

Determinants of Trade Credit of the Construction Firms Listed on the Vietnamese Stock Exchange

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Abstract:

This paper investigates the determinants of trade credit by the construction firms listed on the Vietnamese stock exchange. The study used data from 101 construction firms listed on given market over the period of 2012-2016. By using the OLS models, the findings showed that the fixed assets, return on total assets and sale growth ratio are significantly affecting on the trade credit of given firms. Other variables such as inventory cycle, liquid assets, total revenue and total cost are not statistically significant. Possible solutions have been considered to increase the trade credit.

Key words: Trade credit, Construction firms, Vietnamese stock exchange, OLS

1. INTRODUCTION

According to the Department of Business Enrollment, Ministry of Investment and Planning (2014), number of firms dissolution in 2013 were 60.737 firms increased 11.9% comparing to 2012. Most of them have been faced the difficulty in the capital access. Possible solutions to reduce the capital constraint have been considered by the Vietnamese State Bank. Up to the present time the interest rate for medium and long term loans ranged from 9.5% to 11%. However, the access to capital of the the business is still very much stuck. According to reports, to

31/12/2014 total outstanding loans for the economy reached 3,970,548 billion VND, increased comparison with 12/2013 is 14.16%. In particular, total outstanding credit for the construction industry is 377,362 billion VND, compared to growth in 12/2013 is 9.63%, representing a relatively low 9.5% (SME, Vietnam, 2014). So, it is probably a relief for the wing career in the economy in General, as well as the construction business sector in particular. Enterprises in the construction industry with characteristics that must invest with a massive amount of capital to carry out the works and therefore cannot based only on sources of equity but also need a lot of extra funding. In addition, while the credit funds from restricted business in promoting the commercial credit will help to make the business work better. Therefore, determinants of the trade credit by the construction firms listed on the Vietnamese stock exchange is vital significant.

2. THEORETICAL FRAMEWORK

2.1. Trade credit definition

As a part of financial support from financial institutions, the payment and supply of goods and services can also be seen as an alternative of financial support (Brennan et al., 1988). This form is considered as vendor financing, so-called trade credit. Most firms try to prolong their payments to suppliers to mitigate credit constraint in a short period. Thus, trade credit is found as a significant short-term external financing for firms, especially for small and medium sized firms (Bovery and Gobert, 2007). It is stated that trade credit can be extended by firms during tight monetary period (Guariglia and Mateur, 2006). In other words, firms with access limitation to bank credit or the cost of bank credit is high, they have to use of trade credit.

Due to the trade credit's specific nature of not belonging to bank sectors, trade credit is not controlled by authorities

(Nieuwkerk, 1979), and it is shown in both sides of balance sheet as accounts receivable and account payable. The measure of level of trade credit in this paper is defined as receivable and accounts payable. It is confirmed that the use of trade credit is affected by the development of a country's legal and financial system (Frank and Maksimovic, 2004).

2.2. The motivation of trade credit

Various theories have been discussed to explain why suppliers are willing to offer credit to buyers and why buyer would like to use the expensive form of trade credit. Frank and Maksimovic (2004) explained the motivation of trade credit focused on two aspects first is related to real operation and the second is about financial function of trade credit. In addition, Fisman and Love (2003) argued that the use of credit is related to industry's characteristics while Biais and Gollier (1997) stated that firms depending on trade credit if they possess enough creditworthiness from suppliers and so on. In short, the most prevalent motivations are classified by Petersen and Rajan (1997) into three categories as follows:

2.2.1. Price discrimination theory

It is supported that supplier can extend trade credit period or offer inearned discount rate to buyers with long-term relationships. This is in line with price discrimination theory suggested by Ng et al (1999). The same ideas are also supported by the Petersen and Rajan (1997). It is emphasized that firms with strong market power offer more trade credit. Such firms operating with high profit margin have incentive to achieve high sales without reducing price to buyers (Brennan et al., 1988). As a result, they provide the same credit terms to all buyers. However, Brennan et al., (1988) further proposed that those buyers with access to other cheaper financing sources realize payment before discount date to obtain discount savings.

The buyers without access to other sources are also likely to pay on due date to avoid expensive interest costs.

Trade credit in certain degree ascertain product quality is considered as a way of allowing customers to have time to evaluate (Smith, 1987). The author further explained that firms with products which need more time to evaluate extend payment period for their customers. Thus, it is predicted firms with high product quality provide longer trade credit period to customers to confirm with quality, especially for new entrants to a market.

Another argument is that credit terms offered determine the effective price of products (Wilson and Summers, 2002). Fisman and Love (2003) specify that trade credit can only be used as price discrimination in the following cases: first, the flexibility of demanding from credit customers is lower than cash customers. Low flexibility defines constant demand therefore stable supplier and customer relationship; second, information asymmetry exists in the credit market. In the case of information inefficiency of customers about product, suppliers prolong trade credit to increase sales; third, trade credit is used to compete with other competitors in the same industry. Then, firm with higher profit margin would like to grant more trade credit as they depend significantly on trade credit to achieve higher continuous sales. As a result, it is expected that firms with higher profit margins would like to grant more trade credit

2.2.2. Transaction costs theory

Two basic transaction costs theories can be considered as follows. First, the nature of trade credit of separation of delivery of goods and payments can reduce the costs of administration expenses both for customers and suppliers in comparison of payment of each delivery (Kohler et al.,2000). Schwartz (1974) further details that customers with trade credit have enough time to prepare payment in case of cash

shortage and unexpected purchase. In line with this, they can summarize future cash outflows with higher certainty and improve cash management. Second, firms with sales seasonality face two large costs: warehousing costs and financing costs of inventory. Regarding to Bougheas et al. (2009), inventory may not be sold for cash in the next period and losing trade credit level can save inventory costs for suppliers by stimulating sales during low demand period. It is also stated that for firms with high sales growth, will resort more on trade credit to invest in inventory.

Four types motives of using trade credit based on previous literatures (Fisman & Love ,2003). In addition to the given theories, they address that the liquidation of buyer firms and customized products also influence the provision of trade credit by suppliers. They state that the easier of a buyer to be liquidated, the higher probability of trade credit granted to the buyer, as it is easier for supplier to resell goods in case of buyer default. This is consistent with part of financial advantage theory. However, customized product is a new theory for researchers. Fisman & Love (2003) proposed that the relationship between suppliers and customers built during the processes of tailoring products can last longer. Thus, suppliers would like to offer more trade credit because of their specialty to customers. Furthermore, trade credit is considered more flexible than bank loans (Danielson and Scott, 2004), because of its fluctuation with business activities. Danielson & Scott (2004) also stated that a temporary delay in trade credit payment is less expensive compared with bank loans delay.

Last but not least, Emery (1984) argues that this operational motive only exists when demands from customers are not constant. Because of uncertainty and seasonality, demands of product is not regular, suppliers have to respond properly to demand fluctuations by changing price and the level of production. This will lead extra costs to both suppliers and customers. A better alternative is to offer trade credit. As trade

credit allows more flexibility in operations. Wilson & Summers (2002) confirmed that the purpose of trade credit provision is not to make profit for suppliers but for pursuing a return on the combination of goods and finance, and long term relationship with customers.

2.2.3. Financial advantage theory

Various studies (Kohler et al. 2000; Garcia-Teruel & Martinez-Solano, 2010; Demirguc-Kunt & Maksimovic, 2001) argued that suppliers have some advantages on providing trade credit compared with other financing institutions. These advantages can be represented under three aspects. First, the suppliers can easily evaluate buyer's financial performance and its creditworthiness through their business (Petersen & Rajan, 1997; Garcia-Teruel & Martinez-Solano, 2010). Therefore they have less risk for granting trade credit compared with bank credit. Second, suppliers have more power to enforce repayment by threaten buyers to reduce its future supply of goods and services, especially in market of less competition, because buyers will depend significantly on the limited suppliers. In contrast, financial institutions may be restricted by bankruptcy law when draw back its past financial lending (Demirguc-Kunt & Maksimovic, 2001). This advantage enables suppliers to provide more trade credit beyond the amount that banks are willing to offer (Cunat, 2007). Third, there is another advantage for suppliers in certain industries, they can repossess goods easily in case buyers cannot realize payment, and those goods can be resold to other customers. Summarized by Garcia-Teruel & Martinez-Solano (2010), whether to offer trade credit, will depend on the creditworthiness of buyers, and their ability to get other less cost external financing. It is assumed that firms with access to capital markets will extend more trade credit to those who do not.

Some other theories, on the other hand, are not likely to support for the given theories. First, there are two main

shortcomings of monitoring advantages of suppliers. The first shortcoming is that they believe banks are more specialized in assessing the creditworthiness of borrowers compared with suppliers, and why banks cannot obtain enough information about financial situation of borrowers. The second shortcoming is that if suppliers have more financial information about borrowers, why they do not lend cash to them directly instead only granting the value of inputs as trade credit (Burkart and Ellingsen, 2004). Second, in the default situation of borrowers, Frank and Maksimovic (2004) stated that sellers can only repossess and resell their goods if the goods are not processed to finished goods, otherwise, it is not allowed to do like that way. This means that the collateral advantage of suppliers is diminished. In addition, Fisman and Love (2003) explain that the process of reselling goods is related to the characteristics of inputs, such as depreciation and firm specificity. Therefore, the implications of Burkart & Ellingsen's (2004) research defined that industries requiring many raw materials can easily get and hold large amount of trade credit. Third, trade credit is a poor alternative for bank credit. The first reason is that trade credit is only applied to inputs of borrowers, while bank credit is not restricted (Nilsen, 2002). In particular, Emery (1984) argues that trade credit is normally only granted to borrowers who have regular contracts with them; also, trade credit is typically granted within 30 days for full payment, which is much shorter than bank loans; finally, borrowers who cannot realize trade credit payment on time or pay back quite late are facing punishment from suppliers and even damaging their relationships which probably need long time to rebuild.

3. METHODOLOGY

To assess the credit status overview are commercial application of construction industry enterprises on the Vietnamese stock exchange, the paper used the statistical methods. In addition,

to determine the factors affecting the amount of trade credit (account pay the seller or provider), based on research models of Vaidya (2011), Akinlo (2012) the paper applied the regression model for table dataset of 101 enterprises in the construction industry are listed on the Vietnamese stock exchange in the period from 2012 to 2016. The first step, the subject using panel data regression model is Pooled to measure measurement of the impact of the factors (independent variables) to the amount of trade credit. This is a regression model in which all coefficients are constant over time and According to the space, ignoring aspects of space, time and their associated data just the usual OLS, FEM and REM regression estimates. OLS model:

$$Y_{it} = b_0 + b_1X_{1it} + b_2X_{2it} + \dots + b_kX_{kit} + u_{it}$$

In which:

Y_{it} : is dependent variable.

$X_{1it} \dots X_{kit}$: are independent variables.

b_1, b_2, \dots, b_k : are the coefficient parameters.

U_{it} : residual errors.

FEM model:

$$Y_{it} = b_1X_{it} + u_i + e_{it} \quad (t=1,2,\dots,T)$$

In which:

Y_{it} : is dependent variable of firm I at the time t (year)

U_i : the unobservable variables of the firms.

B : are the coefficient parameters.

REM model:

$$Y_{it} = b_1X_{it} + u_{it} + e_{it} \quad (t=1,2,\dots,T)$$

$$V_{it} = u_{it} + e_{it}$$

$$Y_{it} = b_1X_{it} + V_{it}$$

4. FINDINGS AND DISCUSSIONS:

4.1. Operational overviews of the construction firms listed on Vietnamese stock Exchange 2012-2016

The situation of operation of enterprises in the construction industry are listed on VIETNAM STOCK MARKET was

demonstrated by the indicators total assets, total revenue from operations business, profit after corporate income tax to reflect the scale of the active as well as the profitability of the business, specifically as follows:

Table 1: Operational overviews of construction firms listed on Vietnamese stock exchange

| period of 2012-2016 | | Unit: Billion VND | | | | |
|--------------------------------|--------|-------------------|---------|---------|---------|--|
| Indicators | 2012 | 2013 | 2014 | 2015 | 2016 | |
| 1. Total assets | 83,010 | 117,251 | 131,583 | 137,877 | 137,858 | |
| 2. Total revenue from business | 49,774 | 67,969 | 76,671 | 68,864 | 69,724 | |
| 3. Net profit | 3,406 | 5,786 | 3,655 | 217 | -311 | |

Source: from financial report of Vietnamese stock exchange 2016

4.2. Descriptive statistics of data

Based on the financial report of 101 construction firms listed on the Vietnamese Stock Exchange, to find better understanding of characteristics as well as the status of the business the construction industry, the paper summarized the descriptive statistics of the indicators as in the table 2:

| Table 2: Descriptive statistics of data used | | Unit: Billion VND | | | |
|--|--------------|-------------------|----------------|-----------|-----------|
| Indicators | Observations | Mean | Standard error | Minimum | Maximum |
| Inventory | 101 | 435.73 | 799.47 | 2.18 | 5,478.16 |
| Total assets | 101 | 1,701.95 | 3,251.56 | 25.18 | 23,040.75 |
| Fixed assets | 101 | 419.02 | 901.12 | 2.03 | 4,938.62 |
| Net profit | 101 | -3.84 | 265.75 | -2,158.74 | 713.01 |
| Money an equivalent | 101 | 104.05 | 249.36 | 0.11 | 1,597.77 |
| Revenue | 101 | 860.79 | 1,585.80 | 0 | 11,173.21 |
| Costs | 101 | 128.56 | 334.11 | 1.49 | 2,550.74 |

Source: from financial report of Vietnamese stock exchange 2016

The findings showed the inventory of the business for the average value is 435.73 billion in which the company VCG has the highest inventory level with 5,478.26 billion and as low as the company HTI inventory quantities 2.18 billion. The more inventories leads to higher pressure on working capital in this business. This is also the cause for these businesses to search

sources different capital. With standard deviation 799.47 billion, shows the different the amount of inventory in the business is relatively large.

The total assets have an average of 1,701.95 billion, in which the lowest is about 25.18 billion and the highest is about 23,040.75 billion VND. This is seen as a very high standard deviation on the assets between the firms with 3,251.56 billion. Among them, the company VCG has the scale of the highest property values.

Of net profit, the statistical results showed that the construction firms generated the net profit in 2016 at an average -3.84 billion, the firm VCG the highest level is 713.01 billion, this is precisely the advantage to business articles conditions of trade credit expansion. However, there are also businesses suffered losses with great value, as the company has the lowest net profit PVX -2,158.74 billion. With high standard deviation 265.75 billion, the findings showed a similar net profit in the construction firms in generally. In business, 36 of 101 firms' losses with total value of 3,143 billion, while those others gain total value of 2,832 billion VND.

The money and equivalent of these businesses have the average value of 104.05 billion, of which the highest is 1,597.77 billion, as low as 0.11 billion; standard deviation of 249.36 billion shows the amount of liquidity reserve enterprises is different remarkably that shows the financial capacity of the payment of the short term debts of the construction firms have different spreads pretty far.

About the revenue statistics, the firms in the construction industry that are listed on the stock market showed the average revenue of 860.79 billion in which the highest level is 11,173.21 billion, the lowest is 0 (the company PVR). With relatively high standard deviation 1,585.80 billion means that the given firm has a lot of difference in revenue. Among the 101 listed firms, the highest total cost is 2,550.74 billion, the lowest is 1.49 billion, the average cost 128.56 billion

VND. With standard deviation 334.11 billion, the total cost of the career statistics are almost no similarities due to the scale of operations and the managing alternative is different. The total cost of the greater demand for capital shows the higher the business led to the amount of capital from commercial credit will be high.

Table 3: The outcome of OLS regression

| Independent variables | Code | Coefficient Parameter | t-test |
|-----------------------|------|-----------------------|--------|
| Constant | C | -0.1378 | 2.49 |
| Inventory Ratio | X1 | 0.1231*** | 3.01 |
| Fixed assets | X2 | -0.0104 | -0.92 |
| Rate of return | X3 | -0.1907 | -1.35 |
| Liquidity assets | X4 | -0.0026 | 0.26 |
| Revenue Growth | X5 | -0.0001 | -0.11 |
| Revenue scale | X6 | 0.1235*** | 6.04 |
| Total costs | X7 | -0.5701*** | -3.26 |
| R ² | | | 0.1463 |
| F-stats | | | 10.77 |
| Prob>F | | | 0.0000 |
| Observations | | | 500 |

Notes: *, **, ***; significant at 10%, 5% and 1%.

Table 4: The outcome of FEM model adjusted to the variance of error changes

| Independent variables | Code | Coefficient Parameter | t-test |
|-----------------------|------|-----------------------|--------|
| Constant | C | 1.0676 | 4.64 |
| Inventory Ratio | X1 | -0.0484 | -0.48 |
| Fixed assets | X2 | -0.1745*** | -4.20 |
| Rate of return | X3 | 0.4421*** | 2.32 |
| Liquidity assets | X4 | -0.0158 | -1.20 |
| Revenue Growth | X5 | 0.0007* | 3.36 |
| Revenue scale | X6 | 0.0240 | 0.61 |
| Total costs | X7 | -0.0690 | -0.38 |
| R ² | | | 0.2053 |
| F-stats | | | 6.05 |
| Prob>F | | | 0.0000 |
| Observations | | | 500 |

Notes: *, **, ***; significant at 10%, 5% and 1%.

Table 5: The outcome of REM model

| Independent variables | Code | Coefficient Parameter | t-test |
|-----------------------|------|-----------------------|--------|
| Constant | C | 0.2711 | 3.51 |
| Inventory Ratio | X1 | 0.1069** | 2.21 |
| Fixed assets | X2 | -0.0434*** | -3.06 |
| Rate of return | X3 | 0.1207 | 0.82 |
| Liquidity assets | X4 | 0.0037 | 0.33 |
| Revenue Growth | X5 | 0.0002 | 0.46 |
| Revenue scale | X6 | 0.0912*** | 3.79 |
| Total costs | X7 | -0.2710* | -1.71 |
| R ² | | | 0.1562 |
| F-stats | | | 51.26 |
| Prob>F | | | 0.0000 |
| Observations | | | 500 |

Notes: *, **, ***, significant at 10%, 5% and 1%.

The R² of 0.2053 reflects that the independent variables of the model of explanation were 20.53% of the variability in terms of the amount of trade credit. The findings of fixed effect models also represented that the fixed assets (X₂), the rate of profit (X₃) and revenue growth (X₅) affect the amount of trade credit, while the inventory ratio variables such as (X₁), the assets are liquid (X₄), scale (X₆) and total costs (X₇) do not affect the amount of trade credit. The impact of the dependent variables can be explained as follows:

For fixed assets, as opposed to the previous research of Hammes (2000) and Akinlo (2012), fixed assets has the inverse effect for the variable account pay vendors but again coincided with the study of Alphonso (2004) and statistical significance at the 1% level. The findings implied that for the construction firms, when the value of the fixed assets of larger businesses often use the trade credit due to the nature of the credit use is to be done in relatively short time. In contrast to those businesses have fewer fixed assets then the executives again tried to find a way strengthen the use of trade credit in order to increase the likelihood of business capital his sector.

As for the rate of return, this variable has a positive correlation with impact pay and there is statistical significance at the 5% level. The findings are contrary to the the results of Petersen and Rajan (1997), Hammes (2000), Vaidya (2011), and Akinlo (2012). However, the results leave coincides with the research of Alphonso (2004) and Ireland (2007). The findings showed that the construction firms do business effectively, the higher the profits firms attract the willingness of suppliers to provide inputs for the process business with raw materials for larger and longer repayment period. Besides, in order to maintain the amount of capital for business and production processes of the business career usually lasts maturity leads to accounts payable increased.

Revenue growth variables also affect the amount of trade credit used and statistical significance at the 1% level. This reflect that the construction firms have revenue from doing business with the increasing growth in demand of higher capital so this business can delay the account to pay the seller in order to create sources of capital in the manufacturing business. So trade credit amount will increase and vice versa. This result is similar to the study of Petersen and Rajan (1997), Hammes (2000) and Summer (2002).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions:

This paper investigates the determinants of access to trade credit by the construction firms listed on the Vietnamese stock exchange. Data used were collected from 101 construction firms from 2012-2016 on the stock market in both Ho Chi Minh stock exchange and Ha Noi stock exchange. By using the descriptive statistics and OLS models, the findings showed that the fixed assets (X_2), the rate of profit (X_3) and revenue growth (X_5) affect the amount of trade credit, while the inventory ratio variables

such as (X_1), the assets are liquid (X_4), scale (X_6) and total costs (X_7) do not affect the amount of trade credit.

From the results of the study were presented to the author has proposed a number of solutions for businesses in the construction industry are listed on the free stock Male in particular and the construction business all over the country in General, to strengthen effective use of trade credit as a financing tool for regulatory capital for business activities in a way to be effective.

5.2.Recommendations:

From the results of research on, businesses in the construction industry should make the following solutions to enhance the efficiency in the use of trade credit:

Firstly, in terms of fixed assets, most of the valuable business assets, it is quite accepted that the firms may access to credit of bank capital, because they use the fixed assets to ensure the loan serves for the production process business, this is pretty steady and capital costs are also relatively low with time suitable for production and business. In contrast, due to the characteristics of trade credit is to be repaid in a relatively short time so sometimes these businesses typically don't care much for trade credit increases that will cause liquidity pressure in the short term. Besides, due to the long term characteristics of production of construction firms the liquidity pressure in the short term will cause a huge impact in business activities. However, depending on the situation business activities in which the administrator may consider regulating command policy its capital is a way to balance the performance of the firm.

Secondly, high profit rate enables the supplier's willingness to supply raw materials then offers good opportunities in expanding their business activities. Therefore, to improve the accessibility of trade credit resources, the improve management capacity and the efficiency of economic

activities business are really needed to consider to enhance profits.

Thirdly, the firms are often the offers in favor of providing trade credits (on the number as well as billing period) and the firms also often delay the pay supplier payments when immature aims to create products of development capital export business. However, this activity would be very risky if the financial administrator do not considered the highest risk that will cause liquidity pressure in the short term, this risks easily cause risk business which does not acquire the receivables on time lost prestige and more serious can do business in bankruptcy.

In summary, with respect to the findings the construction firms are expected to consider expanding or tighten its credit policies. As a result, the industry wants to increase the accessibility of trade credit in order to consider lifting high-efficiency production and business activities.

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