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Determinants of Capital Structure: Empirical Evidence of Manufacturing Companies in the Republic of Serbia

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Abstract: The subject of research in the paper is the capital structure of companies in the Republic of Serbia. The research sample consists of companies that operated in the manufacturing industry in the Republic of Serbia in the period 2006–2020. The aim of the research is to identify firm-specific variables that have significant influence on the capital structure of the analyzed companies. Using a panel data methodology, three leverage models were estimated: long-term leverage, short-term leverage, and total leverage. The research results confirm the importance of company size, profitability, tangibility, and risk in determining the capital structure of companies in the Republic of Serbia. However, the research results show that size, profitability, and tangibility of assets have the opposite effect on long-term leverage compared to short-term and total leverage. That is, the behavior of companies in the Republic of Serbia in the case of long-term leverage is in accordance with the predictions of the trade-off theory, while in the case of short-term and total leverage, the behavior of companies can be explained by the pecking order theory.

Keywords: capital structure; trade-off theory; pecking order theory; leverage; Republic of Serbia

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1. Introduction

Deciding on the capital structure is one of the most important issues, given that the capital structure plays an important role in determining firm performance [1–3] and significantly contributes to a company's ability to adapt to a competitive and rapidly changing economic environment [4].

Deciding on capital structure is a very complex process, and existing theories of capital structure can only explain certain aspects of the diversity and complexity of these choices [5]. Capital structure essentially refers to the way a company finances its entire operation and progress using different sources of funds [6], i.e., it represents a mixture of owned capital and debt with which companies finance their operations [7].

A company can raise additional capital to finance operations by issuing equity or debt (or hybrid) securities. Each of these methods of obtaining capital has advantages and disadvantages that should be taken into account when deciding on a capital structure. Inadequate capital structure results in high costs of capital, which also affects the increase in required rates of return and stricter selection of investment projects, while limiting investment activities has a negative impact on company growth and competitiveness [4].

The use of equity capital to finance the company's activities has its advantages and disadvantages, which also applies to the use of debt capital. The most significant advantages of equity financing are reflected in the fact that it does not have a fixed term, ensures more secure solvency, reduces dependence on creditors, etc. [8]. By raising capital through the issue of shares, the company becomes financially stronger and improves its solvency and credit rating, which ensures a more favorable position in relation to creditors when taking out new loans [9]. However, equity capital is a very expensive form of financing and causes significant issue costs. Furthermore, since the issuance of ordinary shares increases the number of owners, this can lead to the loss of control over the company [10].

The advantages of financing the company's activities with debt capital refer to the fact that the use of debt capital is time-limited and that the costs of capital (interest) occur only while the company owns debt capital [8], in addition to the tax advantages of debt [11,12], as well as increasing management discipline [13]. On the other hand, financing with debt capital also has certain disadvantages in the form of bankruptcy costs [12], agency costs arising as a result of conflicts of interest between equity holders and debt holders [14], restrictions imposed by creditors, and loss of flexibility [11].

Deciding on the capital structure is one of the most important but also the most complex activities, since it greatly affects the performance, competitiveness, and survival of the company on the market. Bearing in mind that deciding on the capital structure of companies is a very complex process, existing theories can only explain certain aspects of the diversity and complexity of these choices, since there is no universal theory of capital structure, but different theories of capital structure explain the choices of the capital structure of companies from different aspects. The objectives of the research are to determine the capital structure of the analyzed companies and to identify which factors affect the choice of capital structure of companies in the Republic of Serbia. By achieving the objectives, it will be checked whether the most important theories of capital structure can explain the decisions on the capital structure of companies in the Republic of Serbia.

Capital structure theories were created in developed countries, where capital markets function well; therefore, it is of particular importance to investigate whether their relevance can be confirmed in the context of developing countries. Although in recent years, there has been an evident growth in such research in developing countries, a very small amount of research from Central and Eastern European (CEE) [15] contexts has been identified, which certainly encourages further empirical research, especially in the context of emerging economies.

To the authors' knowledge, this is one of the first studies that analyzes companies from the divisions of manufacturing industry in the Republic of Serbia in a very long period of observation (2006–2020), which will certainly provide a framework for understanding the capital structure of companies in an emerging economy such as the Republic of Serbia's.

Mono-industrialism in post-communist small towns could function as a limit in sustainable development of companies [16,17]. Furthermore, foreign corporations are important for alleviating poverty, because foreign direct investments are needed mainly in less-favored areas of the CEE region where social risk appears [18]. The main objective of policymakers during the first phase of transition is to create an adequate infrastructure that will guarantee the proper functioning of the market economy at the macroeconomic level, but long-term economic stability requires transformation at the microeconomic level as well, which includes the transformation of the behavior of economic agents [19]. The focus of research in the paper is the determinants of the company's capital structure as part of the microeconomic transformation. Managers' lack of attention to this strategic parameter of the company, i.e., optimization of the capital structure, is caused by gaps in professional training of managers, lack of models applicable in local practice, lack of methodological guidelines, underdevelopment of the capital market, etc. [20].

Determinants of capital structure are internal (firm-specific) and external (country specific) factors which influence capital structure and its adjustment [21]. Bearing in mind that internal factors and their impact can be managed by the company, while macroeconomic factors cannot be controlled by managers [21], the focus of the paper is on the analysis of firm-specific factors that influence the capital structure. Prudent and rational management of the capital structure is an important management tool for creating the value of the company, for its strategic development, and for the recovery of companies in crisis [20]. Therefore, knowledge about the level, direction, and power of the factor's influence supports companies to make effective decisions for adjusting the capital structure in order to achieve long-term economic stability and sustainable growth [21].

The rest of the paper is organized as follows. The second part provides an overview of the literature on theories of capital structure, and within this part, based on theoretical and

empirical findings, research hypotheses on potential determinants of capital structure are derived. The third part presents the research methodology in which the research sample, data collection, research variables, and model specification are presented. The fourth part presents the empirical results of the research. In the fifth part, the results of the research are discussed, and the results of this study are connected with the international literature. The last section offers concluding remarks.

2. Literature Review and Hypotheses

One of the most important theories of capital structure is the so-called irrelevance theory developed by Modigliani and Miller [22]. Although the theory has been contested by numerous authors, its importance is particularly reflected in the fact that various contemporary theories of capital structure have been developed on the basis of the Modigliani–Miller (MM) theory of capital structure.

Modigliani and Miller believed that the market value of a company is completely independent of its capital structure and that the value of a company is determined by its assets, not by the ratio of debt to capital. The theory is based on very rigorous assumptions, so taxes and transaction costs do not exist, as well as company bankruptcy and agency costs; there is no information asymmetry, individuals and companies can borrow unlimited amounts at the same interest rate, etc. Nevertheless, in the following years, the authors corrected the initial, rigorous assumptions about a perfectly competitive market, and stated that by borrowing, companies achieve a tax advantage, given that interest reduces the tax base [11].

When Modigliani and Miller published a correction of the original model in 1963, by taking into account the existence of taxes, bearing in mind that by using debt, the company achieves a tax shield, the authors came up with an irrational solution, which implies that the company should use the maximum amount of debt in its capital structure. However, the authors distanced themselves from the stated claim in the paper itself, stating that the existence of a tax advantage from the use of debt does not necessarily mean that corporations should strive to use the maximum possible amount of debt in their capital structures. The authors especially emphasize the restrictions imposed by lenders, but on the other hand, the need to preserve flexibility, which generally implies that the corporation maintains a significant reserve of unused borrowing power [11].

Nevertheless, this corrected version of the MM theory served as the basis for the development of perhaps the most complete theory of capital structure—trade-off theory. Kraus and Litzenberger [12] took into account the negative aspects of debt in addition to the positive aspects of debt in the model they developed. The negative aspect of over-indebtedness relates to the costs of financial distress.

Trade-off theory [12] suggests that companies choose their capital structure by balancing the benefits and costs of debt. The main benefit of using debt relates to tax savings, while the costs of debt generally include bankruptcy costs. The problem of optimal capital structure is formulated as determining the level of debt that gives the maximum market value of the company, which is achieved by balancing the tax advantages of debt and the costs of bankruptcy. According to the trade-off theory, the optimal level of debt is achieved when the marginal benefit of debt financing is equalized with its marginal cost.

The tax advantage of debt financing arises because the interest is deducted from the tax base. Tax savings represent a key advantage over the use of debt; however, the transmission of the capital structure, in terms of higher indebtedness, has advantages only for companies that are sure that they can use tax savings [8], i.e., that the company can cover from the generated earnings their debt obligations. If the company cannot meet its debt obligations, it will be forced to go bankrupt, as well as bear the costs associated with that event [12].

Bankruptcy costs can be direct and indirect and arise due to increased financial risk [6]. Direct costs of bankruptcy mainly include legal and administrative costs related to this process [23]. Another cost of bankruptcy is the cost that the company bears in cases where stakeholders believe that the company will cease to operate [24]. Indirect costs of

bankruptcy refer to the loss of income due to consumers' perception that a company is in trouble, the stricter terms of suppliers to protect against the possibility of defaulting on them, and the difficulties companies may have in trying to obtain capital for their projects, which may ultimately lead to the rejection of good projects [23]. With the explicit consideration of bankruptcy costs, maximization of the market value of the company is not equivalent to either maximization of leverage or maximization of the market value of the company's debt [12].

In addition to financial distress costs, agency costs [14] are also taken into account in the trade-off model. The ownership structure of the companies is also reflected in the capital structure of the companies and consequently also in the value of agency costs, given that different capital structures of companies cause qualitatively and quantitatively different agency costs.

Conflicts of interest between owners and managers, as well as between owners and creditors, generate qualitatively different agency costs. On the one hand, the separation of ownership and control causes the emergence of agency costs of capital, since managers do not always act in the best interest of the owners but use discretionary spending to realize their own goals. Jensen [13] states that debt can reduce these agency costs and argues that higher debt creates an obligation to pay more money to repay the debt, which reduces the free cash flow available for spending at the discretion of managers. Therefore, the use of debt can be significant in reducing agency costs of free cash flow and improving organizational efficiency. On the other hand, the conflict of interest between the owner and the creditor generates another type of agency costs. Since conflicts between debt holders and equity holders arise only when there is a risk of default [25], and as this risk increases with the growth of debt in the capital structure, the excessive use of debt contributes to the intensification of this conflict and the growth of agency costs of debt. Therefore, Jensen and Meckling [14] state that the optimal ratio of equity and debt is the one that results in minimum total agency costs.

Based on the findings of Donaldson [26] that management prefers internal financing over external, Myers and Majluf [27] developed the pecking order theory. Unlike the trade-off theory, the pecking order theory does not deal with determining the optimal capital structure, but points out that when composing the capital structure, companies are run in a predefined order regarding the preferences of different sources of financing.

Myers and Majluf [27] started from the assumption that there is an information asymmetry between insiders and outsiders, i.e., that the company (i.e., managers) have information that investors do not have, and that both parties are aware of it. Furthermore, the assumption is that investors interpret the company's actions rationally, and that the company (i.e., management) acts in accordance with the interests of the old, passive shareholders. The aforementioned assumptions allow for the explanation of the company's tendency to rely on internal sources of financing and that, if external financing is needed, it prefers debt over equity.

Myers [28] points out that companies prefer internal financing, while if external financing is necessary, companies first decide on the safest option, i.e., start with debt, then eventually decide on hybrid securities, such as convertible bonds and equity, as a last resort.

The pecking order theory is based on the assumption of the existence of information asymmetry between company managers (insiders) and potential investors (outsiders), that is, it is assumed that management knows more about the value of the company than potential investors. Myers and Majluf [27] state that the informational advantage of managers in relation to investors is not only reflected in the amount of information that the manager has, but much more important than that is that the manager knows better what that information means for the company. They have an insider's view of their organization and what it can and cannot do, and this organizational knowledge is part of the human capital managers acquire while working. Therefore, the separation of ownership from professional management naturally creates asymmetric information.

Given that the company's managers know much more about the value of its assets and investment opportunities than external investors, investors, aware of this, will rationally observe the actions of the company, on the basis of which they will make decisions about investing in the company, as well as the price they are willing to pay for the company's shares.

The pecking order theory explains how asymmetric information affects the emission investment decisions of the company and explains how the company tries to avoid the problem of information asymmetry by preferring certain sources of financing. Companies that have large financial slack (high levels of cash, marketable securities, or the ability to issue debt without the risk of default) would take advantage of all investment opportunities with a positive net present value, unlike the case where a company does not have significant financial slack and therefore is not able to realize all investment opportunities. In the case that internal sources of financing are not sufficient for the realization of investment opportunities, i.e., when there is a need for external sources of financing, bearing in mind that management acts in the interest of old shareholders, Myers and Majluf [27] state that the company will prefer debt over equity, considering that the issue of debt has less influence on the price of shares than the issue of shares. If investors know that a company does not have to issue shares in order to invest, then the attempt to issue shares sends a strong pessimistic signal and explains why share prices fall, on average, when companies announce a share issue. Therefore, the financial slack allows the company to avoid external financing and thus to avoid interfering with its investment decisions in possible conflicts of interest between old and new shareholders, that is, it allows the company to avoid the consequences of insider information of managers [27].

The creators of the financial growth cycle theory, Allen Berger and Gregory Udell [29], showed how the capital structure changes depending on the age and size of the company. With the change in the company's growth phase, the company's needs for different sources of financing change, as well as the availability of different sources of financing to the company. Therefore, the authors point out that at different points in the growth cycle, different capital structures are considered optimal. According to this theory, in earlier stages, when companies are young or small, they focus on financing from internal and mostly informal sources, trade loans or financing from "business angels", while companies that move to later stages of growth have access to more external sources [1].

By analyzing the actual financial decisions of companies, the creators of Market Timing Theory, Baker and Wurgler [30], showed that market timing has large, lasting effects on capital structure. The main findings suggest that low-leverage firms are those that raised funds when their market values were high, as measured by the market/book value ratio, while highly leveraged firms are those that raised funds when their market values were low. According to the theory of market timing, there is no optimal capital structure. The capital structure is the result of cumulative financial decisions in accordance with good market timing [30].

These theories are assumed to be the main theories of capital structure. However, in the largest number of empirical studies, the behavior of companies has been confirmed in accordance with the trade-off theory and the pecking order theory.

Bradley et al. [31] provide evidence supporting the trade-off theory. Rajan and Zingales [32] analyzed the financial decisions of public firms in the major industrialized countries and found that the behavior of companies is in accordance with the pecking order theory. Titman and Wessels [33] present evidence which also supports pecking order theory. Chen and Jiang [34] empirically test the determinants of capital structure choice for Dutch companies, and research results provide evidence supporting the trade-off hypothesis. Deesomsak et al. [35] found that Malaysian companies prefer to use internal sources of financing, which is in line with the predictions of the pecking order theory. The results of the study conducted by Mazur [36] generally suggest the relevance of the pecking order hypothesis in explaining the financing choices of Polish firms. The results of a study by Pacheco [37] in Portuguese companies support the pecking order theory. La Rocca et al. [38]

found that firms change the hierarchy of financial decision making depending on the stage of their business life cycle. The authors find that in the initial stages of development, debt is the most important source of financing, while in the maturity stage, firms replace debt with internal capital, which is in line with the pecking order theory. The result of the research conducted by Simatupang et al. [39] in Indonesia supports the pecking order theory, which states that the higher the profitability of the company, the more the company will tend to use internal financing.

Oolderink [40] found that the pecking order theory in capital structure decisions prevails, while there is moderate support for the static trade-off theory. Nguyen et al. [41] investigating Chinese manufacturing firms found that these firms follow the pecking order or trade-off theories in their capital structure choices. Zhao et al. [42] found that both the trade-off theory and the pecking order theory confirm the validity of Chinese firms' financing decisions at different quantiles of leverage, while Chen [43] found that the capital choice decision of Chinese firms seems to follow a "new pecking order"—retained profit, equity, and long-term debt.

Theoretical and empirical research has identified key determinants of capital structure. Although different theoretical viewpoints often predict different effects of certain variables on the capital structure of companies, a large number of empirical studies have confirmed the importance of the following firm-specific variables for determining the capital structure of companies: company size [33,36,43,44], profitability, [36,39,40,43–47], tangibility [36,39,43,44,46,47], growth opportunities [33,36,43,44,47], and risk [33,45,46].

According to the trade-off theory, company size is positively related to the company's level of leverage, that is, according to this theory, larger companies tend to use more debt. The size of the company is a reflection of its strength, stability, security, and negotiating power [48]. Large companies are more inclined to obtain debt compared to smaller companies since they have a high value of assets, which gives them the ability to repay the debt and interest [49]. Titman and Wessels [33] state that larger companies may be more diversified, which makes them less susceptible to the risk of bankruptcy. Pecking order theory predicts a negative relationship between company size and debt. Myers and Majluf [27] state that information asymmetry is less for larger companies; therefore, large companies may have an advantage over small companies to issue equity instead of debt. Information non-transparency and the way small companies are managed (in most small companies, the owner is also the manager) are the key characteristics that cause the distinction between the financing of small companies and the financing of large companies [29]. The aforementioned differences make the problems of information asymmetry and moral hazard greater for small companies. The size of the companies significantly affects the maturity of the debt. Ortiz-Molina and Penas [50] state that small companies, due to riskiness and information asymmetry, must rely more on short-term debt. The results of research conducted by Degryse et al. [51] show a positive relationship between company size and long-term debt, while the relationship between company size and short-term debt is negative, indicating that larger companies rely more on long-term financing and use less short-term financing, while small companies have to rely more on short-term debt. Deesomsak et al. [35] state that large companies have lower agency costs of debt, relatively lower monitoring costs, less volatility of cash flows, easier access to the credit market, and require more debt to fully utilize the tax shield.

Based on the above, the first research hypothesis was formulated:

Hypothesis 1 (H1): *Company size positively and significantly affects company leverage.*

The most important theories of capital structure have the opposite point of view regarding the impact of profitability on the capital structure of companies. Given that, according to the pecking order theory, internal sources of financing have priority over external sources of financing, more profitable companies will use less external financing. Myers and Majluf [27] state that in cases where internal sources of financing are not sufficient to realize investment opportunities, companies will use external financing, and in that case they will prefer debt over equity. Chen and Chen [24] state that due to

information asymmetry between the company and potential investors, companies prefer retained earnings as an internal source of financing over debt, short-term debt over long-term debt, and debt over equity. Since profitability reflects the amount of earnings that a company can retain, higher profits allow companies to have higher retained earnings and less reliance on external sources of financing; therefore, the pecking order theory predicts a negative relationship between profitability and leverage. On the other hand, trade-off theory predicts a positive relationship between profitability and company leverage, given that more profitable companies have a lower probability of bankruptcy. Abor [52] states that more profitable companies can afford a higher level of debt in the capital structure, since they have a high potential to absorb significant amounts of interest and since, on the other hand, a high level of debt provides them with significant tax savings (tax shield).

Following the above arguments, a second research hypothesis was developed:

Hypothesis 2 (H2): *Company profitability positively and significantly affects company leverage.*

The trade-off theory predicts a positive impact of tangibility of asset on the company's debt level. A company with more tangible assets has more collateral to service debt in the event of bankruptcy and therefore has a greater ability to raise more debt [53]. Furthermore, bankruptcy costs depend on the company's asset structure, and these costs are significantly higher when the asset structure is dominated by intangible assets. In the case of bankruptcy, the biggest losses occur in intangible assets (technology, professional staff, brand name, etc.), and it is much more difficult for creditors to collect claims in cases where the structure of assets is dominated by intangible assets [8]. The pecking order theory, looking at tangibility of asset from the aspect of information asymmetry, predicts a negative relationship between tangibility of asset and leverage. Bessler et al. [54] state that, given that monitoring costs are generally higher for companies that have fewer assets that can serve as collateral, these companies may voluntarily choose higher levels of debt to limit the consumption of benefits by managers, since managers in companies with lower levels of assets that can be used as collateral are more likely to consume more than the optimal level of perquisites. Managers of highly leveraged companies will be less able to consume excessive perquisites since creditors will monitor such companies more closely [54]. Furthermore, (high) information asymmetry leads to underpricing of new equity [43], while low information asymmetry, associated with tangible assets, makes issuing shares cheaper [55]. Chen [43] confirms the positive relationship between a company's leverage, especially long-term debt, and the tangibility of its asset, and states that the tangibility of assets is an important criterion of banks' credit policy, especially for long-term loans. Chiang et al. [56] also found a positive relationship between asset tangibility and long-term debt. Amidu [57] confirms the negative relationship between asset tangibility and short-term debt, while in the case of long-term debt, the relationship is positive.

Based on the above, the following research hypothesis was formulated:

Hypothesis 3 (H3): *Asset tangibility positively and significantly affects company leverage.*

The pecking order theory predicts a positive relationship between growth opportunities and debt. Myers [28] states that due to the information asymmetry between managers and investors, when composing the capital structure, in order to reduce the costs of asymmetric information, companies prefer internal sources of financing, i.e., retained earnings, then low-risk debt, high-risk debt, and lastly, issuing new equity. Since companies with higher growth opportunities have more need for funds and when internal finance is exhausted, companies prefer debt over external equity to finance risky investments and therefore increase leverage [58]. According to trade-off theory, companies that have future growth opportunities, which are a form of intangible assets, tend to borrow less than companies that own more tangible assets, because growth opportunities cannot be collateralized [43]. Myers [25] points out that the value of these investment opportunities is a bad collateral for obtaining a loan, given that the value of these investment opportunities depends on future investment decisions. For companies with high growth opportunities,

the risk of bankruptcy increases; therefore, according to the trade-off theory, a negative relationship between growth opportunities and company leverage is expected.

Therefore, based on the above, the following hypothesis was proposed:

Hypothesis 4 (H4): *The company's growth opportunities negatively and significantly affect the company's leverage.*

According to trade-off theory, higher earnings volatility or higher business risk of a company increase the likelihood of financial difficulties. Companies with high volatility of earnings bear the risk that the level of earnings will fall below their debt service obligations, which may cause an increase in the risk of bankruptcy [59]. Higher earnings volatility increases the likelihood of financial problems, as companies may not be able to meet their debt service obligations. Thus, a company's debt capacity decreases with an increase in earnings volatility, leading to the expected inverse relationship with leverage [35]. Given that earnings volatility or business risk is generally related to the possibility of company bankruptcy, risky companies or companies characterized by a high possibility of default should have a low level of leverage, that is, according to the trade-off theory, risk is negatively related to debt. Earnings volatility or business risk is a proxy for the probability of financial distress and is generally expected to be negatively related to leverage [60]. The pecking order theory also predicts a negative relationship between business risk and leverage. Companies with high earnings volatility tend to accumulate cash to avoid the problem of underinvestment in the future [61]. Alipour et al. [53] state that companies with high risk or high earnings volatility are more likely to go bankrupt; therefore, they have low creditworthiness.

Accordingly, the following hypothesis was proposed:

Hypothesis 5 (H5): *Company risk negatively and significantly affects company's leverage.*

Since the results of previous research about the level, direction, and power of the determinants of the capital structure are not unambiguous, and since the sign of the relationship between the identified determinants and the capital structure is also caused by the selection of the capital structure indicators, the value of this research is in testing the proposed research hypotheses with different models. Three models were evaluated to test whether potential determinants have the same importance and effect on capital structure using different indicators of capital structure.

3. Methodology

3.1. Sample and Data Collection

The research sample consists of joint-stock companies operating within the manufacturing industry in the Republic of Serbia (production of food products, beverages, and tobacco products, production of textiles, clothing, leather, and leather goods, production of chemicals and chemical products). The choice of the manufacturing industry is motivated by the fact that it is a very important economic activity in the Republic of Serbia, since a significant amount of the national income, as well as the number of employees, is formed precisely in this economic sector. Since the authors' intention was not only to analyze the capital structure in the current period, but also to analyze the capital structure and its changes in the long-term period, the time period of the research includes the period 2006–2020, since this is the longest period for which data were available to the authors. The research sample consists of companies that operated during the entire observed period. A total of 86 companies were identified based on data from the Agency for Business Registers [62] and scoring.rs [63]. The data were collected from the published financial reports of the companies. Since there were no published financial reports for certain companies from the initially defined sample for certain years, those companies were eliminated from the sample, in order to avoid artificially creating variability, by using average values for missing data. After the mentioned eliminations, the total number of observations in the leverage models is 1005.

3.2. Model Specification and Variable Measurements

The research methodology follows the logic of the set research objectives and is aimed at testing the set research hypotheses.

The traditional understanding of the capital structure, according to which the capital structure includes only long-term sources of funds, is increasingly being replaced by a broader understanding of the capital structure in empirical research. In order to express the capital structure, the majority of research uses the indicators long-term debt to total assets of the company (long-term leverage—LL), short-term debt to total assets (short-term leverage—SL), or total debt of the company to its total assets (total leverage—TL) [33,43,45,59,64–69].

The use of capital structure indicators that include short-term or total company debt is particularly significant in research conducted in developing countries, since companies in developing countries generally have a low share of long-term debt in the capital structure [70]. Demirguc-Kunt and Maksimovic [68] state that a significant difference between developing countries and developed countries is that developing countries have significantly lower amounts of long-term debt. Although long-term sources of financing are particularly important because they affect the long-term stability of financing, due to the willingness of companies to use short-term financing to finance long-term projects, the use of capital structure indicators in a narrower sense, i.e., the long-term debt/total assets indicator, could provide a misleading picture of the company's risk in relation to financial debt [1]. In accordance with the above, the following indicators of capital structure were used in the research: long-term leverage, short-term leverage, and total leverage.

Using a panel of regression models, the determinants of the capital structure will be identified. Data analysis and processing were done in STATA and R programs.

In order to determine whether potential determinants have the same importance and effect on long-term, short-term, and total leverage, three capital structure models will be evaluated: a model with long-term leverage as a dependent variable (1); a model with short-term leverage as a dependent variable (2); and a model with total leverage as a dependent variable (3).

$$LL_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Tangibility_{it} + \beta_4 Growth_{it} + \beta_5 Risk_{it} + e_{it} \quad (1)$$

$$SL_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Tangibility_{it} + \beta_4 Growth_{it} + \beta_5 Risk_{it} + e_{it} \quad (2)$$

$$TL_{it} = \beta_0 + \beta_1 SIZE_{it} + \beta_2 ROA_{it} + \beta_3 Tangibility_{it} + \beta_4 Growth_{it} + \beta_5 Risk_{it} + e_{it} \quad (3)$$

where LL_{it} represents long-term leverage (long-term liabilities/total assets); SL_{it} short-term leverage (current liabilities/total assets); TL_{it} total leverage (total liabilities/total assets); *SIZE*—company size (natural logarithm of total assets); *ROA*—profitability (return on total assets); *Tangibility*—tangibility of assets ((fixed assets–intangible assets)/total assets); *Growth*—growth opportunities (intangible assets/total assets); *Risk*—earnings volatility (standard deviation ROA); e_{it} represents the error-term composed of the firm-specific (η_i) and time-specific effects (λ_i), followed by the time-varying error term (ϵ_i).

4. Results

Table 1 shows descriptive statistics. The average value of the long-term leverage of the companies in the sample is 9.85%. It is interesting to note that in addition to the extremely low value of this indicator, some companies from the sample have no long-term debt at all, so the minimum value of this indicator is zero.

The low values of the long-term leverage indicator are not unexpected, given that in a large number of studies conducted in developing countries, the value of this indicator is also at a very low level compared to developed countries. Demirguc-Kunt and Maksimovic [68] identified a very low share of long-term debt in the total assets of companies in Brazil, Zimbabwe, and Jordan (value of the indicator up to 10%), while the value of this indicator in companies in Thailand, Malaysia, Mexico, Pakistan, Turkey, and the Republic of South Africa was at a higher level (up to 15%). Companies in India and Korea had significantly

higher long-term leverage compared to other developing countries (around 20%). In developed countries, long-term leverage was generally at a higher level, and in companies in Finland and Norway, long-term leverage was over 45%. However, Demirguc-Kunt and Maksimovic [68] show that not all developed countries are characterized by a particularly high level of long-term leverage, and that Great Britain and Hong Kong, compared to other developed countries, have a lower level of long-term leverage (below 15%).

Table 1. Descriptive statistics.

Variable		Mean	Std. Dev.	Min	Max	Observations	
Long-term leverage	overall	0.098474	0.1661978	0	1.45559	N =	1005
	between		0.1191417	0	0.6035417	n =	67
	within		0.1167258	−0.384736	0.9931816	T =	15
Short-term leverage	overall	0.4936689	0.4976569	0.019524	4.47108	N =	1005
	between		0.3314433	0.0562465	1.879774	n =	67
	within		0.3732821	−0.6465213	3.600742	T =	15
Total leverage	overall	0.5921429	0.5466175	0.030457	4.62922	N =	1005
	between		0.3815999	0.0617331	1.942447	n =	67
	within		0.3939578	−0.5964337	3.733963	T =	15
Size	overall	0.5952351	0.772446	3.65639	7.76653	N =	1005
	between		0.7588528	4.520789	7.407187	n =	67
	within		0.1698383	4.756017	6.459864	T =	15
Profitability	overall	−0.0112141	0.1585783	−1.7808	1.6148	N =	1005
	between		0.0808372	−0.27396	0.189933	n =	67
	within		0.1367609	−1.636387	1.690039	T =	15
Tangibility	overall	0.5036521	0.2063012	0.033352	0.996655	N =	1005
	between		0.1567496	0.1560135	0.7892477	n =	67
	within		0.135397	−0.1814456	0.9809187	T =	15
Growth opportunities	overall	0.0052889	0.0168697	0	0.199375	N =	1005
	between		0.0105011	0	0.0682376	n =	67
	within		0.0132609	−0.0628907	0.1709595	T =	15
Risk	overall	0.1179104	0.1006681	0.01	0.49	N =	1005
	between		0.1013774	0.01	0.49	n =	67
	within		4.14×10^{-17}	0.1179104	0.1179104	T =	15

Source: Authors.

A very low long-term leverage of 6.81% was identified for companies in Turkey [71]. Le and Phan [69] determined that the long-term leverage of companies in Vietnam is 10.83%, while in China the value of this indicator is 8.88% [60]. Kayo and Kimura [72], analyzing the capital structure of companies from 40 countries, identified the lowest level of long-term leverage in the Republic of South Africa (6.46%), Turkey (6.59%), Great Britain (7.37%), Singapore (8.28%), and Taiwan (8.46%).

On the other hand, De Jong, Kabir, and Nguyen [73] analyzing companies from as many as 42 countries, identified the lowest level of long-term leverage (below 10%) in companies in Greece (5%), Poland (5.2%), Turkey (5.9%), Germany (7.2%), Italy (8%), Great Britain (8.4%), Malaysia (8.7%), the Netherlands (9.1%), Singapore (9.3%), Hungary (9.4%), France (9.7%), and Hong Kong (9.9%), while in certain developing countries they identified a high level of long-term debt indicators (Korea 16.4%, India 22, 2%, Argentina 22.9%).

Figure 1 shows that the average value of the indicator of long-term leverage did not change significantly during the observed period, while when it comes to the indicator of short-term leverage, a significant increase in the average value of this indicator was achieved in 2014, when its average value began to exceed 0.5. The lowest average value of the long-term leverage indicator was in 2013, when its average value was 0.08, while it had the highest value at the end of the observed period, i.e., in 2020, when its average value

was 0.13. Since the value of this indicator is at a fairly low level in the observed period, it is interesting to mention that certain companies in certain years of the observed period had no long-term debt at all, that is, their long-term leverage was zero. The percentage of such companies in the observed period ranged from 13% to 28%.

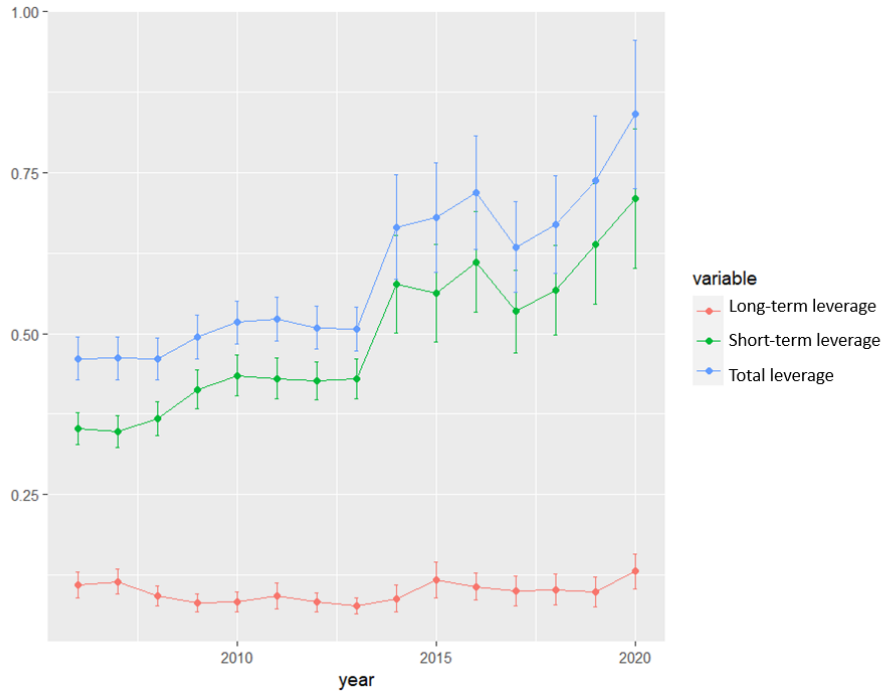

Figure 1. Long-term leverage, short-term leverage, and total leverage in the Republic of Serbia in the period 2006–2020. Source: Authors.

Using panel regression models, the research hypotheses were tested, which check the significance of the following variables for determining the capital structure of companies in the Republic of Serbia: company size (H_1), profitability (H_2), tangibility of assets (H_3), growth opportunities (H_4), and risk (H_5). In order to determine whether the mentioned variables are equally significant for different indicators of the capital structure, three models were evaluated. In the first model, the dependent variable is long-term leverage, in the second model, short-term leverage, while the dependent variable in the third regression model is total leverage.

In order to provide the most representative analysis of the factors influencing the capital structure of companies, three models were evaluated: the Pooled Ordinary Least Squares model (OLS), Fixed Effects Model (FE), and Random Effects Model (RE). In order to select a consistent model, statistical tests such as the F-test, the Breusch–Pagan LM test, and Hausman's test were used.

The results of the evaluation of the model with long-term leverage as the dependent variable are presented below. The model was first assessed using the grouped OLS method, and then the Breusch–Pagan LM test was used to test whether there were significant differences between companies. Based on the test results, it will be checked whether the grouped OLS model is consistent in the estimation.

The Breusch–Pagan LM test tests the hypothesis that there are no significant differences between observation units or formally:

Hypothesis 0 (H0): *The variance between observation units is zero.*

Based on the value of the Breusch–Pagan LM test statistic of 1335.22 (p = 0.000), the hypothesis that there are no significant differences between the companies in the sample is rejected. In that case, the random effects model is better for estimation than OLS. Since the

Breusch–Pagan LM test proves that there is a panel effect, a fixed effects (FE) model and a random effects (RE) model were estimated.

In order to determine which model is consistent in the estimation, the Hausman test was used, with which we test the hypothesis that the differences in the coefficients between the fixed effects model and the random effects model are not systematic:

$$H_0 = \textit{Differences in coefficients are not systematic.}$$

Based on the Hausman test statistic value of 2.96 ($p = 0.7065$) at the 5% test significance level, the stated hypothesis cannot be rejected, which is why the RE model was selected. Since the RE model is consistent in estimation, the results of the RE model estimation are shown in Table 2.

Table 2. Estimated long-term leverage model (Random Effect).

Variable	Coef.	Std. Err.	Z	$p > \|t\|$
Size	0.0455	0.0169	2.7	0.007
ROA	0.0515	0.0143	3.59	0.000
Tangibility	0.2045	0.0902	2.27	0.023
Growth opportunities	0.0033	0.0045	0.74	0.462
Risk	−0.0525	0.0143	−3.67	0.000
_cons	−0.1977	0.0928	−2.13	0.033
Observations	1005	Wald chi2(5)	21.16	0.0035
R-sq:		within	between	overall
		0.0132	0.1072	0.0605

Source: Authors.

The results of the long-term leverage model using the RE method show that there is a statistically significant relationship between the following independent variables: company size, profitability, tangibility of assets, risk, and long-term leverage (dependent variable).

As the company size (log of total assets) increases by 1%, long-term leverage is expected to increase by 0.000455. With a unit change in profitability, the value of long-term debt is expected to increase by 0.0515, while with a unit change in asset tangibility, an increase in long-term leverage is expected by 0.2045.

There is a statistically significant negative relationship between risk and long-term leverage, and a unit change in risk is expected to reduce long-term leverage by 0.0525. No statistically significant relationship with long-term leverage was identified for the growth opportunity variable.

The identical econometric procedure was applied in the model in which short-term leverage is the dependent variable. First, based on the Breusch–Pagan LM test statistic value of 452.23 ($p = 0.0000$), it was proven that the random effects model is better for estimation than the OLS model. Since there is a difference between observation units (companies), FE and RE are better estimators compared to the OLS method. Based on the Hausman test statistic value of 38.7 ($p = 0.000$), the relevance of the FE model was confirmed. Table 3 shows the results of the FE model for short-term leverage.

The results of the short-term leverage model using the FE method confirm a negative and statistically significant relationship between company size, profitability, tangibility of assets, risk, and short-term leverage. The growth opportunity variable is not statistically significant.

For a 1% increase in company size, the model predicts a 0.000494 decrease in short-term leverage. A unit change in profitability is expected to reduce short-term leverage by 0.1873. For a unit change in asset tangibility, the model predicts a decrease in short-term leverage by 0.3603, while for a unit change in risk, a decrease in short-term leverage is expected by 0.2143. The following is a presentation of the results of the assessment and the third model, with total leverage as the dependent variable.

Table 3. Estimated short-term leverage model (Fixed Effects).

Variable	Coef.	Std. Err.	t	$p > \|t\|$
Size	−0.0494	0.0143	−3.46	0.001
ROA	−0.1873	0.0141	−13.2713	0.000
Tangibility	−0.3603	0.0802	−4.49	0.000
Growth opportunities	−0.9503	0.8228	−1.16	0.248
Risk	−0.2143	0.0892	−2.4	0.016
_cons	3.0833	0.4523	6.82	0.000
Observations	1005	F(5.947)	3662.54	0.000
R-sq:		within	between	overall
		0.09508	0.05098	0.08973

Source: Authors.

Based on the Breusch–Pagan LM test statistic value of 773.32 ($p = 0.0000$), it was proven that there is a difference between the observation units, and in that case, FE and RE are better estimators compared to the OLS method. Based on the Hausman test statistic value of 35.94 ($p = 0.000$), it was confirmed that the FE model is consistent in the assessment, and the results of the FE model assessment will be interpreted. Table 4 shows the results of the estimation of the FE model for total leverage.

Table 4. Estimated total leverage model (Fixed Effects).

Variable	Coef.	Std. Err.	t	$p > \|t\|$
Size	−0.3214	0.0843	−3.81	0.000
ROA	−1.8703	0.0148	−126.08	0.000
Tangibility	−0.1052	0.0415	−2.54	0.011
Growth opportunities	−0.2928	0.8649	−0.34	0.735
Risk	−0.1135	0.0429	−2.65	0.008
_cons	2.9091	0.4754	6.12	0.000
Observations	1005	F(5.947)		
R-sq:		within	between	overall
		0.09457	0.04504	0.08833

Source: Authors.

The results of the total leverage model using the FE method show identical results as in the short-term leverage model. A negative and significant relationship between company size, profitability, tangibility of assets, risk, and total leverage was confirmed. As the size of the company increases by 1%, the total leverage is expected to decrease by 0.003214.

With a unit change in profitability, the value of total leverage is expected to decrease by 1.8703, while with a unit change in asset tangibility, a decrease in total leverage is expected by 0.2045. With a unit change in risk, the total leverage is expected to decrease by 0.1135.

There is no statistically significant relationship between the growth opportunity variable and total leverage in this model specification either.

Based on the evaluation of the different specifications of the leverage model, the following can be concluded: in all three models, a statistically significant relationship between the variables of company size, profitability, tangibility of assets, risk, and leverage was identified. However, the variables of company size, profitability, and asset tangibility show the opposite expected effect on short-term and total leverage compared to long-term leverage. In the model of short-term and total leverage, the expected effect of the variables of company size, profitability, and tangibility of assets is negative, while the expected effect of these variables on long-term leverage is positive. The risk variable has a negative and statistically significant relationship with all three dependent variables of the regression models. The growth opportunity variable has no significant effect in any leverage model.

The research hypotheses H_1, H_2, and H_3, which assume a positive and significant influence of variables of company size, profitability, and tangibility of assets on leverage, were confirmed in the long-term leverage model. Research hypothesis H_5 predicting a

negative and significant effect of risk on company leverage was confirmed in all three leverage models. Given that the growth opportunity variable did not have a significant impact on company leverage in any model, H_4 is rejected.

5. Discussion

The expected effect of the variables of company size, profitability, and asset materiality on long-term leverage is positive, which is in line with the predictions of the trade-off theory. According to trade-off theory, larger companies tend to use more debt, since they have a high asset value that gives them the ability to repay debt and interest [49]; furthermore, considering that larger companies are more diversified, this makes them less susceptible to the risk of bankruptcy [33]. The trade-off theory predicts a positive effect of company profitability on leverage, since more profitable companies have a lower probability of bankruptcy. Furthermore, more profitable companies achieve significant tax savings by using debt [52], and the trade-off theory predicts a positive effect of profitability on leverage. Asset tangibility, according to trade-off theory, also has a positive effect on leverage, since a company with more tangible assets has more debt collateral [53].

Risk, on the other hand, according to trade-off theory, has a negative effect on leverage. Riskier companies or companies that have high earnings volatility have a higher possibility of default, which increases the risk of bankruptcy and reduces the company's debt capacity [35,59].

Bearing in mind that the model of long-term leverage confirmed the expected effect of company size, profitability, tangibility of assets, and risk on leverage, it can be concluded that in the case of long-term leverage, the behavior of companies in the Republic of Serbia is in accordance with the trade-off theory.

On the other hand, the model of short-term leverage and the model of total leverage show a negative and significant effect of company size, profitability, tangibility of assets, and risk on leverage, while the variable growth opportunity is not significant in these models either. The negative effect of these variables on leverage can be explained by the pecking order theory, according to which companies prefer internal financing [28] and borrow when internally generated funds are not sufficient to meet investment needs [74]. The pecking order theory looks at company size and tangibility of assets from the aspect of information asymmetry and predicts a negative effect of these variables on leverage. On the other hand, higher profitability allows companies to have higher retained earnings, which are the preferred source of financing according to this theory; therefore, the pecking order theory predicts a negative relationship between profitability and leverage. When it comes to risk or earnings volatility, the predicted relationship with leverage is also negative, because companies with high earnings volatility tend to accumulate cash to avoid the problem of underinvestment in the future [61].

Since the negative influence of all statistically significant variables on leverage was identified in the models of short-term and total leverage, it can be concluded that companies in the Republic of Serbia in the case of short-term and total leverage make decisions in accordance with the pecking order theory.

The research results are largely in accordance with the results of previous, comparable research.

Delcoure [67] on a sample of companies from Central and Eastern Europe shows a positive and statistically significant relationship between company size and total leverage, as well as between company size and short-term leverage, while the influence of size is not significant for long-term leverage. Chen [43] found that size is negative and significant in estimating long-term leverage but positive in estimating total leverage. Degryse, de Goeij, and Kappert [51] show a positive relationship between company size and long-term debt, while the relationship between company size and short-term debt is negative.

Chiang, Cheng, and Lam [56] and Amidu [57] found a positive relationship between asset tangibility and long-term debt, while in the case of short-term debt, Amidu [57] confirms the negative impact of asset tangibility and short-term debt. Delcoure [67] found

a positive and statistically significant effect of asset tangibility on leverage. Booth et al. [45], on a sample of companies from 10 developing countries, found a positive impact of asset tangibility on long-term debt, while in the case of total leverage, the impact of asset tangibility is negative. Chen [43] shows a positive effect of asset tangibility on long-term and total leverage. Delcoure [67] found a negative and statistically significant relationship between companies' leverage and their profitability. Booth et al. [45] found a negative effect of profitability on long-term and total leverage. Chen [43] also finds a negative effect of profitability on long-term and total leverage.

Delcoure [67] found a negative impact of risk (earnings volatility) on total and long-term leverage in companies in Russia, while a negative impact of risk on long-term and short-term leverage was found in companies in the Czech Republic.

The results of the research are largely in line with the results of previously conducted research in the Republic of Serbia. Kuč and Kaličanin (2021) [48], on a sample of the largest companies in the Republic of Serbia, determined that in the case of total and short-term leverage, companies predominantly behave in accordance with the pecking order theory, while when it comes to long-term leverage, the research results show that the behavior of companies is in accordance with the trade-off theory. Kuč and Kaličanin [48] found a negative and statistically significant influence of the variables profitability, tangibility of assets, and liquidity on total leverage, while the identified impact of company size on total leverage is positive and significant. In the short-term leverage model, the authors found a negative and statistically significant influence of the variables profitability, tangibility of assets, and liquidity on short-term leverage, while the influence of variables profitability, tangibility of assets, and liquidity on long-term leverage is positive and statistically significant. Malinic, Dencic-Mihajlov, and Ljubenovic [75] found a significant negative impact of profitability, asset tangibility, and liquidity on total and short-term leverage and a statistically significant negative effect of risk (earnings volatility) on total leverage.

6. Conclusions

Based on the research conducted within the manufacturing industry in the Republic of Serbia on the capital structure of companies and the determinants of the capital structure, the following conclusions can be drawn.

Companies operating in the manufacturing industry are characterized by a very low share of long-term debt in the capital structure, which did not change significantly during the analyzed fifteen-year period, i.e., it ranged from 0.08 to 0.13. The highest value of this indicator was achieved in 2020. On the other hand, unlike long-term leverage, short-term leverage shows significant changes in average value over the observed period. If the initial year of the analyzed period is compared with the last year, it can be seen that the average short-term leverage has doubled, i.e., from 0.35 to as much as 0.70. Since companies are largely financed by short-term debt, changes in total leverage during the observed period are expectedly significant. The highest average value of total leverage was determined in 2020. Based on the average values of the capital structure indicators, it can be concluded that observing the capital structure in the traditional, narrower sense, which includes only long-term sources of financing (equity and long-term debt), does not provide a realistic picture of the company's indebtedness and risk related to financial debt. The fact that certain companies in some years of the analyzed period had no long-term debt at all, that is, the long-term leverage of these companies was zero, indicates the need to look at the capital structure in a broader sense (which includes all sources of financing). The percentage of such companies was the highest in 2017, when as many as 28% of analyzed companies had zero long-term leverage.

In order to determine the factors that significantly influence the company's capital structure decisions, three leverage models were analyzed in which the dependent variables were long-term, short-term, and total leverage. All leverage models showed the importance of size, profitability, tangibility of assets, and risk in composing the capital structure of companies in the Republic of Serbia. However, it is interesting that the identified

determinants of capital structure show the opposite effect in the case of long-term leverage compared to short-term and total leverage. Company size, profitability, and asset tangibility show the expected positive effect on long-term leverage, while the estimated effect of risk on long-term leverage is negative. The above indicates that the behavior of companies in the case of long-term leverage is in accordance with the predictions of the trade-off theory, according to which larger, more profitable companies with greater tangibility of assets tend to use more debt in the capital structure.

On the other hand, the research results indicate a negative effect of size, profitability, tangibility of assets, as well as risk on short-term and total leverage. The negative effect of the identified determinants of short-term and total leverage is consistent with the predictions of the pecking order theory. Based on the above, it can be concluded that size, profitability, tangibility of assets, and risk are significant determinants of capital structure in the Republic of Serbia, but that size, profitability, and tangibility of assets have the opposite effect on long-term leverage compared to short-term and total leverage. That is, the behavior of companies in the Republic of Serbia in the case of long-term leverage is in accordance with the predictions of the trade-off theory, while in the case of short-term and total leverage, the behavior of companies can be explained by the pecking order theory. Furthermore, it is important to note that the growth opportunity did not prove to be a significant determinant of the capital structure in any specification of the leverage model. A potential reason for this may be that the research was conducted in traditional, mature areas of the manufacturing industry and that the analyzed companies have limited opportunities for growth.

The above can be one of the limitations of the research and at the same time represent a recommendation that future research be conducted within growing areas of industries, bearing in mind that such companies have different capital needs compared to companies operating in mature industries. Another limitation of the research refers to the fact that the models did not consider the influence of country-specific factors that, in addition to the considered firm-specific factors, can also affect the capital structure of the company; therefore, the recommendation for further research on the determinants of the capital structure is the inclusion of external factors (macroeconomic) in the model.

Since the largest amount of research on the determinants of capital structure has been conducted in developed countries, the results of this research contribute to the understanding of the behavior of companies in determining the capital structure in developing countries and have significant theoretical and practical implications.

This study shows that theories of capital structure that originated in developed countries can explain the capital structure behavior of companies in developing countries as well. However, the results of the research show that when considering the capital structure of companies in developing countries, it is very important to look at the capital structure in a broader sense, since these companies to a significant extent finance their operations with short-term debts. Managers of such companies must pay attention to this issue, because predominant reliance on short-term debt for financing operation and progress increases the risk of refinancing but also limits the possibilities of long-term investment. Furthermore, knowing the determinants of capital structure can help managers in making capital structure decisions in the functions of achieving long-term economic stability, sustainable growth, and development of the company.

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