

The Impact of Financial Distress on Trade Credit in Indonesian Stock Exchange

Angelica Marcia T

Faculty of Administrative Science
Department of Business Administration
Universitas Indonesia
Kampus UI Depok
Jawa Barat Post Code 16424, Indonesia

Bernardus Y. Nugroho (Corresponding Author)

Faculty of Administrative Science
Department of Business Administration
Universitas Indonesia
Kampus UI
Jawa Barat Post Code 16424, Indonesia
E-mail: nugroho_yuliarto@yahoo.com
Indonesia

Abstract

This study examines the use of trade credits by firms that are in a state of financial distress. Trade credit is short-term financing that can be useful for firms in financial distress. The purpose of this study is to analyze the effect of financial distress on trade credit. The study sample was taken from non-financial firms listed on the Indonesian Stock Exchange (IDX) from 2007 to 2016. The research method is panel data regression by using the estimation model of the fixed-effect model and random effect. This study found that firms in financial distress tend to increase the use of trade credit. This is reflected from the results of research showing the positive and significant coefficients on the variable financial distress on the ratio of trade payable to the cost of goods sold and the ratio of trade payable to equity. Based on the results of the study it can be explained that firms that are in a state of financial distress have a larger current liability, its source from short-term financing.

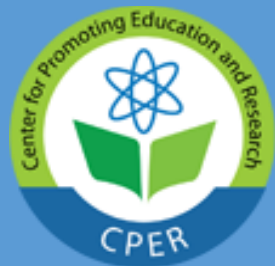
Keywords: Financial Distress; Trade Credit; Trade Payable; Coverage Ratio, Current Liability

1. Introduction

Financial distress is defined as a process of financial decline that occurs before a firm experience's bankruptcy or liquidation (Platt and Platt,2002). *Financial distress* is when the cash flow is not enough to cover the current liabilities (such as trade credit or interest) and the firm is forced to do corrective actions (Wruck 199) in Ross et al, 2015). The situation pushes the firm to locate a creditor who is willing to provide loans or an investor who is willing to invest a significant amount in the business.

An attempt the firm can do to fix the financial situation is by identifying a funding source to enable the business to run smoothly. The firm has several funding options that can be used for the business. Depending on the source, funding can be grouped based on the length of the financing period, such as short-term financing and long-term financing. Types of short-term financing are (1) accruals, (2) trade payable/trade credit, (3) short-term bank loans, (4) commercial paper (Margaretha,2005). These four types of financing may be able to fund a firm's business activities, especially for firms that are undergoing financial distress.

One that is often used is trade credit. Trade credit is when the supplier provides a flexible repayment period so the buyer does not need to do a down payment when purchasing the goods or when the goods are delivered



(Paul and Boden,2008). Trade credit refers to the credit given by a firm to another firm (Horne and Wachowicz, 2001).

Trade credit aims to reduce transaction fees when making purchases (Ferris, 1981). Instead of paying every time the goods are sent, the buyer may want to save up and pay in monthly or quarterly installments (Petersen and Rajan, 1997). From this, we can conclude that delaying payment for goods or services is a financing option for the buying firm as the goods or services can already be used for business activities although the buying firm (the receiver of trade credit) has yet to make payment for the said goods or services. Trade credit can be a solution for firms experiencing financial distress.

In the opinion of Modigliani and Miller (1963) which states that policies to increase debt will increase the value of the company to a certain point and then decline as a result of agency costs and the possibility of bankruptcy. This MM theory received criticism to financial distress caused by an increase in firm debt. The firm that continues to add to the debt will pay a bigger interest and there is a higher probability of a decline in net income, leading the firm to a state of financial distress and, finally, experience bankruptcy (Manurung, 2006).

Ross et al (2010) in Liono (2014) explained that one of the consequences of taking on debt is the possibility of financial distress. Debt can provide benefits such as tax saving for the firm, and the bigger the debt the higher tax is saved. But at a certain point, a significantly high level of debt will produce cost of financial distress that can cover tax-saving benefits. The firm's decision in taking debt is an important consideration so that the firm does not end in financial distress.

There is a difference in opinion of some analysts, where trade credit is an alternative option to obtain financing when the firm experiences financial distress but MM and Ross' theory (2010) stated that higher debt will direct the firm further into financial distress, eventually ending in bankruptcy. By looking at this difference in opinion, researchers want to re-examine whether there are influences of companies experiencing financial distress on the existence of decision making in the use of trade credit (trade debt). The study discusses the topic of the impact of financial distress on trade credit, which is still rarely studied in Indonesia. The study is the first study in Indonesia that examines the use of trade credits by firms that are in a state of financial distress and by looking at the industrial sector using the highest trade credit as short-term financing.

This study will discuss the impact of financial distress on trade credit in a firm. The proxy variable for financial distress is the coverage ratio, where the calculation is Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA)/Interest expense. This measurement is taken from a previous study done by Asquith, Gertner, and Sharfstein (1994), accompanied by controlled variables: firm size and sales growth. The proxy variable for trade credit is the ratio of trade credit to the cost of goods sold, the ratio of trade credit to equity, and the ratio of trade credit to financial debt.

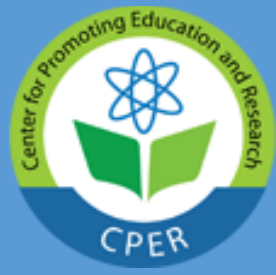
Based on the background of previous research, this research will be conducted by using companies in the non-financial sector listed on the Indonesia Stock Exchange in the period 2007-2016. The objective of the study is to examine whether firms undergoing financial distress have an impact on the usage of trade credit.

2. Theoretical Framework

Several previous studies have conducted research relating to the topic of financial distress and trade credit, both domestic and international. These studies are, among others, Molina and Preve (2012); Petersen and Rajan (1997); Cuñat (2007); Atanasova (2007); Liono (2014).

A study by Molina and Preve (2012), stated that a firm under financial distress uses trade credit compared to firms that do not suffer from financial distress.

Atanasova (2007) discussed the impact of the availability of institutional loans on a firm's request for trade credit from the supplier. The study tested for obstacles in obtaining credit and its impact on the firm's repayment policy. The empirical outcome of the study supported the hypothesis that trade credit is taken by a firm to replace



institutional loans when credit is limited.

Cuñat (2007) in his study presents significantly how the use of trade credit is higher in firms with low asset levels and low liquid assets. Furthermore, Cuñat (2007) discussed how there is a higher level of trade credit in firms with lower assets and liquid assets. According to the results, companies need to use more trade credit if they have the little guarantee and when they are faced with the needs of additional liquidities. Also, it was found that a firm uses more trade credit if it has higher sales and supply, which possibly indicates a positive correlation between business and trade credit. It implies that the available supply can be used as a guarantee for the supplier.

Based on Liono's study (2014), the risk of financial distress can be represented by the interest coverage ratio; the lower the interest coverage ratio, the higher the risk of financial distress. The study found that the level of profitability and liquidity of a firm can reduce the risk of financial distress, and the longer the firm is around then there will be a lower risk of financial distress.

Petersen and Rajan (1997), in their study, used proxy account payable and account receivable, stating that short-term trade credit is regularly used to minimize transaction fees, while medium/long-term borrowing does not support trade credit as an alternative payment method. Also, the study discovered that small businesses under financial distress could give profit for trade credit suppliers. There was also a correlation between margin and receivable, where the supplier can offer trade credit as a tool for price discrimination.

3. Research Method

This study used a quantitative approach. The data used was quantitative and utilized to test existing hypotheses. This study is classified as panel data research, taking 76 firms listed in the Indonesian Securities Exchange in the period 2007-2016 as a sample. The method used is panel data regression, with the estimation models fixed effect model and random effect model.

We analyzed the behavior of trade credit when a firm undergoes financial distress, with the following model:

$$(Tpay/CGS)_{it} = \alpha_i + \beta \text{ financial distress}_{it-1} + \gamma X_{it} + \text{Dummy Sector} + \varepsilon_{it}$$

$(Tpay/CGS)_{it}$ = Ratio of trade payables on daily cost of goods sold

α_i = Vector of dummy variable

$\beta \text{ financial distress}_{it-1}$ = Dummy Variable (financial distress =1)

γX_{it} = Controlled variable (Size dan Sales Growth)

Dummy Sector = Dummy variable

ε_{it} = Error term

$(Tpay/CGS)$ is the ratio of trade payable on the cost of goods sold; this calculation is a measurement for trade credit as dependent variable. α_i is the dummy vector variable. $\beta \text{ financial distress}_{it-1}$ is the dummy variable to measure financial distress by measuring coverage ratio, where if $\beta < 1$ for two consecutive years or if $\beta < 0,8$ in a certain year, then the firm experiences financial distress. γX_{it} is the controlled variable, representing firm size and sales growth. Size uses log of asset and log of sales, while sales growth is measured by $[Sales(t)-Sales(t-1)/Sales(t-1)]$ (the sales from a certain year is subtracted by the previous year's sales, then divided by the sales prior to that year). **Dummy Sector** is a dummy variable that gives the value 1 on a firm in the sector using a high trade credit amount and 0 for others. Deciding on the sector was conducted by listing firms from the highest trade credit to the lowest. Based on this list, it was clear to discern the sectors that tend to use large trade credit amount. To further support the study results, other dependent variables were also used: (Tpay/Equity) and (Tpay/Financial Debt). These variables can help explain whether trade credit is a solution of the main choice when firms are in a financial distress.

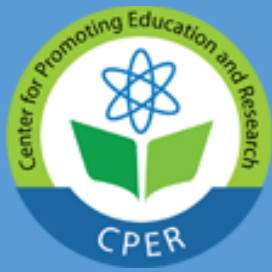


Table 1 shows the definition of variables in the study.

Table 1. Definition of Variables

Variable	Definition
Dependent Variable	
<i>Trade Credit</i>	<i>Ratio of Trade Payables to Cost of Goods Sold</i> <i>Ratio of Trade Payables to Equity</i> <i>Ratio of Trade Payables to Financial Debt</i>
Independent Variables	
<i>Financial Distress</i>	<i>Coverage Ratio = EBITDA/Interest Expense</i>
Control Variables	
<i>Sales Growth</i>	<i>[Sales(t)-Sales(t-1)/Sales(t-1)]</i>
<i>Size</i>	<i>Log of Asset dan Log of Sales</i>
<i>Dummy Sector</i>	<i>Dummy Variable</i> <i>(Sectors using a high amount of trade credit = 1)</i>

Source: Molina and Preve (2012)

4. Research Hypothesis

According to a previous study by Molina and Preve (2012), a firm under financial distress tends to use a lot of trade credit from the supplier, compared to a firm free from financial distress. In alignment with the mindset of Molina and Preve (2012), the hypothesis for this study uses the financial distress variable measured with coverage ratio; therefore, the first hypotheses developed from the question in the study are as follows:

H1: Firms under Financial Distress Have Positive Impact on Ratio of Trade Payable to Cost of Goods Sold

A study by Molina and Preve (2012) showed that ratio trade credit on equity is a dependent variable, where if a firm experiences financial distress the ratio trade credit on equity will increase. With this explanation, we have the second hypothesis below.

H2: Firms under Financial Distress Have Positive Impact on Ratio of Trade Payable to Equity

Molina and Preve (2012)'s study also stated that ratio trade credit on financial debt is a dependent variable, where if a firm experiences financial distress the ratio trade credit on the financial debt will increase. Continuing from this rationale, the third hypothesis was produced.

H3: Firms Under Financial Distress Have Positive Impact on Ratio of Trade Payable to Financial Debt

5. Results and Discussion

This study focused on the impact of financial distress on the use of trade credit. It used panel data regression as the research method. Table 1 shows the variables: trade credit measured with trade payable as a dependent variable; financial distress with proxy coverage ratio as the independent variable; Sales Growth, Size and Dummy Sector used as controlled variables. Table 2 shows descriptive statistics from every related variable.

Table 2. Descriptive Statistics

Descriptive Statistics of Variables				
Variables	Mean	Median	Minimum	Maximum
Tpay_CGS	0.186016	0.132246	0.001140	7.901703
Tpay_Equity	0.640617	0.178454	-21.46891	39.44630

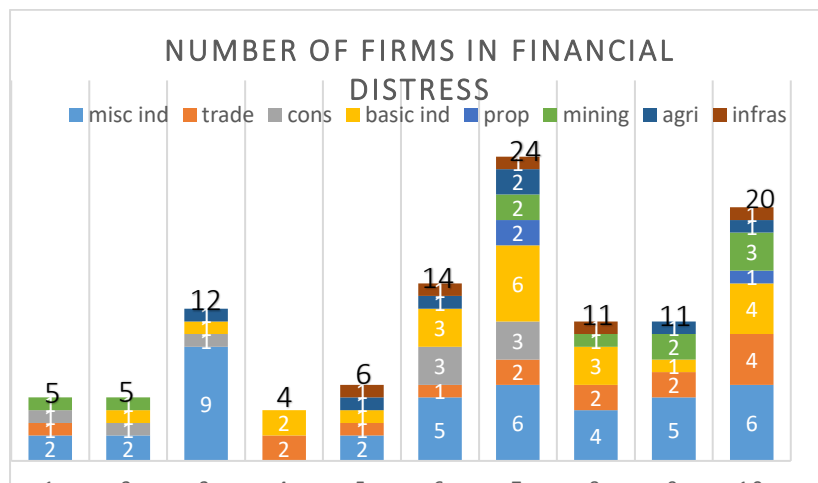
Tpay_Financial Debt	0.544820	0.161032	0.000195	92.54310
Financial Distress	0.147368	0.000000	0.000000	1.000000
Log of Asset	12.35287	12.30484	10.11970	14.01352
Log of Sales	12.25800	12.21673	10.39974	13.74783
Sales Growth	0.187093	0.113975	-0.985831	38.54135
Dummy Sector	0.789474	1.000000	0.000000	1.000000

Source: Data processed by eviews 9.0

Table 2 shows the statistic descriptive of every variable used. The financial distress variable indicates that the lowest value is 0 and the median value is also 0, implying that firms undergoing financial distress are in the smallest sample out of 76 firms annually. With the spread of the number of companies experiencing financial distress that is not much, then according to descriptive statistics, where the mean of financial distress variables that have a value of 0.14 (14%) then it explains the average company experiencing financial distress included in the sample classified as small.

Figure 1, on the other hand, shows the number of firms under financial distress every year in the 2007-2016 period. It also shows the sectors experiencing financial distress, from which a conclusion can be drawn that the miscellaneous industry contributes greatly, compared to other industries, to the total number of firms experiencing financial distress on an annual basis. Although the number of firms under financial distress is considered relatively low, this study can provide significant results for the dummy financial distress variable.

Figure 1. Firms Under Financial Distress and Their Industries in 2007-2016



Source: Author

Tables 3a, 3b, and 3c show the relationship between the variables in the study. The results were processed using panel data regression. Table 3a used the random effect estimation model, while tables 3b and 3c used the fixed effect estimation model.

Table 3a. Regression Output

Dependent Variable (Tpay/CGS)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.433549	0.299257	-1.448750	0.1478
FD	0.167465	0.042778	3.914770	0.0001***
TOTAL_ASSET	0.053090	0.023825	2.228385	0.0261**
SALES_GROWTH	-0.008393	0.009536	-0.880163	0.3791
DUMMY_SECTOR	-0.075191	0.043470	-1.729703	0.0841*

Source: Data Processes by evIEWS 9.0

(Tpay/CGS)= C + 0,16 FD + 0,05 T_A – 0,07 D_S

Note:

*** Significance on 1%

** Significance on 5%

* Significance on 10%

Based on Table 3a, the variables that influence the dependent variable Tpay/CGS are dummy financial distress, total asset, and dummy sector variables. The dummy financial distress variable has 0.00 probability, meaning the significance level is at 1%. The total asset variable (log of asset) has a probability value of 0.02, indicating a significance level of 5%. The dummy sector variable has a probability value of 0.08, showing a significance level of 10%. These three variables affect the independent variable (Tpay/CGS). The dummy financial distress variable has a positive relationship with Tpay/CGS. The total asset variable (log of asset) has a significant, positive relationship with Tpay/CGS. The dummy sector variable has a significant, negative relationship with Tpay/CGS.

In this study, the dummy sector has standards in measuring, which is by giving the value of 1 to firms in the sector that tend to take out large amounts of trade credit. Out of the 8 sectors in the sample, 4 sectors were chosen: miscellaneous industry, basic industry, consumer and trade. The results show that every increase of 1% in the dummy financial distress variable will increase trade credit by 0.16%. This is consistent with a previous study by Molina and Preve (2012). Table 3a shows that the controlled variable, total asset, gives a significant influence on trade credit, implying a positive relationship between the two variables.

Table 3b. Regression Output

Dependent Variable (Tpay/Equity)				
Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.169631	0.627547	-0.270308	0.7870
FD	0.270821	0.079739	3.396328	0.0007***
TOTAL_SALES	0.059830	0.050173	1.192477	0.2335
SALES_GROWTH	0.016284	0.011966	1.360865	0.1740
DUMMY_SECTOR	0.042935	0.073266	0.586013	0.5580

Source: Data Processed by evIEWS 9.0

(Tpay/Equity)= C + 0,27 FD

Note:

*** Significance on 1%

** Significance on 5%

* Significance on 10%



Table 3b shows that the variable impacting on the dependent variable Tpay/Equity is the dummy financial distress variable. The dummy financial distress variable has 0.00 probability, meaning the significance level is at 1%. The dummy financial distress variable has a positive relationship with Tpay/CGS, meaning that trade credit increases quicker than the equity value when a firm experiences financial distress. A quick increase in trade credit implies that when a firm experiences financial distress, the firm is more likely to have more trade credit instead of utilizing equities. The results show that every 1% increase in the dummy financial distress variable will increase Tpay/Equity by 0.27%. This is also consistent with a previous study by Molina and Preve (2012). Table 3b shows the controlled variables total asset, sales growth, and dummy sector do not impact significantly on trade credit.

Table 3c. Regression Output

Dependent Variable (Tpay/Financial Debt)					
Variables	Coefficient	Std. Error	t-Statistic	Prob.	
C	-0.978199	0.517821	-1.889070	0.0593	
FD	0.009273	0.020380	0.455001	0.6492	
TOTAL_SALES	0.117247	0.041475	2.826908	0.0048***	
SALES_GROWTH	-0.000279	0.004497	-0.062019	0.9506	
DUMMY_SECTOR	0.107020	0.092165	1.161176	0.2459	

Source: Data Processed by eviews 9.0

$(Tpay/Financial\ Debt) = C + 0,11 T_S$

Note:

*** Significance on 1%

** Significance on 5%

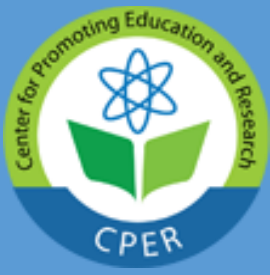
* Significance on 10%

Table 3c shows that the dummy financial distress variable does not influence Tpay/Financial Debt. Financial debt is defined as the total short-term and long-term debt (Molina and Preve, 2012). This means that financial debt cannot be wholly replaced by trade credit for a firm undergoing financial distress. Table, 3c shows the significance of the dummy financial distress variable is >0.05 , where probability is 0.6492 this indicates there is no relationship between the two variables. This outcome is not in line with the previous study by Molina and Preve (2012), where all the results showed a positive and significant correlation between the dummy financial distress variable and Tpay/Financial Debt. A positive correlation indicates that financial debt can be replaced by trade credit when a firm experiences financial distress. Table 3c shows that the controlled variable, total sales, has a significant impact on Tpay/Financial Debt; this indicates a positive relationship between the two variables. The results show that every 1% increase in the total sales variable will increase Tpay/Financial Debt by 0.11%, which explains that sales are funded through debt. The controlled variables sales growth and dummy sector do not impact significantly on Tpay/Financial Debt; this is supported by Brigham and Houston (2001), who stated that creditors are hesitant to provide additional funds or loans to firms under financial distress or firms that have the probability to go bankrupt.

6. Conclusion

This study was conducted to analyze the trend in utilizing trade credit when a firm experiences financial distress. Trade credit is the largest short-term financing method that a firm can benefit from when they are under financial distress. The proxy used for the financial distress variable was the coverage ratio.

Based on the study, we can conclude as below:



The results of the study proved Hypothesis 1: Firms under Financial Distress Have Positive Impact on Ratio of Trade Payable to Cost of Goods Sold. These firms tend to increase their usage of the Ratio of Trade Payable to Cost of Goods Sold. This was reflected in the study results, showing a positive and significant correlation the financial distress variable has with trade credit. It also explains that firms under financial distress tend to rely on trade credit and reduce their production to continue its operation.

The results of the study proved Hypothesis 2: Firms Under Financial Distress Have Positive Impact on Ratio of Trade Payable to Equity. Firms under financial distress tend to increase their usage of trade credit and lower equities to fund business operations. This was reflected in the study results, showing a positive and significant relationship between the financial distress variable and the Ratio of Trade Payable to Equity. The study discovered that trade credit increases quicker compared to equity value under financial distress. This spike explains that a firm under financial distress tends to increase trade credit instead of using its own equities; however, when this type of firm needs to fund the operations of a firm that is not able to use trade credit, then the firm has to use equities or own resources.

The results of the study rejected Hypothesis 3: Firms Under Financial Distress Have Positive Impact on Ratio of Trade Payable to Financial Debt. The results did not show that there is no relationship between firms under financial distress and the Ratio of Trade Payable to Financial Debt. This does not correspond with Molina and Preve (2012)'s study, which shows that financial distress does not have an impact on dependent variables. Their study provided positive and significant results'; explaining that trade credit plays an important role in firms undergoing financial distress. The difference in these results can be supported by Petersen and Rajan (1997)'s statement: Most firms that request for significant trade credit are because the firms are limited in obtaining bank loans. Atanasova (2007) provided empirical results in her study, which supported the hypothesis that trade credit is taken by firms to replace financial institutions (i.e. banks) when credit is limited. Baxter (1967) discovered that firms under financial distress struggle to obtain trade credit. Therefore, it can be concluded that Hypothesis 3 was rejected due to the possibility that firms under financial distress will struggle to add to their debt because creditors, banks as well as trade credit suppliers do not trust them. This is further supported by Brigham and Houston (2001), who stated that creditors are reluctant to provide additional funds or loans to firms under financial distress or firms that have the probability to go bankrupt.

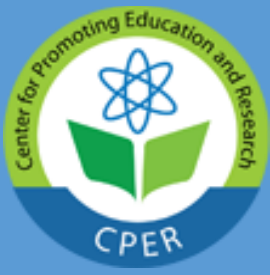
Based on the discussion for each hypothesis, it can be concluded that firms under financial distress tend to increase the usage of trade credit. This implies the possibility that these firms tend to have higher current liabilities.

Recommendation

Based on the above study, it is recommended for trade credit to be a financing method when a firm undergoes financial distress. Looking at the results, then it can be concluded that firms under financial distress have higher current liabilities. These firms also cut down on production to alleviate the financial burden. They also tend to increase trade credit because they cannot rely on equities or own resources, leading them to seek loans. In summary, trade credit can be seen as a solution to financial distress. Firms that utilize trade-credit need to maintain a good relationship with suppliers, because when the firms experience financial troubles the suppliers may be a key to resuming business operations. When a firm does not have a good relationship with the supplier or often makes a delay in payment, then the supplier will lose trust in the firm, put a halt in supplying the good/service and has the right to increase the interest and loosen time maturity. The firm needs to maintain the supplier's trust because, in times of financial distress, the firm will struggle to obtain loans due to banks tightened and strict regulations.

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