

DETERMINANTS OF THE TRADE PAYABLES OF LISTED COMPANIES IN BULGARIA²

The study is based on data on non-financial enterprises in the manufacturing and services sectors that are publicly traded on the Bulgarian Stock Exchange for the period 2022-2024. The aim is to identify the factors that determine the levels of trade payables of listed companies in Bulgaria after the crisis caused by the COVID-19 pandemic. The research in the article contributes to clarifying the effects of the pandemic. The results of the multiple linear regression analysis study show that larger firms more easily attract financing from their suppliers. The hypothesis that firms strive to match the maturity of liabilities and assets is also proven. Enterprises that have more Trade receivables, more Inventories and a generally higher share of short-term assets use more trade credit. The positive impact of the Inventories / Total assets ratio on the level of trade payables of firms confirms the transaction theory, according to which financing from suppliers is a subsidy to customers for holding stocks of raw materials for production. The results of the study show a negative impact of short-term credit from banks and other financial institutions on the level of trade credit used by firms in accordance with the hypothesis of substitution between the two types of credit. At the same time, the established positive influence of the ratio Long-term debt/Total assets shows that long-term institutional lending and lending from suppliers are complementary sources of financial resources. It is proven that the maturity of debt to other creditors is important for the nature of its relationship with financing from suppliers. This issue has been poorly studied in previous studies. The importance of the maturity of debt to other creditors is largely determined by the efforts of companies that have attracted expensive long-term debt to reduce their interest expenses by replacing short-term credit to financial institutions with interest-free credit from suppliers. In accordance with this, a positive influence of the ratio Interest Expenses / Interest-bearing Debt on the level of trade payables of companies is observed. The theory of financial distress is also confirmed. Firms that are more indebted seek more financing from suppliers as the risk of bankruptcy increases and access to institutional credit becomes more difficult.

Keywords: trade credit; trade payables; bank credit; COVID crisis

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¹ Galya Taseva, Chief assistant, PHD, Economic Research Institute at the Bulgarian Academy of Sciences and University of National and World Economy, e-mail: galya_taseva@abv.bg.

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1. Introduction

Although trade credit has attracted research interest for decades, there is still no consensus in theoretical and empirical research in the field on the factors that determine the demand for supplier financing and the ability of firms to attract such financing. Some studies focus on financial motives for using supplier financing, while another group of studies mainly finds operational factors that justify the levels of trade payables of enterprises. The unexpected challenges that firms faced during the COVID pandemic have called into question a number of widely accepted understandings of trade credit. The crisis caused by the COVID-19 virus was very different from the crises of previous decades (Mihaylova-Borisova, 2023). It was accompanied by disruptions in logistical connections and the possibility of delivery, which led to an increase in demand and prices for many goods and services (Nenkov, Hristozov, 2023). This has also affected the motivation of firms to offer and seek trade credit. The extraordinary economic conditions and especially the fragmentation and disruption of supply chains require a reassessment of the role and functions of trade credit. The aim of the article is to identify the determinants of the trade payables of publicly traded non-financial enterprises in Bulgaria after the COVID pandemic. The crisis, which faced companies with unprecedented problems, necessitated the need to verify theories about trade credit after the pandemic.

2. Theoretical Review

Existing theoretical and empirical studies reveal a multitude of factors determining the size of firms' trade payables. In line with the liquidity theory of trade credit, firms that are constrained in attracting institutional financing seek more trade credit than larger firms that have better liquidity and/or have lower costs of maintaining liquidity (Schwartz, 1974; Emery, 1984; Meltzer, 1960; De Blasio, 2003; Petersen and Rajan, 1997; Nielson, 1999; Cuñat, 2007; Boissay, Gropp, 2007). According to Petersen and Rajan (1997), firms that have the ability to attract easy bank lending and can generate sufficient internal financial resources seek less trade credit.

The demand for financing from suppliers is also influenced by the age and size of the firms. Firms that are larger, with a longer history of existence and, accordingly, with a lower risk of non-payment, attract more trade credit, even though they have higher cash flows and lower growth opportunities (Petersen, Rajan, 1997). Shapiro et al. (2018) find that larger (in terms of sales revenue and number of employees) publicly traded firms in Mexico tend to use more intercompany trade credit than bank credit. As a result of limited access to bank credit and credit markets, firms in emerging economies use more trade credit from suppliers than firms in developed economies. The depth of the capital market in Bulgaria lags significantly behind that in the EU-15 countries (Stefanova, 2015). This is an additional prerequisite for a greater demand for financing from suppliers.

Shi et al. (2020) demonstrate that trade credit is an important financing channel for Chinese firms that have difficulty obtaining credit from financial institutions. Their study shows that the substitution of bank credit with supplier financing increases when financial constraints become more severe, and this is true for firms of all sizes. The use of trade credit to reduce

financial constraints is not unique to SMEs. It is found that the larger the company, the more it uses trade credit to smooth out financial constraints. The countercyclical nature of the substitution of bank credit with trade credit is more evident for financially constrained firms. They also find that institutional factors, such as political connections and creditor protection, have a significant impact on the smoothing of financial constraints. These factors reduce firms' reliance on more expensive supplier financing (Shi et al. 2020). Sahin (2019) proves the existence of a substitution effect of bank credit with trade credit for SMEs in Turkey, but the absence of such an effect for large enterprises.

Duliniec and Świda (2021) find that Polish listed companies with lower liquidity and more trade receivables also use more trade credit. Furthermore, in line with other authors (such as Meltzer, 1960; Burkart, Ellingsen, 2004), Duliniec and Świda (2021) conclude that both long-term and short-term debt from institutional creditors are substitutes for supplier credit. They find that the strongest influence on the use of trade credit is exerted by trade payables in the previous period, trade receivables, long-term debt, liquidity and short-term debt. There is a positive effect of the increase in trade payables in the previous period on the increase in trade payables in the current period.

As interest rates on bank loans increase, firms seek alternative sources of financing. Goldman and Zhelyazkova (2023) find a “negative relation between banking interest margins and shadow banks”. In Bulgaria, the choice of sources of institutional financing for enterprises is small. This reinforces the importance of financing from suppliers for enterprises in Bulgaria. With high interest rates on loans from financial institutions, corporations seek more financing from their suppliers as an alternative to expensive institutional financing (Altunok et al. 2020; Lawrenz, Oberndorfer, 2018 – cited in Tabash et al. (2023)). There is usually no correlation between the price of trade credit and the dynamics of interest rates (Fitzpatrick, Lien, 2013, p. 41). The price of credit from suppliers is determined by the payment terms that are agreed upon between trading counterparties (Cuñat, 2007). If no early payment discount is provided, trade credit is considered interest-free, but if there is one in the payment terms, trade credit can be more expensive than bank credit.

Trade credit is used by companies as an alternative to credit from financial institutions when interest rates increase and access to institutional lending shrinks. The use of trade credit as a substitute for bank credit can provide temporary relief from various cash flow problems and contribute to maintaining the financial health of companies (Fitzpatrick, Lien, 2013). The results of the study by Fitzpatrick and Lien (2013) on data on Australian unlisted companies show that there is partial substitution between trade and bank credit. Therefore, changes in the price or access to bank credit will have a slightly smaller effect on the total debt of the business than if trade and bank credit were complementary sources of financing. They also find that firms with a higher share of short-term assets tend to use more trade credit, which is due to the short-term nature of financing from suppliers. The results of their study also show a statistically significant, but extremely weak effect of accounts receivable turnover and liquidity on trade payables. A substitution effect is found for all sectors, although with different strengths.

Fitzpatrick and Lien (2013, p. 45) conclude that trade credit is an important source of financial resources in Australia, and this is especially true for non-public firms. The extent to which trade credit is used depends on the nature and size of the business. Firms in

industries that carry extensive inventories and are suppliers of intermediate goods tend to use more trade credit. The results of the study by Fitzpatrick and Lien (2013, p. 45) also show that large non-public firms have a higher share of trade credit relative to total assets compared to smaller non-public firms. The explanation for this is that smaller firms have weaker bargaining positions and are perceived as riskier.

Carreira and Silva (2023) analyse the determinants of trade credit granted and received and the effect of the 2008 financial crisis on them using data on Portuguese non-financial SMEs. The results of their study confirm the theoretical assumptions about the financial motives for using trade credit. According to Carreira and Silva (2023), trade credit plays an important role in the financial policies of firms. Firms that have easier access to external financing under better credit conditions act as financial intermediaries and provide more trade credit to their customers, and use less financing from their suppliers. It is found that the use of trade credit is a substitute for bank financing. Firms that generate more internal resources also sell more on credit to their customers and buy less on credit from their suppliers. Furthermore, Carreira and Silva (2023) find that firms with increasing sales tend to use more trade credit from their suppliers to finance new investments in inventory, while firms with decreasing sales attract less financing from their suppliers. For Carreira and Silva (2023), this confirms the thesis that suppliers act as typical financial intermediaries. They also find an increase in credit granted to customers up to the peak of the 2008 financial crisis, and a collapse in trade credit immediately after the crisis, which is observed in parallel with the contraction of bank lending in Portugal.

The results of their study do not confirm the hypothesis of using trade credit as a tool for providing information about the quality of the company's products, but they prove that, according to the theory of price discrimination, trade credit is an appropriate marketing tool. It is also confirmed that SMEs use trade credit as a marketing tool to stimulate sales. An important conclusion reached by Carreira and Silva (2023) is that the decisions of companies on trade credit are influenced by the same factors, regardless of the industry in which they operate.

Cosci et al. (2020) test the hypothesis that trade credit is a financing mechanism for firms with limited credit capacity from their more liquid suppliers. They analyse the characteristics of net borrowers and net lenders and assess the relationship between bank financing and supplier financing for these two groups of firms. They conclude that in Italy, there is no effective redistribution and movement of trade credit from more liquid firms to financially constrained firms.

There is no consensus in the scientific literature on the nature of the relationship between trade and bank credit, and empirical studies show contradictory results (Afrifa et al. 2023). In a study of UK firms for the period 2008–2021, Afrifa et al. (2023) prove that supplier credit and short-term bank credit are substitutes for publicly traded firms that can easily attract cheap credit from financial institutions, but are complementary for firms that are not publicly traded and have difficulty attracting financing. For UK firms that experience serious financial constraints, supplier credit is a complementary source of financing, regardless of whether they are public or non-public firms (Afrifa et al. 2023).

The crisis caused by the COVID-19 pandemic has challenged the widely held view that trade credit serves as a source of financing for financially constrained firms, especially in times of crisis and difficult access to bank credit. Contrary to research findings from previous crises, Srivastava and Gopalakrishnan (2021) find that in the first quarters of the coronavirus pandemic, firms with low creditworthiness were able to attract less trade credit than financially more stable firms. Their study is based on quarterly data for the period 2017–2020 for 7,406 large publicly traded firms from 58 countries around the world with different levels of economic development.

They also conclude that firms with low creditworthiness but better growth prospects (firms in industries that allow work from home and those with higher sales growth) can attract financing from suppliers at the very beginning of the pandemic. Also, firms with questionable credit quality but maintaining better relationships with stakeholders manage to attract trade credit at the beginning of the COVID crisis. Srivastava and Gopalakrishnan (2021) argue that financing from suppliers depends on product market conditions and is not always a substitute for bank lending. Financing from suppliers replaces lending from financial institutions only under favourable product market conditions. During the crisis caused by the pandemic, characterised by operational disruptions and a collapse in demand for products and services, trade credit is received by firms with better growth prospects. At the beginning of the pandemic, the distribution of trade credit was disproportionate, as it went to firms with higher quality.

According to the financial distress theory, firms that have financial problems seek more trade credit because they carry a high risk of insolvency and have difficulty attracting external financial resources (Petersen, Rajan, 1994; Petersen, Rajan, 1995; Petersen, Rajan, 1997; Frank, Maksimovic, 2005; Molina, Preve, 2007; Wilner, 2000). However, there are also studies, such as those by Molina and Preve (2007) and Andrade and Kaplan (1998), which prove that firms with financial problems also have difficulties in attracting trade credit. In addition, Molina and Preve (2007) argue that large firms use less financing from suppliers in financial distress, compared to small firms with this problem. The explanation is that large firms have a higher quality of management, are characterised by higher information transparency and, as a result, have better relations with banks. Firms that are more opaque and difficult to assess by creditors seek more trade credit in financial distress (Molina and Preve, 2007). There is much research that reveals the advantages of suppliers in gathering information about the creditworthiness of buyers (Petersen, Rajan, 1997; Smith, 1987). Firms with higher default risk seek more trade credit because it is a more flexible source of financing than bank lending. Suppliers are interested in the survival of their customers and are more lenient as creditors than banks (Huyghebaert et al. 2007; Cole, 2010). When customers are in difficulty, suppliers are more likely to renegotiate debts, as this can protect existing loans as well as future profits (Wilner, 2000).

Firms also seek trade credit because it serves as a signal to banks about their creditworthiness and improves their access to bank lending (Alphonse et al. 2003; Biais, Gollier, 1997; Antov, Atanasova, 2007; Gama et al. 2008). Afrifa et al. (2023) show that supplier credit is used by non-public firms and firms that are financially constrained not only to signal their creditworthiness to financial institutions, but also to supplier firms. Trade credit serves firms that are more financially constrained to signal their creditworthiness to banks. In addition,

these firms use their access to bank financing as a signal of creditworthiness to their trade counterparties.

Stefano et al. (2023) draw attention to the fact that, according to studies such as that of Howorth and Moro (2006), Angelini et al. (1998), Stein (2002), the lending decisions of small cooperative banks (unlike large banks of national importance) are based on soft information that they collect directly and indirectly in the process of ongoing relationships with local firms. At the same time, firms also rely on soft information that they receive in their trade relationships to assess the creditworthiness of their counterparties Petersen and Rajan (1997). It follows that supplier financing and bank credit can be substitutable sources of financial resources for firms (Stefano et al. 2023).

In line with transaction cost theory, many authors view supplier financing as a mechanism for managing various types of costs. Firms use deferred payment to suppliers to reduce the transaction costs associated with paying for each delivery by paying periodically (Ferris, 1981; Bhattacharya, 2008; Petersen, Rajan, 1997).

Supply uncertainty increases cash flow volatility and forces both buying and selling firms to incur costs in holding cash or in obtaining institutional financing. The separation of the movement of goods from the movement of money turns supplier financing into a hedging instrument through which trading partners pool the trade risk that arises from the stochasticity of cash flows (Ferris, 1981).

According to Fabbri and Klapper (2008) and Petersen and Rajan (1997), firms use supplier financing as a risk hedging tool by matching the maturities of assets and liabilities. Firms with a higher share of current assets also seek more supplier financing. Both small and large firms seek to match their short-term receivables and payables. Large firms seek supplier financing to hedge the risk of their receivables from customers. Small firms, in addition to hedging their risk, also use trade credit to finance their receivables from customers. This improves their competitiveness in product markets (Fabbri, Klapper, 2008).

Many studies have also analysed the importance of trade credit for supply management and inventory holding costs. The provision of trade credit by suppliers of raw materials is a mechanism for subsidising customers' inventory holding costs, thus incentivising them to buy instead of delaying purchases (Daripa, Nilsen, 2005). The role of trade credit as a subsidy for customers' inventory holding is enhanced by high bank interest rates. The interest rate on bank deposits expresses the opportunity cost of firms to hold inventories. High interest rates on bank deposits encourage firms to hold fewer inventories of inputs for production, which in turn leads suppliers to extend more trade credit to them.

It is widely accepted that, due to its predominantly short-term nature, trade credit cannot be used to finance long-term investments of firms, but is sought only to finance short-term assets. However, there are also studies such as that of Bartholdy and Olson (2023), based on data from about 16 million annual observations for European firms during the period 1998–2017. They prove that European firms use trade credit to temporarily finance the purchase of a significant part of their long-term tangible and intangible assets. This applies to firms of all sizes. Over time, firms replace most of the expensive trade credit with other, cheaper sources

of financing. The replacement is easiest for large firms, as they have easier access to diverse sources of financing.

A similar study of euro area firms for the period 1993–2009 by Ferrando and Mulier (2012) also finds that trade credit is used by firms for long-term purposes. Firms use trade receivables and payables to manage growth. Trade payables are an alternative source of growth financing for firms that are more sensitive to financial market imperfections and experience greater financial constraints. And receivables from customers help firms overcome product market imperfections.

In a study of Bulgaria for the period 2008–2009, Taseva (2012) proves that part of the fixed assets of small and medium-sized enterprises are financed with liabilities to suppliers, which poses a risk of liquidity problems for firms. Among the possible explanations for this are insufficient quality of management, a desire to achieve higher profitability, and difficulties in accessing institutional financing. Furthermore, higher levels of fixed assets also indicate higher barriers to entry into the business, which gives firms market power and the ability to attract more trade credit.

Mantzari et al. (2024) find that the level of trade credit is influenced by profitability, financial leverage, firm size, cost of capital, financial distress, institutional ownership, corporate power, corporate liquidity, asset utilisation intensity, and corporate growth. Using data from companies listed on the Tehran Stock Exchange, Yazdinejad and Jokar (2019) found that the most important internal factors for firms that influence the demand for trade credit are the availability of collateral, inventory turnover, reorder point, accounts payable payment period, firm size, firm age, „product corruptibility”, and bankruptcy possibility. The availability of collateral reduces the risk for suppliers and makes trade credit more accessible to buying firms. Their study also shows that as inventory turnover increases or as the reorder point decreases, firms with low liquidity seek more financing from suppliers. The demand for trade credit is also directly related to the accounts payable payment period. Firms with larger sizes and a longer history of existence have more market power and the ability to attract financing from suppliers. Yazdinejad and Jokar (2019) also find that when purchasing perishable products, firms have a greater chance of attracting financing from sellers, and that financially distressed and illiquid firms also seek more trade credit.

The most important external factors for firms on the size of trade payables, according to Yazdinejad and Jokar (2019), are the location of firms in large cities, the presence of banks, and the monopoly of suppliers. In large cities, there are more banks and credit opportunities, which reduces the demand for financing from suppliers. In addition, competition between banks in large cities improves the contractual positions of firms and their need for financing from selling firms. With a monopoly on the supplier, firms have little opportunity to attract trade credit.

3. Empirical analysis of intra-firm determinants of trade payables

3.1. Research methodology

The research in the article is based on pooled data from the financial statements of 43 non-financial enterprises listed on the Bulgarian Stock Exchange during the period 2022 – 2024. The research period covers the years immediately following the crisis caused by the COVID-19 pandemic. This allows us to test the relevance of trade credit theories following the unprecedented challenges faced by firms during the pandemic, and especially the fragmentation of supply chains as a result of the pandemic. Manufacturing companies and companies in the service sector are covered. The research methods used include a literature review in the field, multiple linear regression, Pearson correlation analysis, descriptive statistics, horizontal financial analysis, and financial ratio analysis.

Using the multiple linear regression method, a model was constructed that reveals the intra-firm determinants of the trade payables of listed companies in Bulgaria. The dependent variable in the model is Accounts Payable to Suppliers and Customers. The factor variables in the model are the following:

- Total assets
- Trade receivables
- Inventories / Total assets
- Current liabilities to banks and non-bank financial institutions
- Long-term debt / Total assets
- Tangible fixed assets / Total assets
- Interest expense / Interest-bearing debt

3.2. Analysis of the variables in the model

Table 1 presents descriptive statistics of the variables in the model for the determinants of trade payables of listed companies in Bulgaria.

Table 1. Descriptive statistics of the variables in the model for the period 2022-2024

	Mean	Mode	Std. Deviation	Range	Minimum	Maximum
Accounts Payable to Suppliers and Customers	18590,65	23	39248,051	214644	23	214667
Total assets	162222,29	5422	197223,036	936806	5422	942228
Trade receivables	19831,60	2666	38828,062	298157	2	298159
Current liabilities to banks and non-bank financial institutions	11887,84	0	29835,372	143833	0	143833
Inventories / Total assets	0,091	0,000	0,109	0,716	0,000	0,716
Long-term debt / Total assets	0,213	0,000	0,231	0,997	0,000	0,997
Tangible fixed assets / Total assets	0,273	0,001	0,228	0,906	0,001	0,906
Interest expense / Interest-bearing debt	0,029	0,000	0,026	0,129	0,000	0,129

Source: Author's calculations.

The following table presents the percentage changes of the dependent variable and the factor variables in the model. Variables that show a constant increase during the analysed period are the dependent variable Accounts Payable to Suppliers and Customers, and the explanatory variables Total Assets, Accounts Receivable from Customers and Suppliers, Current Liabilities to Banks and Non-Bank Financial Institutions and Interest Expenses / Interest Debt. There is a decreasing trend in the ratio Long-Term Debt / Total Assets, while the dynamics of the remaining variables in the model are diverse in the individual years.

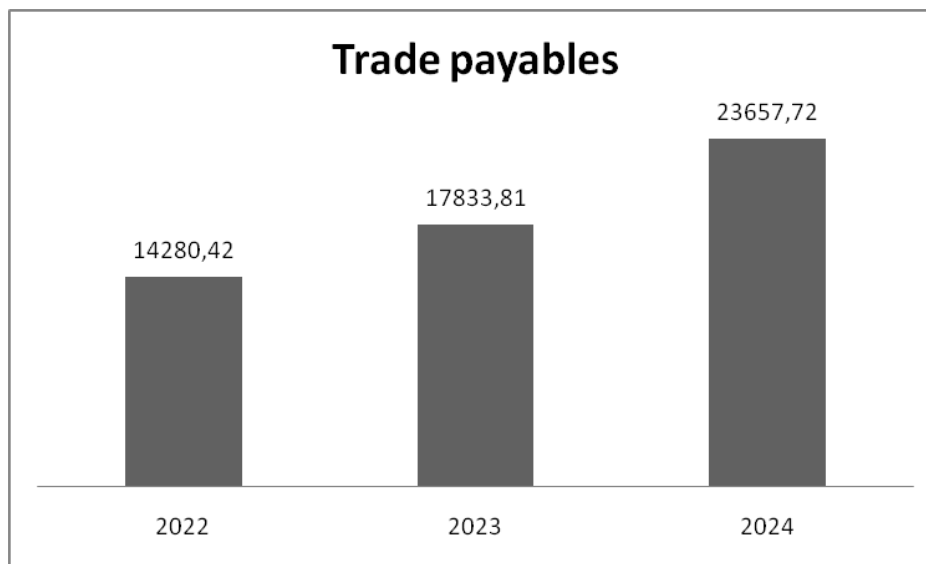
Table 2. Percentage change in the arithmetic mean values of the dependent variable and the factor variables in the model

	2023	2024
Trade Payable to Suppliers and Customers	24,88	32,66
Total assets	8,59	4,92
Trade receivables	25,50	18,51
Current liabilities to banks and non-bank financial institutions	11,72	20,31
Inventories / Total assets	-16,49	1,51
Long-term debt / Total assets	-19,23	-4,95
Tangible fixed assets / Total assets	-6,86	4,93
Interest expense / Interest-bearing debt	24,96	2,11

Source: Author's calculations.

Trade payables are a key source of short-term financing for enterprises in Bulgaria. During the analysed period, companies' trade payables increased significantly.

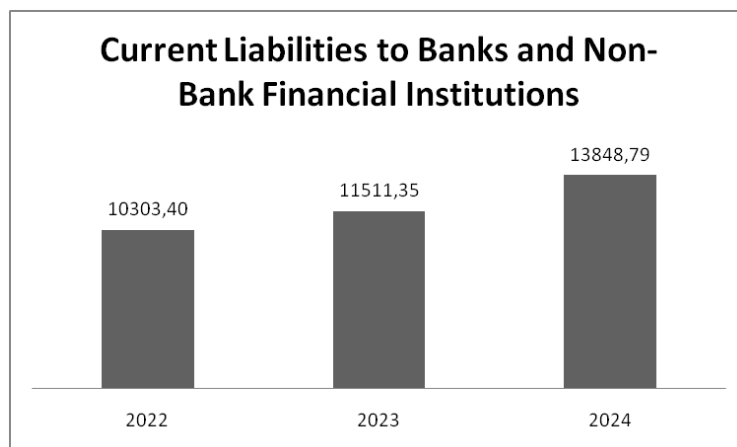
Figure 1. Dynamics of trade payables by years of the research period



Source: Author's calculations

An upward trend is also observed in the factor variable Current liabilities to banks and non-bank financial institutions. However, the increase is weaker.

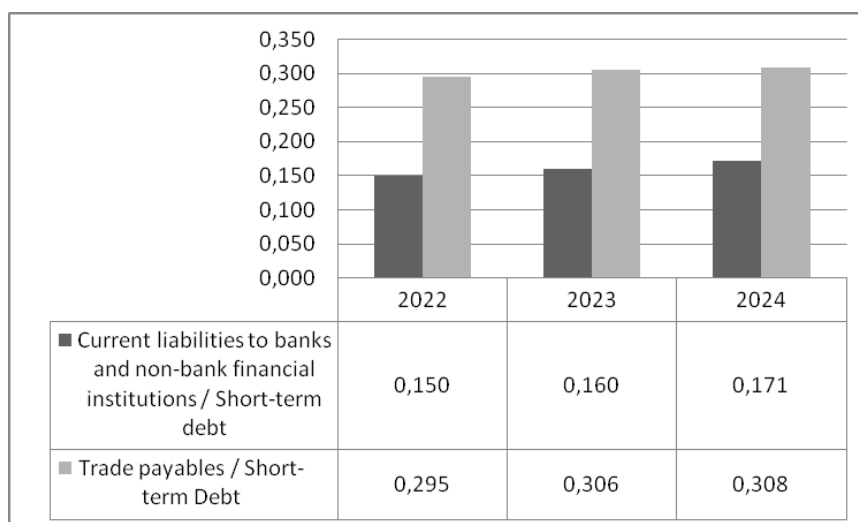
Figure 2. Dynamics of Current Liabilities to Banks and Non-Bank Financial Institutions by years of the research period



Source: Author's calculations.

In all years of the research period, the share of trade payables in the short-term debt of companies significantly exceeds the share of current liabilities to banks and financial institutions relative to short-term debt.

Figure 3. Dynamics of the ratios Trade payables / Short-term Debt and Current liabilities to banks and non-bank financial institutions / Short-term debt



Source: Author's calculations.

The following table presents the percentage changes in the ratios Trade payables / Short-term Debt and Current liabilities to banks and non-bank financial institutions / Short-term debt. An increase is observed in both ratios during the analysed period, but it is much stronger in the ratio Current liabilities to banks and non-bank financial institutions / Short-term debt.

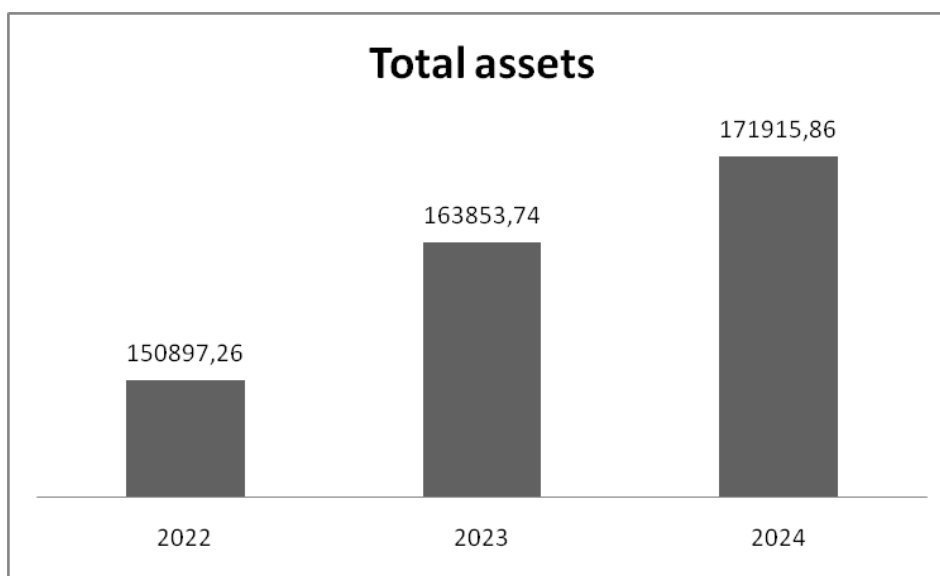
Table 3. Percentage change in the arithmetic mean values of the ratios Trade payables / Short-term Debt and Current liabilities to banks and non-bank financial institutions / Short-term debt.

	2023	2024
Current liabilities to banks and non-bank financial institutions / Short-term debt	6,75	7,32
Trade payables / Short-term Debt	3,83	0,66

Source: Author's calculations.

The increase in trade payables and Current liabilities to banks and non-bank financial institutions is in line with the increase in the amount of assets of listed non-financial corporations during the period under analysis.

Figure 4. Dynamics of the Total Assets

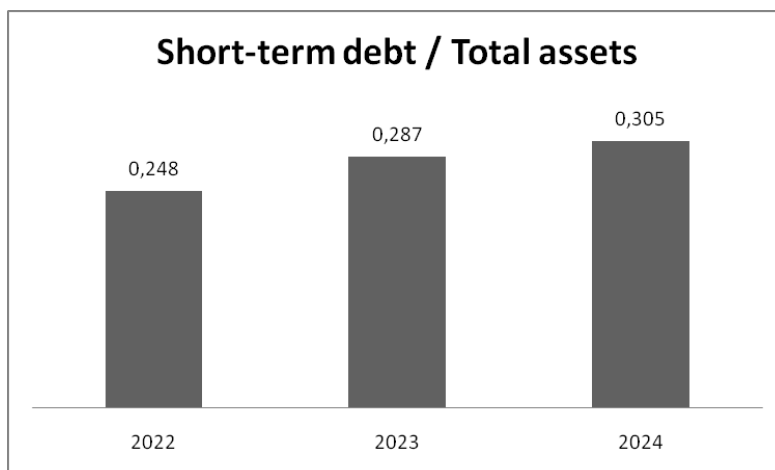


Source: Author's calculations.

The increase in trade payables and current liabilities to banks and non-bank financial institutions led to an increase in the share of short-term debt in the financing of enterprises' assets during the period. This dynamics is presented in the following chart.

The increase in the share of short-term debt in financing the assets of companies is a result of the fact that in both 2023 and 2024, the percentage increase in current liabilities exceeds the increase in Total assets.

Figure 5. Dynamics of the ratio Short-term debt / Total assets



Source: Author's calculations

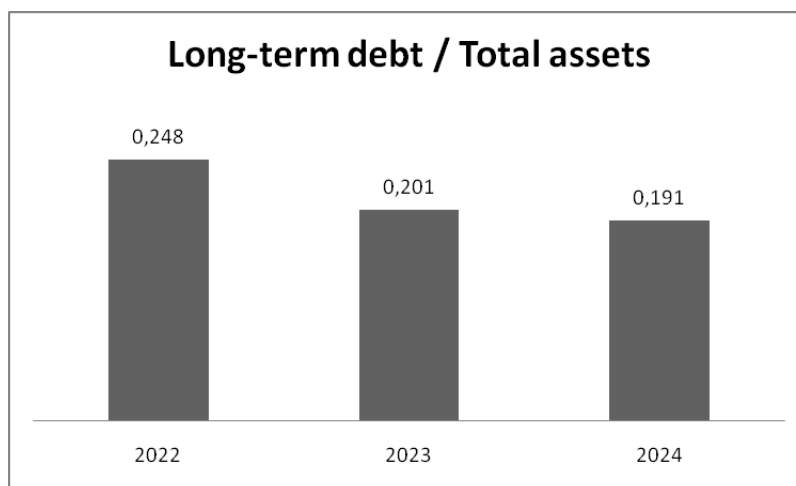
Table 4. Percentage increase in short-term debt and total assets

	2023	2024
Short-term debt	24,33	12,50
Total assets	8,59	4,92

Source: Author's calculations.

The increase in the share of short-term debt was accompanied by a decrease in the share of long-term debt during the analysed period.

Figure 6. Dynamics of the ratio Long-term debt / Total assets



Source: Author's calculations.

The reasons for the decrease in this ratio are that in 2023, the increase in total assets exceeds the increase in long-term debt, and in 2024, the increase in total assets occurs against the background of a decrease in long-term debt.

Table 5. Percentage changes in Long-term debt and Total assets

	2023	2024
Long-term debt	4,01	-6,08
Total assets	8,59	4,92

Source: Author's calculations.

During the period, a constant increase in the variable Interest Expenses / Interest-Bearing Debt was also observed. The reason for the increase in the ratio is the much stronger increase in Interest Expenses compared to Interest-Bearing Debt during all years of the period.

Table 6. Percentage changes in Interest Expenses and Interest-bearing Debt

	2023	2024
Interest Expenses	45,44	12,78
Interest-bearing Debt	18,74	2,15

Source: Author's calculations.

3.3. A model for the determinants of trade payables of listed companies in Bulgaria

The characteristics of the model for the trade payables of publicly traded companies for the period 2022-2024 are as follows:

- Correlation coefficient (R) – 0,891
- Coefficient of determination (R Square) – 0,793
- Adjusted R Square – 0,781
- Std. Error of the Estimate – 18361,682
- F statistic – 66,260
- Sig. – 0,000

The results of the multiple regression analysis study show a very strong multiple correlation dependence ($0.7 < R = 0.891 < 1$). The combined influence of the factors included in the model explains a huge part of the variation of the outcome variable. It is found that 78% (R^2) of the differences in the value of trade receivables in publicly traded non-financial enterprises are related to the differences in the value of the factors included in the model. All factor variables in the model are statistically significant (sig. < 0.05). The strongest influence is the Trade receivables factor, followed by the Total assets variable, and the third strongest is the influence of the Current liabilities to banks and non-bank financial institutions factor.

The check, using a correlation matrix, for the presence of multicollinearity shows the absence of such; there is no single coefficient (except those located on the main diagonal) greater than 0.7. The explanatory variables are independent of each other (See Table 8).

Table 7. Results for the explanatory variables in the model for the trade payables of publicly traded companies during the period 2022 – 2024.

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	-12370,898	3994,114		-3,097	,002
Total assets	,071	,011	,354	6,294	,000
Trade receivables	,686	,056	,679	12,204	,000
Current liabilities to banks and non-bank financial institutions	-,394	,073	-,300	-5,409	,000
Inventories / Total assets	82008,428	15972,656	,229	5,134	,000
Long-term debt / Total assets	17392,468	8146,827	,102	2,135	,035
Tangible fixed assets / Total assets	-18862,954	7676,257	-,109	-2,457	,015
Interest expense / Interest-bearing debt	157799,881	68899,602	,105	2,290	,024

Source: Author's calculations

Table 8. Correlation matrix for the factor variables in the model for the trade payables of publicly traded companies during the period 2022 – 2024

	Total assets	Trade receivables	Long-term debt / Total assets	Current liabilities to banks and non-bank financial institutions	Inventories / Total assets	Tangible fixed assets / Total assets	Interest expense / Interest-bearing debt
Total assets	1	,584	-0,142	,602	,251	-0,008	0,061
Trade receivables	,584	1	-0,166	,562	,287	-0,107	0,072
Long-term debt / Total assets	-0,142	-0,166	1	-0,153	-0,143	-,274	,390
Current liabilities to banks and non-bank financial institutions	,602	,562	-0,153	1	,232	-0,081	-0,037
Inventories / Total assets	,251	,287	-0,143	,232	1	0,165	0,039
Tangible fixed assets / Total assets	-0,008	-0,107	-,274	-0,081	0,165	1	-0,131
Interest expense / Interest-bearing debt	0,061	0,072	,390	-0,037	0,039	-0,131	1

Source: Author's calculations.

Regarding the influence of the factors included in the model for the trade payables of publicly traded non-financial enterprises in Bulgaria during the period 2022 – 2024, the following results are established:

- Total assets – the value of assets is an indicator of the size of the companies and is among the most influential factors on the size of trade payables. It is assumed that larger companies have a higher quality of management, information transparency, creditworthiness and the ability to attract more financing from their suppliers. Due to their

larger size, they usually make more purchases of resources, have more market power and accordingly receive more financing from their suppliers.

- Receivables from customers and suppliers – the positive relationship is evidence of the desire of companies to match trade receivables and payables. This relationship confirms the transaction theory of trade credit, according to which matching trade receivables and payables results in a reduction in the cost of maintaining a cash reserve for unexpected liquidity problems. In this way, companies also seek to hedge the risk of non-payment by customers who buy on credit. The high risk of late payments among companies in Bulgaria stimulates the desire to match trade receivables and payables.
- Inventories / Total assets – The positive relationship confirms the desire of firms to match the maturity of assets and liabilities. This is an opportunity for firms to achieve higher efficiency and avoid liquidity problems. It also confirms the transaction theory, according to which financing from suppliers is a subsidy for holding inventories of raw materials.
- Current liabilities to banks and non-bank financial institutions – the negative sign of the relationship proves that credit from financial institutions and trade credit are substitutes during the analysed period.
- Long-term debt / Total assets – an indicator of the level of leverage. The positive relationship shows that more indebted firms prefer more financing from their suppliers. As indebtedness increases, the risk of bankruptcy also increases, which makes firms seek more financing from their suppliers in accordance with the theory of financial distress. As indebtedness increases, the difficulties in attracting additional debt also increase due to the exhaustion of the debt capacity of firms and for many of them, credit from suppliers becomes a source of financing of last resort. The established positive influence of the ratio Long-term debt / Total assets indicates a complementary nature of the relationship between financing from suppliers and long-term institutional financing. The results of the study prove that the maturity structure of debt to banks, to non-bank financial institutions and on bond issues is important for the nature of the relationship with lending from suppliers. This issue has been poorly studied in the existing previous research in the field of trade lending, despite numerous studies of the dependence between trade credit and credit from financial institutions. A substitution effect of financing from suppliers with short-term institutional financing and a complementarity effect with long-term institutional financing were established. The importance of the maturity of debt to other creditors is largely determined by the cost of financing from the various sources. Long-term debt is usually more expensive, and when companies have to use more expensive long-term debt, for example, to finance long-term investments, they seek to counteract the increase in their overall interest costs by reducing the share of short-term bank credit by replacing it with interest-free trade credit from their suppliers. This explanation is also consistent with the established positive impact of the ratio Interest Expenses / Interest Debt on the trade payables of listed companies.
- Tangible fixed assets / Total assets – the established negative relationship is in accordance with the rule of correspondence of the maturity of liabilities and the assets financed with them. Compliance with this golden rule in financial management contributes to maintaining financial stability. This relationship also corresponds to the established

positive influence of the variables Receivables from customers and suppliers and Inventories / Total assets on the trade payables of listed companies.

- Interest Expenses / Interest-bearing Debt – a positive relationship is established. Firms that are riskier and at risk of bankruptcy pay higher interest expenses, which is why they prefer financing from suppliers. This conclusion is consistent with the theory of financial distress. In addition, firms with a higher Interest Expenses / Interest-bearing Debt ratio seek to reduce their financing costs by attracting more trade credit. No explicit interest rate is applied to trade credits. When the terms of trade credit do not provide for an early payment discount, financing from suppliers is assumed to be interest-free. In Bulgaria, the majority of trade credits are interest-free and do not include an early payment discount (Taseva, 2012).

4. Conclusion

The results of the multiple linear regression analysis study identify as determinants of trade payables the variables Total assets, Trade receivables, Inventories / Total assets, Current liabilities to banks and non-bank financial institutions, Long-term debt / Total assets, Tangible fixed assets / Total assets, and Interest expense / Interest-bearing debt. In accordance with the hypothesis of the companies' striving to match the maturity of liabilities and the assets financed with them, a positive influence of the Trade receivables variable and the Inventories / Total assets variable is established, as well as a negative influence of the Tangible fixed assets / Total assets ratio on the trade payables of listed companies. The positive influence of the Inventories / Total assets ratio also proves the transactional theory of trade credit, according to which financing from suppliers is a subsidy for customers to hold inventories, with which they are stimulated to buy more resources for production.

The results of the study also show a substitution effect between trade credit and short-term credit from banks and other financial institutions. Throughout the analysed period, the share of trade payables in the short-term debt of companies exceeds the share of current liabilities to banks and non-bank financial institutions in relation to the sum of current liabilities. There is a tendency for simultaneous growth of trade payables and short-term liabilities to banks and non-bank financial institutions. The share of short-term financing is also increasing against the background of a decrease in the share of long-term debt.

The financial distress theory is also confirmed. Firms that are more indebted, with a higher ratio of Long-term debt / Total assets, seek more financing from their suppliers, as access to institutional lending becomes more difficult for them. The positive impact of the Long-term debt / Total assets ratio indicates a complementary nature of the relationship between trade credit and long-term institutional financing. The results obtained for the negative impact of short-term loans to banks and non-bank financial institutions and the positive impact of long-term debt prove that the maturity structure of debt to financial institutions is important for the nature of the relationship with supplier lending. This is a contribution of the study, since this issue is extremely poorly studied in the literature. Companies that have a higher share of long-term debt in asset financing also incur higher interest costs, as long-term debt is usually more expensive. These firms seek to reduce their total interest costs by replacing the

expensive short-term bank credit with interest-free trade credit. In confirmation of this, a positive influence of the variable Interest Expenses / Interest Debt on the level of trade payables of publicly traded companies is also found. The ratio Interest Expenses / Interest Debt increases throughout the period, the reason for which is the much stronger increase in Interest Expenses compared to Interest Debt.

Another conclusion from the study is that larger companies, which are more transparent in terms of information, have higher quality management, make more purchases from suppliers and have stronger market positions, manage to attract more trade credit, although it is also easier for them to attract institutional lending.

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