Effects of Firm Specific and Macro-Economic Factors on Trade Credit Supply: The Case of a Developing Country

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Abstract

This study answers the call of understanding trade credit determinants and consequences in different cultures and economic setups in order to be able to devise policies. Trade credit is the separation between the delivery of goods and their payments. It is affected by two types of factors including firm specific characteristics and macroeconomic conditions. This study investigates the following firm specific variables such as firm size, liquidity, product quality, price discrimination and macroeconomic conditions viz GDP. Data have been collected for trade credit supply determinants of non-financial firms listed in Karachi Stock Exchange, Pakistan. The number counts for 156 firms in 13 sectors with 11years data from 2001-2011. The results show that all the variables are significantly related to trade credit supply as hypothesized.

Keywords: Trade Credit, Financial Policy, Industry sectors, Non-financial Firms, Pakistan

1. Introduction

Organisations seek various means to finance their capital needs. Theorists has classified two major types of financing modes, naming long term financing and short term financing. Constraints in accessing expensive bank short term loans make other modes of short term financing more attractive. These problems are mainly due to the agency costs and information asymmetries as suggested by the economic theorists. Short term financing resolves these issues making it preferable or substitute to bank financing.

Trade credit, as explained by Martínez-Sola *et al*. (2012) is an arrangement between a seller and a buyer allowing an exchange of goods with deferred payment terms. Hence trade credit is an important source of financing for firms, especially for the small and medium sized firms (Boyery and Gobert, 2007).Trade credit when appears on the assets side of the balance sheet is called accounts receivables (trade credit supply). Alternatively, when trade credit appears at the liability side, it is referred as accounts payable (trade credit demand). Trade credit enhances efficiencies on both sellers' and buyers' part by smoothing out the uncertainties in delivery cycles and simplifying cash management (Schwartz, 1974).

Trade credit and bank loans are considered as substitute to each other as in tight monetary conditions, the share of trade credit in external financing policy is increased as compared to banks loans (Guariglia and Mateut, 2006).

Financial advantages that add to supply of trade credit enlists as the suppliers can easily and efficiently evaluate the financial standings and creditworthiness of their customers from close business ties and the power they possess over their customers by controlling the supply of goods in case of late payments or default (Ono, 2001). Further Smith (1987) argues that the firms forgoing the discount signals for a weak financial standing and calls for close monitoring by suppliers.

Further, Wilson and Summers (2002) suggest that trade credit proves to be an important marketing tool. The logic is that trade credit could be used to build business relationships in a new market and new entrants could earn success more easily as compared to building their reputation after years of hard work and marketing their products.

It is for these and many other positive reasons that evidence proves of strong use of trade credit in many developed and

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developing economies. The aggregate volume of trade credit was a significant part (17.8%) of total assets for all American firms in the early 1990s (Rajan and Zingales, 1995), while in the United Kingdom 70% of total short-term debt and 55% of total credit received by firms is made up of trade credit (Kohler *et al*., 2000; Guariglia and Mateut, 2006). Trade credit represents more than a quarter of total corporate assets in France, Germany and Italy and it is also important in emerging economies, like China, where firms get limited support from the banking system (Ge and Qiu, 2007). The gap of research remains when the trade credit literature is sought for Pakistan. No study till date had carried out a detailed analysis of the factors effecting trade credit supply in the various industries listed via large firms on Karachi Stock Exchange, the country's largest stock exchange. Main objectives of this paper are to explore the major factors that determine the level of trade credit in listed non-financial firms of Pakistan and to look at the pattern of trade credit use in different sectors of economy of Pakistan.

Martínez-Sola *et al*. (2012) call for a research on trade credit and firm characteristics in different cultures, as culture have a profound effect on the factors that govern the patters of trade credit. This research will contribute to the literature regarding the factors that influence the optimal quantity of trade credit supply in a developing country.

The remainder of this paper is planned as section 2 reviews the literature that leads us to the gap in the literature and building of hypotheses. Section 3 discusses the sample and empirical methodology. Section 4 reports the results with the analysis and lastly section 5 concludes the study and discusses the implications of the findings.

2. Literature Review

Many researchers have investigated the determinants of trade credit with respect to their countries to analyze the importance and use of trade credit (Niskanen and Niskanen, 2006; Cheng and Pike, 2003; Petersen and Rajan, 1997).

In every corporate financing policy trade credit always performs a significant job. Funds involved in trade credit supply have always been considered as an investment in current assets. According to Giannetti *et al*. (2003) account of trade credit supply stands as a quarter of total assets in balance sheet of European firms. Trade credit is the major source of external financing in underdeveloped countries because they have less access to standardized capital markets (Beck *et al*., 2008; Ge and Qiu.,2007). Creditworthy firms use trade credit as an external source of financing and find it cheaper because they always seek a discount in early payments to suppliers (Giannetti *et al*., 2003).

Jain (2001) argued that trade credit act as a second flash cover between the relationship of financial institutions and businesses. In case of inefficient financial market it is quiet beneficial for buyers and suppliers to use this second layer to meet their external financing needs (Frank and Maksimovic, 2004). Firms having less credible relation with financial institutions involved more in credit transactions and have enough amount of trade credit in their balance sheet than the firms having good association (Petersen and Rajan, 1994, 1997).

2.1. Theoretical Background

Literature on trade credit has tried to find out the motives at work in the supply and demand of trade credit. The theories that address some of these motives have explained below.

2.1.1. Financial Models

Trade credit serves as a monitoring tool for the product quality and shortens the informational asymmetries (Smith, 1987; Long *et al*., 1993; Pike *et al*., 2005), regarding the quality of the delivered product between buyers and suppliers. This specially is of importance in a scenario where product quality verification needs longer time period (Smith, 1987). Thus trade credit serves as a means to guarantee product quality by the suppliers (Lee and StoI, 1993; Long *et al*., 1993; Deloof and Jagers, 1996) and buyers could use trade credit as a mechanism to control purchased product quality (Smith, 1987; Long *et al*., 1993). Due to this very reason, trade credit helps in shaping the buyer supplier relationship towards a long term orientation (Ng *et al*., 1999; Wilner, 2000). This motive leads us to investigate the proxy for product quality i.e. TURN over of sales. This means that more the sales turnover, lesser would be the supply of trade credit because this would be the case when the product quality is not good or according to the buyers requirements. So the first hypothesis would suggest;

H_1: There is a negative relationship between TURN and trade credit supply.

2.1.2. Price Discrimination Theory

Trade credit is also used as a tool to design product pricing by sellers and thus, enhancing product demand. This could be done in two ways; either increasing cash discount or by extending credit period that ultimately results in hype in sales (Pike *et al*., 2005). All these setups result in price discrimination applied by sellers. As the theory of price discrimination put forward by Petersen and Rajan (1997) there are two types of customers; one who would make an early payment for their purchases and the other who would delay it due to Oak standings thus the price discrimination allows suppliers to provide the facility of payment to both the customers. This theory of price discrimination is widely supported in trade credit literature (Garcia-Teruel and Martinez-Solano, 2010a; Guariglia and Mateut, 2006).

From this theory I have drawn the variable of price discrimination which is also the measure of market power. Firms having unique products and larger operating margins may generate additional cash flows by offering their additional units to customers having Iak financial standing on credit. As the strong customers may pay early against the Iak ones, firms are thus able to discriminate price easily. This leads to the hypothesis;

H_2: There is a positive relationship between price discrimination and trade credit supply.

2.1.3. Transaction Cost Theory and Inventory Management Model

Another theory put forward by Ferris (1981) suggests that trade credit could also be used a means to reduce transaction costs. Theory suggests that as the suppliers are able to separate items sold from cash in return, they could thus manage their future cash inflows and hence do not need to withhold surplus deterrent cash. Inventory management model developed by Bougheas *et al.* (2009) speak of the two variables naming liquidity and size of the firm in determining the level of trade credit supply. They argue that producers produce goods, either sell finished goods or hold them in inventory at cost and thus play a role in the credit chain as middle men. Inventory management model was developed by Bougheas *et al*. (2009). It appears that firms having liquidity issues would extend more trade credit to their customers in order to have accounts receivables mounted which they may then use as assets or collaterals to banks. Hence the hypothesis regarding liquidity and trade credit supply is as following;

H_3: There is a negative relationship between liquidity and trade credit supply.

Further, the inventory management model speaks that large firms do not face liquidity issues and do not have much storage cost of holding inventory like the small firm. This fact leads the small firms to resolve their issues of liquidity and inventory cost by granting more trade credit. Also as argued by Long *et al*. (1993) large firms normally have good reputation and creditworthiness so they have the capacity to get financing from any other source. They have less incentive to involve in credit sales and they have no need to provide the guarantee for their products (Long *et al*., 1993). Hence I postulate the hypothesis regarding firm's size as follows;

H_4: There is a significant relationship between firm size and trade credit supply.

2.1.4 Macroeconomic Conditions

A macroeconomic factor is gross domestic product. Smith (1987) and Walker (1991) advocates that the level of account receivables is settled on the circumstances of economy. Firms normally increase the use of trade credit under the conditions of deteriorating in gross domestic product (Niskanen and Niskanen, 2006). Therefore, I postulate the last hypothesis as under;

H_5: There is a negative relationship between gross domestic product and trade credit supply

Table 4 in the appendix contains the variables of this study along with their definitions and sources.

3. Data and Econometric Methodology

3.1. Data

I have used eleven year's data from 2001 to 2011 for analysis of determinants of trade credit supply. Major part of data has been extracted from Balance Sheet Analysis (BSA) and Financial Statement Analysis (FSA) published

by State Bank of Pakistan (SBP). Secondly, data have been extracted directly from the financial statements of non-financial firms listed at Karachi Stock Exchange (KSE). During the analysis, firms which did not provide the complete information regarding trade credit supply and other variables were excluded. Firms having missing and extreme values of assets and liabilities were also excluded. To get better results, firms which did not have consecutive six year's data were also excluded. Finally, 156 non-financial firms from 13 sectors with 1397 number of observations have been included.

Table 1 shows the industrial distribution and their contributions in overall sample selected.

Table 1: Industrial Frequency Distribution

No.	*Industry*	*Frequency*	*Percentage*
D1	Textile	63	40.38%
D2	Chemicals, Chemical Products and Pharma.	19	12.18
D3	Manufacturing	13	8.33
D4	Cement	10	6.41
D5	Motor Vehicles, Trailers and Auto parts	10	6.41
D6	Other food products	9	5.77
D7	Sugar	8	5.13
D8	Paper, Paperboard and Products	7	4.49
D9	Fuel and Energy Sector	6	3.85
D10	Mineral products	3	1.92
D11	Refined Petroleum Products	3	1.92
D12	Information, Comm. and Transport Services	3	1.92
D13	Services Activities	2	1.28
	Total	156	100

Table 1 clearly shows that 63 firms belong to the major textile sector of Pakistan. Services sector belongs to the smallest portion of the above mentioned distribution.

Table 2 provides the statistic summary along with correlation matrix of variables. It has been observed that mean values are closer to their median. It shows that extreme values do not exist in the ratios of these variables. Moreover I can observe that there is not a pronounced variation in data. TCS and TURN have a greater variation than any other variable. To check the correlation among variables a Pearson correlation test has been conducted.

Table 2: Descriptive Statistics and Correlation Matrix

	Mean		*Median*	*Variance*	*Standard Deviation*	
TCS	1.9265		0.1000	27.8450	5.2769	
GDP	8.4836		8.4900	0.0300	0.1722	
LIQ	0.0913		0.0200	0.1410	0.3758	
PD	0.0677		0.0500	0.0160	0.1279	
SIZE	7.5345		7.4600	2.7320	1.6529	
TURN	-1.8287		-0.1400	34.3510	5.8609	
	TCS	GDP	LIQ	PD	SIZE	TURN
TCS	1	-0.329	-0.022	-0.010	-0.195	-0.525
GDP		1	-0.072	-0.055	0.234	0.090
LIQ			1	0.009	-0.138	-0.005
PD				1	0.327	0.030
SIZE					1	-0.137
TURN						1

Trade credit supply (TCS) is the ratio of account receivable over sales. It has a negative relationship with all other variables. GDP is gross domestic product and can be measured as by taking the log of the annual values of GDP. It has negative relationship with TCS, LIQ and PD and has a positive relationship with SIZE and TURN. LIQ is liquidity ratio can be measured as firm liquid assets to total assets. Liquidity has a positive relationship with price discrimination but negative with all other variables. Price discrimination (PD) is operating margin to sales. Price discrimination has negative correlation with TCS and GDP but negative with other variables. SIZE can be calculated as natural log of book value of assets. SIZE has a positive correlation with GDP and PD but negative with TCS, TURN and LIQ. TURN is a proxy for product quality and calculated as sales over assets deducting receivables. TURN is positively correlated with PD and GDP but negatively correlated with LIQ, SIZE and TCS.

3.2. Econometric Methodology

In order to check the violation of ordinary least square assumptions I have performed different tests to check the problems of Heteroskedasticity, Autocorrelation and Multicollinearity. To look at the problem of heteroskedasticity in the residuals of fixed effect model, I have performed the Wald test. Significance of the Wald test is clearly showing that there exits the problem of heteroskedasticity. By looking at the variance inflation

factor (VIF) it appears that problem of multicollinearity does not exist because all variables have VIF less than ten. To look for autocorrelation among error terms, Wooldriged test has been applied for AR(1) process. Significant value of Wooldriged test is clearly indicating the presence of autocorrelation.

Generalized Methods of Moments (GMM) have been used to get appropriate results. This methodology has previously been used in numerous studies in order to serve its purpose of dealing with non-linearity models and unified estimation technique (Garcia-Teruel and Martinez-Solano, 2010b; Cunat, 2007; Bougheas *et al*., 2009). Trade credit supply data happen to have the problem of endogeneity very often and OLS fails to address this problem (Rodriguez-Rodriguez, 2006). Hence as suggested by Cunat (2007) GMM is the best approach to be opted to take care of this problem and to solve the issue of correlation between independent variables and error term.

The study carried out by Garcia-Teruel and Martinez-Solano (2010b) provides us with an example to use GMM in this research as the authors has dealt with a dynamic panel data and they suggest that the problem of autocorrelation do exist among random errors, thus OLS is not suitable to use. The static model for trade credit supply is given as

$$TCS_{it} = \beta_0 + \sum_{i=1}^{5} \beta_i X_{it} + \varepsilon_{it} \quad (1)$$

where TCS_{it} is trade credit supply of ith firm at time t and α is the constant term. X_{it} is a vector of explanatory variables comprises firm specific and macroeconomic variable at time t. β_i is the vector of coefficients and ε_{it} stand for error term. By including explanatory variables in the equation (1) it could be written as

$$TCS_{it} = \beta_0 + \beta_1 LIQ_{it} + \beta_2 PD_{it} + \beta_3 SIZE_{it} + \beta_4 TURN_{it} + \beta_5 GDP_{it} + \varepsilon_{it} \quad (2)$$

By using the panel data method I have estimated the proposed model of trade credit supply to elude the problems of endogeneity and heterogeneity. Trade credit supply may depend on some specific firm characteristics. Panel data method pedals this distinct heterogeneity. Problem of heterogeneity may lead towards biased estimates. φ_i is used to control this distinct effect of heterogeneity. The error term can be divide into three groups of firm specific effect, time specific effectand the random error term, can be represent as φ_i, τ_t and ε_{it} respectively.

$$TCS_{it} = \beta_0 + \beta_1 LIQ_{it} + \beta_2 PD_{it} + \beta_3 SIZE_{it} + \beta_4 TURN_{it} + \beta_5 GDP_{it} + \varphi_i + \tau_t + \varepsilon_{it} \quad (3)$$

Sometimes dependent variable may depend on some of its own lagged values and so the problem of endogeneity is expected to arise. As Blundell and Bond (1998) state that in order to derive the system estimator one may take all the right-hand-side variables ranging from the lag value of t-1 to t-4 and thus determine as instruments in difference's equation and also one for the equation in level.By taking the problem of endogeneity and heterogeneity into consideration, the dynamic panel model is as follows

$$TCS_{it} = \beta_0 + \beta_1 TCS_{it-1} + \beta_2 LIQ_{it} + \beta_3 PD_{it} + \beta_4 SIZE_{it} + \beta_5 TURN_{it} + \beta_6 GDP_{it} + \varphi_i + \tau_t + \varepsilon_{it} \quad (4)$$

According to Harlin (2010), if lagged dependent variables become an explanatory variable as well then problem of endogeniety occur, in other words, explanatory variables do not remain strictly exogenous any longer. Hence Least Square Dummy Variable proofs deficient to get the results and so, Generalized Method of Moments (GMM) is used to solve the issue.

We have also found the misspecifications related to estimated model. Hansen J-Statistic has been used to check the non-existence of correlation among error terms and instruments.

4. Estimation Results

In this study two separate equations for trade credit supply have been estimated. In first case I analyzed equation containing only firm specific and macroeconomic variables. Later by including the dummy variables the relationship between explanatory variables and trade credit supply is investigated.

Table 3 represents the empirical findings of estimated model. First column represents the adjusted coefficients and standard errors in parentheses. Column 2 shows their p-values. Results report the value of R^2 that is 44.5 percent. The value of adjusted R^2 is almost equal to the value of R^2. J-statistic is indicating towards the validity of instruments.

The first firm specific variable of TURN is in line with the hypothesis confirming a negative relationship with trade credit supply and it is significant at p-value<0.01. Turn is used as proxy for quality of the product being offered on credit as stated by Garcia-Teruel and Martinez-Solano (2010a). They further argue that lower values of

turn represent high quality of products and hence, firms with high quality products would grant more trade credit to convey the quality to their customers. The empirical findings of Li (1997) also support the negative and significant relationship of turn with accounts receivables.

The result for the second hypothesis of price discrimination (PD) turns out to be highly significant with the p-value of 0.0003 and is positively related to trade credit supply. This is as according to my hypothetical postulation supported by the theory of price discrimination proposed by Petersen and Rajan (1997). Also the empirical study of Niskanen and Niskanen (2000b) provides evidence in the support of the results of this study. Niskanen and Niskanen argue that account receivables of large firms are due to their huge contribution margin which suggests that price discrimination is used by large firms.

Further, liquidity (LIQ) is indicating a negative and significant relationship with trade credit supply as hypothesized. The results are in line with the liquidity and trade credit supply relationship addressed in the inventory management model. The inventory management model developed by Bougheas *et al*. (2009) speaks of the two variables naming liquidity and size of the firm in determining the level of trade credit supply. They argue that producers produce goods, either sell finished goods or hold them in inventory at cost and thus play a role in the credit chain as middle men. This could be explained by the fact that the producers who are not certain about their products demand would be at ease to offer trade credit to customers with financial constraints. This would result in enhancing sales rather than accumulate costly inventories. This mechanism is only appropriate for firms facing liquidity issues in managing their own obligations, which they could resolve by extending trade credit to its customer thus having twofold benefits; generating cash and also enhancing product demand. Thus firms with higher liquidity issues would extend more trade credit than those with enough liquidity to manage their affairs. Hence, I will not reject the hypothesis regarding relationship between liquidity and trade credit supply.

Last firm specific variable size of the firm is significant and negatively related to trade credit supply at p-value 0.0000. This shows that large firms do not carry out credit sale transactions. These results confirm the empirical findings of Wilson and Summers (2002) who state that young and small firms use trade credit supply as a means to assure their quality and build their reputation among potential customers in order to increase their market share. Also the empirical literature states that as large firms have already built their reputation in the market and their customers are by now aware and satisfied with their quality hence they offer less trade credit to customers (Long *et al*., 1993).

The negative sign of firm size with trade credit supply can also be justified in this study by the Diversion value theory put forward by Burkart and Ellignsen (2004). They argue that buyers may divert bank loans instead of purchasing inputs for their projects. Buyers may take inputs on credit and may complete their projects rather having bank funding. Moreover it is useful for the sellers to extend trade credit as they may use the accounts receivables as collateral for the bank funding. This theory has been used by Giannetti *et al.* (2003) in providing evidence that the producers of standardize goods have less incentive to offer trade credit than the producers of differentiated goods. In case of repayment failure, repossessed goods are of more value to the supplier than to the bank and this is more pronounced in the case of a differentiated product than a standardized one. As the sample in this study consists of the firms which are listed in KSE index and are producing standardized goods.

Table 3: GMM Results

	1	*2*	*3*	*4*
Constant	46.30661 (5.249271)	0.0000	45.14962 (5.259830)	0.0000
LIQ	-1.041878 (0.296964)	0.0005	-0.598968 (0.309262)	0.0530
PD	3.028585 (0.831351)	0.0003	3.050623 (0.894592)	0.0007
SIZE	-0.723527 (0.062942)	0.0000	-0.666293 (0.067115)	0.0000
TURN	-0.482397 (0.016122)	0.0000	-0.496525 (0.016563)	0.0000
GDP	-4.740663 (0.626072)	0.0000	-4.752222 (0.621555)	0.0000
TCS(-1)	0.462314 (0.021293)	0.0000	0.450114 (0.021293)	0.0000
D1			1.192197 (0.795138)	0.1340
D2			0.658030 (0.875716)	0.4525
D3			1.271075 (0.871598)	0.1450

	1	2	3	4
D4			0.894144 (0.825935)	0.2792
D5			0.575274 (0.842057)	0.4946
D6			0.595650 (0.859313)	0.4883
D7			0.065449 (1.017844)	0.9487
D8			0.353406 (0.859151)	0.6809
D9			-1.505992 (0.921403)	0.1024
D10			-0.600659 (1.020074)	0.5561
D11			0.236093 (1.039092)	0.8203
D12			0.266869 (0.888319)	0.7639
J-statistic114.04 (98)			J-statistic126.08 (115.02)	
Adjusted R-Square 0.4430			Adjusted R-Square 0.4590	

Variables are significant at 0.01 and 0.05 level of significance.

Results could have shown a positive relationship of size of the firm with the trade credit supply if this study would have included the producers of differentiated goods not listed in KSE index. Thus the product nature could prove to be a good avenue for future research in context of Pakistan. As far as this study is concerned I will not reject the hypothesis of having a significant relationship between firm size and trade credit supply which is negatively related to each other.

Lastly, the macro-economic variable Gross Domestic Product (GDP) shows a negative relationship with trade credit supply. That is significant at p-value<0.01. Niskanen and Niskanen (2006) also build the same argument that accounts receivable also have an inverse relationship with macroeconomic conditions. This study suggests a line of thought for these results as when country's GDP decreases, every industry gets affected due to this decrease. As a result, banks will also not be in a position to grant loans. When bank loan would not be available to customers at that time they will move towards another channel of financing as a result account receivables would increases. On these grounds I would not reject the hypothesis.

To check the effect of industry dummy variables second models have been estimated. Columns 3 and 4 of Table 3showthe results of GMM estimation after including industry dummy variables. P-values are clearly showing that all the explanatory variables are significant and their signs of coefficients remain same in twelve industries. Thirteenth dummy has used as reference dummy in the analysis. All the dummy variables are insignificant which concludes that there is noeffect of industry dummy variables on trade credit supply. However, some authors (Ng *et al*., 1999; Burkart *et al*., 2005) have reported wide variations in the usage of trade credit supply across industries. This may be due to cultural differences that in some countries trade credit supply is not counted as a preferable mode of financing. Evidence for this reasoning could be reported from Vaidya (2011) that trade credit supply is equally significant as bank credit in Indian industries.

5. Conclusion

The study adds to the literature by analyzing the determinants of trade credit supply in context of Pakistan. Many studies has called for this literature gap that trade credit practices should be studied in different cultures in order to have insights into the different patterns prevailing across the nations (Solano *et al*., 2012). Thus this research has tried to sort the supply side of trade credit prevailing in Pakistan. Furthermore, I have used the variable of liquidity which has not been previously used by other authors expect for the ones who put forward its theory. Results give strength to the inventory management model postulated by Bougheas *et al*. (2009) that liquidity is important in determining the level of trade credit supply. This study has found that firms with greater size enhance their sales without much getting involved in credit transactions. It is also observed that the firms with low quality products not need to get involved in credit transaction. As they are scared from losing their customers after measure the quality of their products they grant less trade credit. In case of deteriorating gross domestic product non-financial firms of Pakistan practices more credit sales.

This study gives important insights to the industry players in a way that the firms may decide on their trade credit patterns while considering the firm specific characteristics. By this I mean that as firms whose products require more time to verify the quality may give extended credit periods in order to build strong relationship with their customers. Further, firms that are facing liquidity issues may take trade credit as a tool in order to build their current assets and this may serve collateral to get bank loan. Last but not the least; trade credit could be used as an inventory management practice as the units that require storage cost could be dealt profitably by issuing them on credit.

For future directions, first and foremost, trade credit demand side should be explored in the industrial sectors in Pakistan in order to develop an understanding of the equilibrium equation for trade credit patterns in this country. Secondly, a very wide part of our economy stays out of research area which consists of the non-listed firms and they do not maintain their financial statements in a proper manner. One such research would use primary data from these market players and may bring up the invaluable insights in to the trade credit patterns at work.

Appendix A: Summary of Variables

Table 4: Dependent and Independent Variables

Variables	*Definitions*	*Source*
Trade Credit Supply (TCS)	Account receivables to total sales	Petersen & Rajan (1997)
Liquidity (LIQ)	Firms liquid assets to total assets.	Transaction Cost theory and Inventory Management Model Bougheas *et al*. (2009)
Price Discrimination (PD)	Operating margin to sales	Price Discrimination Theory Petersen & Rajan (1997)
SIZE	Natural log of book value of assets	Inventory Management Model Bougheas *et al*. (2009)
TURN	Equating to sales over assets	Financial models Garcia & Solano (2010a)
Gross Domestic Product (GDP)	Measured it by taking the log of annual figures of GDP.	Macroeconomic Conditions Niskanen & Niskanen (2006)

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