TRADE CREDIT IN ITALY: FINANCING TO SELL

Candida Bussoli[1], Claudio Giannotti[2]

[1]LUM Jean Monnet University. bussoli@lum.it
[2]LUMSA University. c.giannotti@lumsa.it

ABSTRACT

The analysis considers Italian SMEs and investigates, over the years 2006-2011, the existence of interdependencies between trade credit policy and trade debt policy and the co-existence of conditions of complementarity and substitutability between trade credit and other financing sources. Linear regression models on a yearly basis are used and these models are put under observation for six years. The paper shows that there are interdependencies between trade credit policy and trade debt policy; trade credit can be a complementary and substitute source of financing to bank loans; conditions of substitutability and complementarity can also be observed by considering separately firms involved in agricultural or industrial activities and firms that perform services.

Keywords: Trade credit, trade debt, bank-firm relationship, SMEs, intercompany financing
JEL Classification: G10, G20, G21

1. INTRODUCTION

Italian firms characterise themselves by an elevated recourse in self-financing, bank debts – especially over short periods – multiple exposures (Banca d'Italia 2010, 2011, 2012) and intercompany financing. Many reasons lead to the use of trade credit which can be traced to real and financing functions. Real functions refer to credit offers which support the selling policy. Trade credit may be a way to strengthen client relationships, to guarantee product quality and to allow discrimination of prices; ultimately, this represents a possible response to the variability of demand and a way to improve the profitability of firms. From a financing point of view, trade credit may represent an alternative form of financing in the short term. This paper focuses on the relevance of transactional and financing motivations, as well as the dual function of substitutability or complementarity of trade credit in comparison to other forms of third party financing.

The empirical analysis is carried out on Italian SMEs during the period immediately before and after the outbreak of the financial crisis (2006-2011). This study contributes to reference literature for various reasons. Firstly, Italy represents an important case to study the determinants and the implications of trade credit, as it is characterised by an elevated practice of trade credit, much higher than other European countries. Secondly, this study was carried out over a six-year period, before and during the economic and financial crisis, allowing us to observe the financial function of trade credit even in times of crisis. Thirdly the survey investigates the possibility that recourse in trade credits can be influenced by the enterprise's characteristics (size and age) and by their territoriality and business sector. For these purposes the Italian economic system represents an

---

[1] This paper is the result of a joint effort and a continuous exchange of ideas among the two authors. The individual parts are attributed as follows: Candida Bussoli has written Literature Review, Data and Methodology, Findings and Discussions; Claudio Giannotti has written Introduction and Conclusion.

important contest at an international level, as it consists of SMEs characterised by different economic development conditions, also depending on their location: northern and central regions compared to southern regions and islands. Finally, in literature the financial reasons for recourse in trade credit are usually dealt with debtor firms. This study also takes into consideration creditor firms, and the overall net position of enterprises: the difference between trade receivables and payables that contributes to the financial needs for working capital. The results of this study confirm that there are interdependencies between trade credit policy and trade debt policy. Trade credit, also available in periods of crisis, can be a complementary and substitute source of financing to bank loans. Conditions of substitutability and complementarity can also be observed by considering separately firms involved in agricultural or industrial activities and firms that perform services.

The paper is organized as follows: the second section gives us a brief review of the literature that leads to the research hypotheses; the third section illustrates the methodology and the sample, and the fourth discusses the results. The last paragraph sets forth brief conclusive assessments and the implications of the studied phenomenon.

2. LITERATURE REVIEW

Trade credit is the financing between enterprises, resulting from the granting of agreed deferred payments to the client by the supplier. Through the provision of trade credit, the seller forgoes an immediate cash flow, for real-type motivations, in the hope to set up, expand or consolidate relations with customers.

The main aim is to begin a relationship with potential clients and to expand relationships with existing clients: trade credit can be a useful support tool for sales policies and a way to undertake and consolidate relationships with customers, thanks to the product quality guarantee and price discrimination. (Lee and Stowe 1993; Long Malitz and Ravid 1993; Schwartz and Whitcomb 1978, 1979). Another aim is represented by the consolidation of business relations (Emery 1987). Apart from real-type motivations, recourse in trade credit also has financial motivations. Literature weighs on the relevance of the financial reasons for the use of trade credit, distinguishing the transactional and financial components. The transactional element refers to trade credit as a synchronisation tool between receipts and payments instead of using the money, for a better forecast of cash flow, and treasury management planning in case of unexpected payments. From this point of view Schwartz (1974) and Ferris (1981) claim that the demand and supply of trade credit for transactional reasons explain the short-term and very short-term components of trade credit, which reduces the transaction costs and the liquidity buffers for precautionary reasons.

Other studies on the transactional costs hypothesise a positive relationship between demand variability and supplier loan (Emery 1987; Long, Malitz and Ravid 1993). Long, Malitz and Ravid (1993) demonstrated that enterprises which face variable demand make more use of trade credit than enterprises that have steady demand. Transactional reasons refer to the use of trade credit which synchronizes receipts and payments and proves to be convenient both for the seller and the purchaser: the short-term duration and the granting of discounts, when paying by cash, distinguish this operation from trade credit for financial reasons. A survey carried out by Banca d'Italia (Finaldi Russo and Leva 2004) demonstrated that transactional reasons are predominant for enterprises which make a more intense use of trade credit. Financial reasons are of lower importance and the influence of financial reasons affects trade debt much less than real-type motivations. The importance of financial reasons in intercompany financing operations is justified by the increased availability of trade debt compared to other sources of funding, the convenience of trade debts being less onerous compared to other sources, the higher ductility of the financing source which, on one hand, has no complex contractual formulas and on the other hand may have an extended duration with no extra costs. Inaccurate information on the financial system and the presence of weak financial institutions (Fisman, Love 2001) and also weak legal recovery rules (Carmignani 2004) may determine substitutability or complementarity between trade credit and bank financing. Imperfections in the financial markets may determine the rationing of bank financing (Schwartz 1974), which has a greater influence on the financing of opaque or young enterprises (Huyghebaert 2006). The rationing of bank financing may lead to recourse in trade credit as a fall-back determined by the insufficiency and inadequacy of sources of finance from third parties or banks (Duca 1996; Jaffe and Stiglitz 1990; Petersen and Rajan 1997). Complementarity conditions and an extended recourse in trade credit is noted when non-financial enterprises know how to monitor the credit capacity of a firm, and they are able to transfer funds,

borrowing from intermediaries and granting deferred payments to other firms, otherwise rationed for reasons of misinformation (Demirguc, Kunt and Maksimovic 2001). In this case, trade credit can also be a signal: information that financial intermediaries receive from relationships with non-financial firms granting deferred payments can mitigate misinformation that may cause problems for opaque enterprises and may decrease the conditions of credit rationing. Opaque firms that are predominantly small in size can be subject to credit rationing (Stiglitz and Weiss 1981) and can turn to trade credit as an alternative source of financing. Trade credit, obtained according to the assessment made by the credit provider in respect of the creditworthiness of the firms to be financed, increases the good reputation of creditors and allows them to earn easy access to bank credit. Alphonse Ducret and Severin (2004) therefore claim that trade credit can be replaceable, but also complementary to bank debts. The substitutability and complementarity between trade credit and bank credit can occur in the economic-financial system with the prevailing real motivations for recourse in trade credit. The importance of financial motivations may also appear where larger sized firms that do not have to worry about limited access to the financial market, in terms of funds and costs, act as intermediaries, offering trade credit to smaller firms which face greater difficulties in accessing credit market (Emery, 1984: Mian and Smith, 1992; Schwartz, 1974). The financial motivation to use trade credit implies that the provision of trade receivables could have a positive impact on the profitability of larger sized firms, in this way consolidating their relationship with clients. An even more positive impact is expected for small and medium-sized enterprises as the higher percentage of trade payables may represent the availability of intercompany financing even in situations of opacity and credit rationing by banks or other intermediaries.

It may be therefore useful to investigate the importance of financial determiners of intercompany credit and the existence of relationships of substitutability and complementarity between intercompany credit and other sources of financing by third parties. Small and medium-sized enterprises can be subject to conditions of sale from suppliers that have a larger market share: the offer of trade credit, imposed by the exploitation of the market power of suppliers, may determine the adoption of a balancing strategy, financing the supply of trade credit with trade debt. To investigate the financial reasons for recourse in intercompany credit, it is necessary to acknowledge the existence of an interdependent relationship between trade credit policy and trade debt policy, the existence of relationships of substitutability and complementarity between intercompany credit and other sources of financing by third parties and the influence of the business sector.
As claimed in literature and for the above reasons, the following research hypotheses are formulated:

HP1: A strict interdependence relationship exists between trade credit policies and trade debt policies for small and medium-sized enterprises.
HP2: Conditions of substitutability and complementarity coexist between intercompany credit and financing from banks or third parties for small and medium sized enterprises.
HP3: Conditions of substitutability and complementarity coexist between intercompany credit and financing from banks or third parties for small and medium sized enterprises that belong to industry and services sectors.

3. DATA AND METHODOLOGY

In coherence with literature, to verify the research hypotheses, linear regression models on a yearly basis are used and these models are put under observation for six years. The variables used for the analysis are presented in Table No. 1.

To verify the research hypotheses the following models are used:

$$Y_{ik} = \alpha + \beta_1 inbanel_i + \beta_2 inbanol_i + \beta_3 inalen_i + \beta_4 inalol_i + \beta_5 cosden_i + \beta_6 ros_i + \beta_7 roe_i + \beta_8 curr_i + \beta_9 solven_i + \beta_{10} ldim_i + \beta_{11} logeta_i + \beta_{12} darea_i + \varepsilon$$

$$Y_{ik} = \alpha + \beta_1 inbanel_i + \beta_2 inbanol_i + \beta_3 inalen_i + \beta_4 inalol_i + \beta_5 cosden_i + \beta_6 ros_i + \beta_7 roe_i + \beta_8 curr_i + \beta_9 solven_i + \beta_{10} ldim_i + \beta_{11} logeta_i + \beta_{12} darea_i + \beta_{13} varspec_i + \varepsilon$$

Table 1: Regression Variables

NAME	DESCRIPTION	MEASURE
crclta	Incidence of trade receivables	Ratio of the sum of accounts receivable in the short and medium term and total assets
deforta	Incidence of trade payables	Ratio of the sum of trade payables in the short and medium term and total assets
crmerta	Incidence of net mercantile credit	Ratio of the difference between trade receivables and trade payables and total assets
ros	Return on Sales	Ratio of operating income and sales revenues
roe	Return on Equity	Ratio of net income and shareholders' equity
inbanel	Incidence of short-term bank debt	Ratio of short-term bank borrowings and shareholders' equity
inbanol	Incidence of medium and long-term bank debt	ratio of medium and long-term bank debt and shareholders' equity
inalen	Incidence of debts to other financiers in the short term	Ratio of debt to other financiers in the short term and shareholders' equity
inalol	Incidence of debts to other financiers in the medium to long term	Ratio of debt to other financiers in the medium and long-term and shareholders' equity
curr	Current ratio	Ratio of current assets and current liabilities
solven	Solvency ratio	Ratio of equity to total assets
cosden	Impact of financial charges	The ratio of total financial charges and the sum of short and medium - long-term bank debt
ldim	Firm's size	Natural logarithm of the number of employees
logeta	Firm's age	Natural logarithm of firm's age at the time of the analysis
darea	Dummy variable for the territoriality	Dummy equal to 1 if the firm is located in the Centre and North of Italy

Where i identifies the single observations of the sample; Y_{ik} is the dependent variable expressed by k independent variables; $\beta_1, \beta_2, \dots$ are the parameters that have to be estimated with the model; α is the constant and ε is the error. Enterprises may adopt a combination of trade receivables and payables that is coherent both in terms of amount as in terms of duration. To verify the first research hypothesis this analysis considers two regression models in which the dependent variables are: the incidence of account receivables on total assets (*crclta*) and the incidence of account payables on total assets (*deforta*). The difference between the two models consists in the presence (net models) or not (gross models) of an extra independent variable (*varspec*), specular in relation to the dependent variable. In the net model that shows as the dependent variable the incidence of trade receivables on total assets, the incidence of trade payables is considered among the explanatory variables. In the net model that shows as the dependent variable the incidence of trade payables on total assets, the incidence of trade receivables is considered among the explanatory variables (Fabbri and Klapper 2008, Gibilaro and Mattarocci 2010). If the decision to include the specular variable results statistically significant and determines an improvement in the statistical significance of the model, trade credit policy and trade debt policy can be considered closely interrelated.

To verify the second and third research hypotheses this analysis considers only the results of the gross models. Useful predictors are *inbanen, inbanol, inalen, inalol, cosden*, related to the incidence of debt towards banks and third parties - for short and long-term periods - on shareholder equity and the rate of financial charges on the total bank debt. The independent control variables are related to the general characteristics of the firms (*ldim, logeta* and *darea*) and to the financial and economical balance conditions (*ros, roe, curr, solven*).

The existence of a significant dependency relationship between trade payables and receivables and the independent financial variables could confirm the use of intercompany credit for financial purposes.

The existence of a positive relationship of dependency between the dependent variables and bank loans could show system conditions which allow a *complementary* use of intercompany financing and bank financing. The existence of a negative relationship of dependency could signal an *alternate* use of intercompany credit with respect to bank financing. The dynamic of the ratio between net mercantile credit and total assets (*crmerta*) is also investigated. Net mercantile credit is very significant for the purpose of analysis, as it represents the amount of working capital that may be covered by financial debts. The existence of significant dependent relationships of the variable *crmerta* compared to the independent financial variables could confirm the importance of financial motivations in the recourse in trade credit.

The reference sample is composed of SMEs where the balance sheets were available in the Aida Bureau Van Dijk database in November 2013.

The enterprises present the following characteristics:

- Legal status: active firms; independent firms;
- Joint stock companies and limited companies;
- Number of employees less than 250;
- Total assets less than 43 million euros;
- Financial statements availability: for the years 2006 to 2011.

The study was carried out for the years 2006 – 2011 and the sample is made up of enterprises from all over Italy and very different in terms of location and business sectors, according to the classification of economic activities by the Italian National Institute of Statistics (ISTAT): ATECO classification 2007. Firms that conduct financial activities (Ateco codes: 64, 65, 66) were not included in the sample.

Table 2: Descriptive Statistics – 2006

Variable	Obs	Mean	Std Dev	Min	Max
crclta	864	0,370	0,203	0,000	0,981
deforta	864	0,282	0,162	0,000	0,909
crmerta	864	0,088	0,200	-0,772	0,699
inbanen	864	1,885	19,831	0,000	577,306
inbanol	864	0,428	1,346	0,000	27,590
inalen	864	0,046	0,458	0,000	11,746
inalol	864	0,027	0,178	0,000	2,215
cosden	722	5,693	3,974	0,000	19,750
ros	843	5,462	6,647	-42,490	29,110
roe	861	8,337	16,403	-109,620	88,490
curr	863	1,647	0,969	0,020	9,650
solven	865	0,308	0,197	0,001	0,994
ldim	865	9,041	0,806	6,032	10,544
logeta	865	3,192	0,593	1,099	4,595
darea	865	0,894	0,308	0,000	1,000

Table 3: Descripctive statistics - 2011

Variable	Obs	Mean	Std Dev	Min	Max
crclta	865	0,327	0,200	0,000	0,966
deforta	865	0,230	0,145	0,000	0,892
crmerta	865	0,097	0,182	-0,860	0,752
inbanen	865	1,607	19,154	0,000	559,466
inbanol	865	0,397	1,076	0,000	15,922
inalen	865	0,028	0,318	0,000	8,589
inalol	865	0,017	0,151	0,000	3,877
cosden	736	4,252	3,183	0,000	19,940
ros	839	3,649	6,869	-47,000	29,130
roe	861	3,843	18,467	-130,320	97,400
curr	861	1,745	1,146	0,120	9,820
solven	865	0,367	0,213	0,001	0,989
ldim	865	9,252	0,823	5,439	10,632
logeta	865	3,406	0,466	2,079	4,644
darea	865	0,894	0,308	0,000	1,000

In order to verify the third research hypothesis, the sample is divided into industrial and service firms: industrial firms belonging to ATECO sectors 01-53 and service firms belonging to ATECO sectors 55-99.

From a geographical point of view most of the firms are located in the North: the sample, therefore, reflects the economic and productive Italian systems, which are characterized by a greater number of enterprises located in the northern regions compared to the firms which are located in southern and central regions.

The descriptive statistics are calculated on the available data for the first and last year considered and they are presented in Tables no. 2 and 3.

4. FINDINGS AND DISCUSSIONS

The linear regression models are statistically significant in all years under observation, for all dependent variables considered alternatingly. The results of the collinearity tests allow us to exclude problems of collinearity: the values of the *Variance Inflation Factor* (VIF) are always inferior to the critical threshold of literature (Fox 1997). The results of the *White heteroskedasticity test* demonstrate heteroskedasticity problems. Therefore robust standard errors analyses are conducted.

The first research hypothesis is verified by comparing the gross models (Tables no. 4 and 6), that don't consider the specular variable as a regressor, and the net models (Tables no. 5 and 7), that consider the specular variable as a regressor (*varspec*). The comparison between gross and net models shows that the net models allow an improvement of the analysis (the value of R-squared increases significantly). We can, therefore, assume - in line with reference literature (Fabbri and Klapper 2008, Gibilaro and Mattarocci 2010) and confirming the first research hypothesis – that there is an interdependent relationship between trade credit policy and trade debt policy.

Table 4: Regression Analysis 2006-2011 - Dependent Variable: *crclta* - gross models

	2006		2007		2008		2009		2010		2011	
inbanen	0,0008	***	0,0008	***	0,0009	***	0,0011	***	0,0011	***	0,0009	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0280	***	-0,0222	**	-0,0549	**	-0,0739	***	-0,0503	***	-0,0351	***
	0,0009		0,0325		0,0170		0,0000		0,0051		0,0009	
inalen	-0,0213	**	0,0080		-0,0166		0,0323		-0,0100		0,0217	
	0,0319		0,8837		0,5996		0,3792		0,2639		0,1922	
inalol	-0,0412		-0,0234		0,0086		-0,0027		0,0337		0,0256	
	0,3584		0,3490		0,5677		0,9039		0,3991		0,7973	
cosden	-0,0024		-0,0027		0,0006		-0,0047	**	-0,0078	***	-0,0075	***
	0,1841		0,1394		0,7475		0,0226		0,0001		0,0002	
ros	-0,0038	**	-0,0041	**	-0,0028	*	-0,0004		-0,0004		-0,0027	*
	0,0386		0,0139		0,0560		0,7700		0,7694		0,0864	
roe	0,0016	***	0,0020	***	0,0032	***	0,0019	***	0,0018	***	0,0023	***
	0,0012		0,0003		0,0000		0,0006		0,0092		0,0000	
curr	0,0419	***	0,0411	***	0,0393	***	0,0372	***	0,0466	***	0,0447	***
	0,0046		0,0044		0,0001		0,0000		0,0001		0,0002	
solven	-0,3650	***	-0,3453	***	-0,4933	***	-0,5470	***	-0,5350	***	-0,5463	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0074		-0,0012		-0,0101		-0,0275	***	-0,0192	*	-0,0190	**
	0,4528		0,8957		0,2619		0,0059		0,0589		0,0496	
logeta	0,0091		0,0115		0,0037		-0,0044		-0,0072		-0,0007	
	0,4285		0,3426		0,7410		0,7224		0,5732		0,9595	
darea	0,1126	***	0,1159	***	0,0700	***	0,0655	***	0,0698	**	0,0417	
	0,0000		0,0000		0,0043		0,0063		0,0103		0,1313	
deforta												
crclta												
Cons	0,3971	***	0,3190	***	0,4773	***	0,7241	***	0,6346	***	0,6451	***
	0,0001		0,0011		0,0000		0,0000		0,0000		0,0000	
N	707		711		702		707		704		720	
R²	0,1497		0,1635		0,2395		0,2659		0,2529		0,2704	
F	16,3329		27,4496		23,2727		26,8994		22,4732		26,3636	

Level of significance: (***)1%; (**)5%; (*)10%

Table 5: Regression Analysis 2006-2011 - Dependent Variable: *crclta* **- net models**

	2006		2007		2008		2009		2010		2011	
inbanen	0,0009	***	0,0009	***	0,0010	***	0,0012	***	0,0012	***	0,0011	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0193	***	-0,0162	*	-0,0404	**	-0,0568	***	-0,0339	***	-0,0257	***
	0,0038		0,0521		0,0156		0,0000		0,0086		0,0007	
inalen	-0,0317	***	-0,0014		-0,0041		0,0451	*	-0,0001		0,0318	**
	0,0010		0,9814		0,8658		0,0969		0,9931		0,0308	
inalol	-0,0202		-0,0100		0,0018		-0,0039		0,0547		0,0737	
	0,6192		0,6734		0,8982		0,8275		0,1482		0,4379	
cosden	-0,0041	**	-0,0038	**	0,0008		-0,0057	***	-0,0078	***	-0,0078	***
	0,0295		0,0415		0,6695		0,0057		0,0001		0,0001	
ros	-0,0007		-0,0010		-0,0009		0,0003		0,0002		-0,0015	
	0,6413		0,4595		0,4361		0,7985		0,8796		0,2287	
roe	0,0007		0,0011	**	0,0021	***	0,0012	**	0,0009		0,0017	***
	0,1728		0,0418		0,0001		0,0217		0,1674		0,0009	
curr	0,0475	***	0,0456	***	0,0387	***	0,0349	***	0,0467	***	0,0406	***
	0,0003		0,0003		0,0000		0,0000		0,0000		0,0001	
solven	-0,1952	***	-0,1747	***	-0,2833	***	-0,3373	***	-0,2978	***	-0,3134	***
	0,0010		0,0046		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0002		0,0075		-0,0023		-0,0159		-0,0108		-0,0125	
	0,9859		0,3806		0,7875		0,1042		0,2601		0,1686	
logeta	0,0042		0,0053		-0,0022		-0,0096		-0,0106		-0,0056	
	0,7018		0,6493		0,8411		0,3991		0,3560		0,6359	
darea	0,1052	***	0,1115	***	0,0807	***	0,0754	***	0,0766	***	0,0556	**
	0,0000		0,0000		0,0012		0,0016		0,0036		0,0315	
deforta	0,4670	***	0,5023	***	0,4972	***	0,4722	***	0,5369	***	0,5254	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
crclta												
Cons	0,1592		0,0631		0,2146	**	0,4449	***	0,3466	***	0,3846	***
	0,1104		0,4978		0,0236		0,0000		0,0013		0,0003	
N	707		711		702		707		704		720	
R²	0,2394		0,2656		0,3254		0,3377		0,3529		0,3659	
F	21,1921		27,1594		27,8388		33,3822		34,1973		39,6877	

Level of significance: (***)1%; (**)5%; (*)10%

The verification of the second research hypothesis takes into account the results of the gross models (Tables no. 4 and 6) and is related to the coexistence of substitutability and complementarity conditions between trade credit and debts with third parties or banks. The importance of financial motivations is evident in the relationship between the dependent variables *crclta, deforta* and *crmerta* and the incidence of debt towards banks and third parties, both for short and medium and long term.

Table 6: Regression Analysis 2006-2011 - Dependent Variable: *deforta* - gross models

	2006		**2007**		**2008**		**2009**		**2010**		**2011**	
inbanen	-0,0002	***	-0,0002	***	-0,0003	***	-0,0003	***	-0,0002	***	-0,0003	***
	0,0000		0,0005		0,0000		0,0000		0,0002		0,0000	
inbanol	-0,0188	***	-0,0120	**	-0,0291	*	-0,0364	***	-0,0305	***	-0,0180	**
	0,0008		0,0138		0,0521		0,0010		0,0094		0,0209	
inalen	0,0223	***	0,0188		-0,0253		-0,0270		-0,0184	***	-0,0193	***
	0,0000		0,6722		0,1612		0,4384		0,0000		0,0033	
inalol	-0,0451	**	-0,0266		0,0137		0,0025		-0,0390		-0,0915	**
	0,0406		0,1136		0,1282		0,8780		0,1882		0,0133	
cosden	0,0035	***	0,0021	*	-0,0004		0,0021		0,0000		0,0007	
	0,0087		0,0984		0,7663		0,1200		0,9899		0,6685	
ros	-0,0066	***	-0,0061	***	-0,0038	***	-0,0013		-0,0011		-0,0024	**
	0,0000		0,0000		0,0012		0,1332		0,2951		0,0158	
roe	0,0021	***	0,0019	***	0,0021	***	0,0014	***	0,0016	***	0,0012	***
	0,0000		0,0000		0,0001		0,0047		0,0005		0,0047	
curr	-0,0121		-0,0089		0,0012		0,0046		-0,0002		0,0078	
	0,1441		0,2422		0,8237		0,2972		0,9767		0,1704	
solven	-0,3634	***	-0,3398	***	-0,4225	***	-0,4444	***	-0,4419	***	-0,4432	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0154	**	-0,0173	***	-0,0158	***	-0,0242	***	-0,0154	**	-0,0123	**
	0,0123		0,0045		0,0094		0,0000		0,0167		0,0447	
logeta	0,0105		0,0124		0,0119		0,0109		0,0062		0,0095	
	0,2213		0,1694		0,1665		0,2081		0,5049		0,3137	
darea	0,0158		0,0089		-0,0215		-0,0212		-0,0127		-0,0264	
	0,3873		0,6635		0,2397		0,2147		0,5043		0,1794	
deforta												
crclta												
Cons	0,5095	***	0,5095	***	0,5284	***	0,5886	***	0,5357	***	0,4959	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
N	707		711		702		708		705		720	
R^2	0,3212		0,2927		0,3416		0,3583		0,3325		0,3174	
F	29,4879		24,0806		26,7834		34,1884		35,4781		26,1487	

Level of significance: (***)1%; (**)5%; (*)10%

Table 7: Regression Analysis 2006-2011 - Dependent Variable: *deforta* - net models

	2006		2007		2008		2009		2010		2011	
inbanen	-0,0004	***	-0,0004	***	-0,0005	***	-0,0005	***	-0,0005	***	-0,0005	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0125	***	-0,0066	**	-0,0167		-0,0211	**	-0,0179	**	-0,0092	
	0,0042		0,0225		0,1253		0,0438		0,0301		0,1227	
inalen	0,0271	***	0,0168		-0,0215	*	-0,0337		-0,0159	***	-0,0247	***
	0,0000		0,7188		0,0722		0,2565		0,0000		0,0000	
inalol	-0,0357	*	-0,0209		0,0118		0,0031		-0,0474	*	-0,0978	***
	0,0583		0,1989		0,1470		0,8170		0,0904		0,0079	
cosden	0,0041	***	0,0028	**	-0,0005		0,0030	**	0,0020		0,0025	*
	0,0026		0,0321		0,6809		0,0252		0,1996		0,0952	
ros	-0,0058	***	-0,0051	***	-0,0032	***	-0,0012	*	-0,0010		-0,0017	**
	0,0000		0,0000		0,0013		0,0881		0,2335		0,0185	
roe	0,0017	***	0,0014	***	0,0014	***	0,0010	**	0,0012	***	0,0006	
	0,0001		0,0001		0,0030		0,0342		0,0084		0,1044	
curr	-0,0215	***	-0,0189	***	-0,0077	*	-0,0028		-0,0118	***	-0,0034	
	0,0028		0,0023		0,0824		0,4607		0,0086		0,4529	
solven	-0,2810	***	-0,2559	***	-0,3105	***	-0,3308	***	-0,3084	***	-0,3070	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0138	**	-0,0170	***	-0,0135	**	-0,0189	***	-0,0107	*	-0,0076	
	0,0171		0,0028		0,0184		0,0009		0,0853		0,1825	
logeta	0,0084		0,0096		0,0110		0,0120		0,0081		0,0096	
	0,3011		0,2613		0,1768		0,1357		0,3385		0,2613	
darea	-0,0097		-0,0193		-0,0374	**	-0,0347	**	-0,0301	*	-0,0368	**
	0,5839		0,3103		0,0408		0,0393		0,0955		0,0460	
deforta												
crclta	0,2259	***	0,2431	***	0,2270	***	0,2071	***	0,2493	***	0,2492	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
Cons	0,4198	***	0,4319	***	0,4200	***	0,4413	***	0,3783	***	0,3351	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
N	707		711		702		707		704		720	
R^2	0,3928		0,3791		0,4159		0,4206		0,4217		0,4068	
F	37,1387		32,9192		36,6864		38,3653		43,9904		36,4651	

Level of significance: (***)1%; (**)5%; (*)10%

There is a statistically significant relationship between all dependent variables and the variables which show the incidence of debt towards banks for a short term (*inbanel*) and a medium and long term (*inbanol*). In the six years, it is possible to observe a statistically significant negative relationship between the incidence of trade payables (*deforta*) and the incidence of short-term bank debt (*inbanen*) and medium and long-term bank debt (*inbanol*). The presence of an inverse dependent relationship highlights substitution conditions in the use of different sources of financing: a greater recourse in bank financing results in a lower recourse in trade credits. Regarding the incidence of trade receivables (*crclta*) instead, the relationship is positive and direct with the incidence of short-term bank debt (*inbanel*) and negative with the incidence of medium and long-term bank debt (*inbanol*). The presence of a significant positive dependent relationship between the incidence of trade credits and the incidence of bank loans or third parties is a symptom of double intermediary conditions, therefore of complementarity between credit from third parties and trade credit. The presence of a direct relationship between the variable *crclta* and the short-term bank financing states that there are conditions of complementarity and emphasizes the importance of transactional motivations other than solely financial in the granting of trade credit. The coexistence of complementarity and substitutability conditions between intercompany credit and financing from banks or third parties is also confirmed by the results of the regression model (Table no. 8) which considers the dependent variable *crmerta* (incidence of mercantile credit on total assets). The existence of a significant and positive dependent relationship between *crmerta* and external financing sources sustains the hypothesis of complementary use of trade credit compared to financing from banks: enterprises try to minimize the amount of financial needs in situations of credit restrictions and increase it in times of greater availability of bank financing. Conversely, a negative dependent relationship highlights an alternative use of trade credit compared to financing from banks, showing a minimization of financial needs in situations of credit expansion.

The empirical analysis confirms the coexistence of complementarity and substitutability conditions, as the *crmerta* and *crclta* variables present a significant positive relationship with short-term bank financing (*inbanel*) and a significant and negative relationship with medium and long-term bank financing (*inbanol*), in the six years. It is interesting to consider the relationship between the dependent variables and the regressor *cosden* (the ratio of financial charges on total bank debt): the relationship is not consistently significant for every year studied. The relationship is statistically significant and positive in the years 2006 and 2007 between *deforta* and *cosden* (Table no. 6): when the cost of borrowing increases the incidence of trade payables also increases, showing conditions of substitutability between bank loans and inter-company loans. The relationship is statistically significant and negative in the years 2009-2011 between *crclta* and *cosden* (Table no. 4): during crisis years, if the cost of money increases the cost of borrowing increases and double intermediary conditions may be too expensive, so credits granted to customers decrease. It is also possible to observe statistically significant relationships between the *deforta* variable with other predictive finance variables (Table no. 6). In particular, we can observe a significant and negative relationship with the *inalen* and *inalol* variables, but not in all years under observation. The relationship with the predictor variable *inalen* is statistically significant in 2006 and 2010 -2011; the relationship with the incidence of medium and long-term loans from third parties (*inanol*) is statistically significant only in 2006 and 2011. The presence of a negative dependent relationship in the years 2010 and 2011 highlights substitution conditions: a greater recourse in third party financing results in a lower recourse in trade credits. The medium and long-term financial predictive variables show a greater importance following an increase in the financial and credit crisis. Regarding firm's characteristics, we can see the impact of the *darea* variable (dummy which has a value 1 for firms located in the central and northern areas of Italy and 0 for firms located in the southern regions and islands) on *crclta* and *crmerta* (Tables no. 4 and 8).

Table 8: Regression Analysis 2006-2011 - Dependent Variable: *crmerta*

	2006		2007		2008		2009		2010		2011	
inbanen	0,0010	***	0,0010	***	0,0012	***	0,0013	***	0,0013	***	0,0012	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0092	*	-0,0102		-0,0258	**	-0,0376	***	-0,0198	**	-0,0171	***
	0,0753		0,1064		0,0136		0,0024		0,0190		0,0020	
inalen	-0,0436	***	-0,0107		0,0087		0,0593	**	0,0085		0,0410	***
	0,0000		0,8807		0,6102		0,0234		0,2140		0,0022	
inalol	0,0038		0,0032		-0,0051		-0,0052		0,0727	*	0,1171	
	0,9206		0,9014		0,7071		0,7438		0,0772		0,2113	
cosden	-0,0060	***	-0,0048	**	0,0010		-0,0068	***	-0,0078	***	-0,0081	***
	0,0047		0,0189		0,6302		0,0030		0,0007		0,0002	
ros	0,0028	**	0,0020		0,0010		0,0010		0,0007		-0,0004	
	0,0463		0,1233		0,3577		0,3065		0,4969		0,7178	
roe	-0,0004		0,0001		0,0011	*	0,0005		0,0002		0,0012	**
	0,4338		0,8173		0,0556		0,4201		0,7970		0,0225	
curr	0,0539	***	0,0500	***	0,0381	***	0,0323	***	0,0468	***	0,0370	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0001	
solven	-0,0015		-0,0055		-0,0708		-0,1029	**	-0,0932	**	-0,1031	**
	0,9777		0,9210		0,1255		0,0281		0,0428		0,0220	
ldim	0,0081		0,0161	*	0,0057		-0,0029		-0,0037		-0,0066	
	0,3970		0,0738		0,5276		0,7752		0,7201		0,4799	
logeta	-0,0014		-0,0009		-0,0082		-0,0154		-0,0135		-0,0101	
	0,9060		0,9444		0,4938		0,1989		0,2642		0,4206	
darea	0,0968	***	0,1070	***	0,0915	***	0,0866	***	0,0825	***	0,0681	**
	0,0005		0,0000		0,0016		0,0015		0,0044		0,0163	
deforta												
crclta												
Cons	-0,1124		-0,1905	*	-0,0511		0,1328		0,0981		0,1492	
	0,2758		0,0567		0,6022		0,2050		0,3777		0,1599	
N	707		711		702		707		704		720	
R²	0,1255		0,1185		0,1013		0,1121		0,1164		0,1297	
F	15,1912		13,7945		10,9150		11,8667		95,4559		15,6929	

Level of significance: (***)1%; (**)5%; (*)10%

In all years under observation the relationship is positive and highlights the greater intensity of credit offers by firms in the central and northern regions of Italy. For the dependent variable *crclta* (Table no. 4) there are also statistically significant negative relationships with the predictor *ldim*, which represent the size of the firms, but only in 2009-2011: during the crisis years the smaller-sized firms grant extended payment deferrals, probably with the aim to strengthen client relationships. For the dependent variable *deforta* (Table no. 6), there are statistically significant negative relationships only with the predictor *ldim*, in all years under observation. The negative relationship between *ldim* and the incidence of trade payables shows a greater recourse in trade payables for smaller firms, confirming the hypotheses supported in literature, that trade payables are a substitute for credit from banks or third parties for small and opaque firms. To verify the third research hypothesis we replicate the analysis considering separately firms that belong to the industry sector (Tables no. 9-11) and firms that perform services (Tables no. 12-14). The linear regression models are statistically

significant in the six years of study for all dependent variables *crclta, deforta* and *cremerta*, considered alternatingly. The results of the collinearity tests allow to exclude problems of collinearity: the values of the *Variance Inflation Factor* (VIF) are always inferior to the critical threshold of literature (Fox 1997). The results of the *White heteroskedasticity test* demonstrate heteroskedasticity problems. Therefore robust standard errors analyses are conducted.

Table 9: Regression Analysis 2006-2011 - Dependent Variable: *crclta* - Industry

	2006		2007		2008		2009		2010		2011	
inbanen	0,0059		0,0038		0,0192	***	0,0327	***	0,0243	***	0,0143	*
	0,1927		0,3956		0,0036		0,0000		0,0001		0,0836	
inbanol	-0,0541	***	-0,0692	***	-0,0535	***	-0,0911	***	-0,0653	***	-0,0300	***
	0,0000		0,0000		0,0001		0,0000		0,0007		0,0074	
inalen	0,2152	***	0,1268	***	-0,0062		0,0525		-0,0049		0,0075	
	0,0023		0,0000		0,8485		0,1404		0,5781		0,7451	
inalol	-0,0861	**	-0,0562	***	-0,0168		-0,0257		0,0449		0,0515	
	0,0275		0,0060		0,6114		0,1735		0,3835		0,6664	
cosden	-0,0024		-0,0012		0,0003		-0,0038	*	-0,0064	***	-0,0048	*
	0,2287		0,5604		0,9072		0,0738		0,0043		0,0637	
ros	-0,0037	**	-0,0015		-0,0013		0,0005		0,0013		-0,0012	
	0,0493		0,3579		0,4799		0,6991		0,3315		0,5278	
roe	0,0016	***	0,0012	**	0,0027	***	0,0015	**	0,0012		0,0022	***
	0,0029		0,0287		0,0008		0,0325		0,1032		0,0003	
curr	0,0381	***	0,0139		0,0117		0,0153	**	0,0131		0,0072	
	0,0052		0,3048		0,1586		0,0379		0,1759		0,5091	
solven	-0,3625	***	-0,3489	***	-0,3431	***	-0,3947	***	-0,3656	***	-0,3366	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0085		-0,0029		-0,0135		-0,0326	***	-0,0228	*	-0,0179	
	0,4842		0,8023		0,2600		0,0099		0,0711		0,1736	
logeta	-0,0147		-0,0242	**	-0,0174		-0,0265	*	-0,0261	*	-0,0265	*
	0,1988		0,0444		0,1678		0,0522		0,0629		0,0813	
darea	0,1182	***	0,1300	***	0,0804	***	0,0616	**	0,0857	***	0,0569	
	0,0003		0,0000		0,0065		0,0268		0,0056		0,1102	
deforta												
crclta												
Cons	0,4839	***	0,4749	***	0,5407	***	0,8141	***	0,6889	***	0,6674	***
	0,0002		0,0001		0,0000		0,0000		0,0000		0,0000	
N	455		453		452		449		455		469	
R²	0,1977		0,1979		0,2657		0,3461		0,2888		0,2526	
F	9,1282		8,0677		11,3662		20,0118		17,7318		11,5366	

Level of significance: (***)1%; (**)5%; (*)10%

Table 10: Regression Analysis 2006-2011 - Dependent Variable: *deforta – Industry*

	2006		2007		2008		2009		2010		2011	
inbanen	-0,0018		-0,0014		-0,0060		-0,0093		-0,0105		-0,0096	*
	0,6059		0,3237		0,2361		0,1800		0,1277		0,0870	
inbanol	-0,0453	***	-0,0410	***	-0,0095		-0,0415	***	-0,0420	***	-0,0201	**
	0,0001		0,0000		0,4883		0,0060		0,0019		0,0144	
inalen	-0,0164		0,0039		-0,0101		-0,0230		-0,0179	***	-0,0035	
	0,7724		0,9292		0,5386		0,5811		0,0000		0,6979	
inalol	-0,0200		-0,0090		0,0010		-0,0189	**	-0,0021		-0,0529	
	0,3919		0,5188		0,9398		0,0148		0,9505		0,1743	
cosden	0,0032	**	0,0025	*	0,0002		0,0017		-0,0016		0,0006	
	0,0341		0,0870		0,8699		0,2397		0,3700		0,7590	
ros	-0,0050	***	-0,0029	**	-0,0018		0,0008		-0,0001		0,0011	
	0,0005		0,0161		0,1957		0,3041		0,9403		0,2952	
roe	0,0017	***	0,0010	**	0,0016	**	0,0001		0,0008		0,0000	
	0,0010		0,0267		0,0152		0,9057		0,1627		0,9828	
curr	-0,0208	**	-0,0236	***	-0,0174	***	-0,0063		-0,0123	**	-0,0096	
	0,0242		0,0016		0,0007		0,1853		0,0347		0,1333	
solven	-0,3670	***	-0,3193	***	-0,3159	***	-0,3966	***	-0,4152	***	-0,3700	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0145	*	-0,0196	**	-0,0138	*	-0,0219	***	-0,0070		-0,0066	
	0,0719		0,0121		0,0715		0,0028		0,3668		0,3742	
logeta	0,0030		0,0062		0,0111		0,0061		0,0002		0,0053	
	0,7453		0,5008		0,2544		0,5417		0,9849		0,6360	
darea	0,0732	***	0,0689	***	0,0361		0,0106		0,0238		0,0016	
	0,0026		0,0078		0,1587		0,6573		0,3911		0,9587	
deforta												
crclta												
Cons	0,4910	***	0,5041	***	0,4339	***	0,5549	***	0,4658	***	0,4266	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
N	455		453		452		450		456		469	
R²	0,3344		0,3175		0,3184		0,3311		0,3303		0,2755	
F	19,3527		18,5569		21,3798		21,7892		23,0577		16,8934	

Level of significance: (***)1%; (**)5%; (*)10%

	2006		2007		2008		2009		2010		2011	
inbanen	0,0077		0,0052		0,0252	***	0,0420	***	0,0348	***	0,0239	***
	0,2962		0,2864		0,0000		0,0000		0,0000		0,0026	
inbanol	-0,0088		-0,0282	**	-0,0440	***	-0,0496	***	-0,0233	**	-0,0099	
	0,5247		0,0309		0,0000		0,0008		0,0300		0,1419	
inalen	0,2316	**	0,1229	**	0,0039		0,0757	**	0,0129	*	0,0110	
	0,0261		0,0160		0,8237		0,0150		0,0515		0,6105	
inalol	-0,0661	*	-0,0471	**	-0,0178		-0,0068		0,0470		0,1043	
	0,0542		0,0364		0,5932		0,7477		0,4777		0,3661	
cosden	-0,0056	***	-0,0037	*	0,0000		-0,0055	**	-0,0047	**	-0,0054	*
	0,0077		0,0978		0,9904		0,0178		0,0500		0,0503	
ros	0,0013		0,0013		0,0005		-0,0003		0,0014		-0,0024	
	0,3753		0,3394		0,6740		0,8078		0,2633		0,1067	
roe	-0,0001		0,0002		0,0011	*	0,0014	*	0,0004		0,0021	***
	0,8945		0,6830		0,0984		0,0860		0,6777		0,0019	
curr	0,0589	***	0,0374	***	0,0291	***	0,0214	***	0,0254	***	0,0169	*
	0,0000		0,0042		0,0001		0,0014		0,0010		0,0544	
solven	0,0045		-0,0297		-0,0272		0,0012		0,0495		0,0334	
	0,9503		0,6867		0,5238		0,9845		0,4568		0,5929	
ldim	0,0060		0,0167		0,0003		-0,0102		-0,0158		-0,0114	
	0,6278		0,1660		0,9775		0,4222		0,2044		0,3721	
logeta	-0,0177		-0,0304	**	-0,0285	**	-0,0329	**	-0,0263	*	-0,0318	**
	0,1365		0,0152		0,0319		0,0140		0,0506		0,0316	
darea	0,0450		0,0611	**	0,0443		0,0508	*	0,0619	*	0,0553	
	0,1363		0,0359		0,1580		0,0897		0,0696		0,1411	
deforta												
crclta												
Cons	-0,0072		-0,0292		0,1069		0,2553	**	0,2225	*	0,2408	
	0,9551		0,8119		0,3834		0,0439		0,0927		0,0903	
N	455		453		452		449		455		469	
R²	0,1195		0,1027		0,1287		0,1915		0,1375		0,1382	
F	4,7360		3,6429		4,8731		7,5728		7,7393		5,9691	

Level of significance: (***)1%; (**)5%; (*)10%

Interdependence between management policies of trade receivables and payables is considered through the comparison between gross and net models, noting that the choices of recourse to trade receivables and payables are closely interrelated since the net models have constantly greater predictive power than gross models.

Moving on to observe the results relate to the third research hypothesis, for the industrial sector (Tables no. 9-11) we find the absence of a constant relationship of dependency between the dependent variables and predictors of a financial nature in all years under observation. In particular, the incidence of trade payables (*deforta*) has statistically significant relationships with the incidence of short-term bank debt (*inbanel*) only in 2011 (Table no. 10). The incidence of trade receivables (*crclta*) has statistically significant positive relationships with the incidence of short-term bank debt (*inbanel*) only since 2008 (Table no. 9): this suggests that transactional motivation in the use of trade credit are relevant to industrial firms especially in the years following the outbreak of the crisis.

Significant and negative relationships are observed between the dependent variables and the incidence of medium and long term bank debt (*inbanol*), except for the years 2006 and 2008 with respect to the variable *deforta* (Table no. 10) and 2011 for the variable *crmerta* (Table no. 11). These reports emphasize the importance of substitutability between trade credit and bank loans also for the industrial firms. Statistically significant relationships with other predictors of a financial nature do not show a similar constancy in the results, highlighting the importance of real type motivations for industrial sector. With respect to the impact of financial charges *cosden*, dependency relationships are present but not constant over the years. For the dependent variable *deforta* there is a positive and statistically significant relationship only in the first two years of observation (Table no. 10): the higher cost of money leads to an increased use of trade payables by firms operating in the industry and agriculture.

For variables *crclta* and *cremerta* (Tables no. 9 and 11) significance is observed especially in the last three years (2009-2011) and it is a negative relationship The higher cost of money in the years of crisis causes lower deferred payment and a minimization of the financial needs determined by the incidence of net mercantile credit.

Moving on to the analysis of the results attributable to companies that operate in the services sector (Tables no. 12 - 14), statistically, significant dependency relationships of the three dependent variables with the incidence of short-term bank debt (*inbanen*) are observed in all the six years. For *crclta* and *crmerta* the relationships are positive and reiterate the importance of motivation of transactional type in the use of trade credit (Tables no. 12 and 14); for *deforta* the relationships are negative manifesting conditions of substitutability that coexist with conditions of complementarity (Table no. 13). For the variables *crclta* and *deforta* there are also negative dependency relationships with the incidence of medium and long term bank debt (*inbanol*) and for the variable *deforta* there are negative dependency relationships with the incidence of debt to other financiers, indicating conditions of substitutability.

Table 12: Regression Analysis 2006-2011 - Dependent Variable: *crclta* - Services

	2006		2007		2008		2009		2010		2011	
inbanen	0,0008	***	0,0006	***	0,0007	***	0,0010	***	0,0010	***	0,0007	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0217	***	-0,0126		-0,1037	***	-0,0587	***	-0,0318		-0,0401	**
	0,0019		0,1146		0,0000		0,0055		0,1153		0,0406	
inalen	-0,0224		-0,0999	***	-0,1223	*	-0,1959		-0,0604		-0,0072	
	0,1237		0,0045		0,0682		0,2490		0,7506		0,9674	
inalol	-0,0242		0,0104		0,0544	***	0,0946		-0,0249		-0,0133	
	0,8168		0,8517		0,0028		0,1520		0,9054		0,9525	
cosden	-0,0030		-0,0062	*	-0,0005		-0,0040		-0,0080	**	-0,0102	***
	0,3768		0,0570		0,8984		0,2866		0,0440		0,0021	
ros	-0,0050		-0,0092	***	-0,0047	*	-0,0011		-0,0019		-0,0035	
	0,1839		0,0007		0,0759		0,6509		0,5527		0,1165	
roe	0,0017	*	0,0033	***	0,0023	***	0,0025	***	0,0021	**	0,0022	**
	0,0815		0,0003		0,0072		0,0095		0,0341		0,0204	
curr	0,0418		0,1009	***	0,1455	***	0,1148	***	0,1564	***	0,1292	***
	0,1630		0,0002		0,0000		0,0000		0,0000		0,0000	
solven	-0,3260	***	-0,3982	***	-0,6930	***	-0,6317	***	-0,6788	***	-0,7527	***
	0,0059		0,0002		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0002		0,0081		-0,0037		-0,0263	*	-0,0093		-0,0189	
	0,9879		0,5727		0,7937		0,0827		0,5452		0,1759	
logeta	0,0589	**	0,0676	***	0,0431	**	0,0351		0,0287		0,0272	
	0,0230		0,0056		0,0392		0,1055		0,2134		0,2590	
darea	0,1149	***	0,1234	***	0,1169	***	0,0858	**	0,0592		0,0520	
	0,0058		0,0009		0,0033		0,0272		0,1633		0,2081	
deforta												
crclta												
Cons	0,1611		0,0177		0,2070		0,4627	***	0,3313	*	0,5097	***
	0,3510		0,9043		0,1751		0,0058		0,0683		0,0028	
N	252		258		250		258		249		251	
R²	0,1634		0,2830		0,3616		0,3051		0,3500		0,3906	
F	20,0939		79,3962		33,6142		27,9318		23,9239		32,7222	

Level of significance: (***)1%; (**)5%; (*)10%

Table 13: Regression Analysis 2006-2011 - Dependent Variable: *deferta – Services*

	2006		2007		2008		2009		2010		2011	
inbanen	-0,0002	***	-0,0003	***	-0,0004	***	-0,0004	***	-0,0003	***	-0,0005	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0142	***	-0,0074	**	-0,0645	***	-0,0457	***	-0,0208	*	-0,0232	**
	0,0008		0,0460		0,0000		0,0006		0,0732		0,0212	
inalen	0,0222	***	0,0312		-0,1129	**	-0,0647		-0,0065		0,0787	
	0,0002		0,6685		0,0485		0,2783		0,9256		0,4919	
inalol	-0,0589		-0,1152	**	0,0434	***	0,0505	**	-0,1146	*	-0,2630	***
	0,1999		0,0428		0,0010		0,0414		0,0839		0,0062	
cosden	0,0039	*	0,0004		-0,0025		0,0032		0,0015		-0,0010	
	0,0995		0,8791		0,3006		0,1820		0,5056		0,6835	
ros	-0,0081	***	-0,0102	***	-0,0070	***	-0,0024		-0,0012		-0,0061	***
	0,0037		0,0000		0,0009		0,2193		0,5635		0,0018	
roe	0,0022	***	0,0030	***	0,0024	***	0,0028	***	0,0018	**	0,0023	***
	0,0075		0,0000		0,0006		0,0001		0,0120		0,0012	
curr	-0,0013		0,0204		0,0401	***	0,0321	**	0,0406	***	0,0212	
	0,9322		0,1895		0,0094		0,0121		0,0053		0,1893	
solven	-0,4506	***	-0,4857	***	-0,6494	***	-0,5848	***	-0,5871	***	-0,6061	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
ldim	-0,0120		-0,0062		-0,0164	*	-0,0261	***	-0,0203	**	-0,0174	*
	0,2145		0,5120		0,0844		0,0069		0,0320		0,0768	
logeta	0,0199		0,0171		0,0062		0,0162		0,0095		0,0115	
	0,2500		0,3299		0,6973		0,2829		0,5441		0,5142	
darea	-0,0348		-0,0473	*	-0,0379		-0,0382		-0,0462	*	-0,0397	*
	0,1743		0,0912		0,1182		0,1109		0,0514		0,0832	
deforta												
crclta												
Cons	0,5066	***	0,4783	***	0,6357	***	0,6171	***	0,5903	***	0,6089	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
N	252		258		250		258		249		251	
R²	0,3537		0,3691		0,4729		0,4487		0,4071		0,4511	
F	15,7842		14,8011		17,1104		18,6308		17,1678		17,5950	

Level of significance: (***)1%; (**)5%; (*)10%

	2006		2007		2008		2009		2010		2011	
inbanen	0,0010	***	0,0010	***	0,0011	***	0,0014	***	0,0013	***	0,0012	***
	0,0000		0,0000		0,0000		0,0000		0,0000		0,0000	
inbanol	-0,0074		-0,0053		-0,0391		-0,0130		-0,0110		-0,0169	
	0,1782		0,3329		0,1281		0,5706		0,3653		0,2255	
inalen	-0,0447	***	-0,1312	**	-0,0094		-0,1312		-0,0539		-0,0859	
	0,0002		0,0163		0,8727		0,4430		0,7578		0,4899	
inalol	0,0346		0,1256		0,0110		0,0442		0,0896		0,2497	
	0,7651		0,1643		0,5316		0,4587		0,6568		0,2322	
cosden	-0,0069	*	-0,0066	*	0,0020		-0,0071	*	-0,0096	**	-0,0091	***
	0,0762		0,0860		0,6672		0,0631		0,0274		0,0097	
ros	0,0031		0,0009		0,0023		0,0013		-0,0008		0,0026	
	0,2501		0,6883		0,4370		0,3696		0,6847		0,2195	
roe	-0,0005		0,0004		0,0000		-0,0002		0,0003		0,0000	
	0,6473		0,7080		0,9832		0,8059		0,7873		0,9890	
curr	0,0430	*	0,0804	***	0,1054	***	0,0827	***	0,1158	***	0,1080	***
	0,0715		0,0002		0,0000		0,0001		0,0000		0,0000	
solven	0,1245		0,0875		-0,0436		-0,0470		-0,0917		-0,1466	*
	0,2641		0,3938		0,6457		0,5735		0,2411		0,0697	
ldim	0,0118		0,0142		0,0127		-0,0002		0,0110		-0,0015	
	0,4241		0,3257		0,4183		0,9906		0,5060		0,9162	
logeta	0,0390		0,0505	**	0,0369		0,0189		0,0192		0,0157	
	0,1502		0,0412		0,1238		0,3887		0,4140		0,5144	
darea	0,1497	***	0,1706	***	0,1548	***	0,1241	***	0,1054	**	0,0917	**
	0,0015		0,0001		0,0006		0,0043		0,0211		0,0349	
deforta												
crclta												
Cons	-0,3455	*	-0,4606	***	-0,4288	**	-0,1543		-0,2590		-0,0993	
	0,0567		0,0066		0,0107		0,3885		0,1832		0,5614	
N	252		258		250		258		249		251	
R²	0,1791		0,2303		0,1975		0,1655		0,2034		0,2130	
F	25,2224		22,3329		19,2845		14,4897		12,0782		24,6782	

Level of significance: (***)1%; (**)5%; (*)10%

Finally, it is interesting to note that for the variable *deforta* is absent a statistically significant relationship with the impact of financial charges (*cosden*) in most years under analysis. The cost of money does not affect the recourse to trade payables, even in this case also underlying the importance of motivations of real type in the use of trade payables for service firms.

5. CONCLUSION

For many Italian firms during the crisis, financial needs increased because of the growth of the working capital. Payment deadlines were extended for commercial transactions and this generated greater difficulty in maintaining a financial equilibrium, especially in SMEs with less bargaining power (Banca d'Italia 2010, 2011, 2012, 2013), confirming the importance of trade credits with real motivations, but also transactional reasons and financial reasons. Firms that have reduced access to bank debt may be forced to use trade credit more frequently than firms which are not subject to credit rationing. On the other hand, trade credit improves the visibility and reputation of the borrowing firms, making the banks more open to granting finance to healthy

projects that they would have otherwise refused. A dynamic and complementary relationship exists between trade credit and bank financing, which results in partial substitutability. Enterprises use trade credit because they are exposed to credit rationing – in this a substitution effect is formed –and at the same time trade credit signalises and reveals information to the banks about the reliability of the firms receiving payment deferrals, facilitating access to bank debt.

The results of the paper highlight the existence of an interdependent relationship between trade credit policy and trade debt policy in SMEs (first hypothesis), and the coexistence of conditions of complementarity and substitutability between trade credit and other financing sources (second and third hypothesis). The results of the analysis referring to the incidence of trade payables signal a substitutability relationship between intercompany debt and financing from banks or third parties. The hypotheses of the coexistence of conditions of complementarity and substitutability is verified by observing the results referring to the incidence of trade credit. We can see a direct functional relationship between the incidence of trade credit and the incidence of short-term bank financing, testifying double intermediary conditions and a complementarity between the two variables. The importance of transactional motivations has been highlighted.

Regarding the variable which represents the incidence of net mercantile credit, we can also confirm the coexistence of complementarity and substitutability conditions. The empirical analysis shows a significant direct relationship between the dependent variable and short-term bank financing and an inverse relationship with the incidence of medium and long-term bank financing and short-term financing from third parties.

The direct relationship between the incidence of trade payables and the incidence of financial charges reiterates the importance of substitutability in the years preceding the crisis. While during the crisis (2008-2011) the inverse relationship between the incidence of trade receivables and the incidence of financial charges reduces the convenience of double intermediation. Conditions of substitutability and complementarity can also be observed by considering separately the sample firms involved in agricultural or industrial activities and the sample firms that perform services. For both categories, we observe the coexistence of complementarity and substitutability, but in the case of industrial firm complementarity conditions and the relief of the transactional reasons are observed over the crisis years, from 2008 onwards, and not in the early years of the analysis. Significant relationships with other predictors of a financial nature do not show a similar constancy in the results, highlighting the importance of real type motivations for the industrial sector.

In the case of service companies, however, relations with the predictors of financial nature are weakened during the crisis years, reaffirming the importance of the motivations of real type in the use of trade credit. In keeping with reference literature (*inter alia*: Alphonse Ducret and Severin 2004), the results of the study allow us to state that substitutability and complementarity between trade credit, bank financing and financing from third parties can be verified in the same financial-economic system, without having to exclude each other. The results of the study also allow to state that the substitutability and/or complementarity conditions can operate together with the prevailing of real motivations of recourse in trade credit. In financial systems characterized by the presence of SMEs and in situations of economic and financial crisis the close interconnection between real and financial motivations for recourse in intercompany credit is therefore reiterated.

REFERENCES

Alphonse, P. Ducret, J. Severin, E. 2004, "When trade credit facilitates access to bank finance: Evidence from US small business data", EFMA Base Meetings Paper.

Banca d'Italia *Economic Bulletin*, various years, Roma.

Banca d'Italia *Regional economies,* various years, Roma.

Banca d'Italia, *Annual Report*, various years, Roma.

Biais, B. Gollier, C. 1997, "Trade Credit and Credit Rationing", *Review of Financial Studies*, vol. 10, No. 4, pp. 903-937.

Cannari, L. Chiri, S. Omiccioli, M. 2004, "Condizioni del credito commerciale e differenziazione della clientela", Banca d'Italia, *Temi di discussione*, No. 495.

Cannari, L. Chiri, S. Omiccioli, M. 2005, *Imprese o intermediari? Aspetti finanziari e commerciali del credito tra imprese in Italia*, Il Mulino.

Carmignani, A. 2004, Funzionamento della giustizia civile e struttura finanziaria delle imprese: il ruolo del credito commerciale*,* Banca d'Italia, *Temi di discussione*, No. 497.

Demirguc-Kunt, A. Maksimovic, V. 2001, Firms as Financial Intermediaries: evidence from trade credit data, *World Bank Policy Research Working Paper* No. 2696, World Bank Development Research Group (DECRG) and University of Maryland.

Duca, J. 1986, "Trade credit and credit rationing: a theoretical model"*,* Board of Governors of the Federal Reserve System, *Research Papers in Banking and Financial Economics*, No. 94.

Emery, G.W. 1987, "An optimal financial response to variable Demand"*, Journal of Financial and Quantitative Analysis*, Vol. 22, pp. 209-225.

Emery, G.W. 1984, "A pure financial explanation for trade credit", *Journal of Financial and Quantitative analysis*, Vol. 19, pp. 271-285.

Fabbri, D. Klapper, L. 2008, "Market power and the matching of trade credit terms", *World Bank Policy research working paper,* no. 4754.

Ferris, J.S. 1981, "A transactions theory of trade credit use"*, Quarterly journal of Economics*, vol. 96, no. 2 pp. 243-270.

Finaldi Russo, P. Leva, L. 2004, "Il debito commerciale in Italia: quanto contano le motivazioni finanziarie?" *Temi di discussione*, No. 497, Banca d'Italia, Roma.

Fisman, R. Love, I. 2002, "Trade credit, financial intermediary development and industry growth", NBER *working paper,* No 8960.

Forestieri G. 1975, *Il credito mercantile*, Giuffrè.

Fox, J. 1997, *Applied regressions analysis, linear models, and related methods,* Sage Publications, USA.

Gibilaro, L. Mattarocci, G. 2010, "Le variabili predittive della posizione netta in credito commerciale: evidenze empiriche per le imprese italiane"*, Credifact, Discussion Paper Series,* No. 1.

Huyghebaert, N. 2006, "On the Determinants and Dynamics of Trade Credit: Empirical Evidence from Business Start-ups", *Journal of Business Finance & Accounting*, Vol. 33, pp. 305-328.

Jaffe, D.M. Stiglitz, J.E. 1990, *Credit rationing*, in Friedman B.M. e Hahn F.H., (Ed.), *Handbook of Monetary Economics*, Amsterdam, North Holland.

Lee, Y.W. Stowe, J.D. 1993, "Product risk, asymmetric information, and trade credit"*, Journal of Financial and Quantitative Analysis*, Vol. 28, No. 2, pp.88-96.

Long, M.S. Malitz, I.B. Ravid, S.A. 1993, "Trade Credit, Quality guarantees, and Product Marketability", *Financial Management*, Vol. 22, No. 4, pp. 117-127.

Mian, S.L. e Smith, C.W. 1992, "Accounts receivable policy management: theory and evidence", *Journal of Finance*, vol. 47, pp. 169-200.

Panetta 2003, "Evoluzione del sistema bancario e finanziamento dell'economia nel Mezzogiorno"*,* Banca d'Italia, *Temi di Discussione,* No. 467.

Petersen, M.A. Rajan, R.G. 1997, "Trade credit: theories and evidence", *The Review of Financial Studies*, Vol. 10, pp. 661–691.

Pike R., Nam Sang Cheng, Cravens K. 2005, "Trade Credit Terms: Asymmetric Information and Price Discrimination Evidence From Three Continents", *Journal of Business Finance & Accounting*, Vol. 32, pp. 1197-1236.

Schwartz, R.A. 1974, "An economic model of trade credit"*, Journal of Financial and Quantitative Analysis*, Vol. 9, pp. 643-657.

Schwartz, R.A. Whitcomb, D.K. 1978, "Implicit transfers in the extension of trade credit"*,* in K.E. Boulding e T.F. Wilson (Ed.), *Redistribution through the Financial System*, New York.

Schwartz, R.A. Whitcomb, D.K. 1979, "The trade credit decision"*,* in Bicksler J. (Ed.), *Handbook of financial economics*, Amsterdam.

Stiglitz, J.E. Weiss, A. 1981, "Credit Rationing in Markets with Imperfect Information", *American Economic Review*, Vol. 71, pp. 393-410.