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Does Trade Credit Really Help Relieving Financial Constraints?

An analysis on a sample of Italian firms

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The European Union introduced a Directive aimed at reducing the use of trade credit because it is supposed to affect negatively the European economy. This contrasts with the “redistribution view” arguing that trade credit may allow the financing of credit constrained firms by their more liquid suppliers. Previous empirical analyses found some support for this view but they did not distinguish between net borrowers and net lenders. We show that in Italy the probability to be a net borrower is higher for those firms that are not likely to be credit constrained and that have more market power. Consistently with this result, the substitutability between trade debt and bank short-term debt occurs only for net lenders. These findings cast some doubts on the positive role of trade credit in relieving financial constraints and suggest that regulating late payments can protect vulnerable suppliers from more powerful buyers.

The term “trade credit” refers to a variety of heterogeneous, unilaterally determined arrangements under which individual suppliers of products or services trust their trade customers to defer payment for some designated period. Most firms, both in Europe and in the United States, have an important amount of cash invested in accounts receivable, as well as substantial amounts of accounts payable as a source of financing.

Most of the economic literature tends to emphasize the positive role of trade credit as a mean for providing funds to credit constrained firms. The function of “intermediary of substitution” exerted by the supplier is supposed to be facilitated by the nature of the trade relation which underlies the financing. Sellers benefit from savings in collecting information about small firms, evaluating

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default risk and valuating products in case of bankruptcy (Petersen and Rajan, 1997). Trade credit demand is therefore justified by the need of limiting the adverse effects of asymmetric information, especially when banks do not adopt relationship lending technologies and do not produce and use soft information about their borrowers. According to the so called “redistribution view” of trade credit, more liquid firms may help constrained firms to finance their investment projects (Emery 1984, Jain 2001, Huyghebaert 2006, Love et al 2007, Ferrando and Mulier 2013, Garcia-Appendini and Montoriol-Garriga 2013).

Despite this common wisdom, the European Commission (EC) appears to be worried about the negative consequences of late payment on the European economy¹. According to the European Commission, each year across Europe thousands of small and medium-sized enterprises (SMEs) go bankrupt waiting for their invoices to be paid. Because of late payments jobs are lost and entrepreneurship is stifled. With the economic crisis, the challenges presented by late payment for SMEs have grown disproportionately as credit lines and bank loans became less available. Directive 2011/7/EU (ENTR/172/PP/2012/FC – LOT) on combating late payment in commercial transactions puts in place strict measures which are expected, when properly implemented by EU countries, to contribute significantly to employment and growth and to cause an improvement in the liquidity of businesses². The European Commission is therefore convinced that there is something “wrong” in the conditions suppliers unilaterally determine in the arrangements under which they “trust” their customers to defer payment. If this is true, trade credit is likely to affect negatively employment and growth especially of those countries where it is more frequently used.

In Europe, the average level of trade credit in use varies significantly from country to country. The EC final report of the ex-post evaluation of late payment directive (European Commission, 2015) shows that in the period 2011-2014 Italy (97 days on average), Spain (91 days), Portugal (87.5 days) and Greece (86 days) are the slowest payers in business to business transactions,

¹ http://ec.europa.eu/growth/smes/support/late-payment_en

² According to the Directive, public authorities should pay for the goods and services that they procure within 30 days or, in very exceptional circumstances, within 60 days. Enterprises have to pay their invoices within 60 days, unless they expressly agree otherwise and provided it is not grossly unfair. Firms must pay interest for late payment (statutory interest of at least 8% above the European Central Bank’s reference rate) and €40 minimum as compensation for recovery. The Directive was adopted on the 16th of February 2011 and was due to be integrated into national law by EU countries by the 16th of March 2013 at the latest. EU countries may continue maintaining or bringing into force laws and regulations which are more favourable to the creditor than the provisions of the Directive. On 26 August 2016, the Commission adopted a Report accompanied by a Staff Working Document on the implementation of the Directive that has been submitted to the European Parliament and to the Council. The Report assesses the effectiveness, efficiency, coherence, relevance and added value of the EU Directive.

followed by Ireland (62.5 days), France (56 days), Belgium (50 days), UK (43 days), Netherlands (42 days), Denmark and Austria (36 days), Germany and Sweden (35 days) and Finland (26.5 days)³.

According to the EC report, differences in the experience of late payments can be explained by three main factors: the deterioration of the general economic climate (explaining differences across time), the prevailing business culture (explaining differences across countries) and the power imbalance in the supply chain whereby more powerful actors impose long payment periods on smaller suppliers (for this last explanation see also Marotta, 2005). However, the European Commission also recognises the financing role of trade credit by stating in the same report: “Armed with better information and occasionally more influence over their trading partners, suppliers can actually be more effective sub-prime lenders than the banking sector” (European Commission, 2015, p.24).

How important is the financing motive in explaining the use of trade credit? Is trade credit an effective way to foster small firms financing and to overcome banking system’s shortcomings? Or, on the contrary is it the consequence of the power imbalance in the supply chain whereby more powerful actors impose long payment periods on smaller suppliers?

This paper aims at answering these questions by using balance sheet and survey data for a sample of Italian non-financial firms over the period 2006-2015. We focus on Italy for several reasons. First, it is the country characterised by the highest practice of trade credit in Europe. Secondly, small firms represent a very dynamic part of the Italian productive system. A third important feature concerns the Italian banking system that is populated by many small banks, having more often than large banks close relationships with their borrowers, that are mainly small firms. Since Basel 3 regulation is reducing the use of relationship lending technologies, credit constraints faced by Italian small firms are increasing. It is therefore important to deepen the

³ Italy is in a much worse situation when we look at the average payment duration in public administration to business transactions that is higher than 140 days (while it is around 100 days in Spain and much lower in all the other countries). The Late Payment Directive was transposed in Italy by the Legislative Decree n. 192 of 9 November 2012. Under Italian law, the maximum statutory payment term is 30 days. In case of business to business transactions, the term can be derogated by the parties and shall be expressly agreed upon if it exceeds 60 days. Regarding transactions with certain types of public enterprises and with local health authorities, a 60-day term applies. If the parties in the contract have not agreed upon an interest rate, this shall be the ECB’s reference rate of the relevant semester increased by 8 percentage points. The parties can agree on a different interest rate, provided it is not grossly unfair. The minimum fixed sum for compensation costs is set at €40.

understanding of the redistributive role of trade credit and of the effect of a reduction of its use among Italian firms.

Differently from previous analyses, since we are interested in the intercompany financing, we separate net borrowing firms (those having a negative net trade credit, i.e. a positive trade debt) from net lending ones (those having a positive net credit, i.e. a negative trade debt)⁴. For the purpose of our analysis, it is crucial to separate the two groups of firms in order to assess whether their characteristics differ in the direction predicted by the redistribution view, with net borrowers being potentially more credit constrained than net lenders, or in a way that suggests net borrowing firms to be powerful actors imposing long payment periods on smaller suppliers.

We then estimate the degree of substitutability/complementarity between trade debt and bank debt separately for net lenders and net borrowers. We argue that the degree of substitutability may differ between net lenders and net borrowers shedding light on which group of firms is more likely to suffer from credit constraints. In fact, following previous studies (Atanasova, 2007), substitutability is taken as a sign of the existence of credit constraints since firms which do not obtain credit from banks increase the use of trade credit.

The paper proceeds as follows. Section I reports a brief review of the literature and introduces our research hypotheses. The empirical specification and the econometric methodology are presented in Section II and the data and the results of our econometric analysis in Section III. Finally, we report our conclusions in Section IV.

I. Literature review and research hypotheses

The reasons why firms offer and demand trade credit have been actively researched for more than three decades but the issue is still far from being resolved. Researchers have provided several motives as potential answers (see Ng et al., 1999). The traditional explanation has been that trade credit serves a non financial role. It allows to reduce transaction costs (Schwartz, 1974; Ferris, 1981), consolidates relationships with clients, enables suppliers to price discriminate and increases overall sales when price elasticity differs across buyers (Petersen and Rajan, 1997; Summers and Wilson, 2002). Trade credit may also act as a product quality guarantee since it gives firms'

⁴ There are, in general, more net lending firms than net borrowing firms, since also the public administration borrows resources from its suppliers. An evaluation of the effect of the EU Directive on the public administration (PA) is not in the aims of this study. However, its implementation is likely to cause a redistribution of resources from tax payers to those firms (suppliers of the PA) that are now bearing the cost of the financing of PA purchases.

customers the option of withholding payment until or unless they are satisfied with the goods (Smith, 1987; Long et al., 1993).

Trade credit may also serve a financial role whenever financial markets are imperfect and firms substitute it to (short-term) bank credit⁵. We may have two main cases depending on whether trade credit is more or less expensive than bank credit. Most of the literature assumes that trade credit is more expensive than bank credit. Firms with better access to credit redistribute capital via trade credit to customers that are financially weaker, acting as agents for the financial institutions and channelling short-term funds from the financial institutions to their best use (Deloof and Jegers, 1999). According to the so-called “redistribution view”, firms that borrow from financial intermediaries redistribute their borrowings to those who do not have access to financial intermediaries. Schwartz (1974) proposes a model in which firms that can obtain funds at a relatively low cost offer trade credit to customers that have to pay higher costs to outside financial institutions. Compared to a classical financial intermediary, inter-company relations make it possible for the seller to benefit from savings in collecting information about firms. They know how to monitor the credit capacity of a firm and are able to transfer funds, borrowing from intermediaries and granting deferred payments to other enterprises, otherwise rationed for reasons of misinformation (Smith, 1987; Biais and Gollier, 1997; Jain, 2001). Advantages in acquisition of better and less costly information and control of the buyer explain why the supplier is not forced to limit the amount of loans because of adverse selection and moral hazard problems that do not allow banks to identify firms’ credit risk efficiently. Credit constraints are therefore supposed to make firms heavily reliant on trade credit that they substitute to bank credit. Firms facing credit constraints are, therefore, expected to substitute bank debt with net trade debt⁶.

The second case is that trade credit is less onerous compared to other sources of financing so that firms obviously prefer it to bank credit⁷. By delaying payment, buyers can earn interest through

⁵ In perfect credit markets, with risk-adjusted interest rates, consistently with Modigliani-Miller theorem, the financial motive for trade credit would not be operative (Schwartz and Whitcomb, 1979). When financial markets are perfect a firm cannot increase its value by increasing its trade credit (Lewellen et al., 1980). Market imperfections may induce firms to substitute trade credit to other financing sources.

⁶Trade debt and bank debt might be complements instead of substitutes whenever trade credit increases the good quality reputation of creditors and allows them to earn easy access to bank credit. The quantity of credit obtained from suppliers appears as a positive sign of the borrower’s repayment capacity and this signal can be used to obtain more important bank financing (Elliehausen and Wolken, 1993, Biais and Gollier, 1997, Aphonse et al., 2004).

⁷ Frank and Maksimovic (2005) show that suppliers might have an advantage in salvaging value from sold goods so trade credit may be less expensive than bank credit in a model not based on the presence of credit rationing. Kouvelis

retaining funds or, if the alternative was to borrow, they would have avoided incurring interest and other charges. As stated above, the European Commission argues that a driver explaining late payments is the power imbalance in the supply chain whereby more powerful actors impose long payment periods on smaller suppliers. According to what we name the “market power view”, firms may be therefore forced to grant more, and less onerous, trade credit than they would like. Consistently with this view, Marotta (2005) finds no evidence that trade credit is more expensive than loans on a sample of Italian firms and argues that his result is consistent with the evidence of larger buyers willing to exploit their market power with suppliers. This is also the case when firms do not obtain from their suppliers a higher amount of accounts payable (or more delayed payments) but they are able to increase their usage of trade credit by paying over the due date⁸.

Overall, according to the “redistribution view”, net lending firms have more access to bank credit than net borrowing firms and choose to finance their customers that lack bank credit because of information asymmetries. According to the “market power view”, net lending firms are forced to finance net borrowing firms because they compete to sell them their products.

Our empirical analysis is aimed at discriminating between the “redistribution view” and the “market power view” using a sample of Italian firms over 2006-15.

We proceed in two steps. First, we look at the characteristics of net borrowers and net lenders through a probit model and then we estimate the degree of substitutability between trade credit and bank credit separately for the two groups of firms using generalised method of moments estimators.

In the probit model, if the “redistribution view” applies we expect that:

H1(a) Net borrowing firms have a higher probability to be credit constrained than net lending ones.

Alternatively, if the “market power view” applies we expect that:

H1(b) Net borrowing firms have more market power than net lending firms and are not likely to be credit constrained.

and Zhao (2012) propose a model finding that a supplier will offer interest rates below the risk-free rate and that a retailer will always prefer trade credit to bank credit when offered an optimally structured scheme.

⁸Huyghebaert (2006) argues that stringent collection may damage buyer relationships and suppliers, desiring to maintain an enduring product market relationship, grant more concessions to buyers in financial distress than other lenders. Also in this case we may argue that the buyer has a sort of market power over the seller.

As a further test of the “redistribution view”, following the prevailing literature but also departing from it by distinguishing between net lenders and net borrowers, we estimate the degree of substitutability between trade debt and bank debt. According to the “redistribution view”, we have, on the one side, net lending firms deciding the optimal level of short-term bank debt and payables that is judged to be sufficient to cover short-term liquidity needs (accounts receivable, inventories, cash holdings, short-term cash investments). Since they are not credit constrained, a decrease in their short-term bank debt is determined by a decrease in their demand and therefore it is not necessarily followed by an increase in trade debt. On the other side, we have net borrowing firms that are supposed to be credit constrained. Given their short-term liquidity needs and given the amount of short-term bank debt that they can get, they decide the level of trade debt they must borrow from other firms. In this case, a decrease in short-term bank debt is given by a decrease in supply and it is necessarily followed by an increase in trade debt. Therefore, if the redistribution view applies, we expect that:

H2 A decrease in short-term bank debt causes an increase in trade debt for borrowing firms (substitution hypothesis) and not for lending firms.

Most previous studies, not distinguishing between net lenders and net borrowers found substitutability between trade credit and bank credit (Petersen and Rajan, 1997; Deloof and Jegers, 1999; Blasio, 2005; Atanasova, 2007). Some studies also found evidence of complementarity (Alphonse et al., 2004). Bussoli and Giannotti (2016) find, on a sample of Italian small and medium firms over the years 2006-2011, that trade debt can be a complementary and substitute source of financing to bank loans. We argue that distinguishing between net borrowers and net lenders is important since the two groups of firms may be characterised by different degrees of substitutability/complementarity. This might also explain the heterogeneity of results found in previous studies.

II. Empirical specification and econometric methodology

In the empirical analysis, we first estimate the probability to be net borrower and then we look at the substitutability between trade debt and bank debt separately for net borrowers and net lenders.

In order to discriminate between Hypothesis H1a and H1b, we estimate a Probit equation where the probability of being net borrower depends on a set of variables that are proxies of the likelihood

that a firm is credit constrained, a set of variables proxying firms' market power and a set of control variables:

$$\text{Prob (TRADE DEBT=1)}_{it} = \Phi(\alpha_0 + \alpha_1 CR_{it} + \alpha_2 MP_{it} + \alpha_3 C_{it} + \varepsilon_{it}) \quad (1)$$

where CR_{it} is a vector of variables proxying firms' financial constraints for firm i at time t ; MP is a vector of variables capturing firms' market power; C is a vector of control variables; ε is a vector of residuals.

As proxies for financial constraints we consider a set of firms' characteristics (size, age, innovation, exports, group) and a set of financial variables (short-term bank debt, long-term bank debt, cost of credit, number of banking relationships, share of the main bank). In particular small, young, non-exporting, innovative firms and firms not belonging to a group are supposed to be more likely to be credit constrained and therefore, according to the redistribution view, more likely to become net borrowers. Furthermore, we expect credit constrained firms to have a higher cost of credit, a lower weight of long term bank debt on total assets and a less concentrated bank debt, i.e. more banking relationships and a smaller share of the main bank⁹.

As proxies of firms' market power, we introduce some variables capturing price discrimination (firms not setting the same price for all customers) and the type of main customers (firms selling mainly to local customers and/or to the public administration are expected to have less market power and to be less likely to become net borrowers according to the market power view) in addition to size and age (we expect smaller and younger firms to have a lower probability to become net borrowers according to the market power view).

Since trade credit policy is incorporated in the general credit policy of the firm, among the control variables in the specification we include those variables related to the general demand for credit (see Deloof and Jegers, 1999; Atanasova, 2007). Firms characterized by a higher demand for credit are more likely to become net borrowers. The more growth opportunities a firm has, *ceteris paribus*, the higher the demand for credit should be, so we may expect growing firms to be characterized by a higher demand for credit and to have a higher portion of their assets financed with accounts payables. We therefore expect them to be more likely to become net borrowers.

⁹ Multiple credit relationships can dilute the strength of the relationship with the main bank, thus exacerbating informational asymmetries and the probability of credit rationing (Petersen and Rajan, 1994).

Furthermore, a firm should finance short-term needs with short-term funds and long-term needs with long-term funds (Van Horne, 1995) so we expect firms with more short-term assets to demand more short-term credit in general and more trade credit in particular. Among short-term assets, we include liquid assets and inventories (all measured as a share of total assets). If there is a pecking order in the financing of the firm (Myers and Majluf, 1984), we can expect that internally generated funds are higher in the hierarchy than trade credit, so that firms with a higher cash flow will have a lower demand for trade credit (cash flow is captured by profit/losses plus depreciation and severance indemnities). Since firms obtain trade credit from suppliers, the higher are purchases the higher is the possibility to have access to trade credit (we therefore control for firms' purchases over total assets). Finally, we control for industry characteristics (Pavitt sectors) and territorial dummies (North-West, North-East, Centre and South) that might affect the use of trade credit. A precise definition of all explanatory variables and their sources is reported in the Appendix (Table AI).

In order to test for the substitutability between trade debt and bank debt (Hypothesis H2), we estimate three equations respectively for accounts payable, accounts receivable and net trade debt (the difference between accounts payable and accounts receivable). All dependent variables are measured as ratios to firms' total assets. As stated above, differently from previous studies, we distinguish between two groups of firms (eventually changing over time): those with net trade debt and those with net trade credit.

Since trade debt can act (eventually) as a short-term financing instrument, it should be substitutable to bank short-term debt. However, some studies have shown the existence of some substitutability also with long-term debt (Deloof and Jegers, 1999). Therefore, we introduce long-term debt as a determinant of trade debt.

The estimated equation is the following:

$$TD_{it} = \alpha BSD_{it} + \beta BLD_{it} + X'_{it}\gamma + \eta_i + \lambda_t + \varepsilon_{it} \quad (2)$$

where TD_{it} is either accounts payable or accounts receivables or net trade debt (the difference between the two) over total assets for firm i at time t ; BSD is bank short-term debt over total assets, BLD is bank long-term debt over total assets, X is a vector of control variables. We control for firms' characteristics (size and age), for the variables affecting firms' demand of credit in general

(asset growth, liquidity, inventories) and trade credit in particular (cash flow, purchases¹⁰); η are firms' individual effects (capturing other non-observable firm level characteristics potentially affecting trade debt), λ are time dummies accounting for changes in macro-economic conditions and ε is the random error¹¹.

This equation can be estimated using fixed or random effects models. These methodologies would not allow to deal with problems of endogeneity. However, bank debt can be endogenous to trade debt. In fact, firms using trade debt may convey information from the seller to the bank allowing to increase bank debt. Moreover, in Italy, it is not clear what place do trade debt and bank debt occupy in the pecking order theory. While the literature stresses the higher cost of trade debt with respect to bank debt, in Italy firms do not always pay an interest rate when they use trade debt (Marotta, 2005). In that case, the demand for bank credit would be residual with respect to the demand for trade credit (simultaneity or reverse causality). In order to deal with this problem, we use Arellano-Bond Generalised Method of Moments (GMM) instrumenting endogenous variables with lagged variables of the right end side variables. The GMM gives consistent estimates provided that there is no second order serial correlation among the errors, so we test for second order autocorrelation. We also allow short-term and long-term debt to be endogenous in the trade credit equation.

A problem with the original Arellano-Bond estimator is that lagged levels are often poor instruments for first differences, especially for variables that are close to a random walk. Arellano and Bover (1995) describe how, if the original equations in levels are added to the system, additional moment conditions could be brought to increase efficiency. In these equations, predetermined and endogenous variables in levels are instrumented with suitable lags of their own first differences (system GMM). We, therefore, report robustness tests using the system GMM in the Appendix (Table A4). As a further robustness check, in the Appendix (Table A5), we also report estimates of equation (2) excluding from the sample firms with a value of trade debt (trade credit) close to zero (smaller in absolute value than 0.05).

¹⁰When the dependent variable is account payable we control also for account receivables, and when the dependent variable is account receivable we control also for account payable. Trade credit policy and trade debt policy can be closely interrelated (see Fabbri and Klapper, 2008).

¹¹ Since we have firms' fixed effects, all variables not changing over time introduced in the probit equation cannot be included in equation (2).

III. Descriptive statistics and empirical results

Our analysis is carried out at the firm level using the data base of “Centrale dei Bilanci” reporting balance sheet data for Italian firms. The observations cover a period of ten years from 2006 to 2015. These data are merged with survey data from the EFIGE Bruegel-Unicredit dataset. This is based on information for representative samples of manufacturing firms (with a lower threshold of 10 employees) across European countries. Data for Italy cover about 3,000 firms. As the survey has been run in early 2010, information is mostly collected as a cross-section for the last available budget (year 2008), although some questions cover the period 2007-2009 and/or the behaviour of firms during the crisis. From the questionnaire, we take variables on some firms’ characteristics (exporting, innovation and group), on bank-firm relationships (number of banking relationships and share of the main bank) and on market power (price discrimination and type of clients). These variables are available for the cross-section and are assumed to be stable over the estimation period. In order to clean up data we drop firms with missing or unreliable data for all the variables of interest and outliers for financial ratios. In particular, the values of variables of interest below the first percentile and above the 99th percentile were discarded. As a result of this cleaning procedure, our final sample includes nearly 8.500 firm-year observations.

The descriptive statistics are presented in Table I separately for net lenders and net borrowers. They show that the group of net lending firms is more numerous than that of net borrowing firms. This is justified also by the relevant trade debt of Italian public administration (PA). For net borrowing firms trade credit is a very important source of short-term finance: for them net trade debt is about 11% of assets, against a short-term bank debt of about 15%. Net borrowers’ short-term finance from banks and suppliers is therefore on average about 26% of assets. Net lenders borrow from banks (at short-term) 19% of their assets but they lend to other firms 16% of their assets. At the end, lenders’ short-term finance from banks and suppliers is therefore only 3% of assets. Net borrowers’ long-term bank debt is slightly higher than that of net lenders. They have, on average, lower cash flow but also much higher liquidity and much lower financing costs than lending firms. In conclusion, on average, net borrowing firms have much more external finance than net lending ones and their financing seems to be less onerous than that of the other firms. Furthermore, net borrowing firms are on average larger, only slightly younger and grow much less than net lending firms. When we look at bank firm relationships, borrowing firms have fewer bank firm relationships and a larger share of the main bank. Borrowing firms’ market power seems on average higher (there

is among them a slightly higher percentage of price discriminating firms and a significantly lower percentage of firms selling mainly to the PA or to local firms). Overall, these data suggest that they are not rationed firms needing the support of trade credit.

Table I: Descriptive Statistics

The sample contains data for Italian firms over the period 2006-2015. The data sources for balance sheet data is Centrale dei Bilanci, while for other variables it is the EFIGE survey. Survey data refer to 2008. Lenders are firms with net trade credit while borrowers are firms with net trade debt.

<i>Variables</i>	<i>Lenders</i>					<i>Borrowers</i>				
	<i>Obs</i>	<i>Mean</i>	<i>St.D.</i>	<i>Min</i>	<i>Max</i>	<i>Obs</i>	<i>Mean</i>	<i>St.D.</i>	<i>Min</i>	<i>Max</i>
<i>Trade payable</i>	6507	0.210	0.112	0.000	0.787	2028	0.299	0.149	0.000	0.930
<i>Trade receivable</i>	6507	0.369	0.162	0.000	0.972	2028	0.189	0.124	0.000	0.721
<i>Net trade debt</i>	6507	-0.160	0.122	-0.955	0.000	2028	0.110	0.114	0.000	0.757
<i>Bank short debt</i>	6507	0.188	0.145	0.000	0.976	2027	0.154	0.155	0.000	1.638
<i>Bank long debt</i>	6506	0.091	0.098	0.000	0.846	2028	0.094	0.111	0.000	1.127
<i>Cashflow</i>	6507	0.109	0.204	-0.473	2.624	2028	0.097	0.216	-0.466	2.507
<i>Inventory</i>	6507	0.182	0.133	0.000	0.806	2028	0.225	0.167	0.000	0.933
<i>Purchases</i>	6507	1.667	3.919	0.000	70.649	2028	1.585	3.689	0.000	61.112
<i>Cost of debt</i>	6507	0.056	0.108	0.000	0.983	2028	0.049	0.103	0.000	0.980
<i>Liquidity</i>	6507	0.049	0.079	0.000	0.826	2028	0.073	0.110	0.000	0.991
<i>Assets (log)</i>	6507	8.677	1.236	3.892	15.502	2028	8.869	1.454	5.231	14.381
<i>Age (log)</i>	6460	3.247	0.668	0.000	5.106	2019	3.224	0.703	0.000	5.043
<i>Growth of assets</i>	6507	0.017	0.247	-0.896	1.472	2028	0.009	0.252	-0.895	1.491
<i>Innovation</i>	6498	0.666	0.471	0	1	2028	0.654	0.476	0	1
<i>Export</i>	6468	0.662	0.473	0	1	2028	0.635	0.482	0	1
<i>Number bank. rel.</i>	6498	4.20	2.77	1	30	2028	3.916	2.648	1	30
<i>Main bank share</i>	6507	0.510	0.500	0	1	2028	0.554	0.497	0	1
<i>Price discrimination</i>	6498	0.865	0.342	0	1	2028	0.877	0.328	0	1
<i>Main customer PA</i>	6102	0.010	0.099	0	1	1911	0.003	0.051	0	1
<i>Main customers local firms</i>	6102	0.116	0.320	0	1	1911	0.080	0.271	0	1
<i>Group</i>	6507	0.152	0.359	0	1	2028	0.144	0.351	0	1

Table II reports the results of the Probit analysis aimed at testing whether the characteristics of net borrowers differ from those of net lenders in a way that suggests for them a higher probability to be credit constrained (Hypothesis H1a) or rather a higher probability of being powerful actors imposing late payments on their suppliers (Hypothesis H1b). We report results for the full sample of 8,056 observations (column 1) and excluding firms with net trade credit lower (in absolute value)

than 0.05 (column 2) obtaining a sample of 6,249 observations. This allows a more robust check of differences between the two groups getting rid of firms that are not clearly net lenders or borrowers.

Table II: Regression Analysis 2006-2015 – Probability to be a borrowing firm

The table shows Probit estimates for borrowing firms (firms with net trade debt). Estimates in Column (1) include all firms while estimates in Column (2) exclude firms with a net trade credit (or debt) smaller than 0.05 in absolute value.

Variables	(1)		(2)	
	Coeff.	Std. Err.	Coeff.	Std. Err.
Bank short term debt	-0.638***	(0.0997)	-0.601***	(0.113)
Bank long term debt	0.564***	(0.152)	0.436**	(0.188)
Cashflow	-0.252***	(0.0551)	-0.345***	(0.0643)
Inventory	1.533***	(0.110)	1.939***	(0.134)
Purchases	0.0287***	(0.00483)	0.0389***	(0.00559)
Cost of debt	-0.282	(0.191)	-0.702***	(0.238)
Liquidity	1.927***	(0.174)	2.758***	(0.213)
Assets (log)	0.0631***	(0.0128)	0.0669***	(0.0157)
Age (log)	-0.00549	(0.0227)	-0.0369	(0.0275)
Growth of assets	-0.183***	(0.0682)	-0.220***	(0.0837)
Innovation	-0.0222	(0.0347)	0.0645	(0.0425)
Export	-0.0800**	(0.0374)	-0.0892**	(0.0449)
Main bank	0.0765**	(0.0340)	0.111***	(0.0411)
Price discrimination	0.0802*	(0.0470)	0.225***	(0.0595)
Group	-0.0494	(0.0473)	-0.0146	(0.0548)
Number of banking relationships	-0.0181***	(0.00666)	-0.0143*	(0.00781)
Main customer PA	-0.575***	(0.223)	-0.552**	(0.260)
Main customer local firms	-0.324***	(0.0566)	-0.366***	(0.0700)
Science based	0.250***	(0.0841)	0.294***	(0.101)
Scale intensive	0.0770**	(0.0385)	0.104**	(0.0466)
Specialised suppliers	0.148***	(0.0444)	0.162***	(0.0538)
South	-0.0859	(0.0537)	0.0279	(0.0642)
North East	0.0571	(0.0547)	0.0663	(0.0671)
North West	0.154***	(0.0424)	0.192***	(0.0514)
Constant	-1.696***	(0.171)	-2.206***	(0.209)
Time dummies	YES		YES	
Observations	8,056		6,249	

*** p<0.01, ** p<0.05, * p<0.1

When we look at the set of variables that are proxies of the likelihood that a firm is credit constrained we see that young and innovative firms are not more likely to be net borrowers (having a positive net trade debt) than other firms. Larger, and not smaller ones, are significantly more likely to become net borrowers. Moreover, they have more long-term bank debt (and less short-term debt, which is usually more expensive) and much lower financing costs. Overall, their relationship with the banking system does not appear to be more difficult than that of lending firms in contrast with the redistribution view: those having a more, and not less, concentrated bank debt (fewer banking relationships and a larger share of the main bank) are more likely to become net borrowers.

The picture emerging from the Probit analysis shows that Italian firms using trade credit to finance their investments are the less (and not the more) likely to be credit constrained. Hypothesis H1a is not supported. Trade credit does not seem a way to foster rationed firms financing and to overcome banking system's shortcomings. On the other hand, we see that the probability of being net borrower is significantly and positively affected by the set of variables proxying firms' market power (larger firms, price discriminating firms, firms not having as main client the public administration or local firms are more likely to be net borrowers). Therefore, the power imbalance in the supply chain, whereby more powerful actors impose long payment periods on smaller suppliers, might be a relevant motivation of the use of trade credit in Italy, giving support to hypothesis H1b.

The probability to be a net borrowing firm also increases, as expected, with liquidity, inventories and purchases and decreases with cash flow.

The relationship between short-term bank debt and trade payables and receivables is further investigated by asking to the following question: are net borrowing firms those substituting trade debt to bank debt (Hypothesis H2)?

Looking at the results of the estimates of equation (2) reported in Table III, testing the relationship between short (and long)-term bank debt, accounts payable, accounts receivable and net trade debt separately for net borrowers and net lenders, we may see that also Hypothesis H2 is not supported.

Table III: The determinants of payables and receivables for borrowing and lending firms

The table shows the Arellano and Bond estimates of the determinants of trade credit, trade payables and receivables separately for borrowers and lenders. Lenders are firms with net trade credit while borrowers are firms with net trade debt. Bank debt is allowed to be endogenous to trade debt. Heteroscedasticity robust standard errors in parentheses.

Variables	<i>Borrowers</i>		<i>Lenders</i>		<i>Borrowers</i>		<i>Lenders</i>	
	<i>tmet>0</i>		<i>tmet<0</i>		<i>tmet>0</i>		<i>tmet<0</i>	
	Net trade debt	Net trade debt	Trade payables	Trade payables	Trade receivables	Trade receivables		
	(1)	(2)	(3)	(4)	(5)	(6)		
<i>Trade receivables</i>			0.152*** (0.0398)	0.248*** (0.0207)				
<i>Trade payables</i>					0.119*** (0.0407)	0.348*** (0.0291)		
<i>Bank short-term debt</i>	-0.0749 (0.0677)	-0.335*** (0.0367)	-0.0242 (0.0524)	-0.271*** (0.0293)	0.0744* (0.0394)	0.159*** (0.0276)		
<i>Bank long-term debt</i>	0.0566 (0.0904)	-0.147*** (0.0349)	0.0113 (0.0849)	-0.222*** (0.0266)	-0.0464 (0.0426)	-0.0247 (0.0280)		
<i>Cashflow</i>	-0.0471 (0.0528)	0.00140 (0.00380)	-0.0376 (0.0315)	-0.00214 (0.00246)	0.0452* (0.0273)	-0.00436 (0.00302)		
<i>Liquidity</i>	0.598*** (0.0740)	0.598*** (0.0466)	0.192*** (0.0551)	0.100*** (0.0283)	-0.474*** (0.0700)	-0.579*** (0.0420)		
<i>Inventories</i>	0.254*** (0.0818)	0.666*** (0.0484)	-0.0102 (0.0556)	0.171*** (0.0318)	-0.308*** (0.0670)	-0.619*** (0.0402)		
<i>Purchases</i>	0.00213 (0.00190)	-0.00109 (0.00123)	2.97e-05 (0.00120)	-0.000616 (0.000831)	-0.00357*** (0.00132)	0.00106 (0.00107)		
<i>Age (log)</i>	0.247*** (0.0459)	-0.0588*** (0.0151)	0.158*** (0.0317)	-0.0823*** (0.0123)	-0.145*** (0.0401)	0.0104 (0.0123)		
<i>Assets (log)</i>	-0.0997*** (0.0280)	0.0491*** (0.0130)	-0.0631*** (0.0222)	0.0450*** (0.00898)	0.0567*** (0.0178)	-0.0141 (0.0117)		
<i>Asset growth</i>	-0.00810 (0.00993)	0.00166 (0.00141)	0.00895 (0.00713)	0.00416* (0.00238)	0.0174** (0.00848)	0.00190 (0.00183)		
<i>L.net trade debt</i>	0.638*** (0.0693)	0.321*** (0.0360)						
<i>L.receivables</i>					0.655*** (0.0738)	0.150*** (0.0406)		
<i>L.payables</i>			0.281*** (0.0652)	0.365*** (0.0374)				
<i>Constant</i>	0.0589 (0.278)	-0.421*** (0.117)	0.233 (0.208)	-0.0497 (0.0815)	0.0719 (0.210)	0.442*** (0.107)		
<i>Observations</i>	1,575	5,052	1,589	5,109	1,600	5,145		

*** p<0.01, ** p<0.05, * p<0.1

A first interesting result is that for borrowing firms net trade debt (column 1) does not depend on short-term bank debt while it does for lending firms (column 2). Net trade debt and short-term bank debt are not substitutes for net borrowing firms. A decrease in short-term bank debt causes only a reduction of receivables and not an increase in payables for net borrowing firms. On the contrary, a decrease in short-term bank debt causes an increase in lenders' net trade debt (i.e. a decrease in the net amount they lend to other firms) that is caused by an increase of their payables (substitution hypothesis) and a decrease in their receivables. Net lending firms tend to substitute payables also to long-term bank debt since an increase of the latter causes a decrease in payables (resulting then in a decrease in their net debt). It seems that net lenders' financing choices are conditioned by the need to finance receivables in order to sell their products to customers, a need that they cover with short-term bank debt and long-term bank debt that they substitute with payables when they decrease. On the opposite, for borrowing firms long-term bank debt is never significant.

These results are only partly consistent with those finding substitutability between trade debt and bank debt in Italy (Blasio, 2005), Belgium (Deloof and Jegers, 1999), UK (Atanasova, 2007) and US (Petersen and Rajan, 1997). In fact, we find substitutability only for net lenders and not for net borrowers, leading to a different interpretation of the results.

Our findings also show that the amount of trade credit a buyer takes (columns 3 and 4) is not determined by the internally generated cash, as predicted by the "pecking order" model (Myers and Majluf, 1984), but it is determined by the amount of capital he needs to finance receivables, liquidity and inventories (the latter only for lenders) consistently with the maturity matching hypothesis (Van Horne, 1995).

Finally, it can be noticed (columns 5 and 6) that, while net borrowers' receivables react positively to increases in cash flow, size and growth of assets and negatively to increases in liquidity, age, purchases and inventories, lenders' receivables depend only positively on bank short-term debt and negatively on liquidity and inventories. This might be consistent with the suggestion that net lenders' choice to grant trade credit is significantly affected by their customers' market power while net borrowers are more "free" in their choice.

Table A4 and A5 in the Appendix report respectively the results of the Arellano Bover estimates and of robustness checks excluding firms with a level of trade credit/debt close to zero (below ± 0.05) that confirm the robustness of these findings.

Overall, the results of our econometric analysis do not support the “redistribution view” since they show that there is no substitutability between trade debt and bank debt for net borrowers, while it exists for net lenders, suggesting that these latter firms might be forced to lend resources ending up being credit constrained. In fact, they substitute short and long-term bank debt with trade debt. Moreover, our results confirm the importance of distinguishing between net borrowers and net lenders since the two groups of firms are characterised by different degrees of substitutability between trade debt and bank debt and this may explain the heterogeneity of results found in previous studies.

IV. Conclusions

According to the economic literature, trade credit may play an important role in corporate finance because suppliers have significant cost advantages over financial institutions in providing credit to their customers. In particular, according to the redistribution view, more liquid and better informed suppliers may extend credit to opaque (possibly young and small) enterprises thus helping to overcome credit constraints. Despite this potentially important role of trade credit, the European Commission is worried that late payment may negatively affect growth and employment in Europe since it can lead to insolvencies and job losses, particularly among smaller companies. For this reason, in 2011, the EU adopted the Directive 2011/7/EU (ENTR/172/PP/2012/FC – LOT) on combating late payment in commercial transactions. What can be the consequences of adopting this Directive for the financing of credit constrained firms? Does trade credit really help overcoming information asymmetries thus helping to finance credit constrained firms as suggested by the redistribution view?

In this paper, we have tried to answer these questions on a sample of Italian firms. Differently from previous studies, we have argued that in order to discriminate between the redistribution view and alternative explanations of the use of trade credit, it is important to distinguish between net borrowers and net lenders. A separation of the two groups of firms allows analyzing their characteristics and shedding light on whether net borrowers are potentially credit constrained firms or rather they are firms able to exert their market power on weaker suppliers imposing them late payments. We have also argued (and empirically found) that the degree of substitutability between trade and bank debt differs between the two groups of firms allowing to shed further light on the existence of credit constraints for borrowers and lenders.

Overall, the results of the empirical analysis suggest that the redistribution view does not apply to the Italian trade credit market: Italian net borrowing firms are not the most likely to be credit constrained while net lending firms seem the ones finding more difficult to get the amount of bank credit they need to finance their payables. An important driver explaining late payments for net borrowing firms seems to be the power imbalance in the supply chain: net borrowers appear to be firms with high market power rather than firms facing difficulties financed by suppliers armed with better information and therefore more effective sub-prime lenders than the banking sector.

Previous research has mainly found substitutability between trade debt and bank debt for sample of firms including both net lenders and net borrowers, concluding that trade credit helps relieving credit constraints. However, we have shown that the relationship between trade debt and bank debt can differ between net lenders and net borrowers in a way that suggests lenders rather than borrowers suffering from credit constraints. Further analyses could test whether this result is specific to the Italian case or whether it also applies to other countries.

While our results suggest that adopting the EU Directive for late payment in Italy may be beneficial for SMEs, shedding more light on whether the redistribution view applies to other countries would allow for a more general assessment of the potential impact of restrictive regulations of trade credit.

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Appendix

Table AI - Regression Variables

The table reports for each variable the definition and the data source

<i>Variable</i>	<i>Definition</i>	<i>Source</i>
1) Trade payables	Accounts payable over total assets	<i>Centrale dei bilanci</i>
2) Trade receivables	Accounts receivable over total asset	<i>Centrale dei bilanci</i>
3) Net trade debt	Difference between accounts payable and receivable over total assets	<i>Centrale dei bilanci</i>
4) Bank short-term debt	Short-term bank debt over total assets	<i>Centrale dei bilanci</i>
5) Bank long-term debt	Medium and long-term bank debt over total assets	<i>Centrale dei bilanci</i>
6) Cashflow	Profit/losses plus depreciation and severance indemnities over total assets	<i>Centrale dei bilanci</i>
7) Inventories	Inventories over total assets	<i>Centrale dei bilanci</i>
8) Purchases	Purchases (intermediate goods and services) over total assets	<i>Centrale dei bilanci</i>
9) Liquidity	Liquidity ratio (cash plus bank deposit over total assets)	<i>Centrale dei bilanci</i>
10) Size	Logarithm of the firm's total assets	<i>Centrale dei bilanci</i>
11) Age	Logarithm of the firm's age	<i>Centrale dei bilanci</i>
12) Growth		<i>Centrale dei bilanci</i>
11) Cost of credit	Total financial charges over total debt	<i>Centrale dei bilanci</i>
12) Innovation	C14 On average in the last three years (2007-2009) the firm carried out product or process innovation	<i>EFIGE Survey</i>
13) Export	D1 The firm sold abroad some or all of its own products/services in 2008	<i>EFIGE Survey</i>
14) Number of banking relationships	F9. Number of banks used in total	<i>EFIGE Survey</i>
15) Main bank	F10. What % of your firm's total bank debt is held at your main bank? Main bank=1 if %>60%	<i>EFIGE Survey</i>
16) Main customer PA	Answer number 5 to the question E2. In which of the following categories your main clients, for whom the firm produce-to-order, belong to? 1. intra-group 2. other firms, in the same region. 3. other firms, in the rest of the country 4. other firms, abroad 5. public administration 6. private customers	<i>EFIGE Survey</i>
17) Main customers local firms	Answer number 2 to the question E2. In which of the following categories your main clients, for whom the firm produce-to-order, belong to? 1. intra-group 2. other firms, in the same region. 3. other firms, in the rest of the country 4. other firms, abroad 5. public administration 6. private customers	<i>EFIGE Survey</i>
18) Price discrimination	Answer number 2, 3 or 4 to the question E15. Within your domestic market, the price (net of trade cost) 1. is the same for all customers 2. depends on the volume or distribution channel 3. is set case by case 4. other	<i>EFIGE Survey</i>
19) Group	A8. Does your firm belong to a group?	<i>EFIGE Survey</i>

Table AII: Correlation coefficients among variables

The table reports correlation coefficients for the sample of net borrowing firms: trade debt>0

	<i>Payables</i>	<i>Recev.s</i>	<i>Tnet</i>	<i>Bank sh.</i>	<i>Bank long</i>	<i>Cashflow</i>	<i>Invent.</i>	<i>Purch.</i>	<i>Fincost</i>	<i>Liquid.</i>	<i>Size</i>	<i>Assets</i>	<i>Age 2009</i>	<i>Growth</i>
<i>Payables</i>	1													
<i>Recev.</i>	0.66	1												
<i>tmet</i>	0.58	-0.22	1											
<i>Bank sh.</i>	0.06	0.0491	0.0237	1										
<i>Bank long</i>	-0.2026	-0.1541	-0.0966	0.0179	1									
<i>Cashflow</i>	-0.0294	-0.0053	-0.0325	-0.0593	-0.0652	1								
<i>Invent.</i>	0.1502	0.1243	0.0627	0.0937	-0.1229	-0.0155	1							
<i>Purch.</i>	0.0386	0.0062	0.0435	0.0261	-0.0583	0.6066	-0.0498	1						
<i>Fincost</i>	-0.0635	-0.0514	-0.0268	-0.0746	-0.0820	0.6024	-0.0618	0.61	1					
<i>Liquid.</i>	0.0108	-0.0545	0.0731	-0.1376	-0.1298	0.0165	-0.1305	0.0420	0.0426	1				
<i>Size</i>	-0.0427	-0.0418	-0.0106	-0.0311	0.0418	0.3648	-0.0081	0.3798	0.3442	-0.0144	1			
<i>Assets</i>	-0.1543	-0.1065	-0.0852	-0.0256	0.0447	-0.3457	-0.0848	-0.3421	-0.3628	-0.1059	-0.0121	1		
<i>Age2009</i>	-0.0136	-0.0407	0.0263	0.0161	0.0748	0.0702	-0.1455	0.0699	0.0053	-0.0142	0.0595	-0.0490	1	
<i>Growth</i>	0.0140	-0.0053	0.0240	-0.0246	-0.0025	0.0017	0.0151	0.0584	-0.0097	-0.0043	0.0950	-0.0109	0.0228	1

Table AIII: Correlation coefficients among variables

The table reports correlation coefficients for the sample of net lending firms: trade debt<0

	<i>Payables</i>	<i>Recev.s</i>	<i>tmet</i>	<i>Bank sh.</i>	<i>Bank long</i>	<i>Cashflow</i>	<i>Invent.</i>	<i>Purch.</i>	<i>Fincost</i>	<i>Liquid.</i>	<i>Size</i>	<i>Assets</i>	<i>Age 2009</i>	<i>Growth</i>
<i>Payables</i>	1													
<i>Recev.</i>	0.65	1												
<i>tmet</i>	0.57	-0.72	1											
<i>Bank sh.</i>	0.10	0.19	-0.17	1										
<i>Bank long</i>	-0.22	-0.29	0.19	0.032	1									
<i>Cashflow</i>	0.014	0.12	-0.14	-0.059	-0.089	1								
<i>Invent.</i>	-0.04	-0.188	0.211	0.223	-0.026	-0.095	1							
<i>Purch.</i>	0.0474	0.1408	-0.1419	0.0126	-0.0678	0.6216	-0.0874	1						
<i>Fincost</i>	-0.0447	0.0484	-0.1045	-0.1027	-0.1176	0.5461	-0.1014	0.6094	1					
<i>Liquid.</i>	-0.0593	-0.1125	0.0939	-0.3297	-0.1197	0.0795	-0.1683	0.0053	0.1283	1				
<i>Size</i>	-0.0063	0.0270	-0.0413	0.0080	-0.0066	0.3903	0.0344	0.3821	0.3448	-0.0248	1			
<i>Assets</i>	-0.0957	-0.2323	0.2181	-0.0131	0.1133	-0.3007	0.1205	-0.3129	-0.3465	-0.0053	0.0952	1		
<i>Age2009</i>	-0.0160	-0.0107	-0.0005	0.0256	0.0157	0.0488	-0.0155	0.0701	0.0391	-0.0147	0.0154	-0.0182	1	
<i>Growth</i>	0.0321	0.0248	-0.0032	-0.0031	-0.0124	0.0147	0.0115	0.0821	0.0149	0.0037	0.0727	-0.0279	-0.0138	1

Table AIV: The determinants of payables and receivables for borrowing and lending firms

Robustness checks of the regression analysis using Arellano Bover GMM estimations. Lenders are firms with net trade credit while borrowers are firms with net trade debt.

Variables	<i>Borrowers</i>		<i>Lenders</i>		<i>Borrowers</i>		<i>Lenders</i>	
	<i>t_{net}>0</i>		<i>t_{net}<0</i>		<i>t_{net}>0</i>		<i>t_{net}<0</i>	
	Net trade debt	Net trade debt	Trade payables	Trade payables	Trade receivable	Trade receivable		
	(1)	(2)	(3)	(4)	(5)	(6)		
Trade receivables			0.181*** (0.0432)	0.256*** (0.0198)				
Trade payables					0.110*** (0.0386)	0.360*** (0.0310)		
Bank short term debt	-0.0485 (0.0564)	-0.269*** (0.0325)	-0.00838 (0.0405)	-0.204*** (0.0259)	0.0357 (0.0338)	0.165*** (0.0274)		
Bank long term debt	0.0997 (0.0822)	-0.0872*** (0.0325)	0.0253 (0.0766)	-0.166*** (0.0222)	-0.104*** (0.0345)	-0.0183 (0.0302)		
Cashflow	-0.0508 (0.0458)	-0.000512 (0.00384)	-0.0438 (0.0318)	-0.00210 (0.00245)	0.0480* (0.0267)	-0.00340 (0.00334)		
Liquidity	0.530*** (0.0692)	0.567*** (0.0448)	0.241*** (0.0569)	0.0951*** (0.0265)	-0.342*** (0.0592)	-0.563*** (0.0428)		
Age (log)	0.116*** (0.0335)	-0.0256* (0.0140)	0.0714** (0.0283)	-0.0615*** (0.0114)	-0.0777*** (0.0267)	0.0130 (0.0119)		
Assets (log)	-0.0397** (0.0166)	0.0360*** (0.0112)	-0.0285** (0.0137)	0.0257*** (0.00798)	0.0215** (0.0108)	-0.0140 (0.0107)		
Purchases	0.00202 (0.00181)	-0.000799 (0.00119)	-0.000449 (0.00110)	-0.000282 (0.000851)	-0.00321** (0.00141)	0.00130 (0.00117)		
Inventories	0.293*** (0.0738)	0.621*** (0.0452)	0.0608 (0.0581)	0.187*** (0.0313)	-0.290*** (0.0589)	-0.574*** (0.0408)		
Asset growth	-0.0146 (0.00959)	0.00181 (0.00139)	0.00539 (0.00828)	0.00477* (0.00269)	0.0220*** (0.00808)	0.00235 (0.00209)		
L.net trade debt	0.513*** (0.0602)	0.263*** (0.0311)						
L.receivables					0.519*** (0.0540)	0.328*** (0.0337)		
L.payables			0.543*** (0.0592)	0.303*** (0.0346)				
Constant	-0.0525 (0.171)	-0.432*** (0.108)	0.103 (0.133)	0.0395 (0.0772)	0.198 (0.132)	0.352*** (0.101)		
<i>Observations</i>	1,929	6,159	1,950	6,228	1,959	6,285		

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table AV: The determinants of payables and receivables for borrowing and lending firms

Arellano Bond estimates. Lenders are firms with net trade credit while borrowers are firms with net trade debt. Robustness checks excluding firms with values of trade credit close to zero.

Variables	<i>Borrowers</i>	<i>Lenders</i>	<i>Borrowers</i>	<i>Lenders</i>	<i>Borrowers</i>	<i>Lenders</i>
	<i>tnet>0.05</i>	<i>tnet<-0.05</i>	<i>tnet>0.05</i>	<i>tnet<-0.05</i>	<i>tnet>0.05</i>	<i>tnet<-0.05</i>
	Net trade debt	Net trade debt	Trade Payables	Trade Payables	Trade Receivables	Trade Receivables
Trade receivables			0.101** (0.0477)	0.249*** (0.0227)		
Trade payables					0.0637 (0.0438)	0.335*** (0.0302)
Bank short term debt	-0.0300 (0.0850)	-0.311*** (0.0410)	0.0140 (0.0713)	-0.266*** (0.0342)	0.0655 (0.0416)	0.135*** (0.0293)
Bank long term debt	0.0829 (0.124)	-0.144*** (0.0394)	0.0429 (0.120)	-0.231*** (0.0315)	-0.0495 (0.0452)	-0.0393 (0.0312)
Cashflow	-0.0436 (0.0581)	0.00184 (0.00370)	-0.0237 (0.0367)	-0.00115 (0.00241)	0.0526* (0.0284)	-0.00413 (0.00355)
Liquidity	0.554*** (0.0725)	0.675*** (0.0381)	0.157*** (0.0543)	0.122*** (0.0324)	-0.424*** (0.0818)	-0.634*** (0.0340)
Age (log)	0.362*** (0.0635)	-0.0936*** (0.0181)	0.245*** (0.0512)	-0.0960*** (0.0146)	-0.226*** (0.0473)	0.0459*** (0.0146)
Assets (log)	-0.120*** (0.0343)	0.0473*** (0.0140)	-0.0769*** (0.0270)	0.0442*** (0.00979)	0.0635*** (0.0199)	-0.0132 (0.0129)
Purchases	0.00140 (0.00199)	-0.00126 (0.00131)	-0.000784 (0.00148)	-0.000612 (0.000880)	-0.00347*** (0.00123)	0.00147 (0.00113)
Inventories	0.213** (0.103)	0.747*** (0.0534)	-0.0570 (0.0674)	0.191*** (0.0379)	-0.313*** (0.0810)	-0.688*** (0.0415)
Asset growth	-0.00550 (0.0138)	0.00181 (0.00134)	0.0151 (0.0105)	0.00382 (0.00235)	0.0181 (0.0121)	0.00135 (0.00167)
L.net trade debt	0.634*** (0.0838)	0.305*** (0.0390)				
L.receivables					0.649*** (0.0882)	0.0851** (0.0417)
L.payables			0.280*** (0.0745)	0.401*** (0.0437)		
Constant	-0.104 (0.364)	-0.327** (0.130)	0.122 (0.277)	-0.0123 (0.0916)	0.284 (0.234)	0.384*** (0.116)
Observations	960	4,152	971	4,203	976	4,229

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

