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Financial Constraints and the Use of Trade Credit: Evidence from Pakistan

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ABSTRACT

The **purpose** of this study is to identify whether financially constrained firms use trade credit (payables and receivables) as a channel to finance their operations. The previous literature mainly investigated the role of trade credit in various aspects of a firm's performance. We argue that, since firms with limited financial capabilities usually have limited or no access to the long-term debt market, they can better be expected to rely on short-term financing, such as trade credit. We use Kaplan and Zingales index (KZ Index 1997) to measure the level of firms' financial constraints. The fixed-effects panel regression methodology was applied to a sample of non-financial firms listed on Pakistan Stock Exchange over eleven years from 2009 to 2019. **The results** of this article show that financially constrained firms use trade credit as a financing channel for their operations. We further found that firms with higher profit margins use more trade credit while those that have higher assets turnover use fewer loans.

Keywords: Financial Constraints; Trade Credit; KZ index

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Финансовые ограничения и использование торгового кредита: данные из Пакистана

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АННОТАЦИЯ

Цель данного исследования — определить, используют ли фирмы с ограниченными финансовыми возможностями торговый кредит (кредиторскую и дебиторскую задолженность) в качестве канала финансирования своей деятельности. В предыдущей литературе в основном изучалась роль торгового кредита в различных аспектах деятельности фирмы. Мы утверждаем, что, поскольку фирмы с ограниченными финансовыми возможностями обычно имеют лимитированный доступ к рынку долгосрочных заимствований или не имеют его вовсе, можно предположить, что они будут полагаться на краткосрочное финансирование, такое как торговый кредит. Авторы использовали индекс Каплана и Зингалеса (KZ Index 1997) для измерения уровня финансовых ограничений компаний. Методология панельной регрессии с фиксированными эффектами применена к выборке нефинансовых фирм, зарегистрированных на Пакистанской фондовой бирже, за одиннадцать лет с 2009 по 2019 г. Результаты исследования показали, что фирмы с финансовыми ограничениями пользуются торговым кредитом для финансирования своей деятельности. При этом фирмы с более высокой нормой прибыли берут больше торговых кредитов, в то время как фирмы с более высоким оборотом активов — меньше.

Ключевые слова: финансовые ограничения; торговый кредит; индекс KZ

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INTRODUCTION

According to S.N. Kaplan and L. Zingales [1] a firm is considered financially constrained if it faces a wedge between internal and external costs of financing. According to this definition, every firm is probable to be classified as constrained because every transaction cost of generating external funds put a firm into this category. A firm is considered more financially constrained if a wedge between internal and external costs of finance increases. The size of constraints depends on country financial intermediaries. According to V. Maksimovic and A. Demirgüç-Kunt

[2] firms finance long-term investments (machinery, plants) from their internal funds and short-term investments (inventories, raw materials) from external financing.

When payments do not occur simultaneously for goods and services, the supplier provides a short-term loan to the client in the form of accounts payable. On the other hand, when firms lend to customer firms or provide goods and services on a short-term loan basis, it is called trade receivables. Both accounts payable and receivable constitute trade credit. Trade credit is a significant source of financing, especially when firm is financially constrained. Despite being costly, trade credit is widely used by nonfinancial firms as a source of short-term financing [3]. Suppliers have an advantage by providing short-term financing to customers due to lower contracting and monitoring costs. For example, in a sample of European firms after the 2008 financial crises [4] found that trade credit provided safety to financially constrained firms and reduced their likelihood of financial distress.

Trade credit is closely related to firms' need to finance growth when they are financially constrained and is used by firms in two ways. A firm may act as a supplier, and therefore, its accounts receivable represents how much it lends to its customers. At the same time, a firm may also be seen as a customer, where its accounts payable may represent its borrowings from suppliers. Overall, receiving trade credit from suppliers may be critical for firms as it may finance their growth when they are financially constrained, yet it may also be important for them to extend trade credit to finance sales, thereby selling goods to their constrained customers. Moreover, it is shown that firms that are willing to extend trade credit are often the ones that have received trade credit from their own suppliers. We argue that it is a combination of both aspects of trade credit (i.e., accounts payable and receivable) that is important for a firm's growth when they are financially constrained.

The existing literature shows some evidence for this view, especially in developed economies, e.g. [5] in the USA [6], Jordan [7–10], and in Euro area. However, in developing countries like Pakistan, financial markets are less developed and not many financial institutions are available to finance firms' short-term needs. In countries where credit markets are less developed, firms rely more on credit from customer firms to mitigate the role of financial institutions. These firms further extend credit to the final customer. Therefore, the parent firm will receive its payments when final customer pays its amount to its supplier.

In this study, we analyze how financially constrained firms use trade credit to finance operations in a sample of Pakistani non-financial firms over a period of 11years, i.e. 2009–2019. We believe that the Pakistani corporate sector provides a natural laboratory setting to examine the role of trade credit in firm performance. First, most of the firms here are constrained by their limited access to capital markets to finance production and growth opportunities [7, 8]. Second, short-term bank financing is very limited as well as costly, making it a less preferred choice for most firms. Therefore, these firms may better be expected to rely on trade credit to finance their financial needs when they are financially constrained.

LITERATURE REVIEW

The study draws on theoretical work related to the impact of using trade credit as a channel to finance firms operations when they are financially constrained [1, 9–11]. It shows that financial markets are not perfect. Therefore, information asymmetry may make a wedge between the internal cost of financing and external finance. In order, firms may rely more on trade credit and may refuse growth opportunities with positive NPV due to expensive external funds when they are financially constrained. According to [8], firms operating in an undeveloped financial system with heavy reliance on bank loans for external finance may not be growing. In such a financial system, most firms rely on trade credit to finance operations. Firms obtain trade credit from suppliers and lend to customers, and this process continues until and unless last supplier sells its goods to final customers, i.e., household. Firms can also pledge receivables to banks to finance short-term liabilities and get their receivables insured, which can reduce credit default risk and increase profitability [12]. Despite the costly source of financing, firms frequently use trade credit. This is because trade credit is a substitute for bank loans and capital market financing, as found by a number of previous studies, e.g. [13–15]. This phenomenon becomes even more pronounced in undeveloped markets where capital, debt and bank financing are not easily available [15–18]. In the US, the balance sheets of firms show trade credit is more prevalent as compared to short-term debt financing. When firms are financially constrained and bank credit is a highly supposed liquidity risk, then trade credit is only option for non-financial firms [19]. Firms that receive low credit or no credit make growth slow; on the other hand, in present economic situation and tax policies, firms must receive credit to get more growth and increase employment and GDP. Either firms receive credit from their suppliers, i.e. trade credit or from financial institutions, bank credit or both. This question is important for policymakers and lenders to know about the financial position of the

firm [20]. Trade payables are liabilities, and trade receivables are assets. Firms' use assets and liabilities to improve their liquidity situation and better manage to liquidity shock. The liquidity shock effect payables, receivables, cash holdings, and bank credit simultaneously [21]. When suppliers provide trade credit to financially constrained traders and traders later purchase on cash from other suppliers, this will create problems. As a result, the supplier is accountable for a large portion of trader purchases and agrees to finance a large part of its sale to trader by providing them with trade credit [22]. A firm that belongs to the production network has issues and receives more trade credit even though they are financially constrained. The relationship between firm profitability and trade credit is positive, and this relationship is stronger in case of downstream firms [23]. In the US, many firms give trade credit to their retailers. The provisioning of trade credit depends on competition among firms. In more competitive environment, firms offer more credit. This is being used as a competitive advantage for the firms. Banks lend cash while firms lend goods; the advantage of lending trade credit to firms over banks is that firms have a monitoring advantage over banks [24]. In other words, lenders obtain information about borrowers that other firms obtain by paying costs. While some criticize the above phenomenon and argue that the advantages apply only to prepayments, firms are ready to purchase goods and services from their suppliers at an annual interest rate above 40% as firms are already exhausted by borrowing bank credit [5]. Trade credit is also used in some industries as a product guarantee; the suppliers extend credit to their customer firms and give them enough time to examine the product quality [25]. At the same time, firms give and receive trade credit and collateralized receivables. The use of trade credit differs in business cycle, as explained in [26], where wealthy firms protect poorer firms by providing trade credit under tight financial conditions. When we talk about differences in country level [27], it is explained that trade credit is prevalent more in countries where legal institutions have the worst conditions. K. Manova et al. [28] found that financially constrained domestic firms export less in underdeveloped countries as compared to the firms that have foreign affiliations, joint ventures, and access to foreign capital markets. S. Bougheas et al. [29] explained that an increase in production requires more finance because an increase in production will also increase production costs. It is difficult for firms to manage an increase in production with given amount of liquidity. Hence, an increase in production requires more trade credit to finance firms' operations. R. Fisman and I. Love [30] found that firms that have higher rate of account payables show higher rate of growth in a country where financial institutions are less developed. However, the availability of trade credit depends on the creditworthiness of the firms and their growth rate. Many authors suggested that provision of trade credit is more probable where resale of products is easier so that supplier firms could sell products to customer firms in case of default [31]. When uncertainty is high and firms are financially constrained, firms reduce growth productivity in the form of a reduction in their share of information technology and communication capital in their total capital share. Employment and investment fall when firms develop a "wait and see" strategy during an uncertain period [32]. Financial decisions are a key factor in determining the investment decisions. Financially constrained firms have shown lower levels of growth in the different sectors of the country. Some countries in Europe have been badly affected by financial constraints (Portugal and Italy) and suffered a loss of 21% of their labor productivity due to limited financing options [33]. It provides survival for financially constrained firms during financial crises. If other things remain constant, the rise in trade credit will reduce financial distress. Firms depend on trade credit in two conditions: firstly, if bank credit is not available, and secondly, when the level of bank awareness is very high. Most of the SMEs shift their focus from bank credit to interfirm credit in the form of discounting, invoicing, etc. The benefit of interfirm financing is that it reduces transaction costs and information asymmetry. Trade credit is an significant tool of financing for small and medium enterprises, but total trade credit (payables and receivables) provides full role of firms' contribution in the economy [4]. The competition amongst suppliers is an important source of determinants of trade credit. Suppliers facing strong competition to sell their products to retailers offer more trade credit to maximize firms' profit. In the existence of competition, the advantage of trade credit is not completely examined because retailers not only buy products from the firms that offer trade credit but also use liquidity to buy products from other suppliers [22]. Firms deceived by recession use trade credit as a substitute option of financing during financial constraints. Trade credit has been used by financially constrained firms to finance their expenses, and dependency has increased more through the financial crisis. Unconstrained firms rely on bank loans instead of trade credit [34]. Trade credit is a main option of financing in modern economies. Using trade credit is

questionable because trade credit is costly source of financing. J.H. Nilsen [35] explains that trade credit is considered as "financing of last resort" by financially constrained firms. Question is then why firms are using trade credit? Firstly, trade credit provides a guarantee for product quality to its customers, fosters long-term relationships, and helps firms helps firms to optimize their inventory management. Secondly, there is the role of financial theories (e.g., information asymmetry, singling) to increase or reduce the demand for trade credit. The use of trade credit by financially strong firms may reduce the information asymmetry among managers and investors [36]. The firms face the price of trade credit from those who offer trade credit, and the benefits to retailers are shared amongst all the suppliers. The benefit of suppliers, who offer trade credit can be analyzed when suppliers get a larger share of retailer purchases, therefore, suppliers offer more trade credit to retailers. It means that there is a positive association between provision of trade credit and the share of the supplier to retailer spending. When suppliers share retailers' expenditure, there is also a positive relationship between usage of trade credit by retailers and its supplier's attention because the suppliers who share most of the retailer's expenses are agree to sell further on credit. J. Chod et al. [22]. Financially constrained firms are forced to limit their investment in positive NPV projects and therefore the firms will not invest in innovative projects, and it will limit their growth. Competition reduces disclosure because, in competition, firms are unwilling to share their commercial information. This will create an information asymmetry problem among firms and lenders, and consequently, lenders will limit credit to firms. Competition also reduces firms' profit, hence lowers firms' value, and creates information asymmetry, resulting in credit rationing. If a firm is financially constrained, then it will be unable to take advantage of more profitable growth opportunities. Firms that face strong competition and are financially constrained as well have lower growth opportunities [37].

DATA AND METHODOLOGY

Data and Sample

We initially started with all the firms listed in Pakistan's KSE-100 index over a period of eleven years, from 2009 to 2019. We then refined the sample using the following criteria:

- We excluded financial firms from our sample because their risk profile, industry nature and regulatory requirements are different from those of non-financial firms;
- We retained those firms for which annual reports were available continuously from 2009 to 2019. This was necessary because we were constrained by the unavailability of databases for Pakistani firms, limiting our ability to collect accounting data from the annual reports;
- We further excluded firms that did not report data on important variables of our study, in particular, trade payables and trade receivables.

After applying the above criteria, we excluded outliers and finally ended up with a workable sample of 66 non-financial firms over the eleven-year sample period, amounting to 696 firm-year observations.

We collected data from two sources, i.e., the annual reports of the firms over the sample period as well as from the website of the central bank of Pakistan (the State Bank of Pakistan).[1]

Model

We estimate whether financially constrained firms use trade credit as a channel to finance their operations. To do so, we regressed the sample firms' trade credit over their levels of financial constraints along with other control variables suggested by relevant literature. We estimate the level of firms' financial constraints with the help of KZ Index [1], a widely applied measure of financial constraints in existing literature. The KZ index is determined as a linear combination of five different accounting ratios and their coefficients. The following equation estimates the financial constraints of the firms:

$$KZ\ Index = -1.001909 \times Cashflow / K + 0.2826389 \times \times Q + 3.139193 \times Debt / K - - 39.3678 \times Dividend \ / \ K - 1.1314759 \times cash \ / \ K, \quad (1)$$

where *Cashflow* is (Income before extraordinary items$_t$+ + Total depreciation and amortization$_t$); *K* is Property, Plant and Equipment$_{t-1}$; Q is (Market capitalization$_t$ + + Total shareholder's equity$_t$ – Book value of common equity$_t$ – Deferred tax assets) / Total shareholder's equity$_t$; Debt is Total long term debt$_t$ + Notes payable$_t$ + + Current portion of long term debt; Dividend is Total cash dividend paid$_t$ (common and preferred); Cash is Cash and short term investment$_t$.

The higher the value of KZ Index the more a firm is considered as financially constrained.

[1] The Central bank of Pakistan i.e. The State Bank of Pakistan has conducted two exercises of financial statements analyses of the public sector firms registered on the bourse of the country. The first one from 2009 to 2013 and the other from 2014 to 2019 both available on the bank's website/ URL: www.sbp.gov.pk

Finally, the following equation has been used to test the association among trade credit and financial constraints with some other control variables:

$$TC_{it} = \alpha_0 + \alpha_1 FConst_{it-1} + \alpha_2 ATR_{it-1} + \\ + \alpha_3 SG_{it} + \alpha_4 Size_{it-1} + \sigma_5 GPM_{it-1} + \sigma_6 LTD_{it-1} + \\ + \sigma_7 PUR_{it-1} + \sigma_8 IF_{it-1} + \sigma_9 FC_{it-1} + \varepsilon_{it}, \quad (2)$$

where the subscript "*i*" denotes firm and "*t*" denotes time/year. Detailed definitions, abbreviations and calculations of the variables used in equation (2) are summarized in *Table 1* below.

ANALYSIS & RESULTS

In order to test the relationships between trade credit and the firm level of financial constraints, we applied fixed effects panel regressions to our data. The results of descriptive statistics are reported in *Table 2* and the results of panel regression models are reported in *Table 3 to Table 5*.

Descriptive Statistics

Table 2 shows the descriptive statistics of the study, where trade credit (TC) has been estimated as the sum of accounts receivables and payables scaled by total sales and financial constraints (FConst) measured with the help of the KZ index [1] equation (2). The asset's turnover (ATR) is calculated with the help of sales to total asset minus receivables. Gross profit margin (GPM) measured as the ratio of gross profit to sales. Long-term debt (LTD) is calculated as the ratio of long-term debt to total assets. Purchases (PUR) are calculated with the help of the ratio of purchase of raw materials to total assets. Internal Financing (IF) is calculated by net profit plus depreciation divided by sale, and financing cost (FC) is calculated as financing cost divided by total liabilities minus payables. Size is total assets in million Rs. and Sales Growth (SG) changes of sales with respect to the previous year are control variables.

In *Table 2,* the average value of the ATR (Assets Turnover ratio) 148% shows that the average sample firm uses its assets efficiently to generate revenue. *Table 2* further shows that sample firms have a reasonable profit margin against their sales. The maximum 91% profit margin shows firms have better control over their overhead. It further indicates that the products of our sample firms are not underpriced. According to *Table 1,* the average value of trade credit is 29%, whereas the average value of long-term debt is 0.8%, which shows sample firms are using more trade credit as a source of financing instead of long-term debt. This study is based on a sample of Pakistani firms. Being an emerging market the Pakistani market is a good laboratory to test our model because, in Pakistan, most firms are financially constrained and do not use long-term debt as a channel of financing [7]. Firms are restricted from relying on bank loans or trade credit. Furthermore, in Pakistan, bond markets are not developed, making external financing through long-term debt even more difficult to obtain. Moreover *Table 2* also shows that firms are using their major of assets to purchase raw materials for production. The average firm uses more than 55% of their assets to procure raw material. This indicates that firms have sufficient opportunities for growth. Our measure of internal finance shows less than 20% of average firms use their internal funds to finance growth. Being an emerging market, long-term debt is not available and firms also make less use of their internal funds to finance growth. This scenario suggests that most firms are restricted to relying more on trade credit to finance growth opportunities. According to the results, the value of sales growth shows firms can generate revenue through sales, but minimum value, i.e.—.51 suggests some firms face difficulties generating revenue through sales. *Table 2* further shows the diverse range of samples. The difference between the minimum value and the maximum value shows that all sizes of firms are included in our sample. We do not restrict our sample to the size of the firms.

Regression Analysis

Before proceeding to result analysis, it is necessary for panel data to check which model is appropriate: a fixed effects model or random effects model. To choose between a fixed effects and random effects model, we first applied the Durbin-Watson-Hausman test. We used the straight-line method, i.e., if the *p*-value of the Hausman test is less than 0.05, we reject the null hypothesis, i.e., a random effects model is appropriate. We present the results of our Fixed Effects Vs Random Effects model in *Table 3* while *Table 4* shows the results of Hausman test. *Table 4* shows that the P-value of Hausman test is less than 0.05, therefore we retain the results of fixed effects model in our study.

Fixed Effects Vs Random Effects Regression

Table 3 shows the results of our fixed effects model vs random effects model, where trade credit (TC) has been estimated as the sum of accounts receivables and payables; scaled by total sale Financial constraints (FConst) measured with the help of KZ index [1] is our main independent variable. The asset's turnover (ATR) is calculated with the help of sales to total asset minus receivables. Gross profit margin (GPM) measured

Table 1

Variable Definitions

Variable	Abbreviation	Definition
Trade Credit	TC	The sum of accounts receivables and payables scaled by total sales
Financial Constraint	FConst	Measured with the help of KZ index
Asset turn over	ATR	Calculated as sales to total asset minus receivables
Sales Growth	SG	Change of sales with respect to its previous year
Size	Size	Natural logarithm of total asset
Gross profit margin	GPM	Ratio of gross profit to sales
Long term debt	LTD	Ratio of long-term debt to total assets
Purchases	PUR	Ratio of purchase of raw material to total assets
Internal financing	IF	Calculated by net profit plus depreciation divided by sale
Cost of financing	FC	Calculated as financing cost divided by total liabilities minus payables

Source: Previous literature.

Table 2

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TC	696	0.290	0.340	0.002	2.380
Fconst	695	–4.269	11.170	–78.79	44.857
ATR	696	1.481	1.278	0.142	8.764
GPM	696	0.230	0.163	–0.179	0.919
LTD	696	0.085	0.109	0	0.780
PUR	696	0.558	0.632	0	5.035
IF	696	0.129	0.130	–0.416	0.762
FC	695	0.066	1.674	–29.722	23.781
SG	634	0.160	0.430	–0.510	5.610
Size (in Rs Mn)	696	68118.22	102495.69	801	766597

Source: STATA-14.

with ratio of gross profit to sales. Long term debt (LTD) is calculated as Ratio of long-term debt to total assets. Purchases (PUR) are calculated with the help of ratio of purchase of raw materials to total assets. Internal Financing (IF) is calculated by net profit plus depreciation divided by sale and financing cost (FC) is calculated as financing cost divided by total liabilities minus payables. Size measured with the help of log of total assets and Sales Growth (SG) Change of sales with respect to the previous year are control variables.

Fixed Effects Regression of Net Trade Credit over Financial Constraints

Table 5 shows the results of our fixed effects model, where trade credit (TC) has been estimated as the sum of accounts receivables and payables; scaled by total sale financial constraints (FConst) measured with the help of KZ index is our main independent variable. The asset's turnover (ATR) is calculated with the help of sales to total asset minus receivables. Gross profit margin (GPM) measured with ratio of gross profit to sales. Long-term debt (LTD) is calculated as Ratio of long-term debt to total assets. Purchases (PUR) are calculated with the help of ratio of purchase of raw material to total assets. Internal Financing (IF) is calculated by net profit plus depreciation divided by sale and financing cost (FC) is calculated as financing cost divided by total liabilities minus payables. Size is measured with the help of log of total assets and Sales Growth (SG) Changes of sales with respect to its previous year are control variables.

The results of the fixed effects model in *Table 5* show a positive relationship between our measure of financial constraints and trade credit. This finding is consistent with our expectation that firms use more trade credit when they are financially constrained to finance their operations [5]. This is because financially constrained firms are those that usually have limited or no access in the long-term debt market and largely rely on short-term financing alternatives. Further shows that the assets turnover ratio (ATR) is negatively related to trade credit. This shows that firms with high asset turnover make less use of trade credit as a channel to finance their operations. We believe that this is because those firms have sufficient cash from its internal funds instead of costly alternative trade credit. This finding is consistent with [25].

Moreover, we found that gross profit margin (GPM) is positively related to trade credit. This indicates that firms with higher gross profit margins tend to provide more financing to their customers in the form of credit sales to sustain a steady growth in sales as also highlighted in [38]. Most production firms receive trade credit payable in terms of raw materials from their suppliers to increase their production. They also lend trade credit receivable to their customers for sales growth to save inventory storage costs and finance their production through credit sales [29]. Further, *Table 5* shows a negative relationship between trade credit and long-term debt (LTD). These findings suggest that firms having access to long-term debt market use less trade credit as a channel to finance production because as compared to long-term debt, trade credit is a costly source of financing. Therefore, those firms use less costly alternative sources of financing to finance their operations instead of trade credit channel. Furthermore, firms that have access to capital and long-term debt have a good market reputation. Due to their market reputation, those firms easily obtain long-term debt to finance their operations.

Table 5 shows a negative relationship between trade credit and purchases (PUR). This negative relationship shows that sample firms might be using internal funds to procure their raw materials for production instead of using costly trade credit. Moreover, internal finance (IF) has a negative association with trade credit. These findings propose that firms that have sufficient internal financing use less external financing for their operations [39]. These findings suggest that sample firms use internal finance for procurement and growth. Further, in *Table 5* sales growth (SG) and size have a negative relationship with trade credit. This shows that larger firms and firms with a steady growth in sales might rely less on trade credit to finance operations. This is because they have access to other, better alternatives and less costly options to finance growth.

CONCLUSION

We analyzed the impact of financial constraints on firms' trade credit. We argued that financially constrained firms use trade credit as a channel to finance their operations. Our main argument is that it is not only accounts receivable or accounts payable that affect firms performance individually; rather, both are important in combination to affect a firm's performance. We proposed that the firms' financial policies, as suggested by previous literature and theories of capital structure, change with respect to growth opportunities.

We measured the degree of a firm's financial constraints with the help of the KZ Index [1]. The KZ index is a relative measure of level of financial constraints. Firms with a higher the KZ index score are considered more financially constrained. In order to test the relationship with trade credit, panel data from non-financial Pakistani firms from the KSE-100 index over a period of 11years from 2009 to 2019 was

Table 3

Fixed Effects Vs Random Effects Regression of Net Trade Credit over Financial Constraints

VARIABLES	Fixed Effects	Random Effects
Fconst	0.259**	0.224**
	(0.114)	(0.111)
ATR	−9.407***	−5.604***
	(1.959)	(1.725)
GPM	79.88***	69.35***
	(14.21)	(13.60)
LTD	−30.85***	−34.32***
	(11.38)	(11.40)
PUR	−7.820**	−4.860
	(3.764)	(3.355)
IF	−54.45***	−56.85***
	(14.63)	(14.50)
FC	−0.340	−0.390
	(0.431)	(0.443)
SG	−0.0356**	−0.0392**
	(0.0181)	(0.0185)
Size	−3.950**	2.713
	(1.998)	(1.687)
Constant	109.4***	−10.00
Observations	696	696
Number of Firms	66	66

Source: STATA-14.

Note: Standard errors are in parentheses, ***p < 0.01, ** p < 0.05.

used. Our choice of the Pakistani market provided us with a natural laboratory and allowed us to test the relationship between net trade credit and financial constraints because firms in emerging markets are usually characterized by less developed credit markets and limited access to external capital; therefore, they are financially constrained and dependent on trade credit.

Our findings suggest that financially constrained firms use trade credit as a channel to finance growth. Gross profit margin (GPM) has a positive relationship with trade credit. This indicates that firms with higher gross profit margins tend to provide more financing to

Table 4

Hausman Test Results

Statistic value	Value
Chi-square test value	46.592
P-value	0.0000

Source: STATA-14.

Table 5

Fixed Effects Regression of Net Trade Credit over Financial Constraints

VARIABLES	Fixed Effects
Fconst	0.259**
	(0.114)
ATR	−9.407***
	(1.959)
GPM	79.88***
	(14.21)
LTD	−30.85***
	(11.38)
PUR	−7.820**
	(3.764)
IF	−54.45***
	(14.63)
FC	−0.340
	(0.431)
SG	−0.0356**
	(0.0181)
Size	−3.950**
	(1.998)
Constant	109.4***
	(35.63)
Observations	696
Number of Firms	66

Source: STATA-14.

Note: Standard errors in parentheses, ***p < 0.01, ** p < 0.05.

their customers in the form of credit sales to sustain a steady growth in sales. Most production firms receive trade credit payable in terms of raw materials from their suppliers to increase their production. They also lend trade credit receivable to their customers for sales growth to save inventory storage costs and finance their production through credit sales. On the other hand, we also found that the asset turnover ratio is negatively related with trade credit. This shows that firms with high asset turnover make a lesser use of trade credit (payables and receivables) to finance growth. We believe that this is because those firms have sufficient cash to finance growth from their internal financing instead of costly alternative trade credit. Moreover, we found that. Overall, our findings suggest that financially constrained firms in developing countries, such as Pakistan, may prefer using trade credit as a channel to finance growth opportunities.

The study opens doors for a number of future research directions. First, some firms do not have access to capital markets, so they are limited to only using trade credit because they do not have more options to finance firm's operations. Future research should consider this factor by devising a mechanism to identify such firms and then test the association. Second, the firm's life cycle should be taken into account in future research because firm financial policies vary at different stages of the firm's life cycle. Finally, the effects of corporate governance factors must also be considered in future research.

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