its capital structure in heterogeneous manners. In our research, we applied analysis of variance to inspect the consequences of firm size and legal form on the debt ratio during 2015–2019. The ramifications of company size on the debt ratios was confirmed by the Kruskal–Wallis test, although there were statistically significant dissimilarities in the seven indebtedness indicators with regard to the size of the company. The empirical results showed that the most relevant dissimilarities in the individual calculated indicators occurred between small and medium, large, and very large companies. The result of the Kruskal–Wallis test pointed to statistically significant dissimilarities in the values of debt ratios as a result of the enterprise’s legal form. We confirmed previous results indicating that the most relevant determinants shaping corporate debt were firm size and its legal form. The study’s primary practical implication is the finding that corporate indebtedness level, measured by specific debt ratios, is significantly affected by company size and legal structure in the Slovak environment. The most significant theoretical finding of the study is that a high amount of corporate debt threatens not just a company’s financial health but also the operation of the business. Thus, having appropriate information about the debt level is crucial for business partners and stakeholders during decision-making and investing operations.

Notwithstanding the contribution of our research to the literature, the following limitation should be emphasized: By focusing only on the Slovak economy, the scope of the study restricts the extent of the generalization of the findings. Subsequent research should inspect such situations in additional national economies (using the panel data analysis) or in a more extended planning horizon than established for this study to clarify whether there might be dissimilarities in the outcomes and enable more significant comprehensiveness and applicability.

Author Contributions: Conceptualization, D.G. and K.V.; methodology, D.G.; software, K.V.; validation, D.G. and G.L.; formal analysis, D.G.; investigation, K.V.; resources, G.L.; data curation, K.V. and D.G.; writing—original draft preparation, D.G. and K.V.; writing—review and editing, D.G., K.V. and G.L.; visualization, D.G.; supervision, K.V.; project administration, D.G. and G.L.; funding acquisition, K.V. All authors have read and agreed to the published version of the manuscript.

Funding: This research was financially supported by the Slovak Research and Development Agency—Grant Vega 1/0121/20: Research of transfer pricing system as a tool to measure the performance of national and multinational companies in the context of earnings management in conditions of the Slovak Republic and V4 countries and faculty institutional research 1/KE/2022: Analysis of the determinants of indebtedness and profitability of business entities in the European area.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: This publication was created thanks to support under the Operational Program Integrated Infrastructure for the project: “The implementation framework and business model of the Internet of Things, Industry 4.0 and smart transport.” (ITMS code: 313011BWN6), co-financed by the European Regional Development Fund.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. The output of the pairwise firm size comparison.

CI	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Small–medium	−269.985	47.870	−5.640	0.000	0.000
Small–very large	−271.315	131.899	−2.057	0.040	0.238

Table A1. Cont.

Small–large	−343.083	60.054	−5.713	0.000	0.000
Medium–very large	−1.330	126.478	−0.011	0.992	1.000
Medium–large	−73.097	46.968	−1.556	0.120	0.710
Very large–large	71.767	131.574	0.545	0.585	1.000
NCI	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Medium–very large	−5.973	126.478	−0.047	0.962	1.000
Medium–large	−11.612	46.968	−0.247	0.805	1.000
Medium–small	136.309	47.870	2.848	0.004	0.026
Very large–large	5.639	131.574	0.043	0.966	1.000
Very large–small	130.336	131.899	0.988	0.323	1.000
Large–small	124.697	60.054	2.076	0.038	0.227
IC	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Small–medium	−364.441	47.870	−7.613	0.000	0.000
Small–large	−495.146	60.054	−8.245	0.000	0.000
Small–very large	−641.764	131.899	−4.886	0.000	0.000
Medium–large	−130.704	46.968	−2.783	0.005	0.032
Medium–very large	−277.323	126.478	−2.193	0.028	0.170
Large–very large	−146.618	131.574	−1.114	0.265	1.000
IB	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Very large–large	307.267	131.574	2.335	0.020	0.117
Very large–medium	425.188	126.478	3.362	0.001	0.005
Very large–small	684.279	131.899	5.188	0.000	0.000
Large–medium	117.920	46.968	2.511	0.012	0.072
Large–small	377.012	60.054	6.278	0.000	0.000
Medium–small	259.092	47.870	5.412	0.000	0.000
DCF	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Small–medium	−12.727	47.870	−0.266	0.790	1.000
Small–large	−188.167	60.054	−3.133	0.002	0.010
Small–very large	−320.789	131.899	−2.432	0.015	0.090
Medium–large	−175.441	46.968	−3.735	0.000	0.001
Medium–very large	−308.063	126.478	−2.436	0.015	0.089
Large–very large	−132.622	131.574	−1.008	0.313	1.000
NCAC	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Small–medium	−317.476	47.870	−6.632	0.000	0.000
Small–large	−363.742	60.054	−6.057	0.000	0.000
Small–very large	−367.064	131.899	−2.783	0.005	0.032
Medium–large	−46.266	46.968	−0.985	0.325	1.000
Medium–very large	−49.588	126.478	−0.392	0.695	1.000
Large–very large	−3.322	131.574	−0.025	0.980	1.000
Ins	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Large–very large	−49.190	131.574	−0.374	0.709	1.000
Large–medium	55.030	46.968	1.172	0.241	1.000
Large–small	452.655	60.054	7.537	0.000	0.000
Very large–medium	5.840	126.478	0.046	0.963	1.000
Very large–small	403.465	131.899	3.059	0.002	0.013
Medium–small	397.625	47.870	8.306	0.000	0.000

Source: own elaboration.

Appendix B

Table A2. The output of the pairwise comparison of the legal form.

TI	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Public limited companies	772.045	82.931	9.309	0.000	0.000

Table A2. Cont.

Partnerships–Private limited companies	902.262	69.728	12.940	0.000	0.000
Public limited companies–Private limited companies	130.217	52.308	2.489	0.013	0.038
SF	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Private limited companies–Public limited companies	–130.236	52.308	–2.490	0.013	0.038
Private limited companies–Partnerships	–902.278	69.728	–12.940	0.000	0.000
Public limited companies–Partnerships	–772.042	82.931	–9.309	0.000	0.000
CI	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Public limited companies	457.754	82.931	5.520	0.000	0.000
Partnerships–Private limited companies	646.606	69.728	9.273	0.000	0.000
Public limited companies–Private limited companies	188.852	52.308	3.610	0.000	0.001
NCI	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Private limited companies	133.820	69.728	1.919	0.055	0.165
Partnerships–Public limited companies	294.905	82.931	3.556	0.000	0.001
Private limited companies–Public limited companies	–161.086	52.308	–3.080	0.002	0.006
DE	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Public limited companies	732.299	82.931	8.830	0.000	0.000
Partnerships–Private limited companies	874.839	69.728	12.547	0.000	0.000
Public limited companies–Private limited companies	142.540	52.308	2.725	0.006	0.019
IC	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Public limited companies	517.154	82.931	6.236	0.000	0.000
Partnerships–Private limited companies	736.186	69.728	10.558	0.000	0.000
Public limited companies–Private limited companies	219.031	52.308	4.187	0.000	0.000
DCF	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Private limited companies	196.818	69.728	2.823	0.005	0.014
Partnerships–Public limited companies	366.049	82.931	4.414	0.000	0.000
Private limited companies–Public limited companies	–169.231	52.308	–3.235	0.001	0.004
EL	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Partnerships–Public limited companies	732.301	82.931	8.830	0.000	0.000
Partnerships–Private limited companies	874.844	69.728	12.547	0.000	0.000
Public limited companies–Private limited companies	142.543	52.308	2.725	0.006	0.019
FI	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Private limited companies–Public limited companies	–128.675	52.308	–2.460	0.014	0.042
Private limited companies–Partnerships	–862.009	69.728	–12.363	0.000	0.000
Public limited companies–Partnerships	–733.334	82.931	–8.843	0.000	0.000
Ins	Test Statistics	Std. Error	Std. Test Statistics	Sig.	Adj. Sig.
Public limited companies–Private limited companies	24.508	52.308	0.469	0.639	1.000
Public limited companies–Partnerships	–473.212	82.931	–5.706	0.000	0.000
Private limited companies–Partnerships	–448.703	69.728	–6.435	0.000	0.000

Source: own elaboration.

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