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Trade Credit Policy and Agency Theory: Evidence from Tunisian Export Companies

Meryem Bellouma

Abstract- The study here provides an agency model to explain the offer of trade credit in an asymmetric environment between the suppliers and the customers. Many theories inform traditional arguments focusing on the existence of the trade credit (e.g. tax theory, transaction cost theory, liquidity theory and product quality theory). One theory studies the adverse selection phenomenon but the moral hazard problem needs exploration. The findings indicate that day of sales outstanding of Tunisian export SMEs relates directly to adverse selection and inversely link to moral hazard measured by provision on bad debts and cost ratio. By testing the traditional models, the study does not confirm tax theory, liquidity theory or transaction cost theory. However, the findings support the product quality theory which is based on ex-ante asymmetric information.

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I. INTRODUCTION

Trade credit is an important component of corporate finance. In France, Germany and Italy, trade credit is more than a quarter of company's total assets. In the United Kingdom trade credit represents 70% of total short-term debts (Guariglia and Mateut, 2006). Besides, trade credit is a major source of financing in emerging economies, like Tunisia, where the banking system rationed small companies (Bellouma, 2011 and Ge and Qiu, 2007). In fact, as Bellouma (2011) reports, the part of accounts payable in total liability is 40 percent and accounts receivable represent 60 percent total assets for small and medium Tunisian companies. Previous studies on SMEs and access to finance in Tunisia have focused mainly on bank credit (Bellouma and Omri, 2008; Bellouma, Benaceur and Omri 2009). Nevertheless, banks are not the single source of external finance for SMEs. Indeed, during credit rationing or monetary policy contractions, trade credit may fund working capital.

Research exposes two kinds of studies on trade credit. The first considers trade credit as an important substitute for short and long term bank credit (Petersen and Rajan, 1994; Alphonse, Ducret, and Eric, 2004 and Niskanen and Niskanen, 2006; Demiroglu et al., 2012).

The second type of studies build from the supply view to highlight the impact of trade credit terms on profitability (Bellouma 2011; Pike, Cheng, Cravens, and

Lamminmaki ,2005. More precisely, Schwartz (1974), Brick and Fung (1984) Emery (1984) and Smith (1987) apply several theoretical explanations to identify the existence of the trade credit and its use. Schwartz (1974) suggests a model based on transaction cost theory. Brick and Fung (1984) present a tax model; Emery (1984) proposes a financial model; Smith (1987) designs an asymmetric information model.

According to Jensen and Meckling (1976), agency relation between the company and its client implies adverse selection and moral hazard problems. Long, Malitz and Ravid (1993) consider the adverse selection problem to explain trade credit policy. To date, to my knowledge, there are no studies dealing with moral hazard problem. Consequently, this paper provides an extension of agency model of Jensen and Meckling (1976). I offer a complement for the argument that trade credit allows customers to reduce the ex-ante asymmetric information resulting from the difficulty to assess the quality of the product sold (Smith, 1987, Wei and Zee, 1997 and Pike et al., 2005). By introducing the moral hazard phenomenon, the approach exposes the parallel effect of asymmetric information. Indeed, the seller checks the risk of buyer default in an ex-post perspective. Therefore, in asymmetric information context, trade credit policy is a trade-off between the two phenomena. The time of the payment depends on trade credit policy and may occur after delivery and the seller assumes the credit risk. Otherwise, when the payment occurs before or on delivery, the buyer assumes the risk of lower quality product.

Trade credit concerns all businesses; trade credit is more important for small and medium- sized export companies. In fact, SMEs must be able to face international changes and competition especially in the context of the financial crisis that has spread from 2007 and continued to date (Katrien et al, 2012).

The study here proposes a model based on the agency theory. More precisely, this paper contributes to agency theory literature by clarifying asymmetric information problem in the buyer supplier dyads and highlighting both ex-ante and ex-post asymmetric information phenomena. Finally, in addition to this contribution of this paper, the econometric approach is based on panel data analysis to expose the effect of asymmetric information on trade credit by controlling Tunisian export SMEs in both individual and temporal sides.

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This paper is organized as follows. Section two describes the main theories and research on trade credit. Section three presents the data and methodology. Section four exposes the interpretations of the results. Section 5 concludes and suggests some further research studies.

II. THEORIES ON TRADE CREDIT AND HYPOTHESIS DERIVED

In the last three decades, some theories try to explain trade credit. Most of them rely on market imperfections, such as taxes, transactions costs and asymmetric information.

a) *Tax theory*

The acceptance of trade credit by the buyer depends on its ability to access to other sources of funds. The post payment offered by the seller implies an implicit interest rate which is incorporated in the price. Therefore, the buyer should determinate the real cost of the different financing alternatives. In this view, Brick and Fung (1984) consider the tax effect to compare the cost of trade credit with the cost of other sources of financing. If buyers and sellers are in different tax brackets, they haven't the same borrowing costs. The authors argue that firms in a high tax bracket gain by offering trade credit than those in low tax brackets.

Accordingly, buyers in lower tax bracket than the sellers accept trade credit and those in higher tax bracket could borrow from financial institutions. All other things being equal, buyers with low effective tax rates would choose trade credit and have higher levels of accounts payable than buyers with higher effective tax rate. Even some empirical studies support the tax theory, the argument provided does not seem to be adequate since it cannot explain trade credit between firms situated in the same tax bracket.

H1: Companies offer less trade credit when in low versus high tax bracket.

b) *Transactions costs theory*

Petersen and Rajan (1997) argue that information acquisition is the main source of trade credit cost advantages. In fact, suppliers have a better capacity to get information about buyers than traditional lenders (Schwartz, 1974). The occurrence and the number of the buyers' orders give suppliers information on the credit worthiness of their clients (Bellouma, 2011). For example, the buyer's denunciation of discounts for early payment alerts the supplier about the weak creditworthiness of the buyer and its potential financial difficulties.

The second source of cost advantage arises from the threatening power of the seller compared with financial institution. When the repayment chance is reduced, sellers can threaten buyers to cut off future

supplies. This power becomes stronger when the buyers have limited alternative suppliers of the product needed or when they represent only a small part of the seller's turnover (Kandori, 1992).

Besides, in case of buyer default, the seller can reclaim value from seizing goods that are supplied. Financial institutions can salvage value from existing assets as well. However, the supplier repossesses and sales goods at a low cost since he often trades in the same industry as the buyer and already uses the same channel. Accordingly to this cost advantage, Mian and Smith (1992) note that the trade credit offered is as greater as goods supplied provide better collaterals. Petersen and Rajan (1997) support that more the buyer transforms goods, the lower the advantage of seller compared to financial institutions will be.

Finally, trade credit is a flexible operational tool. Indeed, when demand fluctuates, the company may adjust price or production. Nevertheless, as advanced by Emery (1984), this traditional adjustment is costly and can be replaced by a change in trade credit terms. More precisely, terms can be relaxed or tightened in proportion to the demand. From an empirical view, Long et al (1993) find a positive relationship between the variability demand of the company and the offer of trade credit.

According to the transaction cost theory, trade credit exists in order to reduce costs related to the exchange relationship between the buyer and the seller. Then, as Ferris (1981) supports the improvement in transaction technologies may reduce the level of trade credit. Conversely, this decline has not been detected in recent years.

H2: Companies offer less trade credit when they support high versus low transaction costs.

c) *Liquidity theory*

Trade credit is the important source of financing that rationed Companies use (Bellouma et al., 2009; Bellouma and Omri, 2008, Petresen and Rajan, 1994). The central point of this idea, as Emery (1984) suggest, is that companies with high level of liquidity or which accede to capital markets can finance rationed companies by offering trade credit. Nielsen (2002) supports this assumption by showing that in a period of monetary contraction, credit rationed firms increase the amount of goods bought by trade credit.

In the same way, Petresen and Rajan (1997) obtain evidence supporting the negative relation between buyer's access to other sources of financing and the use of trade credit. Thus, financially constrained companies are more likely to use trade credit than companies with easier access to financial intermediaries. This justification is insufficient since it does not clarify why financially unconstrained companies use trade credit.

H3: Companies offer more trade credit when they have low versus high financial constraints.

d) *Asymmetric information and product quality theory*

Asymmetric information implies a difficulty of assessing the real creditworthiness of the buyer by the seller. As discussed before, the trade credit relationship gives supplier cost advantages in acquiring knowledge about buyer's financial situation. In trade credit relation, another problem may rise if buyers do not correctly know the quality of the acquired product. Thus, sellers provide trade credit to allow customers to evaluate the quality of the product before disbursement. As pointed by Smith (1987), trade credit is frequent only for some industries whose product quality is imprecise at an earlier moment.

Many authors have studied trade credit from this point of view (Deloof and Jegers, 1996; Wei and Zee, 1997; Pike et al., 2005). The main results of their studies show that small companies extend more trade

credit than large ones in order to establish the reputation of their product quality.

In an asymmetric information context, trade credit is offered to allow buyers to check the real quality of the goods before payment. However, the product quality theory does not explain why some companies do not provide credit or even oblige customer to reimburse in advance.

H4: Companies offer more trade credit when their reputation is not developed.

Though these theories have tried to explain the existence of trade credit, they cannot give a complete justification. In fact, some arguments are consistent with specific industries, products or financially constrained environment. Before presenting the arguments of agency theory that would explain the existence of trade credit, table 1 resumes the different theories discussed above.

Table 1: Summary of the previous studies

Arguments	Phenomenon	Authors
Information asymmetry	• default risk/monitoring costs • product quality	Petersen and Rajan 1997 Long et al 1993
• Arbitrage • •	• Tax differences • Liquidity	• Long et al 1993 • Long et al 1993
• Transaction costs minimization		Ferris, 1981, Long et al 1993, Nilsen, 2002

e) *Agency theory*

According to Jensen and Meckling (1976), the relationship between the company and its customers is an agency relation characterized by two informational problems: adverse selection and moral hazard.

Adverse selection emerges from ex-ante asymmetric information between seller and buyer (Dahlstrom and Ingram, 2003). Especially, when the characteristics of the goods acquired aren't observable by the latter. Pike et al., 2005 and Smith, 1987 study this problem by testing the product quality theory. However, the ex-post informational problem called moral hazard isn't yet studied. This phenomenon occurs if customer behaves opportunistically when the payment is due.

Therefore, agency theory can provide an explanation of the trade credit policy. In presence of ex-ante asymmetric information, the offer of trade credit has an important role in the mitigation of adverse selection problem. In fact, the supplier extends trade credit in order to communicate information about the characteristics and quality of the products sold. Moreover, the refusal to sell may be a result of moral hazard problem generated by ex-post asymmetric information between buyers and suppliers.

Generally, the main difference between explanation of the agency theory and other theories that try to clarify trade credit policy is the consideration of the tradeoff between adverse selection and moral hazard phenomena. From the above discussion, I derived two hypotheses:

H5: Companies offer more trade credit when there is a high level of adverse selection problem. H6: Companies that face a low level of moral hazard problem extend more trade credit.

III. METHODOLOGY

In this section, the companies included in the sample, the variables used and the statistical techniques applied in the investigation are presented.

a) *Data collection and sample characteristics*

Data come from Tunisian Export Promotion Center (CEPEX) and are based on the financial statements of small and medium-sized export companies in Tunisia. The CEPEX is a governmental institution which provides assistance for small and medium sized export companies in Tunisia operating in the private sector. Its principal aim is to promote the

expansion and development of Tunisian exports. It supports Tunisian Export SMEs abroad by providing adequate information, organizing promotional activities and programs of meetings between potential partners. I have restricted the sample to manufacturing companies where trade credit has a classical form. It includes 364 unlisted and independent export Tunisian SMEs observed from 2001 to 2011.

Table 2 : Distribution of SMEs by sector of activity

Activity sector	Companies Number
Food industry	136
Construction	96
Metal retail	24
Textile	104
Total	364

Table 2 shows the distribution of the sample by industry. In particular, 136 companies work at the food industry, 96 product construction materials, 104 run textile business and 24 operate in metal industry.

Table 3 : Sample characteristics

	n	%
Number of employees	190	52,2%
Up to 50	174	47,8%
50-100		
Company age		
0-10	70	19,32%
10-30	63	17,3%
30-50	117	32,14%
50 and more	114	31,32%
Export sales ratio	38	10,44%
Less than 10%	87	23,9%
10-25%	96	26,37%
25-50%	143	39,28%
Over 50%		
Type of the company	253	69,5%
Limited liability	111	30,5%
Limited corporation		

As shown in Table 3, the panel is mostly composed of limited liability companies (69.5%). The limited corporations represent 30.5%. 39.28% of companies in the sample export over 50% of their products towards foreign markets (U.S, Asia, Europe and Arabic Maghreb union). Only 31.32% employ more than 50 workers. Thus, they are considered as small and medium-sized companies.

b) Variables of the analysis

In order to verify if agency theory gives an explanation of the trade credit policy in asymmetric informational context, the following variables are retained:

i. The dependent variable

DSO_{it} : The day sales outstanding is measured by $[\text{accounts receivable} \times 365] / \text{sales}$. The DSO reflects the trade credit policy that supplier adopts. Thus, high DSO means that the company extends trade credit to its customer and differ payment for a long period (Petersen and Rajan, 1997).

The independent variable derived from product quality theory and adverse selection problem

PQD_{it} : The product quality degree is measured by the difference between the date of the company's creation and the date of observation. An important feature of the reputation is that a company adjusts its behavior relatively to risk as it matures (Diamond, 1984 and Herbig, Milewicz and Golden, 1994). Explicitly, the company becomes already known and selects less risky projects. As a result, potential customers require less time to verify the quality of the product since adverse selection costs are significantly reduced. The expected relationship between DSO and PQD is negative.

ii. The independent variables derived from liquidity theory

ROA_{it} : The return on assets of the seller is a second measure of the level of asymmetric information. It's calculated as earnings before interest and taxes divided by total assets (Bellouma et al, 2009). The supplier's profitability mitigates the effect of adverse selection on the buyer. In others words, profitability can be considered as the most evident sign of seller's performance.

DPO_{it} : The day of payable outstanding is calculated as $[\text{accounts payable} \times 365] / \text{purchases}$. In general, when the company delays the payment of its supplier, it releases additional resources that may be used to cover the amount of its accounts receivables (Uyar, 2009). Besides, known companies have the ability to increase the trade credit extended to their customers on one hand and to require more trade credit from their suppliers on the other hand. Therefore, a positive relation between DPO and DSO is expected.

iii. The independent variables related to tax theory

DR_{it} : The debt ratio is measured by the sum of total loans divided by total assets. This variable presents the proportion of company's debt relatively to its assets. It gives an idea about the leverage of the company and its potential risks (Bellouma et al., 2005). A high level of debt ratio implies a high tax charges if the company is situated in high tax brackets which would reduce the cost of borrowing.

iv. The independent variable capturing moral hazard

$RPBD_{it}$: The rate of bad debts' provision is calculated as the amount of provisions on the accounts receivables divided by current assets in the period. In practice, an important proportion of accounts receivable is not related to the payment capacity of the buyer. Non-listed companies have the legal right to not

communicate the financial information which makes the assessment of buyer's payment ability difficult (Zambladi, 2011). In order to maintain the market share, the seller has to extend trade credit. However, given the asymmetric informational context, buyers become more opportunistic and the level of bad debts' provision increases.

v. *The independent variable capturing transaction cost theory and moral hazard problem*

$CSTR_{it}$: The cost ratio is measured by the cost of goods sold divided by the total sales. If the buyer behaves opportunistically, the seller supports the costs generated from the goods sold. Consequently, the supplier's loss resulting from the moral hazard will be important. For those reasons, companies are expected to have more flexible credit policy when costs decrease.

vi. *Control variables*

$SIZE_{it}$: The size of the company is measured by a dummy variable which takes the value of 1 if the company employs more than 50 employees and 0 otherwise. Small companies face financial constraints and may suffer from the unavailability of resources. Thus, larger companies are more able to reduce cash gaps and to have more flexible trade credit policy (Raheman and Nasr, 2007).

$SECTR_{it}$: The sector is a dummy variable with four modalities: $Sectr_{it1} = 1$ if the company belongs to the food industry and 0 otherwise, $Sectr_{it2} = 1$ if it operates in construction sector and 0 otherwise, $Sectr_{it3} = 1$ if it has metal trade and 0 otherwise, $Sectr_{it4} = 1$ if it works in textile industry and 0 otherwise. These sectors can influence the company decision about trade credit policy. In fact, the current assets of a distribution company are very important compared to the manufacturing company (Deloof, 2003). Besides, the economic environment (the production factors, the production process, supply and demand, taxes, interest rate...) influences differently the trade credit decision of the company according to the sector in which it operates.

Table 4 presents the different explanatory variables and their expected sign according to the previous hypotheses.

Table 4 : Variables and their expected signs

Theory/ Phenomenon	Variables	Expected signs
Product quality theory	PQD	+
Adverse selection		
Liquidity theory	ROA	+
Liquidity theory	DPO	+
Tax theory	DR	+
Moral hazard	RPBD	-
Transaction cost theory	CSTR	-
Moral hazard		

c) *Data analysis and results*

To understand the relevant aspects of trade credit policy, table 5 reports the average and the standard deviation of the variables included in the study.

Table 5 : Descriptive statistics

N. OBS = 2912

Variables	Mean	Standard Deviation
DSO	92,4	38,4
PQD	6,5	2,8
ROA	0,01	0,4
DPO	94,5	32,2
RPBD	0,15	0,07
CSTR	0,55	0,3
DR	29,5	12,1

Small and medium-sized Tunisian export companies included in the sample collect their cash from receivables after an average of 92.38 days with a standard deviation of 38.41 days. Besides, they pay their purchases after an average of 94.25 with a deviation of 32.24 days. From these statistics, the companies follow a flexible collecting policy in order to increase their foreign share and to make their products known abroad. As observed, the Tunisian small and medium companies need to developed their reputation. In fact, the mean value of the product quality measured by the age of the company is 6.5 with a standard deviation of 2.8.

The mean value of return on asset is 0.014. The value of the profitability can deviate from the mean by 0.43. As a result, it is interesting to see whether the negative profitability of some Tunisian export SME is due to the trade credit policy and moral hazard problem. The average of debt ratio is 29.5% with a standard deviation of 12.1%. These values show a flexible financing structure of the companies in the sample and a greater reliance on internal financial resources.

The cost variable ratio has a mean of 54.7% and a standard deviation of 25.9%. Therefore, the companies included in the sample support different variable costs which depend on productivity, demand, expenses...Finally, the ratio of bad debt provision shows that 15.2% of accounts receivables are classified as doubtful. To verify the hypotheses and the expected relations derived from the different theories and the phenomena of adverse selection and moral hazard, I conduct a regression on panel data. The reason of this choice is that unlike cross-sectional methods, the panel data methodology controls the individual heterogeneity. However, the multiple-regression analysis is restricted to quantitative explanatory variables. As a result, I use the least square dummy variable (LSDV) method to consider qualitative explanatory variables into a linear model (Van Garderen and Shah, 2002). The LSDV is considered as a version of the fixed effects approach where differences across the individuals mediate the

impact of independent variables on the endogenous variable.

Let A_i the dummy variable, corresponding to the sector of activity. A_i is equal to 1 when the observation is

related to the company operating in the sector i and 0 otherwise. The model is as follows:

$$Y_{it} = \sum_{j=2}^k \beta_j X_{ijt} + \delta t + \sum_{i=1}^n \alpha_i A_i + \varepsilon_{it}. \quad (1)$$

Where Y is the dependent variable (Days Sales Outstanding), the X_i are the explanatory variables. The index i refers to the company, t refers to the time period.

ε_{it} is a disturbance term assumed to satisfy the usual regression model conditions. Thus, for the sector i , the equation of the regression when A_i is equal to 1 is:

$$Y_{it} = \sum_{j=2}^k \beta_j X_{ijt} + \delta t + \sum_{i=1}^n \alpha_i A_i + \varepsilon_{it}. \quad (2)$$

However, when A_i is equal to 0, the equation is:

$$Y_{it} = \sum_{j=2}^k \beta_j X_{ijt} + \delta t + \sum_{i=1}^n \alpha_i A_i + \varepsilon_{it}. \quad (3)$$

The specifications (2) and (3) of the model (1) make the regression possible with the use of OLS. Note that dummy variables are defined for all of the companies and their intercepts are the α_i . A dummy variable trap and a problem of multicollinearity will occur when the regression includes a dummy variable for every company in the sample as well as an intercept (Suits, 1957).

Mathematically the LSDV method is identical to the within-groups approach. However, there is an evident difference which is the number of degrees of freedom. Since the panel used in this study is balanced,

there are $n T - k - n$ degrees of freedom. In the within-groups methods, there are $n (1-T) - k$ degrees of freedom. To check the different hypotheses derived in this study on the trade credit policy, the regressions fitted include one by one the set of the variables. Table 6 illustrates five specifications. The first one corresponds to tax theory, the second is related to the cost transaction theory, the third verifies the liquidity theory, the fourth checks the product quality theory and the fifth estimates the impact of adverse selection and moral hazard on trade credit policy as the agency theory suggests.

Table 6 : Regressions' results of LSDV approach

	(I)	(II)	(III)	(IV)	(V)
Tax theory					
	(0,13)	DR -	-	-1, 57 -	-
Transaction cost theory					
CSTR	- (-0,81)	-	-0, 07	- (-1, 93)*	-0, 09
Liquidity theory					
ROA	-2, 48** (-0, 03)	-0,09 (-0, 51)	- (-2,04)**	-0,31 (-1,57)*	-0,88
DPO	- (-1,47)	-0, 14	- (-4,76)***	-0,5 (-1,1)*	-0,05
Product quality theory					

PQD	-0,04	-	-	-	-0,7603	(-)
			(-1,008)*			
Agency theory						
RPBD	-	-	-	-	-	-
			0,08			
			(1,25)**			
			Control variables			1,87)*
SIZE	0,13	0,098	0,055	0,14		0,30
	(0,11)*	(1,43)*	(0,69)*	(1,07)*	(2,43)**	
SECTR ₁	0,16	0,24	0,19	0,13		0,62
	(1,66)**	(2,27)**	(1,25)*	(1,47)*	(3,08)**	
SECTR2	0,21	0,39	0,03	0,014		0,05
	(2,01)**	(2,06)**	(1,17)	(1,82)**		(1,42)**
SECTR ₃	0,11	0,02	0,67 e-03	0,96 e-03		0,14 e-
	(0,47)*	(1,54)*	(0,56)	(0,69)		(0,34)
SECTR ₄	0,72	0,03	0,98	0,13		0,05
	(2,08)**	(1,81)*	(2,08)*	(1,86)*		(1,09)*
F	2,61	2,09	1,78	1,34		2,98
Prob > F	0,02	0,08	0,06	0,04		0,04
R squared	0,22	0,31	0,30	0,23		0,34
Aj R square	0,14	0,18	0,12	0,14		0,20
Root MSE	2,8e+09	2,5e+09	2,12e+09	2,01e+09		2,3e+09

Statistit between parentheses *** Significance at 1%. ** Significance at 5%. Significance at 10%

The first column (I) of the table 6 reports the results related to the tax theory. The regression includes the debt ratio (DR_{it}), the profitability (ROA_{it}) and the control variables ($SIZE_{it}$; $SECTR_{it}$) as independent variables. I consider the ROA variable since the interest is tax deductible only if the seller has positive earnings before taxes. For this specification, the profitability of the company has an influence on day sales outstanding. The debt ratio isn't significant. Therefore, tax arguments cannot explain trade credit policy. On the light of liquidity theory, the ROA_{it} influences positively the DSO_{it} . The day payable outstanding is negatively related to the DSO_{it} . As shown in column (II) of Table 6, these two variables are non-significant. In the third specification of the table 6, I test the arguments of transactions costs theory by using cost ratio ($CSTR_{it}$) and control variables as explanatory variables of the regression (column III).

The results show a non significant coefficient of this variable. Therefore, the transactions costs theory is not supported. As the product quality theory is based on ex-ante asymmetric information, the regression related includes the explanatory variables that proxy the

adverse selection phenomenon. The results (see column IV of Table 6) report a significance of coefficients of the variables capturing this phenomenon. Particularly, findings are consistence with the hypothesis that the greater the adverse selection problem the more trade credit offered. The PQD_{it} variable is negatively related to DSO_{it} . Thus, Tunisian export SMEs which reputation is not yet built, extend more trade credit to allow customers to check their goods. The ROA_{it} variable is inversely linked to DSO_{it} . This relationship implies that more profitable companies offer less trade credit. Hence, when the profitability of the supplier is low, the buyer supports a high adverse selection problem and accordingly needs more trade credit.

To check the agency theory, I incorporate the same explanatory variables related to the adverse selection phenomenon used in the product quality theory. The findings of agency model (see column V of Table 6) have the same sign and significance of coefficients when testing the product quality arguments. According to the moral hazard phenomenon, the regression results show that $CSTR_{it}$ is inversely related

to DSO_{it} . Therefore, suppliers supporting low costs will be not strongly affected in case of buyer default and, therefore, they extend more trade credit. According to this, the amount of bad debt losses that the seller supports is high when the credit is expensive. This argument is consistent with the expected negative relation between $RPBD_{it}$ and DSO_{it} . In fact, the increase of bad debt provision reduces the period of payment that the supplier gives to its customer. As a result, Tunisian export SMEs have to mitigate the high amount of bad debts by offering discounts to encourage even risky customers to pay earlier. In addition, this strategy may restrict the moral hazard problem since the time available for the buyer to develop opportunistic behavior is short.

Another way to avoid bad debts is to enhance the analysis and the comprehension of buyer payment behavior and habit. In fact, Tunisian export SMEs have to manage their relationship with foreign customers in order to reduce the moral hazard problem and to effectively increase their export turnover. By considering the control variables, $SIZE_{it}$ appears to be directly linked to DSO_{it} in all specifications. This positive and significant relation supports the liquidity theory. In fact, larger Tunisian export SMEs are more able to extend trade credit to those more constrained. As an alternative, smaller companies with low reputation level extend few trade credits. This finding is inconsistent with product quality theory under asymmetric information.

Finally, the findings show that the companies of the sample manage their day sales outstanding identically. In others words, independently of the activity's sector, all the companies try to increase the number of days required from the buyers to pay. The competitiveness of the foreign environment that the seller faces may explain this policy. In fact, the seller tries to boost his sales and to build his reputation abroad.

IV. CONCLUDING REMARKS

Firms use trade credit in different countries. The importance of this source of finance generates the question of why companies offer trade credit instead of leaving this function to financial intermediaries. Many theories try to give explanation for the existence of trade credit.

According to the tax theory, companies in high tax brackets extend trade credit to those belonging in low tax brackets. From the liquidity based view, unconstrained companies are more ready to offer trade credit than constrained ones. The arguments relating to the transaction costs theory highlights the advantages of the suppliers over banks in collecting information about customers. Another approach to trade credit is the suggestion that companies of undeveloped reputation must offer trade credit to allow their customers to assess the product quality.

Regarding these theories, the trade-off between different theories may determine the credit policy. Besides, in an asymmetric informational context, suppliers should take account of the creditworthiness of their customers. Thus, this paper proposes an agency model to explain the company's offer of trade credit on the basis of the adverse selection and moral hazard phenomena. The findings obtained do not support traditional arguments highlighted by the tax, liquidity and transactions costs theories.

However, the hypothesis derived from product quality theory is verified. Indeed, the adverse selection phenomenon explains how trade credit may mitigate the ex-ante asymmetric information that buyers support. Besides, from the agency theory view, the moral hazard phenomenon can explain the reticence of some companies to offer trade credit in order to avoid opportunistic behavior of the customers. The model tested posits that less known and more profitable Tunisian export SMEs are more likely to extend credit. Also, Tunisian export SMEs with high costs ratio and bad debts provision level decrease their day sales outstanding.

From the literature review, the trade credit offer is a response to adverse selection phenomenon however; moral hazard needs to be more explored. Thus, others proxies as the risk of the customers or the context of economics crises can enhance further research.

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