

Trade Credit in Non-Financial Firms of Pakistan:

A Quantile Regression Approach

By

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DEPARTMENT OF BUSINESS STUDIES

PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS, ISLAMABAD

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CERTIFICATE

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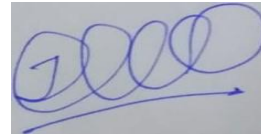
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This is to certify that Bilal Mustafa Hashmi has incorporated all observations, suggestions and comments made by the external evaluators and thesis Supervisor. The title of his Thesis is: Trade Credit in Non-Financial Firms of Pakistan: A Quantile Regression Approach.



Dr. Jaleel Ahmed Malik

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Dedication

*Dedicated from core of my heart to my beloved parents Mr. & Mrs. Khurshid
Ahmed Hashmi for their support in all aspects of life and my most respected teacher
Dr. Jaleel Ahmed Malik for technical and ethical support.*

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List of Abbreviations

TC	Trade Credit
LTD	Long-term debt
STD	Short-term debt
NETPROF	Net Profit
AGE	Age of the Firm
SIZE	Size of the Firm
CURRAS	Current Assets
SG	Sales Growth

Abstract

This study analyzed the determinants of trade credit in non-financial firms listed on the Pakistan Stock Exchange. This study emphasized on the relationship between trade credit and other financial resources such as self-financing and bank credit. The objective of the study was to use the Quantile Regression Approach to take into account the heterogeneity of firms in multiple quantiles of trade credit distribution. The study took into consideration the data of non-financial firms listed at the Pakistan Stock Exchange from a period of 2008-2016. The results reflect that for Short Term Debt, all the quantiles have a significant positive impact on Trade Credit. Where as in the Long Term Debt, the 5th and the 7th quantiles have a significant positive impact on Trade Credit. For profitability, the 7th, 8th & 9th quantile has a significant impact on Trade Credit. Similarly, other variables have been reported and discussed. The findings of this study help to have a better understanding of conflicting results of previous studies. It will also help the decision makers to analyze the trade credit with a different perspective. The results of this study show that the relationship between trade credit and other financial resources is not similar in every case.

Key words: Trade Credit, Quantile Regression Approach, Bank Credit, Self-financing

Chapter 1

1. Introduction

1.1 Background of Study

This chapter explains introduction and theoretical background of the study. The problem statement as well as Research Questions and Objectives have also been explained alongwith the significance of the study.

Trade credit is a kind of loan which is provided to a trader by another one at the time of purchase of goods on credit. It helps the purchase of goods without making any instant payment. Trade credit is generally used by many business organizations as a useful source of short term financing. Both supplier and buyer enter into an agreement to satisfy the requirements of each other which is called trade credit agreement. While facing liquidity problems and shortage of investment the customers becomes perilous and find it difficult to arrange funds, thus try to seek other ways of finance such as trade credit to meet their mutual interest.

Trade credit basically is an association among the buyers and suppliers of goods in a business. It is a form of contract in which the supplier issues goods on credit to the buyer on some pre-defined terms and conditions, to pay at some time later. Trade credit is extended for some specific number of days; however, these agreements can be further extended with mutual agreement of both the parties. In trade credit the buyer does not required to make immediate

payment. This sort of credit is ideal for the customers who have scarce resources available to run business smoothly.

According to the need of the business buyers require goods to run their businesses and suppliers on the other hand seek incentives to increase the sales as well as enhance the market share. Supplier already involved in the business are well aware of the situation being faced by the buyer. In trade credit cycle the buyer get then goods on credit from the supplier. With the mutual consent of both the parties, the supplier once agreed, delivers the goods on credit to the buyer after agreeing upon some terms and conditions. The buyer then pays back to the supplier the due payment upon which both the parties enter into a deal. Trade credit is being commonly used by firms now a days in order to meet their financial requirements and run day to day business.

The role of trade credit is pivotal role in corporate financing as well as in investment, and thus it flows like demand and supply channels from one to another. Especially when a country experiences financial crisis, trade credit has been witnessed as a very useful alternative of bank credit. It arises when there is a gap among supply of goods and their payments. Therefore, trade credit is said to be used as a short-term loan by the firms and customers. It is the most generally accepted method in the modern world as a facility for enterprises to easily obtain credit. According to Paul & Guermat (2008), trade credit is one of the significant financial instruments but researchers sometimes overlook this point. Earlier Brennan et al., (1988) defines the term "trade credit" a type of arrangement for the purchase of goods or services that does not require instant payment of cash.

In trade credit agreement, goods or services are issued by the supplier to buyer on specific terms and conditions, in which buyer has to pay at later date. Trade credit is allowed by supplier to

buyer for some predefined number of days extendable with the mutual understanding of both the parties. These purchases do not involve immediate cash payment. This sort of credit is extended to the customers facing shortage of funds in running their businesses smoothly.

This type of credit is mostly preferred by industrial firms of different countries. According to the survey, Finland manufacturing companies have, on average 9.7% receivables and 6.1 percent payable of their balance sheet items. Trade credit is one of a major source of capital in many business firms in US and also the largest use of capital in B2B.

Study of Ahmed & Khalid (2016) defines that it provides capital to firms which are not able to get funds by traditional channels. It is one of the core goals of firms to expand the business to make profit and also to remain in the market. Trade credit extends benefits to the supplier and buyer to expand their businesses and build long term relationship. Supplier provides goods to the buyers as they want to capture their business. Unlike the financial institutions, supplier can get the better information about the buyer and use it for controlling and monitoring the payments in a different way. Supplier have the provision to take back their goods and sell them to some other buyers. Countries like Italy, Germany and France have represented trade credit as firms' assets for last 25 years. Trade credit has been used as a very vital tool in many emerging economies such as China, where the firms can acquire inadequate resources from banks. According to trade credit contract, when supplier provides goods to the buyer, the buyer is quite often not in a position to pay at the spot and suppliers provide credit term to the buyer to pay at later date.

The financing modes are normally of two main types i.e. long-term financing and the other is short-term financing. The other modes of short-term financings becomes more attractive when there are complications in getting loans from banks. Trade credit which is an alternate source of

short-term financing helps in resolving such issues and make it better choice as an alternate of financing from banks. Trade credit and bank credit are normally considered as replacement of each other as in difficult financial conditions, the use of trade credit as a source of external financing has increased comparatively. Trade credit, as explained by Martínez-Solano (2013) is an agreement among the sellers and buyers by letting an exchange of goods with conditions of deferred payment terms. Trade credit is a term used commonly for supply or demand for goods on credit. In the balance sheet when it is appeared on assets side it is called accounts receivable or trade credit supply whereas, when it is appearing on the liability side of the balance sheet, it is said to be accounts payable or trade credit demand. Trade credit enhances effectiveness for seller as well as buyer by settling the uncertainties in delivery cycles and streamlining management of cash (Schwartz, 1974). The supplier has financial advantage in providing goods on credit as they can have an easy and efficient access to evaluate and understand the standings of their customers while having close business relationship. They can evaluate the financial positions of the customers to assess the condition in case of default of late payments. Trade Credit has also established as a vital tool of marketing. The reason is that trade credit is an effective way of building business connections for new entrants in the market they can get success easily instead of establishing a repute while struggling and marketing their products for long time. Due to such reasons it is quite evident that trade credit is being used in many emerging as well as developed economies.

As far as small firms are concerned use of such credit is a main source of financing. Financing options are limited for small firms as compare to large firms due to not having wide access to bond and equity markets. Apart from relying on borrowing from financial institutions, specially bank, small firms rely heavily on using trade credit. While making transactions, purchasing of

goods and services on credit basis is very common. Purchaser firm borrows goods and services on temporary basis from the supplier and liabilities like accounts payable are recorded till final settlement. As such credit is given by a trading partner, it is said to be trade credit. Trade credit plays pivotal role in arranging short-term financing for firms and reflects as a significant portion of liabilities of a firm. It is important to understand the relationship among trade credit and loans, to make short-term decisions regarding financing issues of firms. It is also important to understand about the changes in getting finances which actually put an impact on activities of firms.

Trade credit is alike short-term loans, upto some extent being provided by suppliers to their corporate customers under an agreement for purchasing their goods and to make the payment after some time. Trade credit is generated inevitably when a customer delays payment against their suppliers' bills. This type of credit is widely used by firms despite the fact that it is more costly as compare to borrowing from banks especially when customers do not use the discounts officer against early payments (Smith N. C., 1999).

The theories narrate the trade credit payable mostly to specific types of market imperfection, specially to asymmetric information prevailing in markets throughout product chain as well as to other forms of credit market friction (Petersen & Rajan, 1997). The banks are normally hesitant to provide loans to small firms as their monitoring may become a financial burden for them. As far as the suppliers are concerned, monitoring and negotiating costs may be less comparatively in context of an established and long-term relationship, since they regularly conduct business with such firms and have can cut off the supply to such firms or repossess the goods in case of default in repayments. The aforementioned advantages that a supplier has over a bank sometimes offer the supplier an opportunity to extend credit to the buyer even in such cases where the buyer does

not seem creditworthy to the bank. Practically, the use of trade credit payable and receivable differs significantly across countries, sectors of activity and sizes of the firm.

The size of the firm and its age are used as proxies for credit worthiness of the firms. Normally, bigger firms normally borrow more even having greater cashflows and lesser opportunities of growth. It shows that they are more creditworthy. The age of a firm indicates the length of its survival.

1.2 Problem Statement

In case of Non-financial companies of Pakistan, in order to overcome the problems of becoming a defaulter they need to build good relationships with financial firms. However, bank loan availability considered as a major issue for the firms which belongs to non-financial sector in the country. There exists a risk that the buyer company may not be able to get funds due to lack of security/collateral. As risk increases, buyers need to find other convenient and less time-consuming external sources of finance for business. Trade credit is the best way for companies where supplier already involved in business provides more help and support to businesses which are facing financial distress.

Trade credit considered as an expensive arrangement of financing but still the non-financial firms' balance sheet contains the major portion of the trade credit as supplier and buyers have their interests towards the use and issuance of trade credit. Trade credit is a tool of monitoring the product quality and serves the purpose to shorten the information asymmetry for the buyers. Also the issues of liquidity are resolved due to trade credit transactions between buyer and seller. Trade credit suppliers extend goods on credit which act as price discrimination for the buyer.

Therefore, raise problem statements as “increase in use of trade credit as a short-term loan due to borrowing constraints and risk faced by the borrower of banks”.

1.3 Research Question (s)

This study tries to answer following questions;

- Does Debt has any impact on Trade Credit?
- Does firm’s size of the firm has any impact on Trade Credit?
- Does firm’ Age has any impact on Trade Credit?
- What are the effects of Current Assets on Trade Credit?
- What are the effects of Growth of the firm on the Trade Credit?
- What is the impact of Net Profit of the firm on the Trade Credit?

Considering above question the main objectives of the study is to determine following relationship;

1.4 Research Objective (s)

The main objectives of this study are given herein below:

- To determine the impact of Debt on Trade Credit
- To find the relationship of Size of the firm with Trade Credit
- To find the relationship of Age of the firm with Trade Credit
- To determine the relationship of Current Assets of firm with Trade Credit
- To identify the relationship of Growth of firm with Trade Credit
- To identify the relationship of Net Profit of the firm and Trade Credit

1.5 Significance of the Study

Trade Credit is used as a vital tool by firms as an alternate of bank loan. Due to various constraints it is not easy to get the bank loan easily. It is used for financing growth in many businesses. Trade credit is a form of credit which is extended to the buyer by those suppliers who allow them to buy now and pay at any later time. Whenever, someone gets the goods delivery without paying any immediate cash, he is enjoying the facility of trade credit.

In start of any business normally the suppliers hesitate to provide cash on credit. They prefer to transactions through cash on delivery. However, with the help of proper finance plans the buyers can negotiate with suppliers to provide goods on trade credit terms. Trade Credit is a very vital and effective source of short-term financing for both buyers and suppliers. Trade credit used as a way of funding to effectively use resources and increase business sales. Trade credit helps in managing the business without disturbing other loan related issues. Furthermore, buyers can make direct transactions with the suppliers without having any problem of liquidity. In addition to financing, firms may also practice the trade credit in sales & marketing, and operations department for cash flow generations to maximize sales and growth. Firms when analyze the benefits of trade credit may create a policy for it in the business model for many advantages. Firms may also be interested in determining optimum level of trade credit that can be used for financing.

This study provides basis for setting up the level of trade credit to be maintained by the firms.

1.6 Plan of Study

The study consists of five chapters. In the first chapter introduction, research questions, problem statement, study objective and the significance of study is explained. The Chapter 2 defines the detailed literature review, theories, literature gap, conceptual frame work definition of variables and hypotheses development. The third chapter of study discusses the data and methodology which further divided into sub section with the headings of data, Research size, Selection of variables, General Equation and Specific Equation. The Chapter 4 is about results and discussion which further explored the descriptive stats, quantile regression results and quantile process estimates graphs. In the fifth chapter, the conclusion and future directions and limitations of study have been explained. The references which were used in study have been placed at the end of study.

Chapter 2

2. Literature Review

This section covers the review of the available literature. It caters to the multiple dimensions of the variables under study. The cited literature covers recent and historical studies for the purpose of literature development. This part of study covers the review of some previous literature regarding the variables and the analyses of the determinants of the trade credit in Non-Financial firms from a changed perspective. The work already done by various theorists and their findings about trade credit. The theoretical background of the topic has also been discussed in the chapter.

Non-financial firms have multiple ways to generate the need of their capital. However, according to the theories there are two major sources to generate the finance i.e. short-term and long-term. In business long-term financing mode is more favorable to generate the profit but it requires the huge investment. On the other hand, short term financing is relatively less profit generating but it gives the edge against the fall of the firms. When firms feel the risk, it should move to other viable ways of financing like short-term financing and it became more attractive for it. According to theory, most of the issues arise in the market due to availability of asymmetric information. The information asymmetries occur when some suppliers have more information about the product as compare to others. Due to this asymmetric information, opportunities are created for some of the suppliers to mold their ways of doing business to others in the same business.

Trade credit is an alternative source which resolves the issues relating to financing of short-term. It is a contract in which the seller come to an agreement to provide the goods/services to buyer and payment can be made at some later stage according to the mutually agreed terms and conditions of contract (Martínez-Solano, 2013). Therefore, trade credit is a vital mean for all sized firms especially for small firms. Petersen & Rajan (1997) explained different theories for the reason that stable firms can easily get the help from financial institutions but the unstable or small/newly entered in market firms have to find the other resources of financing that are useful for the business. Trade credit helps the buyer and seller to make the cash management easier and increase the efficiency. Trade credit is a best mean to check the creditworthiness and financial standing of the buyer. As explained by Ferris (1981) in trade credit theory, trade credit is a mean that used to reduce the attached cost with the transaction. Stated by Petersen & Rajan (1997) in early 1990 the trade credit is an important segment of balance sheet of all the American firms, 18% of total assets recorded as account receivable. According to their findings large firms borrow and lend more trade credit. Larger firms prefer to borrow more although their cash flow are higher and fewer opportunities of growth which indicates that they are more creditworthy.

Trade credit is a contract of demand and supply. On demand from buyer side the supplier provides goods accordingly. After completion of all the contract requirement, the buyers demand for goods as per his requirement and the supplier supply the goods as per contract.

The suppliers offer various discounts to buyers in order to attract them to pay within time specified in the contract. In most of the firms trade credit is being used as short-terms corporate debt. The supplier of the goods always expects to get full payment of his goods. The time period

requires for full payment can be defined in the contract. “Net 60” meant that according the agreement the payment is required to be made within sixty (60) days. The supplier offers some discount if full payment is made by the buyer during this specified period of sixty days. However, if the buyers fail to make full payment during this period, the supplier charges some late payment fee for his goods. Furthermore, the supplier has the advantage of taking his goods back in case the buyer is not in a position to make the payment. The supplier can sell his goods to some other buyers in this case. It is further added that if the buyer pays full amount in the given time, he can avail not only the discount but also get earlier delivery of goods in future due to a good relationship with the supplier

There is a two-way relationship between buyer and supplier as the buyers receives goods and show them as accounts payable whereas, suppliers provide the goods and show them as accounts receivable. From supplier’s point of view, trade credit has many advantages over bank financing. The main reason is that supplier is in a good position to get maximum information of the buyer’s firm. The liquidation risk of suppliers is very low as the goods trades are themselves strong collateral of the supplier.

Pedro J Garia-Teruel (2008) studied that problems like asymmetric information, moral hazards and adverse selection has a greater impact on commercial loan applications as compared to trade credit transactions. Small firms increase their market share with the help of trade credit. Further suppliers offer a lot of concessions and discounts to their buyers as compare to financial institutions such as banks. However, according to Dell G. Laevena (2014) searching for the right

seller at the right time itself is a problem and maintaining the relationship is another matter. For long-terms relationship it is natural for the supplier to allow the buyers to delay the payments.

Smith J. K.(1987) and Maksimovic (2008) explain that buyers are more likely to choose business-related contracts when dealing with trade credit contracts, however, it depends on their financial situation and business characteristics.

In UK, short-term debt observed as 70% account payable in balance sheet and 50% as accumulated debt of companies. According to the study of Burkart & T.Ellingson (2004) in France, Germany and Italy the trade credit is observed as a quarter of the corporate assets and in emerging economies where firms felt difficulty to get the bank loans like China (Ahmed, Xiaofeng, & Khalid, 2014). In trade credit, supplier has comparative advantage to collect the information easily and quickly about the customer than the financial institutions. We can say that suppliers have an informational edge over the financial institution.

Summers & Wilson (2002) explained trade credit as a tool to fulfill business aspects. The use of trade credit in transactions is beneficial for the new entrants in the business as they can gain good reputation and success by building new relationships in the market. As per Ono (2001) suppliers have advantage and power over the customers and they know the financial position of customer by managing and controlling the supply of goods. Smith J. K. (1987) stated that the discount issued to the buyer ultimately represent his weak financial position. While facing hurdles in accessing the financial institutions and being denied by them for extending the credit the firms

search to find other options. In this scenario this type of credit is extensively used by firms (Petersen & Rajan, 1997).

Trade credit is the most important source of external financing particularly in countries which are underdeveloped as they have little access to standardized capital markets (Ahmed, Xiaofeng, & Khalid, 2014). It is easier for the firms with having a reputation as creditworthy to use trade credit as an alternate of external source of financing being cheaper for them to seek a discount in case they make early payments to their suppliers.

The contracts relating to trade credit vary for firms relying on so many factors which includes the industry setting as well as the duration of the relationship of business (Fishman and Love, 2003). Nilsen (2002) explained the trade credit as a short-term source of financing and plays a vital role in the day to day organizing and decision-making of the firms (Rodriguez-Rodriguez, 2006; Martinez-Solo et al, 2013).

The use of trade credit is not new and it has been studied from a multiple perspective which include redistribution, transaction costs, market power substitution and relationship lending. While doing business, the main advantage for the suppliers in extending trade credit is that they have useful information regarding the credit worthiness of the firms. This knowledge is gained as they closely monitor of their orders, plans for repayment and their abilities to impose the repayment and cut off supplies related to future (Love and Zaidi, 2010).

When the firms gain favourable terms of trade credit, it helps them in reducing the overall cost of borrowing, especially in case when they obtain discounts while making early payments (Aktas et al., 2012; Giannetti et al., 2011).

It has been witnessed that trade credit has played a pivotal role in sustaining the profitability and sales of smaller firms in the times of financial crises (Banos-Caballero et al., 2012; Coulibaly et al., 2013). At the same time, it can be an expensive source of financing in case of non-utilization of discounts facilities by the firms (Nilsen, 2002; Petersen and Rajan, 1997). It is useful for firms that they should keep the cash as a preventive measure in order to avoid delaying and causing the expense of delayed payments for their goods (Wu et al., 2011).

Nilsen (2002) explained that the use of trade credit by small firms increases during the times of monetary retrenchment and also the larger firms find it difficult to have easy access to external sources of capital which increase their dependence on trade credit.

There are mixed evidences of redistribution in the periods when financial crises occur, as the system of banking is also not in its proper functioning as compare to normal conditions (Boissay and Gropp, 2007; Love et al., 2007).

Love et al. (2007) explore some empirical evidences of redistribution effect in case of large firms which are listed in some of the emerging markets. However, it has also been found that this effect was tightened in the period of financial crises. Resultantly, there is a change in ways of firms for credit redistribution over time. Choi and Kim (2005) state in his study that at the time of financial contraction when banks are reluctant to extend the credit to smaller firms, that large

firms of us also find that when banks refrain from lending to smaller firms during a monetary contraction, large US firms then also pull out financial help to smaller firms.

Small firms are often not in a position to secure the finance on easy terms. These types of firms are not strong enough to obtain financing easily, which emphasizes their reliance on bank financing and trade credit (Berger & Udell, 1998). The determinants of trade credit have been analyzed in previous literatures and the particular focus was on relationship trade credit with two other important resources of finances i.e. the bank credit and the self-financing.

Firstly, as far as the relationship of trade credit with bank credit is concerned, two alternative hypotheses are used to help in explaining this vital question: one is the substitution hypothesis and the other is the complementary hypothesis. The substitution hypothesis explains that firms incline to engage trade credit more when it is difficult to get it from financial institutions and due to closeness the suppliers may agree to lend (Petersen & Rajan, 1997). Thus, this hypothesis envisages a negative relation between the two resources (Atnasova & Wilson, 2003).

The complementary hypothesis explains a positive relationship of trade credit with lending from the banks. Hence, both the resources moves in the similar direction, mean that decline / rise in bank credit will be followed by a decrease / increase in the use of trade credit, thereby increasing the effect on small businesses of any financial retrenchment or enlargement ((Cook, 1999), (Ono, 2001), (Uesugia & Yamashiro, 2008)). In such case, use of trade credit acts as a signal and exposes supplier's information to the bank that cannot always measure the financial value of a firm when this one looks informationally opaque to them (Biais & Gollier, 1997).

Secondly, the Pecking Order Theory explains the relationship of trade credit with internal financing. This theory speculates that firms that generate more internal funds uses lesser financing from the suppliers (Niskanen and Niskanen, 2006, Garcia Teruel and Martínez-Solano, 2010 a,b). However, there is a possibility that companies which generates more from internal resources may enjoy a better access to financing from their suppliers (Petersen & Rajan, 1997).

Due to mixed results of the evidences we cannot say that the analysis of the relationships of trade credit with bank credit and self-financing is conclusive. Following previous research, it is vitally essential to consider the inter-connection of small firm resources in accordance with the financial growth cycle paradigm. In said paradigm, company's capital structure varies with size of the firms and its age, and the relation also varies between the financial resources. However, firm's samples were considered as homogeneous in previous studies as they can explain the variety of results in the financial literature. The basic question which arises is, whether we should consider these relationships as homogeneous in case of all firms or it varies according to their characteristics of size and age.

Keeping in view the idea stated above, this study will try explaining the true nature of the relationships between trade credit and bank credit and self-financing, with the help of quantile regression approach, the methodology already employed by Canto-Cuevas et al. (2016c). This approach is being used to analyze the heterogeneity of firms in multiple quantiles of distribution of trade credit. The trade credit can be used as a proxy for the age and size of firm, conferring the financial growth cycle paradigm. The younger and small firms have to depend more on trade credit: for the reason of information asymmetries and to their bigger opacity, which compel them

to credit rationing (Stiglitz and Weiss,1981); and also due to more limitations and restrictions in self-generation of financial resources.

For extending the line of study started in the Non-financial sector, the empirical analysis focuses on a sample taken from Pakistani Non-financial firms, which is considered due to lack of studies in trade credit. It is further added that this sector is more vulnerable and affected by varying economic situation (González-Romo, 2011). For the study a period between 2008-2016 has been chosen.

2.1 Trade Credit Theories

2.1.2 Macroeconomic Conditions

Many researchers have highlighted the effects of Macroeconomic conditions on trade credit usage. According to (Smith J. K., 1987) & (Walker, 1991) receivables are settled according to the conditions of the economy. As stated by (Niskanen & Niskanen 2006) use of trade credit has increased in case of declining gross domestic product. As discussed by Ahmed, Xiaofeng & Mujtaba (2014) the relationship of Gross Domestic Product with economy is negatively related to each other. Smith (1987) & Benjamin (2000) stated that suppliers have information advantages as compare to that of banks. Trade credit has increased in case the conditions of the country that are unstable and enhancement in borrowings make trade credit as a most workable type used for short-term funding.

Trade credit is also very vital for the reputation of young and small suppliers newly entered in the business. As per Smith (1987) uncertain product market has the capability to develop complete theory as suppliers have complete informational advantage as compared to banks in case of product quality in accordance with the standards of the buyer and customers. Supplier can monitor the buyer from many types of risks attached because of the informational benefit. Credit screening has been sort out by which the borrower's quality have screened by the lender while indicating liquidity or leverage ratio in order to reduce information asymmetries between lender and borrower.

2.1.2 Inventory Management Model

This model tells us that as compare to small firms the large firms are less vulnerable to liquidity issues. Furthermore, they have ample funds available to meet the cost of storage for holding their inventory. This element compels the small firms to opt for use of trade credit to overcome the shortage of financing resources. As stated by Long et al. (1993) bigger firms mostly enjoys good reputation in the market and their creditworthiness is also higher for getting financing from various other sources. Their interest is quite little in having sales and purchase on credit basis. Bigger firms also have no need to offer any guarantees for their products (Long et al. 1993).

2.2 Literature Gap

Some work has already been done in Pakistan relating to literature on trade credit. However, there is no study, till date, using a Quantile Regression Approach had carried out as per my knowledge in order conduct detailed analysis of the factors which effects trade credit in the non-

financial firms which are listed at Pakistan Stock Exchange (PSX), the biggest stock exchange of the country.

While using above methodology, this article will explain the factual nature of the relationships between trade credit and bank credit and with self-financing. Specially, the approach used in the study i.e. the quantile regression approach is used to cover the heterogeneity of the firms in multiple quantiles of trade-credit distribution. Following previous research, it is very important to consider the inter-connection of small firm resources in accordance with the financial growth cycle paradigm. In said paradigm, company's capital structure varies with size of the firms and its age, and the relation also varies between the financial resources. However, firm's samples were considered as homogeneous in previous studies as they can explain the variety of results in the financial literature.

Main purpose of this research paper is the analysis of using trade credit in listed non-financial firms of Pakistan using that approach. Pakistan's non-financial firms suffers from loan regulations and trade credit is an external financing source helps solve buyer liquidity problems.

Chapter 3

3. Research Methodology

3.1 Conceptual Framework

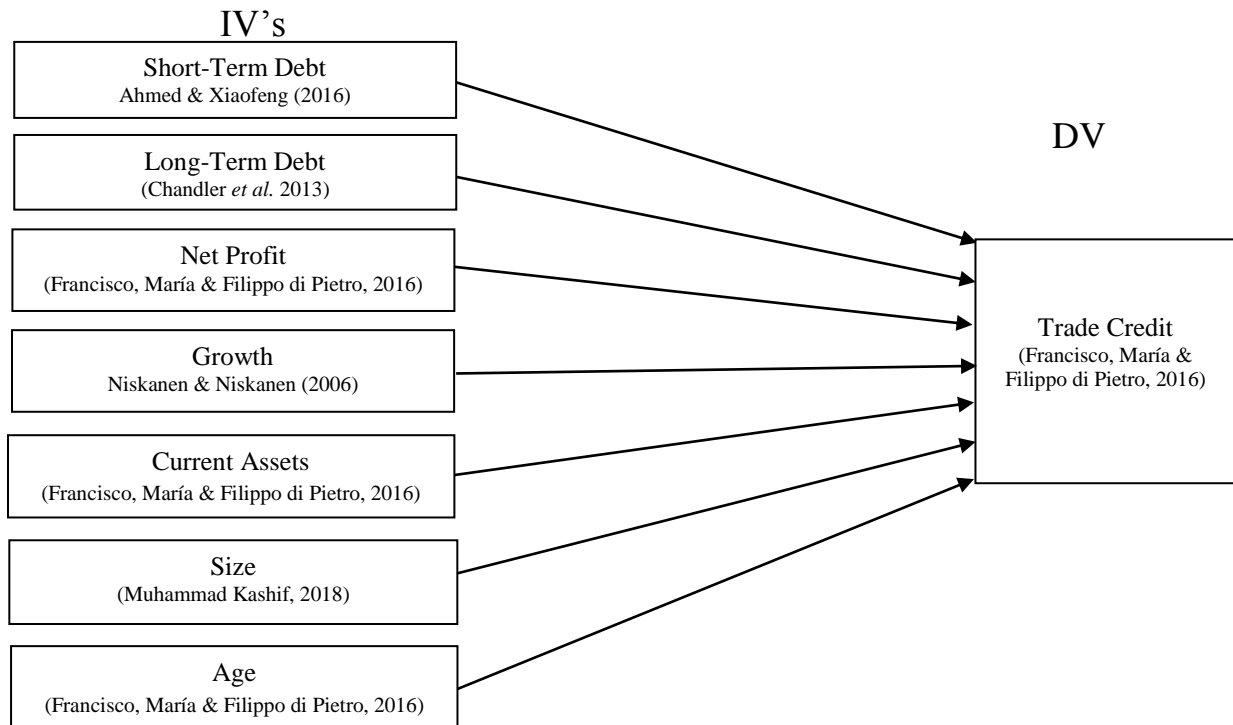


Figure 3.1 Conceptual Framework of the Study
Source: Compiled by the Author

DV: Dependent Variable

IV: Independent Variable

3.2 Definition and Construction of Variables

Table 3.1 Variables and Measurement

Names	Used as	Measurement	Sources
Trade Credit	Dependent Variable	Accounts Payable/Total Assets	(Francisco, María & Filippo di Pietro, 2016)
Short Term Debt	Independent Variable	Short Term Debt / Total Assets	Ahmed & Xiaofeng (2016)
Long Term Debt	Independent Variable	Long Term Debt / Total Assets	(Chandler <i>et al.</i> 2013)
Net Profit	Independent Variable	Net Profit/Total Assets	(Francisco, María & Filippo di Pietro, 2016)
Growth	Independent Variable	Annual Sales growth %age	Niskanen & Niskanen (2006)
Current Assets	Independent Variable	Current Assets/Total Assets	(Francisco, María & Filippo di Pietro, 2016)
Size	Control Variable	ln (Total Assets)	(Muhammad Kashif, 2018)
Age	Control Variable	ln (life of the firm)	(Francisco, María & Filippo di Pietro, 2016)

3.3 Research Size

The annual data of 340 companies listed at the PSX during the period of 2008-2016 was utilized for the purpose of this study. The study had approximately 3060 (company, year) observations. Multiple sources were utilized for the purpose of data collection. The State Bank of Pakistan's Balance Sheet Analysis pertaining to the Non-financial firms had been utilized. Further annual reports of the companies were accessed for the purpose of data collection.

3.4 Data and Data Source

Data of variables such as Short term and long term debt, Size, Age was collected from balance sheets, financial statements and income statements of non-financial sector of Pakistan which state Bank of Pakistan has published. Panel data has been used of all the Non-Financial firms

which have been listed on Pakistan Stock Exchange and the period selected for the study is between 2008 to 2016.

Table 3.2 Sector wise Distribution of Companies Selected for Analysis

S. No	Industry
1	Auto Parts Industry
2	Chemicals Industry
3	Construction Industry
4	Electricity Industry
5	Electronics Industry
6	Engineering Industry
7	Fixed Line Communication Industry
8	Industrial Metals and Mining Industry
9	Industrial Transportation Industry
10	Paper and Board Industry
11	Tobacco Industry
12	Pharmaceutical Industry
13	Oil and Gas Industry
14	Food Industry
15	Textile Industry

3.5 Estimation Technique

The Estimation Technique used in this study is Quantile Regression Approach. The reason for using quantile regression approach is that it provides more flexibility as compare to other methods of regression in order to identify divergent relationships at diverse parts of the distribution of the dependent variable. This approach provides an alternate to ordinary least squares (OLS) regression and related methods, which assume that relationship between dependent and independent variables are identical at all levels. This regression is not a regression estimated on a quantile or sub-sample of data as the name may depict. This approach allows the analyst to somehow relax the common regression slope assumption. In OLS regression, the

target is to minimize the distances between and the observed values and the values predicted by the regression line. In contrary, quantile regression differentially weights the distances between the observed values and the values predicted by the regression line, then tries to minimize the weighted distances.

The company's capital structure varies according to the size and age of the firm, in financial growth cycle paradigm. Furthermore, the relation between the financial resources can also vary. As evident from previous studies the samples of the firms have been considered as homogeneous, which could explain the multiplicity of results in the financial literature. However, the main point is whether we can consider these relationships as homogeneous for all firms or it varies depending on the characteristics such as the size and age.

Considering the above stated idea, the reason of this study is to know about the actual nature of the relationships between the trade credit and bank credit and self-financing, by use of a methodology which has already been employed by Canto-Cuevas et al. (2016). Specifically, the approach used in this study is quantile regression approach, which takes into account the heterogeneity of firms in various quantiles of trade credit distribution.

As per my knowledge this approach has not been used in the study of trade credit in Pakistan so far.

3.6 Hypothesis Development

a. Short Term Bank Loan (STB)

Non-availability of short term financing reduced sales and ultimately reduced cash flows of the businesses. Short term bank borrowing leads to increase the working cycle of the companies,

however the availability of short term loan as trade credit reduce the other borrowings like that of bank borrowing or other high interest commercial loans. The management of the company has to follow the two processes together. One is termed as the planning stage and the other is the controlling process. In case anyone process doesn't work properly then the management and whole working scenario got affected. To meet the short term obligations these both processes should act properly also to reduce the resource waste as in the form of increased level of current assets. As trade credit is used as a source of short-term financing, therefore the bank loan included in the working has also of short term nature. According to Ahmed & Khalid (2016) the relationship between the short terms bank loan and trade credit demand has been negative significant. Hence postulate the hypotheses regarding short term bank loan with respect to trade credit supply and demand as follows

H₁: There is a negative and significant relationship between short term bank loan and trade credit

b. Long-term Investment and Firm Financing

A long-term investment reflects on the asset side of a company's balance sheet represents the investments of the company which includes the stocks, bonds, real estate and cash and the company intends to hold them for more than one year. (García *et al.* 2010) found that larger firms, with larger growth opportunities and bigger investment in current assets, attracts more finances from their suppliers. Where firms can have alternative sources of finance they are less likely to opt for vendor financing (substitution effect).

H₂: There exist a positive and significant relationship between long-term investment and firm financing.

c. **Sales Growth**

Use of trade credit to achieve the targets of growth is also very common in firms (Niskanen and Niskanen 2006). Sales are used as elementary indicators of growth. For the purpose of increasing the growth of the firm they tend to improve their sales. They offer more credit on sales in order to attract more customers which ultimately increases their sales. At the same times, new entrants in the market can also enhance their sales by acquiring more goods on credit from suppliers. Keeping in view these facts we can expect a positive relationship between sales growth and trade credit. Therefore, a hypothesis regarding sales growth can be as under:

H₄: There is a positive and significant relationship between sales growth and Trade Credit

d. **Asset Turnover (ST)**

ST is an important ratio which is used to achieve purpose of management efficiency. Asset turnover has been used to measure the revenue generated through the use of assets. It shows the firm's ability to generate more revenue. According to Koh & Amherst (2017) Assets turnover show that how much of the assets have been utilized by the company for revenue generation. Higher value of the asset turnover depicts that the firm has effectively utilized the assets against sale. Assets turnover showed that the assets produced have a solid impact on the trade credit contracts both on receivable and payable side. More the asset turnover depicts that more will be supply for trade credit. According to Fairfield. & Yohn (2001) the change in asset turnover forecast the future profitability of the company. Author also argued that the investors and analysts have to monitor the change in assets turnover as it indicates the future profitability of the businesses. Hence postulate the hypotheses regarding asset turnover with respect to trade credit supply and Demand as follows:

H₅: There exist a positive and significant relationship between assets turnover and trade credit

e. Firms Size

The Inventory Management Model tells us that as compare to small firms the large firms are less vulnerable to liquidity issues. Furthermore, they have ample funds available to meet the cost of storage for holding their inventory. This element compels the small firms to opt for use of trade credit to overcome the shortage of financing resources. As stated by Long et al. (1993) bigger firms mostly enjoys good reputation in the market and their creditworthiness is also higher for getting financing from various other sources. Their interest is quite little in having sales and purchase on credit basis. Bigger firms also have no need to offer any guarantees for their products (Long et al. 1993). Hence we hypothesize the firm's size as follows;

H₆: There is a negative and significant relationship between firm size and trade credit.

f. Firm Age and Firm Financing

The age is the span of time during which a being or thing has existed. Firm's age is the number of years from incorporation of a company; even though some states the listing age as the age of the company. (Serrasqueiro & Nunes, 2012) explained that age is related for: the impact of financial deficit on variations of short and long-term debt; the level of adjustment of short and long-term debt toward the particular optimum levels; and the relationships between common elements and short and long-term debt. The age of the firm in a vital factor in firm's financing decisions, especially for variations and/or adjustments of the debt.

H₇: There is positive and significant relationship, between firm's age and Trade Credit.

3.7 General Equation

This equation shows the general relationship between the variables and represents the general equation which will be used in EVIEWS for estimation.

$$Quant\theta(yit|xit) = \alpha o + \beta\theta xit + y zt$$

3.8 Empirical Model for the Study

These specific equations show the relationship among dependent and independent variables. There is one dependent variable, that's why following equation will be used to run in EVIEWS for estimation of regression.

$$Quant\theta(yit|xit) = \alpha o + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 NETPROF_{it} + \beta_4 AGE_{it} + \beta_5 SIZE_{it} + \beta_6 CURRAS_{it} + \beta_7 GROWTH_{it} + \varepsilon_{it} \dots\dots\dots Equation 3.1$$

Where;

TC = Trade Credit

LTD= Long Term Debt

STD = Short Term Debt

NETPROF= Profitability

AGE=Firm age

SIZE= Firm Size

CURRAS= Current Assets

GROWTH= GDP Growth

Chapter 4

4.1 Results and Discussion

The results of the implementation of the Quantile Regression Approach are explained in this chapter. The results show the significant and relationship of the variables on Trade Credit. Table 4.1 reflects the effect of all the variable on Trade Credit.

4.2 Descriptive Statistics

Trade Credit has been used as dependent variable in the study. The descriptive statistics of all variables used in this study are explained in table-4.1.

Table 4.1 Descriptive Statistics

Variable	Coefficient	Std.Error	t-Stats	Prob
STD	0.550899	0.141628	3.889775	0.0002
LTD	0.252578	0.126416	1.997995	0.0495
PROF	-0.277760	0.166533	-1.667900	0.0997
SIZE	0.018658	0.013149	1.418979	0.1603
CASSETS	0.347353	0.113044	3.072715	0.0030
SG	-0.064945	0.064795	-1.002313	0.3196

The relationship of size is insignificant with trade credit as trade credit is less applicable to bigger firms. If the firm's size increases it can shift easily to other financial sources as well and

big firms are not attracted towards the trade credit. Smaller firms prefer trade credit as a mean for quality and reputation as compare to large firms which already have built their quality so these firms offer less credit to customers. Size is not significant to trade credit as proved by Ahmed, Xiaofeng & Mujtaba (2014). t-statistics explains that the size variable is not significantly used in case of trade credit and Prob. value is also not significant so accept the null hypothesis.

The relationship of short term bank loan is positive with trade credit. Positive and significant results of short term bank loan indicated that firms in Pakistan especially non-financial firms have interest in short term bank loan. In business, the buyer has to arrange financial resources and in case of non-availability of one source, he will move towards other sources for loan. As stated by Petersen & Rajan (1994) if the buyer will no longer have financing, trade credit facility serves the best purpose. Result show that t-statistics is above 2 so short term bank loan used is significant. P-value is below 0.05 which is also significant.

P-value of sales growth is also more than 0.05 which shows that it is not significant to trade credit. However, the relationship of long-term debt, profitability and current assets is significant being P-value of all of them is less than 0.05. Long-term debt and current assets have positive whereas profitability has negative relationship with trade credit.

4.3 Quantile Regression Results

Table 4.2 presents results of quantile regression. Specifically, following quantiles have been defined as 0.100, 0.200, 0.300, 0.400, 0.500, 0.600, 0.700, 0.800, 0.900. The results show large variation in different quantiles.

Table 4.2 Quantile Process Estimates

	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
C	0.100	-0.264267	0.071506	-3.695744	0.0004
	0.200	-0.152800	0.063609	-2.402174	0.0189
	0.300	-0.180807	0.081340	-2.222852	0.0294
	0.400	-0.197373	0.107583	-1.834610	0.0708
	0.500	-0.315389	0.136300	-2.313941	0.0236
	0.600	-0.334770	0.164447	-2.035736	0.0455
	0.700	-0.226309	0.165083	-1.370883	0.1747
	0.800	0.057407	0.189303	0.303255	0.7626
	0.900	-0.083333	0.225141	-0.370139	0.7124
Short Term Debt	0.100	0.230763	0.080901	2.852427	0.0057
	0.200	0.218910	0.084481	2.591247	0.0116
	0.300	0.287173	0.111497	2.575610	0.0121
	0.400	0.350540	0.153061	2.290203	0.0250
	0.500	0.550899	0.141628	3.889775	0.0002
	0.600	0.617069	0.127514	4.839229	0.0000
	0.700	0.649568	0.111498	5.825814	0.0000
	0.800	0.681606	0.154835	4.402144	0.0000
	0.900	0.630513	0.227750	2.768438	0.0072
Long Term Debt	0.100	0.125306	0.083390	1.502640	0.1374
	0.200	0.085969	0.073770	1.165370	0.2478
	0.300	0.125871	0.093049	1.352734	0.1804
	0.400	0.144101	0.116555	1.236341	0.2204
	0.500	0.252578	0.126416	1.997995	0.0495
	0.600	0.293126	0.129139	2.269845	0.0263
	0.700	0.309918	0.128463	2.412501	0.0184
	0.800	0.153340	0.157765	0.971948	0.3344

	0.900	0.198641	0.199262	0.996886	0.3222
PROFIT	0.100	-0.000305	0.091786	-0.003320	0.9974
	0.200	-0.039253	0.091447	-0.429246	0.6690
	0.300	-0.068796	0.124092	-0.554396	0.5810
	0.400	-0.100101	0.154390	-0.648363	0.5188
	0.500	-0.277760	0.166533	-1.667900	0.0997
	0.600	-0.336514	0.175001	-1.922927	0.0585
	0.700	-0.350106	0.150867	-2.320618	0.0232
	0.800	-0.360705	0.161091	-2.239133	0.0283
	0.900	-0.481724	0.180960	-2.662048	0.0096
SIZE OF THE FIRM	0.100	0.024151	0.007212	3.348944	0.0013
	0.200	0.016493	0.007951	2.074259	0.0417
	0.300	0.016466	0.009823	1.676158	0.0981
	0.400	0.016594	0.013215	1.255706	0.2133
	0.500	0.018658	0.013149	1.418979	0.1603
	0.600	0.017556	0.015003	1.170172	0.2458
	0.700	0.008935	0.014890	0.600076	0.5504
	0.800	-0.005206	0.017163	-0.303332	0.7625
	0.900	0.012650	0.019843	0.637491	0.5259
Current Assets	0.100	0.120078	0.088467	1.357315	0.1790
	0.200	0.109674	0.076674	1.430385	0.1570
	0.300	0.146946	0.100252	1.465774	0.1471
	0.400	0.179119	0.115198	1.554879	0.1244
	0.500	0.347353	0.113044	3.072715	0.0030
	0.600	0.407303	0.128554	3.168350	0.0023
	0.700	0.373835	0.128799	2.902469	0.0049
	0.800	0.197175	0.145581	1.354401	0.1799
	0.900	0.290709	0.217257	1.338084	0.1851
Sales Growth	0.100	-0.019820	0.032282	-0.613971	0.5412
	0.200	-0.057781	0.032693	-1.767393	0.0815
	0.300	-0.073326	0.044446	-1.649755	0.1034
	0.400	-0.110331	0.073121	-1.508888	0.1358
	0.500	-0.064945	0.064795	-1.002313	0.3196
	0.600	-0.082101	0.053202	-1.543203	0.1272
	0.700	-0.110077	0.040011	-2.751181	0.0075
	0.800	-0.152640	0.042817	-3.564955	0.0007
	0.900	-0.164143	0.045585	-3.600791	0.0006

Short-term debt has shown significant relationship in all the quantiles from lower to top. The coefficient value shows that in the 10th quantile the short term debt is 0.23% which decreases in the 20th quantile to 0.21%. In the 30th quantile it increases again as 0.28%. From 40th to 80th

quantile the short term debt increases continuously as 0.35%, 0.55%, 0.61%, 0.64%, 0.68% and in the 90th quantile it again decreases as 0.63%.

Long-term debt has different behavior in the results as it remains insignificant from 10 quantile to 40th quantile. However, it is significant in 50th, 60th & 70th quantile. In last two quantiles it is again insignificant. The coefficient value reflects the long-term debt as 0.12% in the 10th quantile which decreases in the 20th quantile as 0.08% and increases again from 30th quantile to 70th quantile as 0.12%, 0.14%, 0.25%, 0.29% and 0.30%. In the 80th quantile it decreases again as 0.15% and in the last quantile i.e. the 90th quantile it again increases as 0.19%.

The profitability is insignificant in 10th, 20th, 30th and 40th quantiles whereas, it becomes significant in 50th, 60th, 70th, 80th & 90th quantiles. The coefficient value shows that relationship of profitability with trade credit remain negative in all quantiles. It is minimum in the 10th quantile and continue to decrease till the 90th quantile with negative sign which shows an inverse relationship between profitability and trade credit.

The size of the firm is significant in 10th & 20th quantiles. However, it becomes insignificant in rest of the quantiles. The size of the firm is 0.024% which decreases in the 20th and 30th quantile and then increase again in the 40th and 50th quantile. In the 60th, 70th & 80th quantile it further decreases. Afterwards, in the 90th quantile relationship is increased again. The relationship shows a positive sign in all quantiles except the 80th quantile.

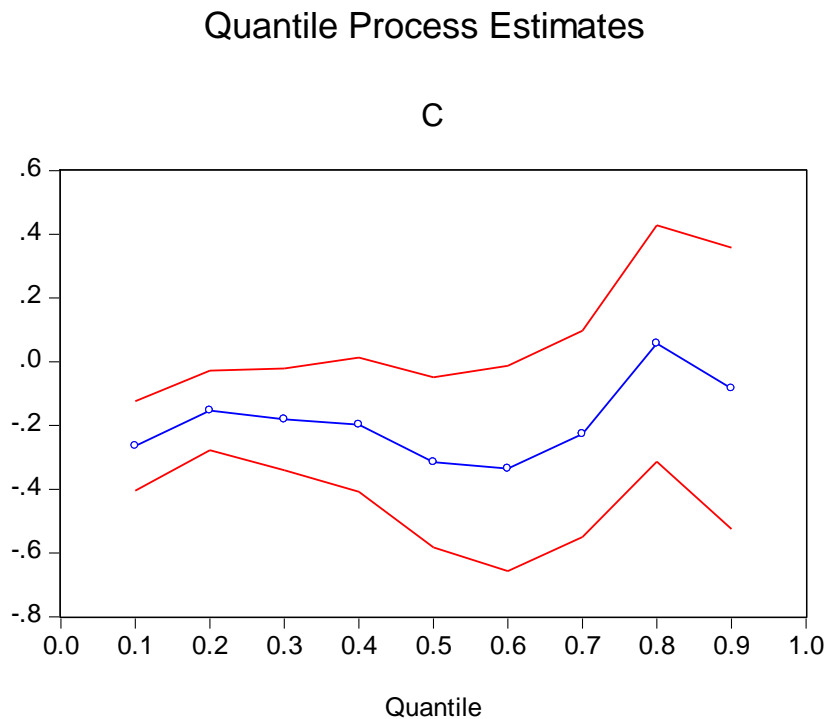
The p-value reflects an insignificant relationship between trade credit and current assets in 10th, 20th, 30th and 40th quantile. It becomes significant in 50th, 60th and 70th quantile. In last two quantiles it becomes insignificant again. The relationship of current asset with trade credit is 0.12% in 10th quantile. It decreased in the 20th quantile and then continuously increased from 30th

quantile to 60th quantile. However, it decreased again in the 70th and 80th quantile. In the last quantile i.e. 90th it increased again and become 0.29%. The relationship of current assets with trade credit remains positive in all the quantiles.

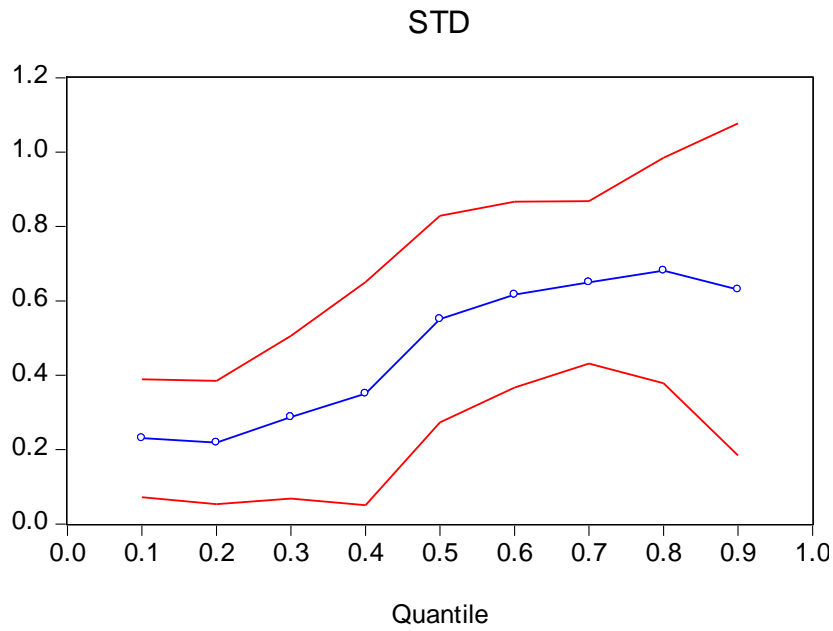
The p-value reflects an insignificant relationship between trade credit and sales growth in all the quantiles except 70th, 80th and 90th. The sales growth is negative in all the quantiles. It is -0.019% in the 10th quantile and further decreased till the 40th quantile. In the 50th quantile it increased again. Then in the 60th quantile it decreased further and continue to decrease till the 90th quantile.

4.4 Quantile Process Estimates (Graphs)

All the results presented in table 4.2 above are presented in graph form in this paragraph which shows similar results.

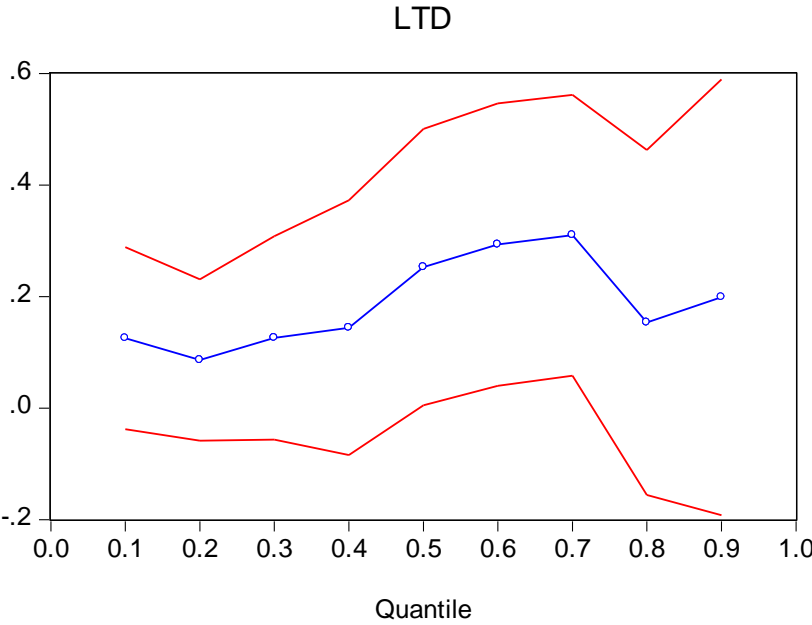


Quantile Process Estimates



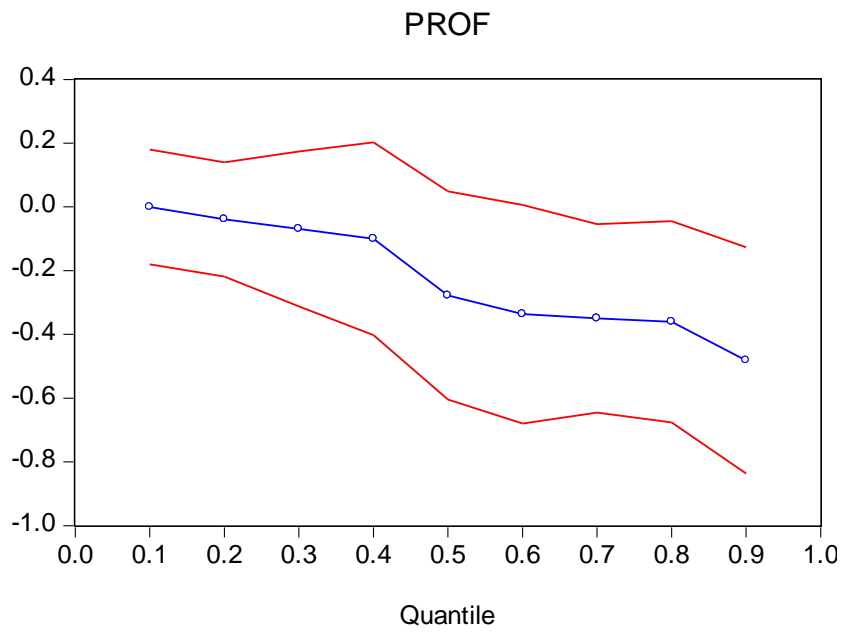
Short-term debt graph shows that the value decreased in the 20th quantile. From 30th quantile to 80th quantile the short term debt increases continuously and in the 90th quantile it again decreased.

Quantile Process Estimates



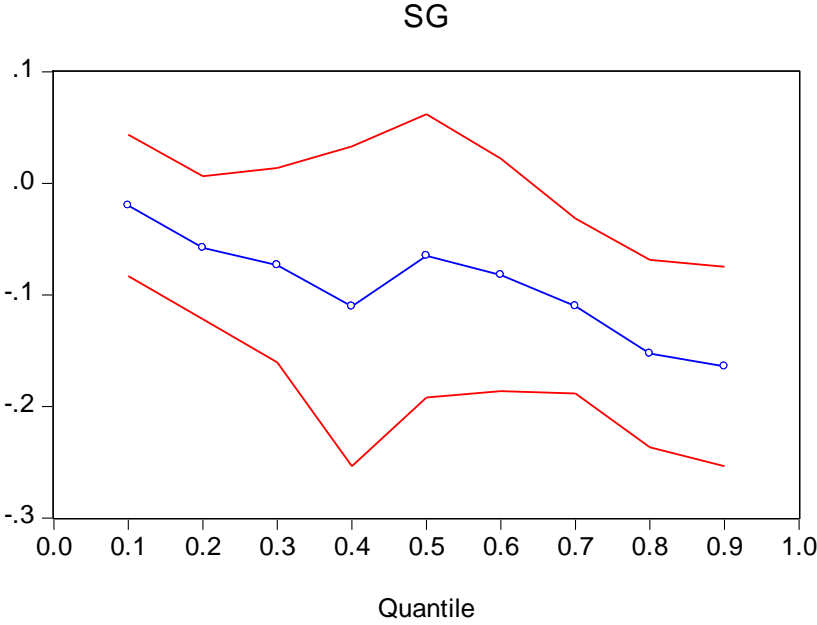
The graph shows that Long-term debt is decreasing in the 20th quantile. However, it increased from 20th quantile onward till the 70th quantile. It decreased in the 80th quantile and then increased again in the 90th quantile.

Quantile Process Estimates



The graph shows that the profitability is continuously decreasing throughout all the quantiles.

Quantile Process Estimates



The graph shows that Sales Growth is decreasing in the 20th quantile. However, it increases from 20th quantile onward till the 50th quantile. It decreases again from the 50th quantile onward till the 90th quantile.

Chapter 5

CONCLUSIONS & FUTURE RECOMMENDATIONS

5.1 Conclusion

Trade credit, as defined as the buyer and supplier contract serves as a best way of short term financing. In modern time the significance of the trade credit has increased manifold. This focus of this research is basically on the key elements of trade credit on Pakistan's non-financial firms. The focus was on the association between the trade credit and other financial resources such as bank-credit and self-financing. The approach used in the study was quantile regression approach. The reason for using this approach was to find the effect of different explanatory variables in different quantiles of the trade credit paradigm of the firm.

While evaluating different results it has been found out that relations of trade credit with bank-credit and self-financing in large and established firms is complementary as they have more resources to generate funds and meet their financing requirements. In case of small and new firms the relationship among trade credit and bank credit or self-financing is of substitution as they use trade credit as a substitute of bank credit and self-financing. Due to extreme limitations and hurdles it is not possible for small firms to get credit easily to meet their day to day business requirements. Furthermore, as they are new in the business it is also very difficult for them to generate their own financing in the start.

It is evident from above that while making important financing decisions the aspect of heterogeneity of firms must be considered.

5.2 Limitations and Future Recommendations

The study mainly focuses on 5 explanatory variables, however, more variables can be incorporated to find better results. The data selected for the purpose consists of from 2008 to 2016 i.e. nine years which can be further increased. Empirical data was selected from non-financial firms of Pakistan only. More countries and firms can be incorporated to get more results regarding the study. Due to the limitations of techniques used the study does not discuss some hypotheses and also some research questions were left as un-answered. The sample size was also small due to data constraints. The financial information of some companies was not available online. Due to these factors data was collected for limited period. In future more data and variables can also be added to analyze more detailed impact of trade credit on firms and present a more clear picture for decision makers.

Bibliography

(n.d.).

Ahmed, J., & Khalid, J. (2016). Determinants of Bank Loan Availability: Evidence From Pakistani Non-Financial Firms. *The Romanian Economic Journal*.

Ahmed, J., Xiaofeng, H., & Khalid, J. (2014). Determinants of trade credit: The case of a developing economy. *European researcher, Series A*, (9-2), 1694-1706.

Atnasova, & Wilson. (2003). *Bank borrowing constraints and the demand for trade credit: evidence from panel data*.

Berger, & Udell. (1998). *The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle*.

Berger, A. N., & Udell, G. F. (1995). Relationship Lending and Lines of Credit in Small Firm Finance. *The Journal of Business*, Vol. 68, No. 3 (Jul., 1995), pp. 351-381 (31 pages).

Biais, B., & Gollier, C. (1997). Trade Credit and Credit Rationing. *The Review of Financial Studies*, Volume 10, Issue 4, Pages 903–937.

Burkart, M., & T. Ellingson. (2004). In-Kind Finance A Theory of Trade Credit. *American Economic Review*, Vol. 94, No. 3, pp. 569-590.

Carvalho, & Schiozer. (2015). Determinants of Supply and Demand for Trade Credit by Micro, Small and Medium-Sized Enterprises.

Cook, L. D. (1999). Trade credit and bank finance: Financing Small Firms in Russia. *Journal of Business Venturing*, Volume 14, Issue 5-6, Pages 493-518.

- Dell G. Laevena, M. R. (2014). Real interest rates, leverage, & bank risk-taking. *Journal of Economic Theory*, 65-99.
- Ferris, J. S. (1981). A Transactions Theory of Trade Credit Use. *The Quarterly Journal of Economics*, Pages 243–270.
- Francisco, María & Filippo di Pietro. (2016). *Trade credit in SMEs: a quantile regression approach*. *Applied Economics Letters*, 23:13, 945-948, DOI: 10.1080/13504851.2015.1122727.
- Ge, Y., & Qiu, J. (2007). Financial development, bank discrimination and trade credit. *Journal of Banking & Finance*, 31(2), 513-530.
- Guariglia, & Mateut. (2006). *Credit channel, trade credit channel, and inventory investment: Evidence from a panel of UK firms*. *Journal of banking and finance*.
- Long et al. (1993). Trade Credit, Quality Guarantees, and Product Marketability. *Financial Management*, Vol. 22, No. 4 (Winter, 1993), pp. 117-127 (11 pages).
- Love, Preve, L. A., & Sarria-Allende. (2007). Trade credit and bank credit: Evidence from recent financial crises. *Journal of Financial Economics*, 83(2), 453-469.
- Maksimovic. (2008). Financing patterns around the world: Are small firms different? *Journal of Financial Economics*, 467-487.
- Martínez-Solano, C. M.-S.-T. (2013). Trade credit policy and firm value. *Accounting & Finance*, Pages 791-808.
- Michael J. Brennan; Vojislav Maksimovics; Josef Zechner. (1988). Vendor Financing. *The Journal of Finance*, Volume 43, Issue 5, Pages 1127-1141.

- Ono, M. (2001). Determinants of Trade Credit in the Japanese Manufacturing Sector. *Journal of the Japanese and International Economies*, 15(2), 160-177.
- Paul, & Guermat. (2008). Trade Credit as Short-Term Finance in the UK. *Centre for Global Finance*, Working Paper Series (ISSN 2041-1596).
- Pedro J Garia-Teruel, P. M.-S. (2008). On the Determinants of SME Cash Holdings: Evidence from Spain. *Journal of Business Finance & Accounting*, 127-149.
- Petersen, & Rajan. (1997). *Trade Credit: Theories and Evidence*.
- Petersen, M. a. (1997). Trade Credit: Theories and Evidence. *Review of Financial Studies*, 10(3), 661-691.
- Pietro, F.-J. C.-C.-M.-J.-S. (2016). *Trade Credit in SMEs; a quantile regression approach*.
- Schwartz, R. (1974). An Economic Model of Trade Credit. *Journal of Financial and Quantitative Analysis*, 9(4), 643-657.
- Serrasqueiro, & Nunes. (2012). Is there a linear relationship between R&D intensity and growth? Empirical evidence of non-high-tech vs. high-tech SMEs. *Research Policy*, Pages 36-53.
- Smith, J. K. (1978). Trade credit and informational asymmetry. *The Journal of Finance*, 42(4), 863-872.
- Smith, J. K. (1987). Trade Credit and Informational Asymmetry. *The Journal of Finance*, Pages 863-872.
- Smith, N. C. (1999). Evidence on the determinants of credit terms used in interfirm trade. *Journal of Finance*, 54, 1109-1129.
- Summers, B., & Wilson, N. (2002). Trade Credit Terms Offered by Small Firms: Survey Evidence and Empirical Analysis. *Journal of Business Finance & Accounting*, Pages 317-351.
- Udell, B. a. (1998). *The effects of bank mergers and acquisitions on small business lending*.

Uesugia, I., & Yamashiro, G. M. (2008). The Relationship between Trade Credit and Loans: Evidence from Small Businesses in Japan . *International Journal of Business*, ISSN: 1083-4346.

Walker, D. A. (1991). *An Empirical Analysis of Financing the Small Firm*.

Wilson, N., & Summers, B. (2002). An Empirical Investigation of Trade Credit Demand. *International Journal of the Economics of Business* , 9(2), 257-270.