Does trade credit substitute bank credit during crisis period? A Review of recent literature

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ABSTRACT
Objective: Although earlier studies on trade credit have made good progress and provide evidence that add to our understanding of the role of trade credit but they don't reach towards unanimous conclusion. This highlights a clear gap in the exiting literature. The objective of this study is to fill the gap in the literature by providing extensive review on the role of trade credit especially during crisis period.

Methods: Since this is a review paper, therefore it does not involve any econometric modelling or statistical methods for validating its claim. The method of this study is based on the interpretation of the results of existing studies.

Results: There are conflicting evidences regarding the role of trade credit during crisis period. However, the current dominant practice in finance is to view trade credit as a substitute for bank credit especially for small firms. Since small firms face high market frictions and have limited access to market finance, therefore when rationed by banks during financial crisis, these firms move towards high implicit cost trade credit to offset the reduction in bank credit.

Conclusion: This paper presents a review of the empirical literature on the use of trade credit for financing motives. Its aim is to provide an insight on whether trade credit serves as a substitute or complement during crisis period. The review concludes that small firm's faces high information problem. This information problem becomes worsen during economic downturn or tight monetary condition. As a consequence firm's particularly small firms move towards trade credit to undo the bank lending channel.

Keywords: Trade credit, bank credit, financial crisis

JEL Classification Code: F17, F18, G01, M48
1. Introduction

Over the last decades there has been an increase in the occurrences of financial crisis throughout the world. The most noticeable among them are the 1994-1995 Mexican financial crises, 1997-1998 Asian financial crisis, 1998 Russian crisis, Turkey financial crisis (2000) and now the recent wave of financial crises 2007-2009. One of the common things among these crises are that they appear as a surprise and affect the economy. These financial crises drag the liquidity from the market and affect the smooth functioning of the financial market. Its effect is not only limited to financial sector but it also affects the household welfare [1], gender employment [2]. This suggests that financial shocks have impact on both financial and real sectors of the economy.

It has been argued that monetary and financial shocks have significant impact on the financing and investment decision of the firms. The effect is more pronounced on the small and bank dependent firms than large firms because these firms usually do not have access to capital market and faces greater market frictions [3-6]. High market frictions and lack of access to alternative source of credit makes small firms more vulnerable to financial shocks. That is why when macroeconomic shocks hit the economy it has greater effect on the financing decision of small firms than large firms.

During financial shocks the banks become increasingly reluctant to lend especially to small firms. As a consequence it affects the activities of small firms. It is because of the fact that small firms have few close substitute for bank loan, therefore reduction of loan to small businesses have greater effect on its activities than on large firms [7]. In such situation the use of alternative sources of finance (such as internal finance and trade credit) becomes more significant especially for small firms which do not have access to capital market. However, the relevant question is whether trade credit increase during crisis or not? If the use of trade credit increase during crisis, does it offset the reduction in bank loan. The exact role of trade credit during crisis period is still an unresolved issue in the literature. This paper presents review of the empirical literature on trade credit. Its aim it to provide further an insight on whether trade credit serves as complement or substitute during tight monetary and financial crisis period. There are different views in the literature regarding the role of trade credit during crisis period. One view acknowledges the substitution role of trade credit while the other regards the complementary role of trade credit. However, there are growing evidences regarding the former view. The current dominant practice in finance is to view trade credit as a substitute for bank credit especially for small firms. It is because of the fact that these firms face greater market frictions and lacking access to capital market.

2. Financial shocks and the behaviour of trade Credit

Trade credit is important source of external short term finance for firms. To state differently, it is one of the important short term finance for both small and large firms, which is also evidence from the table 1 below. According to federal Reserve Board study by Elliehausen and Wolken [8], in US, trade credit represent 20 of all nonfarm nonfinancial liability of...
small business and 15 percent of all nonfarm nonfinancial liability of large firms in 1987. In the UK, total short term credit extended constitute 70 percent and credit received constitute 50 percent of total credit received [9]. Moreover, in the corporate sector more than 80 percent of daily business transaction take place on credit [10]. Hence the use of trade credit for financing motives is very common and represents a significant portion of short term finance in firms’ balance sheet.

Table 1

<table>
<thead>
<tr>
<th>Source: Table 1 PP. 8, Oliner and Rudebusch [11]</th>
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<table>
<thead>
<tr>
<th></th>
<th>SMALL FIRMS</th>
<th>LARGE FIRMS</th>
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<tbody>
<tr>
<td>Total debt</td>
<td>139.2</td>
<td>635.9</td>
</tr>
<tr>
<td>Trade debt (TD)</td>
<td>44.0</td>
<td>138.3</td>
</tr>
<tr>
<td>Bank loans (TB)</td>
<td>55.1</td>
<td>100.2</td>
</tr>
<tr>
<td>Short-term (B)</td>
<td>19.5</td>
<td>24.7</td>
</tr>
<tr>
<td>Long-term</td>
<td>35.6</td>
<td>75.5</td>
</tr>
<tr>
<td>Commercial paper (CP)</td>
<td>.1</td>
<td>19.6</td>
</tr>
<tr>
<td>Other debt (TO)</td>
<td>40.0</td>
<td>377.8</td>
</tr>
<tr>
<td>Short-term (O)</td>
<td>3.8</td>
<td>12.9</td>
</tr>
<tr>
<td>Long-term</td>
<td>36.2</td>
<td>364.9</td>
</tr>
<tr>
<td>Total short-term debt</td>
<td>67.4</td>
<td>195.5</td>
</tr>
<tr>
<td>Total long-term debt</td>
<td>71.8</td>
<td>440.4</td>
</tr>
</tbody>
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### Ratio

#### Measures of short-term debt mix

\[
MIX_{SW} = \frac{B(A+B+CP)}{A+B+CP+O+TD}
\]

99 .56

\[
MIX_{O} = \frac{B(A+B+CP+O)}{A+B+CP+O+TD}
\]

83 .43

\[
MIX_{TD} = \frac{B(A+B+CP+O+TD)}{A+B+CP+O+TD}
\]

29 .13

#### Measures of total debt mix

\[
TMIX_{O} = \frac{TB(TB+CP+TO)}{TB(TB+CP+TO+TD)}
\]

58 .20

\[
TMIX_{TD} = \frac{TB(TB+CP+TO+TD)}{TB(TB+CP+TO+TD)}
\]

40 .16

Source: Table 1 PP. 8, Oliner and Rudebusch [11]

Trade credit is represented by 'account payable' in the balance sheet of the firm that receive trade credit while 'account receivable' in the balance sheet of the lenders' (creditor). Theoretical exposure on the role of trade credit as a potential substitute for bank credit was pioneered by Meltzer[12]. Meltzer [12] p.429) argue that ‘When money was tightened, firm with relatively large cash balances increased the average length of time for which credit was extended. And this extension of trade credit appears to have favoured these firms against whom credit rationing is said to discriminate’. Subsequent studies have provided evidence in support of the Meltzer's prediction (see for example [13, 14].
There are different theories that have provide explanation for the existence of trade credit (see for example [15]. Existent studies have also provided explanation for the transaction and financing motive to use trade credit [14]. However, the relevant issue is which firms use trade credit, why they use and when they use it. Are trade credit is used as substitute for bank credit during crisis period? To provide some insight about these issues is the purpose of this paper.

To provide some insight, we review the literature based on monetary policy impulses. The existing literature suggests that tight monetary policy affect the real economy (see for example [16, 17]). One of the channels through which it affects the aggregate economy is through bank lending channel. Kashyap, Stein and Wilcox [18] provide evidence in support of bank lending channel of monetary policy. They find that bank credit reduce following tightening of monetary policy. Their results support the bank lending channel [19] of broad credit view.

However, Oliner & Rudebusch [11, 20] do not support the same notion. Using disaggregated data from Quarterly Financial Report for Manufacturing, Mining and trade corporations for the period 1973.Q4 to 1991.Q1 Oliner & Rudebusch [11, 20] does not provide evidence in favour of bank lending channel. Their analysis does not support that monetary contraction reduces bank loan relative to other form of finance both for small and large US firms. By disagree with the Kashyap, Stein and Wilcox [18] interpretation of results Oliner & Rudebusch [11, 20] argue that ‘in an economy with heterogeneous agents, aggregate results must always be treated with caution’. Furthermore, their results show that credit has redirected from small firms to large firms following monetary tightening. Overall, their findings provide support for the broad credit channel view. Similarly findings in Gertler & Gilchrist [4, 5] provide evidence that the short term bank borrowing is redirected from small firms towards large firms following monetary contractions.

Bougheas, Mizen and Yalcin [21] show that credit supply squeeze to small, high risky, younger and high indebted firms more than large, less risky and older firms after tight monetary policy. Likewise, Black and Rosen [22] examine the effect of monetary policy on credit availability. They find that tight monetary policy reduces the supply of bank loan. Banks reduce the average maturity of their loan supply during period of tight monetary condition i.e. bank reallocate their supply from long-maturity lending to short-maturity lending. This results in reduction in loan supply over time. In other words they find support for the bank lending channel. Furthermore, banks redistribute the short-maturity lending from small firms to large firms. To state differently, when monetary policy are tight, banks reallocate their supply of loan from small firms to large firms. This is consistent with the balance sheet channel of monetary policy.

The above discussion reveals that tight monetary policy reduces bank lending. To state differently, bank lending to small firm squeeze more than large firms following monetary tightening which affect their financing and investment decision [3-5, 23]. The next question that arise is why lending to small firms reduces following monetary retrenchment. The capital market imperfection which creates information asymmetry and adverse selection problem may explain why certain firms are
relatively more credit rationed (See [24]). It may also create wedge between internal and external finance. Due to information problem the firm may not secure loan even for the positive net present value project because potential investors may not easily verify that firms have access to quality project or to make sure that the fund will not be diverted to alternative use because of information asymmetry problem [25]. The small firms are informationally more opaque and usually lacking reliable information (audited financial statements) [26, 27]. This lack of reliable hard information (financial statement) and information imbalance increase the agency problems in these firms which ultimately lead to increase the agency cost of external financing ( [26]. Chittenden, Hall & Hutchinson [28] argue that because of the close held nature of small firms, it is more likely that the moral hazard and adverse selection problem may be high in these firms. Since owner-managers of these firms may have incentive to engage in risky project and grow particular if they have limited liability thus shifting the risk towards lenders. These information and agency problems between small firms and financial institutions become worsen during economic downturn [29]. That is why when shock hit the banking system they discriminally reduce the credit to small firms. In other words when the financial shock hits the banking system, it has a great effect on the lending of credit to small businesses [7, 25]. This indicates the monetary or financial shocks have significant impact on the financing decision of small firms. Leary[30] argue that small firms increase the use of alternative sources of finance to make up for the reduction in bank credit caused by credit crunch. In a related context, Petersen and Rajan [13] argue that small firms which do not have access to capital market increase their use of trade credit when faced by limited or no availability of credit from the financial institutions. Similar result is found in Schwartz [31]. Nilsen [14] argues that during tight monetary conditions the small firms increase their use of trade credit. Tight monetary conditions reduces bank loan, as a consequence the small firms, which face greater information problem and have less access to capital market, increase their use of trade credit as undesirable substitute for bank loan. Interestingly, his findings also show that large firms also increase their use of trade credit. His further analysis, using bond rating as a measure of access to market, show that large firms without bond rating, having high cash holdings and low collateral are also credit constraint. These firms do not have alternatives sources of finance and therefore use costly trade credit. Overall, their results support the role of trade credit as a potential substitute for the bank loan especially for the small firm’s case. Blasio [32] finds similar results for the Italian Manufacturing firms. One of the uses of trade credit might be that it reduces the information inequality. For instance it has been argued that trade credit can also alleviate the information problem. The terms of credit potentially act as a screening device that illicit the information about the default risks of the buyers [33]. Information imbalance between firms and banks can result in credit rationing possible due to adverse selection. As a consequence firms may not be able to pursue Positive NPV projects. Trade credit can mitigate this information inequality because the sellers have private information about their buyers. The provision of trade credit to buyer
reveals that information to the market. In other words the provision of trade credit from the sellers conveys signal of buyer credit worthiness to the banks and hence mitigate the credit rationing [34].

The information advantage of suppliers has also been emphasized by Peterson and Rajan [13]. They argue that supplier has relatively advantage in providing trade to small, growing firms. It is because of the fact that supplier can obtain private information about the firm at relatively low cost and routinely. Suppliers do not use the information of other financial intermediaries; rather they collect and use different set of information. By monitoring repayment and observing the trade discount, the supplier can quickly and better judge the credit quality of the firms. Furthermore Suppliers are also efficient to liquidate the firm assets, if the firm fail to meet their commitments (ibid). That is why the firms that receive trade credit might have higher probability to obtain access to bank credit. It may be because the bank use the presence of trade credit as a signal of the firm quality [35]

Atanasova and Wilson [36, 37] provide evidence that firm substitute bank credit with trade credit during stringent monetary conditions. They argue that during tight monetary conditions bank reduce the supply of credit. More specifically, the supply of bank credit squeezes for the informationally opaque small and medium-sized firms. However, the demand for bank credit remains strong. To lessen the effect of bank credit rationing the borrowing constrained small firms increase the use of trade credit. In other words their reliance on less desirable alternative source of finance i.e trade credit increased. On balance their results suggest that when monetary conditions are tight, small, bank dependent firms substitute bank credit with trade credit. Similarly Kohler, Britton and Yates [9] show that quoted firms help out the non-quoted firms by extended more trade credit during recession and tight monetary period. Using data on firms quoted on the UK stock exchange, they show that during recession trade credit extended rise while in booms the opposite is true. Likewise trade credit received fall during recession and rise during boom period. As a consequence, the net trade credit rationing the borrowing constrained small firms increase the use of trade credit. In other words their reliance on less desirable alternative source of finance i.e trade credit increased. On balance their results suggest that when monetary conditions are tight, small, bank dependent firms substitute bank credit with trade credit.

Similarly Calomiris, Himmelberg and Wachtel [38] show that financially sound high quality firms can issue commercial paper. These firms issue more commercial paper during downturn to finance account receivable. In other words they extend more trade credit during economic downturns to support the short term financing needs of those firms that have not access to public capital market. Thus these firms serve as intermediaries during downturn.

Wilson, Tung le and Wetherhill [39] examine the Meltzer’s hypothesis by using UK data. They use data from the Credit Reference Agency database, ICC Juniper over the period 1983-1999. By disaggregated data on firm sizes, they find differences in the behaviour of different sized firms.
Their findings reveal that large firms extend more trade credit during contraction monetary period, but at the same time they also receive more credit. This may indicates that large firms need more credit and are not able to obtain the required amount of credit from the external market. However, the trade credit extended is more than trade credit received, as a consequence net trade credit extended increase during stringent monetary period. The medium-sized firms extend less trade credit and receive more credit during tight monetary period. The small firms receive more trade credit when interest rate increases. Interestingly they also find that small firms also extend more trade credit during tight monetary conditions. Their further analysis reveal that this behaviour is also found in financially distress firm. This may explain why small firms run out of cash and eventually fail. Overall, their results support the Meltzer’s hypothesis.

In a similar vein, Mateut, Bougheas and Mizen [21] provide evidence that trade credit serve as a substitute of bank loan during tight monetary period. By using data on 16000 UK manufacturing firms over the period 1990-1999, they show that during stringent monetary conditions the bank loan reduce relative to trade credit. Furthermore, they also divide the sample period into tight (1990-1992) and loose monetary conditions (1993-1999) and classified firms into small, medium and large firms. Their findings show that bank lending to small firms reduce during tight monetary period, nevertheless it is increased during loose period. The bank lending to medium and large firms are not much affected during tight monetary period. Interestingly bank lending to large firms increased during tight monetary conditions. It might be the flight to quality effect induced by tight monetary conditions caused some former borrowers to resort to bank loan. On balance, their findings confirm that UK small manufacturing firms resort to trade credit when monetary conditions are tight. In other words substitute bank loan with trade credit.

However, the findings of some studies do not support the notion that small firms increase the use of trade credit as a substitute for the bank finance during tight monetary conditions (For instance [5, 40]. It might be that the terms of credit offered are unfavourable so that to make it a good substitute for bank loan1. Similarly [5, 20, 40] found ‘no evidence that small firms increase their use of trade credit during period of tight money.....’. In other words small firms might not use trade credit as a substitute for bank credit. Supporting the same argument, Marotta [41] also do not find conclusive evidence for Italian firms that trade credit act as substitution for the bank landings. In a similar vein, Elliehausen and Wolken [8] find evidence consistent with the financing theory of trade credit. They also find firms with high amount of short term finance also use more trade credit. In other words they find that trade credit is complement rather than substitute for short term financial institutional loan.

Taketa & Udell [42] hypothesize whether the contraction in one lending channel is offset by expansion in other lending channels during financial shocks. More specifically they hypothesis whether the reduction in financial institution lending channel is offset by trade credit channel during Japan’s crisis. Using data on SMEs their findings do not support the above hypothesis rather they find that

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1 See for example the footnote 15 on Pp 38-39 in Bernanke and Gertler [40].
trade credit and financial institutions lending is complements. Furthermore, their findings reveal that different shocks have different affect on different lending channels. Moreover, their results show that during bubble period (positive shocks) short term borrowing and trade credit work as a substitute. In case of negative shock the reverse is true. They conclude that different shocks (Positive: Bubble period & Negative: Credit crunch) have different effects on the behaviour of trade credit and financial institution lending.

Love, Preve & Sarria-Allende [43] examine the effect of financial crisis on trade credit and bank credit for a sample of 890 publically traded firms in six emerging economies namely Indonesia, Korea, Malaysia, Philippines and Thailand. Using data from the Worldscope, they find short term surge in the trade credit right after the crisis before falling back in the post-crisis period. To identify whether the result is driven by demand or supply factor, they use reliance on short term debt in the pre-crisis as indicator of firm vulnerability to crisis. Their analysis shows that firms with high short term debt reduce the provision of trade credit after the crisis. The reduction in the aggregate trade credit provision could be due to firm with high pre-crisis short term debt. Firms with high pre-crisis short term debt significantly reduce the trade credit provision following the crisis. Furthermore, their analyses also show that countries that experience significant decline in aggregate bank credit also experience decline in trade credit.

Likewise, Love and Zaidi [44] examine the behaviour of trade credit and bank credit during 1998 financial crisis. They do not find that trade credit can mitigate the effect of decline bank credit. They examine the behaviour of trade credit and bank credit in a sample of SMEs in four East Asia Countries namely Thailand, Korea, Philippines and Indonesia. Their results reveal that on average the trade credit use declined following financial shocks. However, this effect is more pronounced in a sample of firms which are financially constraint. The financial disturbance not only reduces the trade credit, maturity of trade credit about also increase the cost of trade credit for financially constraint firms. On the other hand the financially constraint firms also reduce the extension of trade credit to customer, reduce maturity and increase cost of trade credit. Overall, their results suggest that trade credit and bank credit move in same direction. In other words the reduction of bank credit cannot be offset by increase in trade credit.

3. Summary, limitation and direction for future research

To summarize the above discussion, it seems to suggest that small firms use more trade credit for financing purpose especially during financial shocks or tight monetary periods. Although there are mixed evidences regarding the role of trade credit during financial crisis or tight monetary period, however, the dominant view in the literature is that trade credit serves as substitute during financial and tight monetary period. This study is a step towards better understanding the role of trade credit during crisis period. However, it is based on the interpretation of the results of existing studies. More empirical research is needed to better comprehend the exact role of trade credit during normal and financial turmoil environment. Cross-country comparison of the role of trade credit
is another area for future research. We look forward to future research to address this and other similar related issues.

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