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TRADE CREDIT AND RISK OF INSOLVENCY

The article analyzes the relation between the use of trade credit and risk of insolvency of nonfinancial enterprises in Bulgaria. Data from empirical sociological examination among 201 nonfinancial enterprises are used. The results confirm the financial distress theory of trade credit. It was found out that firms that are financially constraint use more credits from suppliers and financially stable firms are prone to wait longer before taking measures in case of payments delay from clients. It is also found that postponed account receivables create serious liquidity problems for enterprises and difficulties in paying basic expenses for their activity. One of the conclusions from the investigation is that for a number firms, trade credit is a source of financing from last resort, because difficulties in paying to suppliers and problems with delayed account receivables are indicators of insolvency risk of firms.

JEL: G30; G32; G33; G39

Trade credit is widely used tool in the activities of the companies. It performs a number of functions such as sales promotion, supporting clients to overcome temporary liquidity problems through allowing postponements of payments, providing an opportunity to check the quality of production, price discrimination among clients, contributing for reduction on various types of costs and serving for allocation of tax benefits among participants in business transactions, etc. The concept on the role of trade credit as a source of funding for firms is common in literature. The trade credit is a basic source of working capital for the predominant part of them. According some authors credit from suppliers is a substitute for credit from financial institutions, but for other authors the two types of credit are complementary financing sources for firms.

However, its use is associated with serious risks for firms, that may be crucial for their existence as economic subjects. In Bulgaria these risks are reinforced by the high levels of intercompany indebtedness. According to the Bulgarian Industrial Association by the end of 2012 debts between companies amounted to 113,3 bln BGN and are with 5,6 bln BGN (5.2%) more than in 2011, they accounted for more then 90% of the growth in indebtedness of nonfinancial companies in 2012. (BIA, Obligations of the nonfinancial sector of the economy (1 January 2013).

High intercompany indebtedness provokes additional costs for companies, linked with measures against delay in collection of receivables, losses because of decrease of sales on credit, loss of profitability and liquidity, more difficult access to financial resource and on higher price. The high share of bad trade receivables generated threat of chain bankruptcies of viable companies as well, resulting in growing inchain indebtedness (see Taseva, 2012). The multiplication effect of the chains of intercompany debts is a serious danger for the economy. All this determines necessity

of investigation of the relation between trade credit and risk of insolvency on companies in Bulgaria.

Review of theoretic principles and scientific investigations in the analyzed sphere

In accordance with the theory of financial distress, it is a factor, influencing the propensity of companies to use financing from suppliers and also over their aptitude and abilities to grant trade credit to customers. According many authors firms with financial problems use more financing from suppliers as a substitute for alternative financial sources, which decrease with increasing of the risk of insolvency (Petersen and Rajan, 1994; Petersen and Rajan, 1995; Petersen and Rajan, 1997; Frank and Maksimovic, 2005; Molina and Preve, 2007; Wilner, 2000).

Suppliers finance their customers, even when banks are reluctant to lend to them. It is realized through expansion of sales on credit, extending the terms of trade credits or permitting delay of paymants. Suppliers are prone to remit debts or to extend trade credit periods when liquidity problems of their customers threaten their own existence. As a whole firms with financial problems overdue their trade debts but rarely incur financial penalties or suspension of deliveries (Cunat, 2003).

Boissay and Gropp (2007) confirm that trade credit is used for the provision of finance to companies, that have difficulties accessing credit and also that suppliers insure customers against liquidity problems. As an evidence of the role of trade credit as a mechanism to provide liquidity insurance is accepted the fact, that companies continue to supply raw materials to other companies, which in the past have not fulfilled their obligations to them. In literature, however, there are examples of difficulties of companies with financial problems to attract funding from the suppliers (Molina and Preve, 2007; Andrade and Kaplan, 1998).

Large companies, that are typically with higher quality of management and greater information transparency, have better relations with financial institutions and more opportunities to attract funding from them. Because of that they are using less trade credit in financial distress than smaller companies in such a situation (Molina and Preve, 2007).

Financial distress affects the level of funding with trade credit and credits from financial institutions, because of the asymmetry in the cost of obtaining information to assess the creditworthiness of the companies, that are potential borrowers. A number of authors emphasize the advantages of suppliers in obtaining information about the state of their clients (Petersen and Rajan, 1997; Smith, 1987). In financial distress, the asymmetry in information costs increases, which explains the increasing share of trade credit financing in companies with financial problems (Molina and Preve, 2007).

Financial problems of companies also influence their propensity to sell with deferred payment. Petersen and Rajan (1997) found that companies with losses are more willing to extend trade credit in an effort to retain sales. Chan, Chan, Jegadeesh and Lakonishok (2001) and Frank and Maksimovic, (2005) also noted that fast-growing companies tend to increase credit sales when their prospects worsen.

Companies, generating losses, but at the same time developing and growing rapidly, expand granting trade credit. However, the reason for the voluntary extension of credit by companies with negative earnings and negative sales growth (which also need to pay higher costs in order to attract financing) is the fact that these companies want by sales to uncreditworthy customers to maintain the number of customers. Another possible explanation is the desire of these companies, even though not very successfully, to demonstrate financial strength, imitating the strong companies that impose standards for the use of trade credit in the industry (Petersen and Rajan, 1997).

All or part of the extension of trade credit by losing companies with negative sales growth could also be involuntary. The explanation is the lesser propensity of debtors to be correct and to pay on time to their creditors, which are companies in difficulty. That is because for those companie, it is harder to take legal action against their debtors and cannot take the advantage of the threat of suspension of future deliveries (Petersen and Rajan, 1997).

For the expansion of involuntary trade credit by supplier-companies in state of financial distress, having too many clients, is the so-called "free rider" problem, i.e. companies, owing small amounts of money, understand that if they delay the payment, the supplier in the meantime can go bankrupt, and they will save that payment. This leads to the formation of an equilibrium strategy for late payment, although those companies are interested in the continuation of commercial relations with the supplier. They believe that because of the small amount, the timely payment cannot improve significantly the financial position of the supplier. On the other hand, the main customers can reduce the cost of financial distress to suppliers, with which they have long-term relations, by paying faster. Banerjee, Dasgupta and Kim (2004) demonstrated that suppliers with negative cash flows get faster receivables from long-term principal customers.

Long lasting relationships between trading partners can be harmful if one of the sides is dependent on the other. Company-customer with financial problems, but with large share in the profit of supplier-creditor, can take advantage of the dependence of the supplier and to take benefits. Suppliers, interested in maintaining trade relations, provide more discounts to customers with financial problems in comparison to the creditors of competitive credit markets (Wilner, 2000).

The implicit share in the capital of the clients and the interest in long-term relationships with them, makes suppliers more lenient as lenders than banks. While banks typically have security of their claims and priority in resolving claims in case of declaring the debtor bankrupt. This makes them more likely to resort to liquidation procedures for non-payment (Huyghebaert, Van de Gucht and Van Hulle, 2007; Cole, 2010). Therefore riskier customers prefer financing by suppliers, thus ensuring flexibility in case of financial problems.

By renegotiating the debt, providers seek to protect already granted credits and future profits. In case of insolvency, the creditor and the debtor face the alternative to choose between court proceedings and renegotiation of the credit in that case the

debtor company continues to function. Wilner (2000) likens the renegotiation of contractual game by Nash, where in the absence of agreement , both sides suffer losses as expenses for attorneys' fees.

Description of the sample of surveyed companies

The analysis of the relationship between the use of trade credit and the risk a company to fall into a state of inability to service its financial obligations, is based on data from empirical sociological survey, conducted in August 2013.[1] The survey covered 201 companies with various activities. Both manufacturing enterprises and services providing enterprises are represented. Most of the companies employed up to 50 people. The smallest share is of the large enterprises - with 250 or more employees (Table 1).

Table 1

Distribution of the companies by number of employees

Size of company	Number	Percentage	Cumulative Percentage
Microcompanies (from 1 to 9 employees)	67	33,4	33,4
Small companies (from 10 to 49 employees)	102	50,7	84,1
Medium companies (from 50 to 249 employees)	25	12,4	96,5
Large companies (250 and more employees)	7	3,5	100
Total	201	100	

The survey covers the whole territory of the country. According territorial belonging companies are divided as follows (Table 2):

Table 2

Structure of enterprises in the sample according to their territory of origin

Region	Number	Percentage
North-westesrn	30	14,9
North central	21	10,4
North-eastesrn	51	25,4
South-easthern	25	12,4
South-western	38	18,9
South central	36	17,9
Total	201	100,0

The sample covers predominantly companies with local main market and the lowest share is the share of companies with international main market (Table 3).

[1] The survey was conducted by "Sova Harris" for the project "Indebtedness of enterprises in Bulgaria. Origin, condition, problem areas and ability to meet obligations ", implemented by the Bulgarian Academy of Sciences.

Table 3

Distribution of the companies according to their main market

Main market	Number	Percentage
Local	58	28,9
Regional	55	27,4
Domestic	51	25,4
European	23	11,4
International	14	7,0
Total	201	100,0

The companies, represented in the survey vary by period of existence. The minimum indicated period of existence is 4 years and the oldest company in the sample was established 100 years ago. The average is 19.44 years, while half of the respondents had 17 years of history. The most frequently mentioned period of existence is 20 years. The dispersion is significant, the coefficient of variation reached 78.37%. The distribution is asymmetric, right skewed and with acute kurtosis.

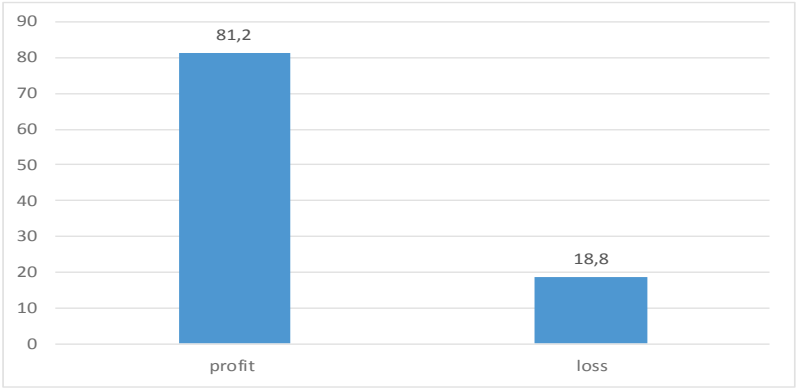
The data was processed with the software product SPSS. For the establishment of relationships in the processing of information from the empirical sociological investigation were used the rank correlation coefficients of Spearman and Kendall, correlation coefficient of Pearson, parametric and non-parametric Analysis of Variance, the test of Student for verification of statistical hypothesis for the difference between the average of two independent samples, the technique "multiple response", U-Test of Mann-Whitney. Risk level of α - error 10% is accepted, which is a usual value for economic research.

Relation between trade credit and financial result of companies

Most companies that answer the question (92,5% of respondents) indicate that they have a positive financial result (Figure 1).

Figure 1

Distribution of companies according to their financial results



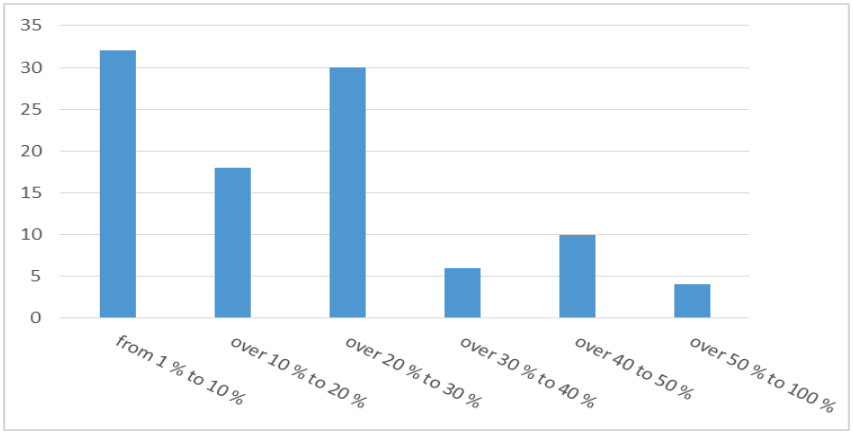
The high percentage of the companies, declaring to have ended in 2012 with a profit, partially could be explained by the desire of companies to demonstrate sound financial position which can provide a better opportunity to access external financing. It can be assumed that a significant share of the profitable companies actually have a negligible positive financial result.

The results obtained in the study with parametric analysis of variance showed a logical (sig=0,007) medium strength (ζ coefficient is 0,391) connection between the financial result and the share of purchases with deferred payments of firms. The numerical value of the empirical characteristic of F- statistics is 7,929. The same conclusion is obtained with the test of Student for verification of statistical hypothesis for the difference between means of two independent samples.

The distribution of firms that carry out part of their purchases on credit is shown in Figure 2. The average size of the percentage of purchases on credit in companies that answer the question reaches 25,04%. Half of these companies have made up 20% of purchases in terms of deferred payment. The most frequently cited response was exactly 10%. Dispersion is high, the coefficient of variation is 73,31%. The distribution is asymmetric, right skewed and with acute kurtosis.

Figure 2

Distribution of companies according to the percentage of purchases on credit



The average percentage of purchases on credit in profitable companies is 20,65 %, while 35,56 % in losing companies. In accordance with theory of financial distress it is found that firms with a positive financial result and accordingly in better financial situation have a lower percentage of purchases with deferred payment and respectively ceteris paribus smaller amounts owed to suppliers and conversely, firms in worse financial position are more indebted to their suppliers. The ability of firms to generate internal financial resources reduces their need for financing from suppliers. The profitable companies have easier access to alternative sources of financing. For losing enterprises the circle of potential lenders is highly restricted. For some of them

financing by suppliers is a source of funding of last resort. Financial difficulties forced companies to seek financing from their trading partners.

This relationship shows also that financially unstable companies in Bulgaria managed to attract trade credits. The supplier companies are willing to grant risky trade credits, providing liquidity support to its customers with financial problems. The main reason for this are the difficulties of enterprises to sell their production. Furthermore, the failure of the customers is associated with losses for suppliers because of the investments in relationships with them. These are serious prerequisites for generating inter-company arrears and bad debts.

Difficulties in access to financing for companies

A significant part of the companies estimate that in the event of financial difficulties they will have problems in attracting additional funds. More than one tenth of the firms respondents to the question (12,9%) answered that it would be very difficult (Table 4). Only 5% think it can be very easy to attract more funds in case of financial difficulties. In need of money even at temporary liquidity problems in the future enterprises are at high risk to experience a situation of inability to repay their obligations due to limited access to financing. This means that there is a high risk of bankruptcies of companies in Bulgaria.

Table 4

Degree of difficulty of attracting additional funds in case of financial difficulty

Level of difficulty of attracting additional funds	Number	Percent	Cumulative percent
Very hard	26	12,9	12,9
Hard	63	31,3	44,2
Neither difficult nor easy	63	31,3	75,5
Easy	25	12,4	87,9
Very easy	10	5,0	92,9
Can not judge	14	7,0	100,0
Total	201	100	

It was found out that the more likely it is for companies to fall into a situation of inability to repay their debts, the more difficult it would be for them to attract additional funds (Table 5).

Table 5

Link between the risk of insolvency and the difficulty of attracting additional funds in case of financial difficulty

	Level of difficulty of attracting additional funds in case of financial difficulty	
Is there a real danger that companies fail to repay their debts	Kendall Coefficient	0,190
	Sig	0,023
	Spearman Coefficient	0,214
	Sig	0,021

In addition, the results of the survey with correlation coefficients of Kendall and Spearman show direct relationship between the probability over the next 12 months firms to need finance and the difficulty of attracting additional funds in financial problems (Table 6).

Table 6

Relationship between the probability over the next 12 months firms to need finance and the level of difficulty of attracting additional funds in financial problems

	Level of difficulty of attracting additional funds in the event that the company falls into financial problems according to respondents	
Probability in the next 12 months company to have a need from financing	Kendall Coefficient	0,128
	Sig	0,039
	Spearman Coefficient	0,152
	Sig	0,038

Nearly one-tenth (8,5%) of respondents recognize that deferred payments under contracts with suppliers are among their main sources of funding. This underlines the importance of trade credit as a financial mechanism to attract funds for the companies in the country. Funds from other enterprises (including from related companies), other than trade credit are mentioned among the main sources of financing by 3,5% of respondents.

Indicative of the attitude of the companies about trade credit are the results of their responses regarding the probability to seek additional funds through the postponement of payments under contracts with suppliers (Table 7). Funding from suppliers is in the fourth place among the most likely sources of additional funds for companies after equity, funds provided by the owner and short-term bank loans. One fifth of the respondents say it is very likely to resort to raising funds in this way and almost as many say that is likely or about 40% of companies consider credit by suppliers as a suitable source of financing. Minor part of the respondents (3.5%) said that they did not know what was the probability to postpone payments to suppliers as a source of additional funds.

Table 7

Distribution of companies according to the probability to seek additional funds by postponement of payments to suppliers

Probability	Number	Percent	Cumulative percent
Very likely	40	19,9	19,9
Likely	37	18,4	38,3
Unlikely	117	58,2	96,5
They do not know	7	3,5	100
Total	201	100,0	

The more unstable financially is a company and the lower is the proportion of its revenues that can afford to pay for repayment of debts, the higher is the share of purchases with deferred payment, i.e. these companies rely more on financing from

suppliers (Table 8). In literature the perception is widespread that trade credit is preferred by more indebted companies that expect suppliers to be more indulgent as creditors of banks. The lower share of revenue of a company, that could be earmarked for repayment of debts in order to make a company confident in its financial stability, indicates a lower residual debt capacity.

Table 8

Relationship between the percentage of purchases on credit and the share of its revenue, that could be earmarked for the repayment of debts to make a company confident in its financial stability

	Share of revenue of the company that could be earmarked for repayment of debts to make a company confident in its financial stability	
Percentage of purchases with deferred payment	Kendall Coefficient	-0,267
	Sig	0,033
	Spearman Coefficient	-0,332
	Sig	0,033

Waiting period before taking action in case of overdue receivables

A confirmation of the theory of financial distress is the established correlation between the financial results and the period, which companies wait before taking action in case of delayed payments from customers. The U-criterion of the Mann-Whitney is applied to establish a statistically significant difference (sig = 0,042) between the average waiting period for profitable and losing companies before taking any action in case of late payments from customers. An analysis of average ranks shows that profitable companies on average wait longer before taking actions. Losing companies wait for an average of 46 days and profitable companies - 94 days. Most companies, that have a negative financial result, wait up to 30 days, as is also the most frequently cited answer (Table 9). The dispersion is high (coefficient of variation is 83%). The distribution is asymmetric, right skewed and with acute kurtosis. The minimum indicated term is 5 days and the maximum 150 days.

Table 9

Distribution of losing companies according to waiting period before taking actions

Waiting period	Valid percent	Cumulative percent
Up to 30 days	68,2	68,2
Over 30 to 60 days	4,5	72,7
Over 60 to 90 days	18,2	90,9
Over 90 to 180 days	9,1	100,0

More than half of the profitable companies wait 60 days before taking measures in case of overdue receivables (seeTable 10). The most common waiting period is 30 days. Dispersion is very high (coefficient of variation is 111.53%). The distribution is

asymmetric, right skewed and with acute kurtosis. Cited minimum waiting period is five days and the maximum is 400 days.

Table 10

Distribution of the profitable companies according waiting period before taking actions

Waiting period	Valid percent	Cumulative percent
Up to 30 days	38,9	38,9
Over 30 to 60 days	18,5	57,4
Over 60 to 90 days	22,2	79,6
Over 90 to 180 days	9,3	88,9
Over 180 to 365 days	10,2	99,1
Over 365 to 400 days	0,9	100,0

A possible explanation is that firms with a positive financial result that ceteris paribus are financially stable and liquid, can afford a longer waiting period, which assist customers in difficulty, because they are interested in customers' survival. More financially stable companies serve as transmitters of liquidity in the system. An alternative explanation is that the longer waiting period improves the competitiveness of companies and contributes to increase their financial results. Furthermore taking measures for compulsory collection of debts engage financial resources of the companies, but often does not result in the desired outcomes, so the costs incurred for collection of receivables become further losses. The losses are maximal in case of customer bankruptcy. The reason is that if the customer goes to bankrupt, the supplier loses not only the value of the receivable, but also the investments made in the relationship with that customer and the expected benefits of trade relations with him. Not always an immediately taken action is the most profitable decision for enterprises. Rational estimation when the companies should proceed to taking appropriate measures for collection of overdue debts and taking into consideration the objective state of debtors, allows the companies to collect maximum part of the granted trade credits.

Difficulties in servicing obligations

Total 126 companies (62.7% of the respondents) give an answer to the question what is the danger of becoming unable to pay their obligations (see Figure 3).

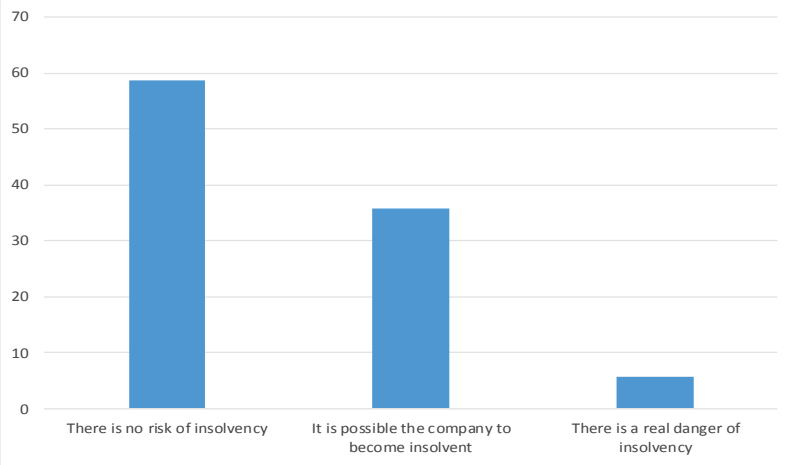
Perhaps, the share of companies at risk of insolvency is significantly higher, but companies are reluctant to share such information. Moreover, most companies don’t give an answer to that question (37.3%). It is reasonable to believe that these companies are indeed experiencing financial difficulties. None of the enterprises is ready to admit the fact of being unable to pay its obligations any more, although practice shows that such companies persist on account of arrears to creditors.

Some companies still recognize, that they have overdue debts to various creditors. The largest share of arrears are to suppliers. A total of 60 companies admit the existence of delayed payments to suppliers as in some cases the delay is for over one year. Then follows the share that admit late payments of tax liabilities to

the government and the municipalities (at total of 42 responses), social and health insurance (19 responses), to the staff (15 responses), to commercial banks (11 responses) and others.

Figure 3

Risk of insolvency of the company



For many companies the credit from suppliers is the funding source of last resort. Difficulties of companies to serve payments to suppliers with their monthly earnings are an indicator of the risk of insolvency (Table 11). Companies that experience such difficulties are more likely to become unable to repay their obligations.

Table 11

Link between the difficulties in payment to suppliers and the level of danger of insolvency

	Level of danger company to fall into a state of inability to repay their obligations	
Difficulties in paying to the suppliers	Kendall Coefficient	0,228
	Sig	0,008
	Spearman Coefficient	0,240
	Sig	0,007
Difficulties in making advanced payments to the suppliers	Kendall Coefficient	0,206
	Sig	0,040
	Spearman Coefficient	0,215
	Sig	0,039
Difficulties in payments to suppliers-related parties	Kendall Coefficient	0,261
	Sig	0,030
	Spearman Coefficient	0,274
	Sig	0,030

Confirmation that the problems in the relationships with suppliers are an indicator of the risk of bankruptcy is another result of the study. The analysis based on the test of Kruskal-Wallis (sig = 0,049) show that companies, which in recent years have been forced to look for other suppliers offering better prices due to inability to repay their debts, continue to experience serious difficulties and for them the risk of insolvency is higher.

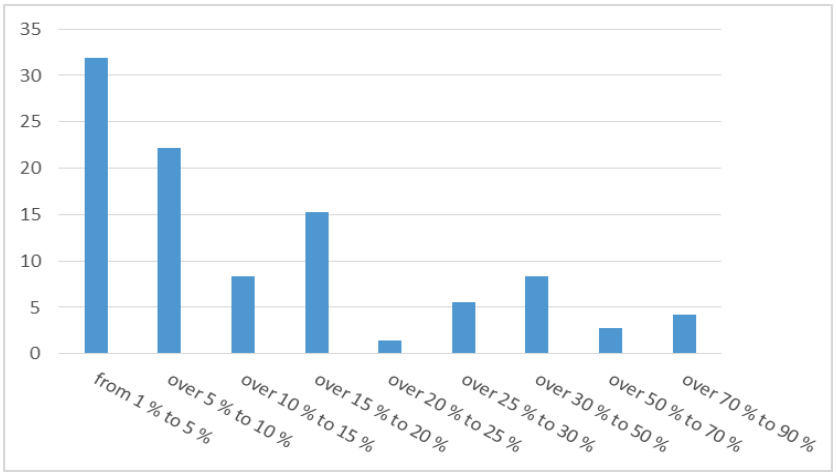
The nonparametric analysis of variance was used to establish the statistically significant relationship (sig = 0,016) between the danger for firms to find themselves in a state of inability to repay their obligations and the assessment, that delayed payments from customers are the main reasons to overdue their financial obligations. Based on the analysis of the direction of the inequality of average ranks, it can be concluded that companies, having a problem with collection of receivables on time, estimate that are more threatened by insolvency. Nearly a quarter of the respondent companies (23%) indicate that delayed payments from customers are the main reasons for them to delay their financial obligations.

Almost 15% of respondents said that they had resorted to postponement and rescheduling of payments to suppliers for the last three years due to inability to repay liabilities. Only 7.5% of the surveyed companies, however, indicated that they had to use additional financing for the repayment of old debts to suppliers. These data indicate that the regularity of payments to suppliers is not a priority for businesses.

Almost 36% of companies indicate the proportion of their outstanding receivables (Figure 4).

Figure 4

Percentage arrears



The average amount of overdue receivables reported by the companies, indicating such a problem, is up to nearly one-fifth of the value of sales with deferred payment (18,82%). More than half of the companies, which face the problem of

collection within the agreed term, have overdue receivables amounting to one tenth of the value of their sales on credit. The most common rate of delayed receivables is 5%. The coefficient of variation is very high, indicating a large dispersion of units in the sample in terms of percentage of overdue receivables. Receivables delayed beyond the maturity date ranged from 1% to 90% of sales with deferred payment. The percentage of overdue receivables to the value of all credit sales in the companies-respondents differ from the average rate of overdue receivables on average with ± 20,67%. The distribution is asymmetric, right skewed and with acute kurtosis.

Companies facing the problem of collection of receivables on time have difficulties even in meeting payments related to the main activities of their existence (see. Annex 1). The results show that companies with a problem with the collection of trade receivables, have problems also in repayment of trade debts. This affects their relations with suppliers and limits their access to trade credit. The study of the correlation coefficient of Pearson confirmed the existence of a logical, medium strength negative correlation between the percentage of overdue receivables and the share of purchases with deferred payment (Table 12). The more overdue receivables, the smaller the percentage of purchases on credit and vice versa, companies with a lower share of delayed receivables have a higher amount of purchases with deferred payment. This dependence can be explained by the desire of companies to match their receivables to payables in combination with the fact that a high percentage of overdue receivables is urging companies to restrict sales on credit and thus lead to less demand for financing from suppliers. A possible explanation is also that more liquid companies, that need less credit from suppliers, provide insurance against liquidity shocks to their customers by allowing overdue receivables.

Table 12

Relationship between the percentage of purchases on credit and the percentage of overdue receivables

	Percentage of purchases with deferred payment	
Percentage of overdue receivables to the sum of all sales with deferred payment for 2012	Pearson Coefficient	-0,396
	Sig	0,050

The Kruskal-Wallis test (sig = 0,009) is used to establish a logical relationship between the indication of overdue payments from clients among the main reasons for the delay of financial liabilities of the companies and the proportion of monthly income for repament of borrowings. Levels of average ranks allow to conclude that firms, experiencing difficulties in collection of receivables from customers on time and therefore in turn delay its financial obligations, spend a larger share of their monthly income for debt payments and therefore experience greater burden of debt servicing.

The share of the monthly revenue, spent to repay borrowed funds, can be considered as an indicator of indebtedness of the companies (see Table 13). It shows the degree of difficulty for businesses in debt service. Just over half (54%) of the

respondents indicate what proportion of their income goes to payments on borrowings, less than one-tenth (8,5%) of respondent companies indicate, that they have no expenditures for repayment of obligations for borrowed funds currently. The rest did not answer the question. The largest share of companies-respondents (62,4%) that answer the question, respond that up to 10% of monthly income are used for repayment of obligations.

Table 13

Share of the monthly income of the enterprise, spent for repayment of borrowings

Share of monthly income	Valid Percentage	Cumulatve percentage
Up to 10	62,4	62,4
Up to 20	12,8	75,2
Up to 30	9,2	84,4
Up to 40	6,4	90,8
Up to 60	7,3	98,2
Up to 80	1,8	100

The nonparametric analysis of variance was used to establish a statistically significant relationship (sig = 0,029) between the option whether the firms start to seek payment of receivables soon after it becomes due, and the burden of debt service. Average ranks indicate that companies, that do not implement this measure, allocate a larger share of their monthly income to repay borrowings (Table 14). This result can be interpreted as a confirmation that the passivity of the companies creditors and tolerance to arrears leads to greater difficulties in servicing their debt.

In accordance with the above statements a direct relationship is established between the percentage of overdue receivables of enterprises and the share of their monthly income, spent for payment of borrowings. Overdue receivables create liquidity problems for firms, generate necessity to attract additional funds and reinforce the difficulties in servicing debt.

Table 14

Relationship between the share of the monthly revenue, spent to repay borrowed funds, and the percentage of overdue receivables

	Share of monthly income spent on repayments of borrowings	
Share of overdue debts to the sum of all sales with deferred payment for 2012	Kendall Coefficient	-0,251
	Sig	0,026
	Spearman Coefficient	-0,314
	Sig	0,026

The results of nonparametric ANOVA, however, give reason to assume that there is no statistical connection between almost all of the measures, implemented by the companies in order to protect themselves against bad debts and the risk of insolvency. Also, absent is dependence between lack of special protection practices against overdue reseivable and uncollectible receivables and the risk companies being unable to cover their obligations (see Annex 2).

Results show that among the measures undertaken by companies for protection against delayed and bad debts, only the requirement to provide a bank guarantee for payment is in statistically logical connection with the risk of insolvency (Test of Kruskal Wallis, sig = 0,016). Companies that implement this measure, even though their share is too low, are in less risk of becoming unable to pay their obligations. These results can be interpreted as an evidence of the ineffectiveness of the most popular protection measures among the companies against delayed and uncollectible trade receivables as mechanisms for preventing the risk of bankruptcy.

The risk of insolvency is affected by the ability of companies to plan their future obligations. Better predictability of the timing of the obligations corresponding to the larger share of purchases with contracts, is in the negative logical correlation with the risk of insolvency (Table 15). The companies, facing a lower risk, carry out a larger share of their purchases with contracts. Probably about this contributes the fact that a contract has a disciplinary effect on the companies debtors and reduces the risk of moral hazard in their behavior.

Table 15

Dependence between the percentage of purchasing with contracts and the degree of danger of insolvency

	Degree of danger the company to become insolvent	
Percentage of purchases with contracts	Kendall Coefficient	-0,305
	Sig	0,048
	Spearman Coefficient	-0,360
	Sig	0,047

An inverse relationship was found between the probability of insolvency and the period of repayment of debts by customers. Companies that are more threatened by bankruptcy have shorter period of repayment of debts by customers (Table 16).

Table 16

Link between probability of insolvency and the period of repayment of debts by customers

	Risk of insolvency	
Period of repayment of debts by customers	Kendall Coefficient	-0,189
	Sig	0,052
	Spearman Coefficient	-0,222
	Sig	0,046

A possible explanation is that firms, that are more financially stable and have no problems in servicing their obligations to various creditors, can afford to grant long-term trade credits and wait longer to receive payment from customers. These longer terms make them relatively more competitive and hence decreace the risk of bankruptcy. It is not always good for companies to try to collect their trade receivables in the shortest term. Companies that have serious difficulties to cover their obligations to creditors aim as quickly as possible to receive payments from their customers, but in terms of a lack of demand their financial problems are

depened, because it results in a decline in sales and loss of customers. For them it would be appropriate to try to attract the necessary funds in an alternative way (Table 17). Often such a way is financing from suppliers. Companies that have shorter accounts receivable collection period agree with the statement that shrinking markets are a cause of increasing inter-company indebtedness.

Table 17

Relationship between the degree of agreement that companies increase their trade payables due to shrinking markets and accounts receivable collection period

	Degree of agreement that companies increase their trade payables due to shrinking markets	
Accounts receivable collection period	Kendall Coefficient	0,190
	Sig	0,190
	Spearman Coefficient	0,220
	Sig	0,017

In a difficult economic situation with shrinking markets, the competitiveness of the companies is of great importance for their survival. Difficulties in the sales of the production create liquidity problems of companies, forcing them to attract more external funding. In a heavy bank lending situation, increased importance of credit from suppliers. Part of the resources, borrowed from trading partners, goes namely to improve the competitiveness of companies by maintaining the levels and even expanding trade credits to retain sales. However, attracting additional resources from trade partners, due to shrinking markets, after certain levels, also presents an increased risk for the companies to become unable to pay their obligations (Table 18).

Table 18

Relationship between the degree of agreement that companies to increase their trade payables, due to shrinking markets and the risk of insolvency

	Risk of insolvency	
Degree of agreement that companies increase their trade payables due to shrinking markets	Kendall Coefficient	0,220
	Sig	0,100
	Spearman Coefficient	0,234
	Sig	0,100

The study by Kruskal Wallis test and the analysis of the average ranks indicate, that other factors which according to companies are reasons for payments arrears are also connected with higher risk of insolvency (Table 19).

Table 19

Relationship between reasons for overdue intercompany debts and the risk of insolvency

Reasons for overdue intercompany debts	Level of significance (sig)
Shortage of funds in enterprises	0,060
Priority payment of other costs	0,066

*

The survey results confirm that the importance of credit from suppliers increases in financial difficulties and exhausted debt capacity of the companies. Limited access to finance for enterprises in Bulgaria increases the risk of failure even in case of temporary liquidity problems. In such conditions it was found out, that a significant majority of companies consider trade credit a primary mechanism to provide the necessary funding.

The theory of financial disorder was confirmed. It was established, that financially troubled companies use more funding from suppliers and that financially healthy companies tend to wait on average longer before taking action in case of delayed payments from customers. By tolerating the delay in the payment of trade receivables after the agreed deadlines, firms in Bulgaria, that are in a better financial condition, provide liquidity support to their customers, because they are interested in their survival and of future sales to them.

Moreover, for companies it is not always justified to seek to collect their trade receivables in the shortest possible time. The reason is that the longer waiting period improves their competitiveness and helps them to increase their financial results. In addition, undertaking measures for enforced collection of receivables requires financial resources of the companies, but often it does not result in the desired outcome, and the costs incurred for the collection of receivables are becoming additional losses. The results reveal the ineffectiveness of the most popular corporate measures against delayed and uncollectible trade receivables as mechanisms for preventing the risk of bankruptcy.

For most enterprises, however, the delay in the collection of receivables is not voluntary. It is a reflection of objective factors such as lack of financial resources at the debtors and the inability of creditors to compel effectively their customers for timely payment of obligations. The study shows that overdue receivables create severe liquidity difficulties for companies and difficulties in covering even basic expenses for carrying out their operations. Inter-companes arrears allow the transfer of the problem to other economic subjects and generate risk for the whole economy.

For many companies trade credit is a source of funding from last resort. This gives a reason to believe that the difficulties in servicing obligations to suppliers and also problems with the collection of trade receivables on time are indicators of the risk of becoming insolvent for firms.

As regards the role of the trade credit about the risk of the bankruptcy of the companies it can be summarized that, on the one hand, sales with deferred payment increase competitiveness of firms and reduce the risk of failure in terms of tight markets, but also are connected with risk of accumulation of significant overdue accounts receivable. They in turn create danger of becoming companies creditors in a situation of inability to meet their own obligations. Furthermore attracting additional resources from suppliers to finance lending to customers after certain levels also presents an increased risk of falling of the companies in a state of inability to pay its obligations.

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Annex 1

Dependence between the percentage of overdue receivables and the difficulties of firms in meeting their monthly expenses

Difficulties in covering monthly costs	Percentage of overdue receivables to the sum of all sales with deferred payment for 2012	
Rent	Kendall Coefficient	0,231
	Sig	0,076
	Spearman Coefficient	0,270
	Sig	0,080
Repairs	Kendall Coefficient	0,284
	Sig	0,012
	Spearman Coefficient	0,341
	Sig	0,011
Payment of monthly salaries	Kendall Coefficient	0,260
	Sig	0,009
	Spearman Coefficient	0,303
	Sig	0,010
Payment of mobile phone services	Kendall Coefficient	0,265
	Sig	0,009
	Spearman Coefficient	0,317
	Sig	0,008
Payment of lease instalments	Kendall Coefficient	0,329
	Sig	0,035
	Spearman Coefficient	0,399
	Sig	0,032
Payment of additional fees	Kendall Coefficient	0,313
	Sig	0,011
	Spearman Coefficient	0,385
	Sig	0,010
Social payments to employees - food vouchers , clothing and others	Kendall Coefficient	0,376
	Sig	0,002
	Spearman Coefficient	0,451
	Sig	0,001
Payment of social insurances	Kendall Coefficient	0,318
	Sig	0,001
	Spearman Coefficient	0,378
	Sig	0,001

Annex 1 (continuation)

Difficulties in covering monthly costs	Percentage of overdue receivables to the sum of all sales with deferred payment for 2012	
Payment of corporate tax	Kendall Coefficient	0,253
	Sig	0,014
	Spearman Coefficient	0,304
	Sig	0,012
VAT payment	Kendall Coefficient	0,348
	Sig	0,000
	Spearman Coefficient	0,420
	Sig	0,000
Excise and customs duties	Kendall Coefficient	0,367
	Sig	0,012
	Spearman Coefficient	0,444
	Sig	0,010
Payment of local taxes	Kendall Coefficient	0,264
	Sig	0,008
	Spearman Coefficient	0,308
	Sig	0,010
Business trips payments	Kendall Coefficient	0,349
	Sig	0,004
	Spearman Coefficient	0,424
	Sig	0,003
Payment to suppliers	Kendall Coefficient	0,253
	Sig	0,013
	Spearman Coefficient	0,304
	Sig	0,012
Advanced payments to suppliers	Kendall Coefficient	0,303
	Sig	0,011
	Spearman Coefficient	0,364
	Sig	0,009
Payments to suppliers related parties	Kendall Coefficient	0,285
	Sig	0,064
	Spearman Coefficient	0,334
	Sig	0,066

Annex 2

Taken actions to protect against delayed and uncollectible receivables

Protection Measures	Number of answers	Percentage of answers	Percentage of cases
Consulting with a lawyer	42	11,1	20,9
Mandatory conclude safe and precise contracts	87	23,0	43,3
Pre-examine the solvency of potential customers	69	18,2	34,3
Require provision of a security connected with specific terms	12	3,2	6,0
Start to demand payment of the receivable immediately after it becames due	31	8,2	15,4
Require bank guaranties for the payment	8	2,1	4,0
Take legal action for compulsory collection	20	5,3	10,0
Insure their receivables	5	1,3	2,5
Have a clear vision and a system on how to collect overdue receivables	14	3,7	7,0
Accept payments in cash only	13	3,4	6,5
Have a department dealing with the collection of overdue receivables	3	0,8	1,5
Require full advance payment	25	6,6	12,4
Retain ownership rights	4	1,1	2,0
They don’t have special practices in the company	35	9,2	17,4
They don’t have such information	11	2,9	5,5
Total	379	100,0	188,6

* The data was processed with the technique“multiple response”

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