Liquidity squeeze on SMEs during the Great Recession in Europe: The role of trade credit *

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Abstract

We find that European SMEs significantly increased their net trade credit to sales ratio during the Great Recession. Therefore, for the aggregate of SMEs, trade credit did not provide any buffer to the contraction in bank loans. In fact, through increased net trade credit SMEs suffered a squeeze in their liquidity. From our analysis it emerges that there is a case for policy action directed at removing obstacles to the real activity of SMEs due to a liquidity squeeze induced by their weak bargaining power in trade credit relations. We explore various policies that could be implemented to relieve SMEs from the liquidity squeeze induced by the increase in their receivables.

Keywords: trade credit, financial crises, SMEs

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1 Introduction

The recovery of European economies from the Great Recession has been very slow. One possible explanation is that small and medium size enterprises (SMEs), which are the backbone of European economies, have been severely hit by the dry-up of financing that has followed the global financial crisis. Accounting for more than 99 percent of the total number of firms, almost 70 percent of employment and close to 60 percent of GDP in the EU-28, SMEs performance has clearly a large effect on the macroeconomy.

SMEs are particularly vulnerable to financial shocks, as they typically are more dependent on bank credit than larger firms and have limited access to alternative market-based sources of finance, such as corporate bonds. For these reasons, many have advocated policies targeted to SMEs in order to relieve them from tight financial constraints (Cœuré, 2013).[1] The asymmetric impact of financial shocks across firms of different size has been a central theme in the so-called credit channel explaining contractionary effects of monetary tightening (Gertler and Gilchrist, 1994).

One objection to the special position of SMEs in credit markets and to the rationale for targeted policies comes from the fact that SMEs are highly heterogeneous and this applies as well to their financial vulnerability. In normal times, aware of their inability to access financial markets, SMEs may anticipate future tightening of bank credit constraints by reducing their leverage. As a result, SMEs may hold significant cash reserves, which, though inefficient, may provide an insurance against shocks to bank credit supply (see Ferrando, Marchica and Mura, 2014).

Furthermore, and related to our analysis, it has been argued that SMEs may loosen their constraints on official sources of borrowing through trade credit (Giovannini et al., 2015; Carbo-Valverde, Rodriguez-Fernandez and Udell, 2013). The question of whether trade credit might have softened the negative shock on bank credit for SMEs during the Great Recession is therefore highly relevant. Although there is a vast literature on trade credit and its determinants, there are only a few studies on the behavior of trade credit during financial crises or episodes of sharp tightening of bank credit to firms. Love, Preve and Sarria-Allende (2007) and Love and Zaidi (2010) studied the behavior of trade credit during financial crises in 1990s in Asia and Mexico. They find that during those financial crises in emerg-

[1] "*Yet, based on survey information provided by the ECB (the Survey on Access to Finance of Enterprises, SAFE), we see that SMEs' profits, liquidity buffers and own capital have developed less favorably than have those of large firms during the crisis*" (Cœuré, 2013).

ing economies, trade credit did not compensate for the contraction of bank credit. Moreover, they also find evidence that SMEs faced unfavorable terms in trade credit relations and experienced a lengthening of the payments for their receivables. However, previous results are related to a small set of countries and, moreover, datasets used did not allow for a simultaneous analysis of the behavior of large and small firms.

We have focused on the behavior of net trade credit in a large dataset of firms in 31 European countries (Coricelli and Frigerio, 2016), which covers the period of the Great Recession and five years prior to that. The Great Recession provides a unique laboratory, as several countries experiences simultaneously a financial crisis. Net trade credit represents the difference between receivables, *i.e.* delayed payments on sales, and payables, *i.e.* delayed payments on purchases of inputs, of a firm. An increasing *net trade credit to sales ratio*, *NTCS*, indicates a squeeze on liquidity available to the firm. This channel is particularly relevant during financial crises, periods in which firms are subject to tight constraints on their sources of external finance. Net trade credit is also a key indicator of the redistribution of liquidity across firms and thus particularly suitable as an indicator of heterogeneity among firms and heterogeneous effects of financial shocks across firms.

2 The liquidity squeeze on SMEs

In contrast to commonly held views, we find that European SMEs significantly increased their net trade credit to sales ratio, *NTCS*, during the Great Recession (Fig. 1). Therefore, for the aggregate of SMEs, trade credit did not provide any buffer to the contraction in bank loans. In fact, through increased net trade credit SMEs suffered a squeeze in their liquidity.

Table 1 shows the behavior of different financing and investment items in firms' balance sheets during different phases of the Great Recession. Firms are divided in quintiles in relation to the behavior of their net trade credit and, in particular, they are ordered in terms of increasing net trade credit to total assets. Several interesting facts can be inferred.

First, firms experiencing the sharpest increase in net trade credit were characterized by only a marginal increase in bank loans.[2] Thus, the increase in net lending to other firms was not compensated by a corresponding increase in bank loans. Second, and related to the first finding, the liquidity squeeze operating

[2]Note that changes on the liability side of the budget are reported with reverse sign, so that sign (-) indicates an increase of the share to total assets.

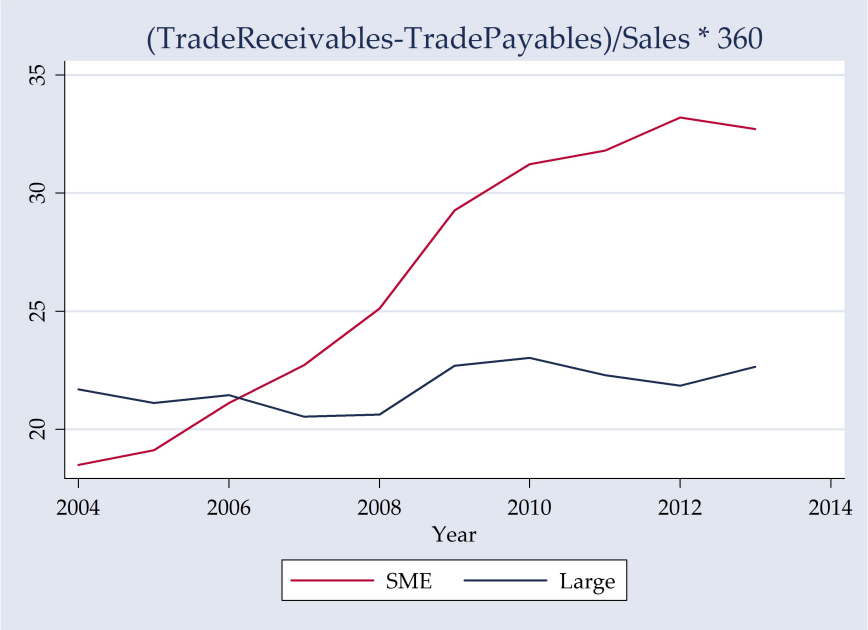
Table 1: Behavior of financing and investment items relatively to net trade credit

		Variation (p.p.) of the Shares in Total Assets of:						
Period		Net Trade Credit	Stocks (+)	Cash (+)	Fixed Assets (+)	Fin. Debt (-)	Oth. Liab. (-)	Sh. Funds (-)
2007-2009								
	I	−25.0	3.6	8.4	3.5	1.6	3.1	4.8
	II	−5.7	0.8	2.5	1.5	1.0	0.8	−1.0
Quintile:	III	0.7	0.0	0.3	0.5	1.1	0.0	−2.5
	IV	7.6	−0.8	−1.8	−0.2	−0.2	−1.3	−3.3
	V	28.3	−3.7	−8.4	−2.1	−2.7	−5.1	−6.1
2009-2011								
	I	−27.0	3.7	7.3	1.9	2.1	5.7	6.3
	II	−6.1	1.2	1.9	−0.1	1.7	0.8	0.7
Quintile:	III	0.0	0.3	0.1	−0.9	1.6	−0.1	−1.0
	IV	6.3	−0.4	−2.2	−1.7	0.8	−1.0	−1.7
	V	26.5	−3.2	−9.5	−3.5	−1.4	−3.8	−5.1
2011-2013								
	I	−24.7	3.6	8.2	2.7	1.5	1.6	7.0
	II	−5.3	1.0	2.3	0.5	1.3	−0.1	0.3
Quintile:	III	0.4	0.2	0.5	−0.4	1.3	−0.6	−1.3
	IV	6.3	−0.5	−1.4	−1.1	0.4	−1.7	−2.0
	V	26.7	−3.4	−7.7	−2.8	−1.8	−5.1	−5.8

Source: our elaboration on Amadeus data.

The quintile classification is based on the variations of the ratio between net trade credit and total assets within each period. Data in the table represent the changes in percentage points of individual budget items, each represented as a share of Total Assets. Figures are obtained as simple averages at the firm level. As indicated in the first row, changes on the assets side of the budget are reported as increases (actual sign, +), while changes on the liability side of the budget are reported as decreases (reverse sign, -). In this way, the sum of the entries in each row sum to zero.

Figure 1: Average *NTCS* by Firm Size and Year



Source: our elaboration on AMADEUS data

through trade credit is apparent by looking at the fall in cash holdings for firms increasing their net trade credit. Finally, firms experiencing the largest increase in net trade credit display a significant negative adjustment of both inventories and fixed capital investment, suggesting that the liquidity squeeze through trade credit exacerbated tightening of financial constraints, which, in turn, induced adverse effects on real activity.

We next turn the attention to the behavior of financing items for SMEs that experienced the deepest fall in investments, both in inventories and fixed capital, and we contrast such behavior with that of SMEs performing well. To emphasize the relevance of firm size, we group micro and small firms together, contrasting such group with the aggregate of medium and large firms.[3]

Fig. 2 contrasts the behavior of the main financing items in firms suffering the

[3]The alternative comparison between SMEs and large companies would be distorted by the fact that too few observations are related to large firms. In addition, we noticed from preliminary descriptive analysis that mid-size companies tend to behave quite similarly to large firms rather than to the micro and small ones.

largest fall (first quartile) in investment and inventories with the behavior of those same items in firms performing better (fourth quartile) during the crisis period. Firms that experienced the sharpest fall in inventories and in fixed capital were characterized by a significant fall in bank loans and by a sizable increase in net trade credit. By contrast, in firms that performed better in terms of inventories and of capital expenditure, the main financing items, including net trade credit, behaved as a mirror image of what found for the worst performing firms. The combination of these opposite behaviors generates the differences between first and fourth quartile that are clearly shown in Fig. 2. It clearly emerges that net trade credit to sales ratio strongly contributes to these differences.

The evidence discussed so far provides the basis for a deeper econometric analysis, which aims at verifying that the stylized facts reported above really capture the role of firm size rather than other factors.

3 Econometric evidence

In Coricelli and Frigerio (2016) we analyze whether the findings of the descriptive analysis survive to econometric analysis that controls for variables that may confound the preliminary results.

Focusing on net trade credit as the main channel of redistribution of liquidity across firms, we find in the econometric analysis that firm size plays a key role in predicting an increase in net trade credit during the Great Recession. Further analysis shows that the increase in net trade credit of SMEs reflects their weaker bargaining power in bilateral relations with larger firms. We find, in line with previous approaches, that firms with larger liquidity (higher cash-flow generation) tend to provide larger net trade credit. By contrast, we find no evidence that firms with easier access to bank loans increase their lending in the trade credit market. Overall, we find that, in addition to some redistribution from liquidity-rich firms to liquidity-poor firms, the increase in net trade credit by SMEs is explained by their weaker bargaining power and thus it does not reflect an efficient redistribution of liquidity.

Furthermore, if trade credit reflected an efficient redistribution of liquidity from less to more financially constrained firms, we should observe that changes in net trade credit induce positive real effects on firms' performance. In fact, we find evidence that the increase in net trade credit reduces both employment and fixed investments of firms. This lends support to the liquidity squeeze channel through which trade credit operated during the Great Recession, with significant

adverse effects on SMEs. As mentioned before, we find that differential bargaining power in favor of large firms is one of the main factors responsible for the liquidity squeeze affecting SMEs through trade credit. Policies to counteract such inefficiency, *i.e.* stronger bargaining power of large versus small firms, are hard to implement. Nevertheless, such inefficiency has sizable real effects and calls for policy responses.

In addition to net trade credit, the behavior of gross trade credit, which is the value of payables or receivables, might have played a crucial role during the Great Recession. Gross trade credit is crucial for understanding the relationship between production and credit chains. Indeed, firms are part of production chains and these chains are related to flows of credit among firms at different nodes of the chain. Even with zero net trade credit positions, financial shocks leading to a fall in gross trade credit can potentially lead to large real shocks through the collapse of production chains.

Furthermore, the position of firms in different stages of the production chain may imply that for purely technological reasons firms are characterized by different net trade credit positions. In this respect, the so-called *upstreamness* of different production activities is relevant for determining the sign of net trade credit positions. Firms that are far away from the final goods market tend to be net creditor in the chain, as they sell inputs to other firms. In particular, it is likely that especially in manufacturing activities small firms act as suppliers of intermediate products for larger firms. Therefore, positive net trade credit positions result from technological factors and do not reflect financial constraints or other possible imperfections. However, these considerations are important as structural characteristics, but do not necessarily imply *changes* in net trade credit positions during the financial crisis. Indeed, we find some stability of the credit chains during the financial crisis, with the response of receivables to a change in payables rather stable over time, with little changes during the Great Recession.

In summary, there is evidence that the increase in $NTCS$ of SMEs during the Great Recession was not driven by demand or by "technological" factors (upstreamness), but rather by the transfer of liquidity from SMEs to large firms resulting from stronger bargaining power of large customers in their relationship with smaller suppliers.

4 Policies

From our analysis it emerges that there is a case for policy action directed at removing obstacles to the real activity of SMEs due to a liquidity squeeze induced by their weak bargaining power in trade credit relations. Punitive actions in principle could shield SMEs from undesirable increases in delays in payments for their sales. This type of actions have been embodied in EU regulations, which introduce a limit to 60 days for delays in payments to suppliers, after which debtors will incur penalties. However, the weak bargaining power of SMEs originates from their difficulty in finding new partners for their sales. Going through legal actions will expose them to the threat of losing main partners for their products.

Therefore, more effective actions should be envisaged. These could focus on increasing the liquidity (marketability) of receivables of SMEs, which can be achieved through several mechanisms: *insurance* and *securitization*, asset-based lending (*i.e.* lending secured using accounts receivable as *collateral*) and *factoring* (which is a transaction where a company, the *factor*, purchases receivables from the seller/supplier and provides cash in advance at a discount). Such mechanisms are at work in normal times, although they cover a limited amount of trade credit and their relevance vary across countries.

As for receivables securitizations, Katz and Blatt (2008) argues that "considerable barriers to entry exist; and sellers generally require both significant size and credit quality to successfully fund through receivables securitization". Indeed, capital market participants tend to consider the credit quality of the receivables of smaller suppliers/sellers with some disbelief. Central banks could initiate programs of securitization of receivables of SMEs by guaranteeing securities issued on receivables. Differently from financial institutions, SMEs cannot (or they are not prepared to) interact in a direct way with central banks. For this reason, an intervention based on the securitization of trade credit would also require to identify those entities (such as the Italian *Confidi* [4]) that may operate as intermediate subjects, also through the use of *pooling* techniques.

Trade credit insurance, servicing outsourcing and appropriate structuring may ease the access of micro and small suppliers/sellers to receivables securitization, by softening the effect of undesirable increases in payment terms during financial crises. But insurance for trade credit may be perceived too costly during normal times, periods in which default probabilities are low and, moreover, potential

[4]Confidi is an institution that provides guarantees for bank loans received by SMEs. It pools SMEs loan applications and provides collectively guarantees to banks.

payment difficulties in trade credit transactions can be buffered through access to bank loans. During financial crises the buffer provided by bank loans evaporates, leaving the trade credit market without its "lender of last resort". Moreover, when the increase in receivables derives from a lengthening of payment terms rather than default of the customer, it is hard to design an insurance scheme. Therefore, insurance helps in absorbing the effects of default of customers but does not have an impact on the transfer of liquidity that large firms can obtain from SMEs as a result of higher bargaining power that large firms exert during financial crises.

A more viable solution for SMEs may leverage on more traditional instruments of invoice discounting, such as asset-based lending and factoring. Factoring can be a very important tool in providing financing to SMEs, since it is well suited for financing receivables from large firms when those receivables represent debts of customers with a higher credit standing than suppliers. However, the development of factoring to meet the financing needs of small-sized suppliers requires policies aimed to remove fundamental obstacles. Klapper (2006) shows that factoring is larger in countries with a better credit information. The development of factoring requires information on the quality of the assets (receivables). Gathering information for a large number of small positions is rather costly. This is the reason why, in developing countries, factoring is typically done on a recourse basis (*pro-solvendo*) so that the factor can collect from the supplier/seller in the case that the customer/buyer defaults.[5] An additional problem during financial crises is that assessing the creditworthiness of each individual firm is complicated by the interlocking of positions through credit chains.

Therefore, interventions are needed to remove barriers to all these tools and mechanisms that are suited for financing SMEs' receivables, especially during financial crises. For those firms with a lower access to finance, in particular, these tools should be strengthened through mutual financial institutions and specific incentive and guarantee schemes, possibly supported by governments and central banks (ECB for countries in the euro zone). This would permit SMEs to avoid the liquidity squeeze induced by delayed payments from larger firms without endangering their production networks.

In addition to remove barriers to ordinary factoring, it may also be useful to promote alternative solutions, such as *reverse factoring*, that are designed to overcome institutional barriers. In reverse factoring, the factor purchases receivables only from selected buyers, such as large high-quality firms. In this way, the factor

[5]By contrast, in developed countries factoring is more frequently done on a non-recourse basis (*pro-soluto*), so that the factor assumes most of the default risk (see Klapper, 2006).

(a) benefits from lower information costs and credit risk and (b) it also makes contact with SMEs that are suppliers of high-quality customers. At the same time, the supplier/seller increases its access to short-term financing and the customer/buyer can negotiate better terms with its suppliers. A success story of reverse factoring has been the program "Cadenas Productivas" ("Productive Chains") implemented by the Nacional Financiera (Nafin) development bank in Mexico (Klapper, 2006). The chains connect large buyers and small suppliers. A particularly interesting and relevant aspect of such program has been the creation of an internet-based platform to allow on-line factoring services to SME suppliers.[6]

Our study shows that policies that would reduce the liquidity squeeze induced by increased receivables in the context of financial crises would lead to sizable real effects, both on fixed investments and employment. Empirical evidence reveals that the magnitude of the implied change in investments is large, with a gap of more than 4 percentage points between the SMEs in industries with largest increase in $NTCS$ and large firms in industries with the smallest increase. Similarly, an increase of one standard deviation in $NTCS$ produces a reduction of 12 percentage points in the wage bill and of 0.6 percent in employment, indicating that the effects of increasing net trade credit on wages and employment are quantitatively relevant.

Finally, we suggest that policies reducing the liquidity squeeze induced by increased receivables, in addition to supporting SMEs, may also constitute a vital part of securing the supply chain across business cycles.

[6]Klapper (2006) states that "the suppliers are typically small, risky firms who generally cannot access any other financing from the formal banking sector. The program allows small suppliers to use their receivables from Big Buyers to receive working capital financing, effectively transferring their credit risk to their high-quality customers to access more and cheaper financing. The role of Nafin is only to coordinate on-line factoring services and not to factor receivables directly. The services provided by Nafin are to operate and promote the electronic factoring platform, encourage the participation of large buyers, and educate SMEs on how to take advantage of the program. Nafin was created by the Mexican government in 1934 as a state-owned development bank".

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Figure 2: Contributions to changes in Stocks and Capital Expenditure:
I quartile (largest decreases) vs. IV quartile (largest increases)