DETERMINANTS OF TRADE CREDIT SUPPLY: THE CASE OF NON-FINANCIAL FIRMS OF PAKISTAN

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Dedicated to My Parents

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Motivation is that force which manages to sustain intents and behaviours in human beings. When I applied for MPhil degree in PIDE, I had my wish to satisfy my motivational intents of research and hence, to add some value to the world in my own capacity. Today, with the grace of Allah Almighty, I am able to take my first step towards this goal by submitting my dissertation.

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Abstract

I have investigated the 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.

Defining the term Trade Credit we may refer to Brennan et al. (1988) who defines it as the separation between the delivery of goods and their payments. Trade credit is divided in two terms naming accounts receivables; refers to the supply of trade credit and accounts payable; refers to trade credit demand. Different authors have suggested that the motives for trade credit use include financial advantages, price discrimination autonomy as commercial motives and reducing inventory costs as operating motives to name a few.

It is affected by two types of factors including firm specific characteristics and macroeconomic conditions. This study investigates the following variables firm specific conditions includes firm size, liquidity, product quality, price discrimination and macroeconomic conditions include GDP.

Our results show that all the variables are significantly related to trade credit which means that these variables do determine the supply of trade credit. Regarding the macroeconomic variable, GDP had a negative relationship with trade credit supply which means that in reduced performance of the financial sector, people move towards trade credit. Secondly, discussing the firm specific characteristics firms' size is negatively related to trade credit supply meaning that large firms do not supply trade credit. Also there is a negative relationship of trade credit supply with liquidity which suggests that firms which do not possess much liquid assets would prefer to supply goods on credit. As the variable of price discrimination is concerned, firms use trade credit as a tool for discriminating prices among their customers. Lastly, trade credit is used to

market their product quality as firms would supply trade credit when they want their customers to confirm their quality and if they possess high quality products, they would extend more sales on credit.

Our study concludes that firms should device their trade credit policy taking in account these findings that which variables would have weight in suggesting their success for trade credit supply. Also I have mentioned the limitations and future research directions in our final thoughts of this study.

Chapter 1

INTRODUCTION

Organizations 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.

Brennan et al. (1988) argues that along with providing financial support, financial intermediaries could extend short term financing by parting goods and services delivery with deferred payment terms. This way of providing short term financing is called vendor financing, also known as trade credit. Trade credit, as explained by Martínez-Sola, Teruel and Martínez -Solano (2012), is an arrangement between a seller and a buyer allowing an exchange of goods with deferred payment terms. Firms take advantage of alleviating their credit constraints by delaying their payments of goods. Hence trade credit is an important source of financing for firms, especially for the small and medium sized firms (Boyery & Gobert, 2007).

Firms extend trade credit so as to increase their profitability (Nadiri, 1969) and enhance their value (Martínez –Solano et al., 2012). Further, consequences of extending trade credit includes added value via increasing incremental cash flows (Schwartz, 1974; Kim and Atkins, 1978).

Trade credit enhances efficiencies on both sellers' and buyers' part by smoothing out the uncertainties in delivery cycles and simplifying cash management (Schwartz, 1974).

Firms extend trade credit in order to maintain long term relationships with their business partners as they can promptly assess the defaulting firms or the ones which are not credible enough to be issued trade credit (Ono, 2001). Secondly, In case of nonpayment, seller firms can cut off the supplies and further could sell the previous supplies and can have the benefit of zero bad debts.

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 & Mateut, 2006). Moreover, no authorities control the processes, terms and conditions of trade credit as compared to banks (Nieuwkerk, 1979). Other factors that affect trade credit are the development of the financial and legal systems of the country. As argued by Demirguc-Kunt & Maksimovic (2001) the imperfections in the country's financial system limits the firms' access to the external financing via banks and hence the non financial institutions actively participate in fulfilling the financing needs of the companies. Hence trade credit becomes the substitute to bank loan. Their argue continues that in a country with well developed legal systems, the strong protection that creditors get against defaulting borrowers make the use of trade credit as a financing mode less preferable. Hence the argument is that in such countries trade credit will not be preferred over bank loans.

As argued by Petersen & Rajan (1994, 1997) trade credit proves to be expensive than bank loans. Their research provides evidence on their claim as the bank loan's average interest costs about 11.3% while trade credit's terms of 2/10 net 30 results in an annual interest cost of 44.6%. (The sellers frequently offer 2/10 net 30 terms in order to persuade their customers to make payments

on time. This term means that there would be a 2% discount if the customers would pay within 10 days of purchase, else full payment would be due in the remaining 20 days of purchase of trade credit. This 2% discounts equates to 44.6% when measured on annual interest percentage basis. Albeit this much expensive mode of financing, buyers prefer trade credit over other kind of external financing as it erodes away the uncertainty in delivery of goods and smoothens the cash management (Schwartz, 1974).

Other reasons have also been highlighted by various authors regarding the logic why customers prefer trade credit over other external financing modes. As suggested by Peterson & Rajan (1994, 1997) trade credit is more attractive choice for firms who face difficulty in accessing bank loans and its supply usually increases in tight monetary period as the supplier risk is less than that which is faced by banks. Other 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 posses 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.

Secondly Garcia-Teruel & Martinez-Solano (2010a) state that the deferred payment system in supplying goods via trade credit guarantees the product quality and reduces transaction costs as well. Third, the price discrimination theory postulated by many authors (Petersen and Rajan,1994, 1997; Garcia-Teruel & Martinez-Solano, 2010a; Atanasova, 2007; Guariglia & Mateut, 2006; Cunningham, 2004; Delannay & Weill, 2004; Deloof & Jegers, 1996) hypothesizes that different prices are quoted for different customers as the early payment terms

of 2/10 net 30 provides a discount to the early payment customers and the rest pays a different payment for the same goods. Another dimension is added to the advantages of supplying trade credit by Wilson & Summers (2002) trade credit proves to be an important marketing tool as it 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 are found evidence of strong use of trade credit in many developed and 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 (credit extended) 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.

After summarizing the vast list of advantages of supplying trade credit and various countries statistics for using trade credit, a strong need of research into the factors influencing its supply in Pakistan is provoked.

1.1 OBJECTIVES OF THE STUDY

Following are the objectives of this study:

- To explore the major factors that determines the level of trade credit in listed non financial firms of Pakistan
- To look at the pattern of trade credit use in different sectors of economy of Pakistan

1.2 SIGNIFICANCE OF THE STUDY

There exists a good enough literature (Petersen & Rajan, 1997; Huyghebaert, 2006; Garcia-Teruel & Martinez Solano, 2007; Garcia-Teruel & Martinez-Solano, 2010b;) on the factors influencing trade credit supply and demand but mostly focused on the small and medium sized firms, characterized by the ones having difficulty in accessing bank loans and new entrants requiring to boost their reputation via supplying goods on trade credit. Hence researchers like Demirguc-Kunt & Maksimovic (2001) highlights that the role of financial intermediaries in granting trade credit to small and medium sized firms is more focused by the development institutions leaving behind the role of the listed firm (the large firms) in credit provisions. Hence this gap encourages studying the credit provisions upheld by the large firms listed in the stock exchange. Moreover, Martínez-Sola, Teruel and Martínez -Solano (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 statistics influencing trade credit.

Trade credit appears in the balance sheets of companies as both accounts receivables (supply) and accounts payable (demand). In Pakistan, state bank requires companies to show their details of financial statements so that it can be published in Balance Sheet Analysis (BSA) and Financial Statement Analysis (FSA) published by State Bank of Pakistan. Hence the measure of trade credit in this study is the supply of trade credit that is accounts receivables.

The research question addressed is; what are the factors that determine the level of trade credit supply in non-financial firms of Pakistan? No study till date has addressed this question in context of Pakistan with an exception of the study conducted by Khan, Tragar and Bhutto (2012). They have estimated the determinants of trade credit in textile sector of Pakistan with the variables as cost of capital, growth, cash flow as internal financing, access to capital markets and size of firms. Their results show a positive and significant effect with size of firm and cash flow.

Thus the present study tries to fill this gap. This study has opted to search for following independent variables to determine the trade credit supply by non-financial firms of Pakistan; macroeconomic indicators comprising of GDP, TURN as a proxy to product quality, liquidity measures the liquid assets of the firm, price discrimination and firm size. The specific volatile financial and legal conditions in the country, strong trusted ties between buyer and suppliers, largely uninformed banks in the market and expensive loans offered by the banks makes the supply of trade credit preferable over bank loans in country like Pakistan. This research will contribute to the literature regarding the factors that influence the optimal quantity of trade credit supply in a developing country.

1.3 ORGANIZATION OF THE DOCUMENT

The remainder of this dissertation is organized as follows: Chapter 2 reviews the literature and thus leading us to the gap in the literature. Chapter 3 discusses the sources of data and discussion about sample size. Chapter 4 reports the results with the analysis and lastly Chapter 5 concludes the study and discusses the implications of the findings.

Chapter 2

LITERATURE REVIEW

2.1 INTRODUCTION

A detailed literature about trade credit policies, its provision and its use across different countries has been reviewed in the first section of this chapter. The next section discusses the various theories that guide us about the motives at work regarding trade credit. These theories provide us with the solid argument of why firms demand and supply trade credit against lending available from banks, and why do some firms act as financial intermediaries in the presence of banks. Then the discussions about variables which have been derived from these theories have been presented. Some hypotheses have also been constructed in the light of theories and discussion about variables. In the last section, we discuss the one study carried out in context of Pakistan regarding trade credit supply and draw our own research path onwards.

2.2 IMPORTANCE AND USAGE OF TRADE CREDIT SUPPLY

A question mostly arise in the literature of financing that why businesses use trade credit in the continuation of financial institutions. This question can be divided into two parts first, why firms use trade credit and secondly, usage of trade credit in the presence of financial institutions. There are various ways to answer this question.

Many research papers 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; Pike,

Cheng, Cravens and Lamminmaki, 2005; Cheng and Pike, 2003; Petersen and Rajan, 1997; Deloof and Jegers, 1996; Elliehausen and Wolken, 1993; Long, Malitz and Ravid, 1993).

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 (2003) account of trade credit supply stands as a quarter of total assets in the balance sheet of European firms. Beck et al. (2008) mention that trade credit is the major source of external financing in underdeveloped countries because they have less access to standardized capital markets. Same argument has made by Ge & Qiu. (2007) who have conducted a study in China, that in emerging markets firms get less back up from financial institutions and they give weight to external informal financing like trade credit. Everything else trade credit is the final source of financing for financially controlled firms. Buyers having good connection with suppliers involved more in credit transactions when they feel more restraint in getting finance. Most of the time speedy and financially constrained firms utilize the opportunity of trade credit (Wilson & Summer, 2002). Firms adopting the trade credit facility normally achieve a higher growth rate than those who do not get involved in this facility. 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).

Alphonse et al. (2003) argue that the firms having limited access to the financial institutions possibly may get involved in the practices of trade credit. 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 & Maksimovic, 2004). Many managers of

small firms are not able to arrange an attractive external financing (Berger & Udell, 2006). They are not able to arrange funds in small amounts (Macmillan gap) and when they found they face a bit expensive (Storey, 1994). He also evaluates the previous research and concludes that use of trade credit is more important for small firms as compare to large firms. After analyzing the US small firms data Walker (1991) conclude that trade credit can be used in the replace of bank credit. According to Boyery & Gobert (2007) small and medium size firms use trade credit as a source of outside financing. They always try to hold the payments to their suppliers. Firms having less financing relation with financial institutions involved more in credit transactions and have enough amount of trade creditor in their balance sheet than the firms having good association (Petersen & Rajan, 1994, 1997).

Before granting any financing every lender need some information regarding the financial performance of the customer. Firms belong to the same industry needs less information regarding the financial and overall performance of the buyer as compare to any financial institutions. A supplier can easily judge the risks associated with the business of the buyer. In this process of evaluation bank may face a larger cost than any supplier in the same industry. In this case banks desire to grant loan to potential suppliers.

In case of information asymmetry any business contract cannot achieve the true spirit of the deal. Rodriguez-Rodriguez (2006) highlights this issue. They also argue that seller have an advantage over bank to repossess the goods and resale them. Financial institutions can use the account of trade credit as a source of measuring creditworthiness of the business. Burkart & Ellingsen (2004) state that the information regarding the quality of the product can be observe through the

amount of trade credit and its end result would be in the shape of reduction in information asymmetry.

Schawartz (1974) monetary contraction may result in the tone down of trade credit. In case of tight monetary conditions when interest rate is high it is more likely that firms with less access to the capital markets may involved in trade credit. On the other hand firms with access to capital market may increase trade credit supply during these conditions. Same thing has been investigated by Guariglia & Mateut (2006) and mentioned that during the situation of monetary contraction firms use trade credit interchangeably with bank loan.

Based on the most recent research of Garcia-Teruel & Martinez-Solano (2010a) and Niskanen & Niskanen, (2006) , they suggest some factors for trade credit: first, firm's capacity to get external financial support and its ability to generate internal resources are positively related with trade credit provision; second, firm's creditworthiness can determine how much trade credit a firm will offer; third, the cost of finance and firm's growth are also reasons for granting trade credit and quality of the product, being measured by turnover of sales, and lastly the macroeconomic conditions as GDP are also positive with the supply of trade credit . These research results are consistent with other literature (Delannay & Weill, 2004; Garcia-Teruel & Martinez-Solano, 2010b).

2.3 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.

2.3.1 Macroeconomic Conditions

Firms normally increase the use of trade credit under the conditions of deteriorating in gross domestic product (Niskanen & Niskanen, 2006). In case of stressed macroeconomic conditions every sector of economy faces a disturbance in itself and vice versa. In case of lower demand in market and decrease in level of production of firms would lead to a limitation in obtaining bank credit and a limited internal cash generation (Huyghebaert (2006) and Garcia-Teruel & Martinez-Solano, 2010b).

2.3.2 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 Stowe, 1993; Emery and Nayar, 1998; 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 that is TURN over of sales. This means that more the sales turnover less would

be the supply of trade credit because this is would be case if the product quality is not good or according to the buyers requirements.

One other important edge that the suppliers get by issuing trade credit is the collateral liquidation advantage. By this we mean that the suppliers gets an edge on banks in disposing the assets seized in a situation where customer may fail to pay for them and then reselling them via their own sales network (Petersen and Rajan ,1997; Longhofer and Santos,2003; Frank and Maksimovic ,2005).

2.3.3 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 a hype in sales (Pike et al., 2005), all this setups results 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 weak standings thus the price discrimination allows suppliers to provide the facility of payment to both the customers. Those who wish to make an early payment are given the discount and for those who would delay their payments a facility of an extended contract is provided by the terms of the trade credit contract which is 2/10 net 30; pay within 10 days and get a 2% discount or pay in full after 30 days. This theory of price discrimination is widely supported in trade credit literature (Garcia-Teruel & Martinez-Solano, 2010a; Atanasova, 2007; Guariglia & Mateut, 2006; Cunningham, 2004; Delannay & Weill, 2004). Thus customers could be differentiated in credit and cash category by the firm and moreover, this mode of financing would lead to a reduction in

competition among firms that some may deal in the cash market and others in the credit market (Brennan et al., 1988).

From this theory we have drawn our 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 weak financial standing on credit. As the strong customers may pay early against the weak ones, firms are thus able to discriminate price easily.

2.3.4 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.

Lastly, the inventory management model developed by Bougheas et al. (2009) speaks of our 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 holds 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 having 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.

Another evidence for trade credit supply by the firms facing liquidity issues comes from the transaction cost theory (Ferris, 1981) that there resides an approach to have a trade-off amongst two costs; financial transactions or the exchange of goods. Thus suppliers consider lessening their inventories on credit in order to enhance their liquidity withholdings. Also the theory states that trade credit supply is used a marketing tool by firms by creating new customers and could cash a long term relationship with them, this is especially true for the new entrants (Wilson & Summers, 2002; Cuñat ,2007). Trade credit supply may serve to reduce the negative impact on firm's profitability in era of liquidity crises, such as that of financial crises (Kestens et al.,2011)

Also larger firm generally do not face issues mentioned above as liquidity constraints, product demand and inventory costs. They have higher internal cash flows and due to quality products they are in demand along with having proper means to bear inventory costs. In contrast, smaller firms are without these benefits in the market and thus they are best suited to extend more trade credit than their larger competitors.

In this study two types of variables have been selected. First type belongs to those variables which are under control of the firm or these are called as firm specific variables. Secondly those variables have been included which are not under control of any firm or sometimes calling them as macroeconomic variables.

Trade Credit Supply (TCS), depicts from the work of Petersen and Rajan (1997). It can be calculated as account receivables to total sales. Many researches as Petersen & Rajan (1997),

Huyghebaert (2006), Niskanen & Niskanen (2006), Rodriguez-Rodriguez (2006) and Garcia-Teruel & Martinez-Solano (2010a; 2010b), states that trade credit supply can be measured as account receivables. The larger amount of this ratio indicates that major portion of sale transactions has been carried out on credit.

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. Study anticipating a negative relationship between trade credit supply and gross domestic product. Because many researches mentioned above suggest that when the economy faces a downfall in their gross domestic product leads towards the increase in custom of trade credit and vice versa.

The inventory management model developed by Bougheas et al. (2009) speaks of 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 holds 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 having 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.

Operating margin over sales is used to measure the price discrimination variable. The logic goes as the firms having huge operating margins would generate excessive cash flows by selling their

extra units to the weak customers. As customers having strong financial standing would pay early in contrast to the weak customers, suppliers are able to discriminate between their customers. This has been empirically proven by may authors including Peterson and Rajan(1997) Niskanen and Niskanen (2000b) and Brennan et al. (1988). Niskanen and Niskanen (2006) reports that monopolists use trade credit as the accounts receivables of firms are explanatory of their huge contributing margins.

Size can be measured as natural log of book value of assets. Larger firms in size have better access to other source of financing because they have good credit worthiness. These firms prove to be a good financial intermediary to financially constrained firms (Schwartz, 1974). According to Long et al. (1993) larger firms have good standing and have a better right to use to capital markets so they have no need to get involved in credit sales. On the other hand 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). There is mix relationship between firm's size and account receivables. McMillan and Woodruff (1999b)

Trade credit suppliers can collect the information about the quality of their products by granting trade credit. TURN is a proxy that we can used to look at the quality of the product. According to Garcia-Teruel & Martinez-Solano (2010a) TURN is a broadcasting parameter which passes on the information regarding worth of the product. Fifth variable is TURN which can be measured as sales over assets minus account receivables. A lower value of the resultant would be a sign of a better value of the products. Firms which are producing more valuable or good quality products

they do not need to allow more time to their customers to examine the quality of their products. TURN have an inverse relationship with trade credit supply Long et al. (1993).

Lastly talking of industry effects on trade credit supply, some authors (Ng et al., 1999; Nilsen, 2002; Burkart et al., 2004) have found variations among different industries. According to Fisman & Love (2003) and Ng et al. (1999) use of trade credit is different in different industries but has the same pattern within one industry. They reason this to the nature of the business that the industries dealing with more tangible inventories use more trade credit as they are best suited to deal with their products on credit against those industries that holds intangible inventories such as the services of restaurants and technology firms (Niskanen & Niskanen, 2006).

Further arguments has been provided by Jain (2001) that in industries which are entitled to many sellers the use of trade credit would be lessened because banks would be able to save monitoring cost and hence would lend to buyers directly. On the contrary, in such industries which are positioned to have high bankruptcy costs and fixed monitoring costs, banks would not like to lend and therefore, trade credit supply would get a boost.

An argument has been given by Smith (1987) that as the buyer and suppliers are known and are affected by the similar conditions of the market hence the trade credit terms and conditions and its provision remains same within industry. We are then to measure that whether the firm characteristics would have any weight in deciding for the trade credit provision or not. We have taken industry as a dummy variable as it may determine the level of trace credit supply and it has been treated as a dummy variable in extensive empirical studies as well (Huyghebaert,2006; Delannay&Weill,2004).

Relationship about independent variables and trade credit supply can be hypothesized in the following pattern.

Firms normally increase the use of trade credit under the conditions of deteriorating in gross domestic product Niskanen & Niskanen (2006). In case of stressed macroeconomic conditions every sector of economy faces a disturbance in itself and vice versa. In case of lower demand in market and decrease in level of production of the firms would lead to a limitation in obtaining bank credit and a limited internal cash generation Huyghebaert (2006) and Garcia-Teruel & Martinez-Solano (2010b). Finally, under the stressed macroeconomic conditions firms are not able to get bank loan as a result level of trade credit increases.

H1: There is a negative relationship between gross domestic product and trade credit supply.

According to the inventory management model developed by Bougheas et al. (2009) and the empirical evidence provided by the authors liquidity has been suggested to have a negative relationship with the trade credit supply. Hence 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. Further as transaction cost theory (Ferris, 1981) also argues that there resides an approach to have a trade-off amongst two costs; financial transactions or the exchange of goods. Thus suppliers consider lessening their inventories on credit in order to enhance their liquidity withholdings. Hence, the following hypothesis has been postulated.

H2: There is a negative relationship between liquidity and trade credit supply.

In long term relationships the suppliers confirms by either extending credit period or providing a good discount rate Ng et al. (1999). Further Brennan et al. (1988) provide evidence that firm with high profits would offer more trade credit as they don't have to reduce their price as well hence, providing same terms of credit to all buyers. However, trade credit supply is best made to discriminate price among customers under certain conditions as suggested by Fisman & Love (2003). Trade credit supply would be offered to firms which are flexible in demanding of payment by sellers. Secondly, as information asymmetries do exist in the market hence the sellers would ensure product quality and thus, sales. Third trade supply is said to have an edge over the competitors in a same industry. Thus we may postulate our third hypothesis as,

H3: There is a positive relationship between price discrimination and trade credit supply.

Size has been used to measure the reputation and creditworthiness of the non financial firms in most of the literature on trade credit (Petersen & Rajan, 1997; Huyghebaert, 2006; Garcia-Teruel & Martinez-Solano, 2010a; Niskanen & Niskanen, 2006). It is to observe that large firms have better access to other source of funds (Schwartz, 1974). These firms can perform a better role of financial intermediary than those firms who have the lesser access to capital markets and have financial constraints during the periods of tight monetary policy Firms with these facilities grant more trade credit than small firms.

On the other hand as mentioned above, model of inventory management by Bougheas et al. (2009) speaks that large firms don't face liquidity issues and don't 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 we postulate our hypothesis as follows;

H4: There is a significant relationship between firm size and trade credit supply.

Trade credit suppliers can collect the information about the quality of their products by granting trade credit. TURN is a proxy that we can used to look at the quality of the product. We can calculate it sales over asset minus account receivable. Lower ratio of sales turnover indicates towards the better quality of the product and vice versa. There is a negative relationship between TURN and account receivables Long et al. (1993). We are also expecting a negative sign between TURN and trade credit supply.

H5: There is a negative relationship between TURN and trade credit supply.

2.4 TRADE CREDIT IN CONTEXT OF PAKISTAN

Only one published study has investigated trade credit demand and supply in context of Pakistan to our knowledge carried out by Khan, Tragar and Bhutto (2012). They have worked on the determinants of trade credit demand and supply in the textile sector of Pakistan. Variables used to determine trade credit supply in their study were internal cash flow, access to capital markets, growth rate, KIBOR and size out of which only cash flow, access to capital market and size were reported as significant. This study does not include some of these variables like internal cash flow, access to capital market and KIBOR. Reason is KIBOR is correlated with GDP and access

to capital market and internal cash generation becomes insignificant. Their study left unanswered the question that whether another important macroeconomic indicator such as GDP would have an effect on trade credit supply or not? Further what impact would other firm related characteristics mentioned in literature have an importance, such as liquidity, price discrimination and product quality. Lastly, do industry plays a part in determining the level of trade credit in context of Pakistan or not?

All these questions have been addressed in this study in order to fill the gap in the literature. This study provides an overall analysis of the non-financial firms listed in the KSE index in their provision of trade credit to customers.

Chapter 3

DATA DESCRIPTION AND ECONOMETRIC METHODOLOGY

3.1 INTRODUCTION

This chapter deals with three sections naming the data description, econometric model and methodology. In the first section, data source and our sample characteristics have been described. In second section, model comprises of the determinants that are being regressed on trade credit supply in order to get the level of trade credit to be provision to the customers. Third section talks about the GMM methodology applied in this research. Other technique that could be used in this study to estimate the model is OLS. This study has made certain arguments in this section as to what shortcomings OLS remains unsuitable to be used in this study. Hence, the appropriate methodology, supported by the literature for the very reasons this study faced, was GMM.

3.2 DATA DESCRIPTION

This study used eleven year 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, some data have been extracted directly from the financial statements of non-financial firms listed at Karachi Stock Exchange (KSE). There are 365 non financial firms listed at Karachi Stock Exchange (KSE). During the analysis firms which are not able to provide the complete information regarding trade credit supply and other variables are excluded. Firms having missing and

extreme values of assets and liabilities are also excluded. To get better results firms which do not have consecutive eleven year data have also been excluded. Finally, 156 non financial firms divided among 13 industrial sectors with 1397 number of observations have been included.

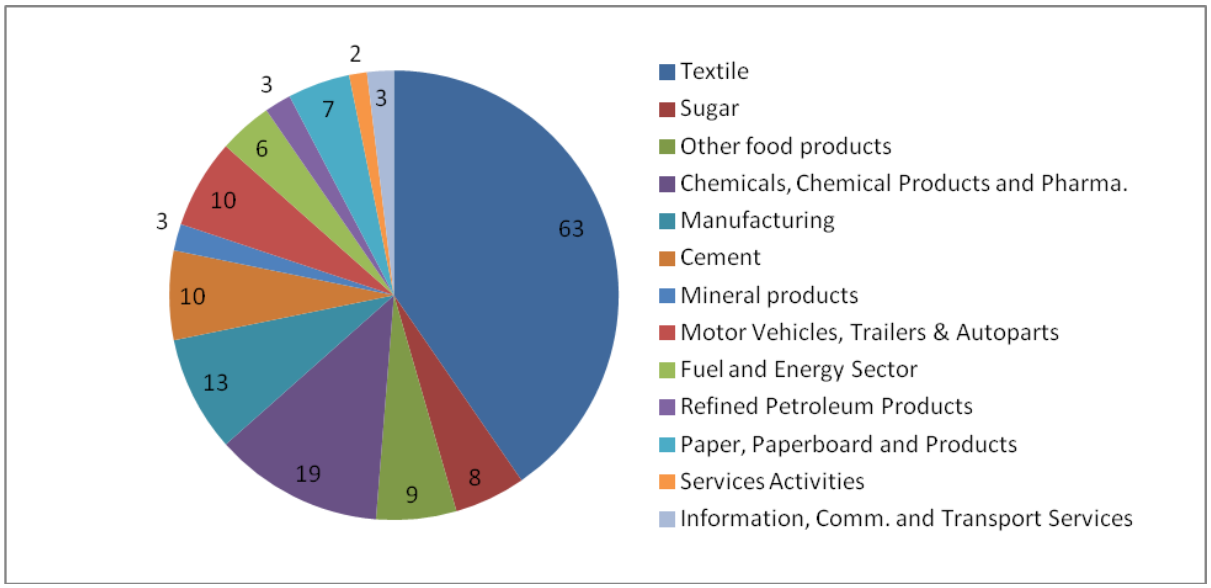
The following Table 3.1 shows the industrial distribution and their contributions in overall sample selected. Table clearly shows that sixty three firms belong to the major textile industry of Pakistan secondly chemical and chemical products and then manufacturing, cement, motor vehicle and food products, sugar, paper and energy sectors are the major sectors. Mineral products, refined petroleum, information technology and transport and service industry belongs to the small portion of the following distribution.

Table 3.1: 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 & 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**

Pie chart of the above distribution is clearly indicating that textile sector is the major part of overall distribution. Textile sector contributing more than any sectors in industrial sector of Pakistan. Almost 63% of the data belongs to this sector. Chemicals, Chemical Products and Pharma contributing 19% in overall distribution. Contribution of Cement and Motor Vehicles, Trailers & Auto parts sectors is 10%. Other food products, Sugar, Paper, Paperboard and Products, Fuel and Energy Sector, Services sector contributing nine, eight, seven, six, two respectively. Mineral Products, Refined Petroleum Products, Information and Communication and Transport Services have equal share of three percent in overall contribution.

Figure 3.1: Pie Chart of Industry Distribution



Trade credit is a general term that is used for two main accounts of balance sheet (account receivable and account payable). First account belongs to the asset side and second belongs to the liability side of the balance sheet respectively. Due to data constraint this study analyzes the determinants of account receivables only. Study using the terms trade credit supply and trade credit demand for account receivable and account payables respectively.

3.3 ECONOMETRIC MODEL

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

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 variables at time t. β_i is the vector of coefficients and ε_{it} stand for error term. The above equation can be written as

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

Then by including industry dummy variables the above equations becomes

$$TCS_{it} = \alpha + \sum_{i=1}^{5} \beta_i X_{it} + \sum_{j=6}^{19} \gamma_j D_j + \varepsilon_{it} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots . (3)$$

Where, TCS_{it} stand for trade credit supply. α is a constant term. β_i is a vector of coefficients of industry and macroeconomic variables and X_{it} is a vector of explanatory variables comprises firm specific and macroeconomic variables. γ_j is the vector of coefficients of industry specific dummy variables. D_j is a vector of dummy variables which are used to explain the influence of trade credit supply in the different sectors of non financial firms of Pakistan. eit is an error term.

The above equation can be written as

$$\begin{aligned} TCS_{it} = \alpha &+ \beta_1 GDP_{it} + \beta_2 LIQ_{it} + \beta_3 PD_{it} + \beta_4 SIZE_{it} + \beta_5 TURN_{it} + \gamma_1 D_1 + \gamma_2 D_2 + \gamma_3 D_3 \\ &+ \gamma_4 D_4 + \gamma_5 D_5 + \gamma_6 D_6 + \gamma_7 D_7 + \gamma_8 D_8 + \gamma_9 D_9 + \gamma_{10} D_{10} + \gamma_{11} D_{11} + \gamma_{12} D_{12} \\ &+ \gamma_{13} D_{13} + \varepsilon_{it} \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots . (4) \end{aligned}$$

By taking lag of the dependent variable

$$TCS_{it} = \beta_0 + \beta_1 TCS_{it-1} + \beta_2 GDP_{it} + \beta_3 LIQ_{it} + \beta_4 PD_{it} + \beta_5 SIZE_{it} + \beta_6 TURN_{it} + \gamma_1 D_1 + \gamma_2 D_2 + \gamma_3 D_3 + \gamma_4 D_4 + \gamma_5 D_5 + \gamma_6 D_6 + \gamma_7 D_7 + \gamma_8 D_8 + \gamma_9 D_9 + \gamma_{10} D_{10} + \gamma_{11} D_{11} + \gamma_{12} D_{12} + \gamma_{13} D_{13} + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Explanation of all above mentioned dependent and independent variables have been presented in second chapter. All variables have been derived from the previous empirical studies and theories of trade credit.

3.4 ECONOMETRIC METHODOLOGY

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.

Generalized Methods of Moments (GMM) has been used in this study, as 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 & Martinez-Solano, 2010b; Cunat, 2007; Bougheas et al., 2009). In trade credit data we deal with 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 & Martinez-Solano (2010b) provides us with an example to use GMM in our 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 again remains unsuitable.

Further, as mentioned earlier, the independent variables and error term are related and hence leaves us to opt for GMM. Garcia-Teruel & Martinez-Solano (2010b) further states that in case of homoscedasticity of residuals, 1-stage GMM would be appropriate to apply and if the residuals are heteroscedastic in nature then we go for 2-stage technique as it suits more in this scenario.

To get the appropriate results all independent variables including dummy variables have been used as instruments. A detailed discussion regarding these independent variables has been discussed in second chapter. The following table 3.2 contains the summary of definitions, abbreviations and source of all independent variables.

Table 3.2: Determinants of Trade Credit Supply

Variables	Definitions	Source
Gross Domestic Product (GDP)	It is measured by taking the annual figures of the data on GDP. Measured it as by taking the log of values.	Macroeconomic Conditions Niskanen & Niskanen (2006)
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 Peterson and Rajan (1997)
SIZE	Natural log of book value of assets	Inventory Management Model Bougheas et al. (2009)
TURN	Equating to sales over assets deducting receivables	Financial models Garcia & Solano (2010a)

Chapter 4

DATA ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

This chapter contains the discussion regarding analysis of the sample data. In the first section it is reported that how much data have keep central tendency and deviation from its mean by reporting the value of mean and standard deviations. Then correlation table and a correlation matrix have been presented. It is clearly show that there is not high correlation among variables. At the end empirical results of estimated model and their significance with empirical findings of previous studies has been presented. After reporting the results, analysis has been carried out and reasoning has put forward for the results.

4.2 DESCRIPTIVE STATISTICS OF THE DATA

Table 4.1 provides the statistic summary of the major determinants of the trade credit supply. It is to observe that mean values are closer to their median. It shows that there are not an adequate amount of extreme values exist in the ratios of these variables. Moreover we can observe that there is not a pronounced variation in data. Trade credit supply and TURN have a greater variation than any other variable. Value of standard deviation is showing the highest deviation of the variables. PD, LIQ, GDP and SIZE have smaller variation in the data.

Table 4.1: Descriptive statistics of variables

	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

Trade credit supply (TCS) is the ratio of account receivable over sales. GDP is gross domestic product and can be measured as by taking the log of the annual values of GDP. LIQ is liquidity ratio can be measured as firm liquid assets to total assets. Price discrimination (PD) is operating margin to sales. SIZE can be calculated as natural log of book value of assets. TURN is a proxy for product quality and calculated as sales over assets deducting receivables.

To check the correlation among variables a Pearson correlation test and a scatter plot has been conducted. Correlation matrix is given in table 4.2

Table 4.2: Correlation Matrix

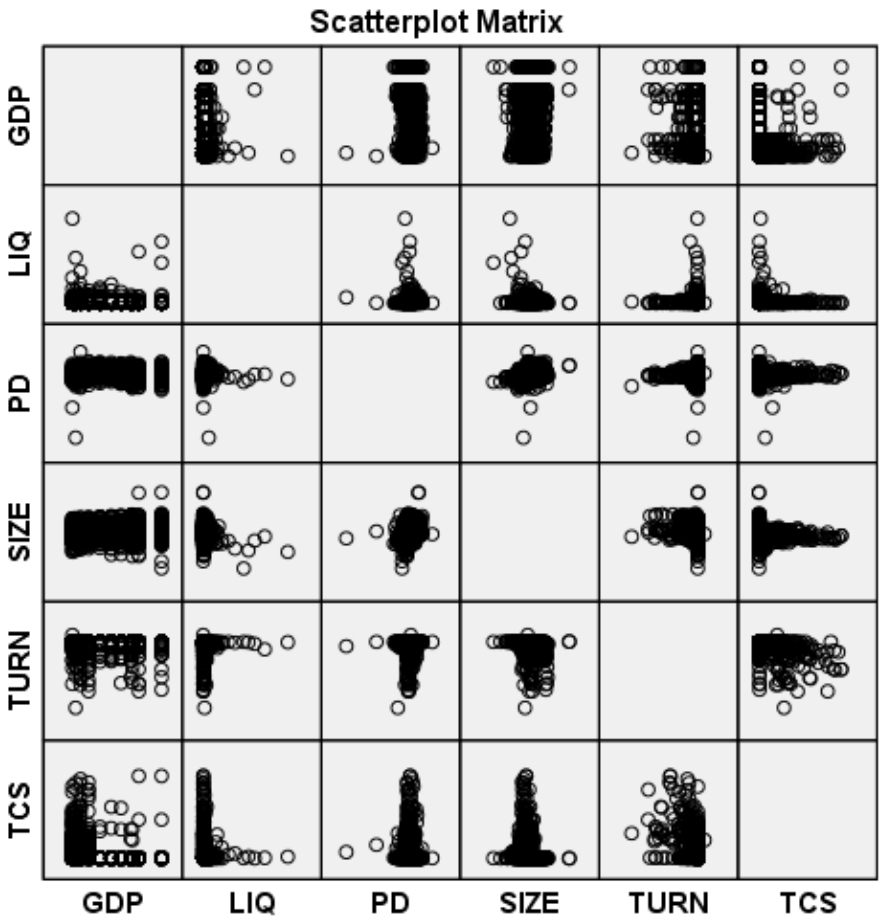
	TCS	**GDP**	**LIQ**	**PD**	**SIZE**	**TURN**
TCS	1	-.329	-.022	-.010	-.195	-.525
GDP	-.329	1	-.072	-.055	.234	.090
LIQ	-.022	-.072	1	.009	-.138	-.005
PD	-.010	-.055	.009	1	.327	.030
SIZE	-.195	.234	-.138	.327	1	-.137
TURN	-.525	.090	-.005	.030	-.137	1

Trade credit supply (TCS) can be measured as account receivable over total sales. Trade credit supply 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. GDP have negative relationship with TCS, LIQ and PD and have 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, LIQ and TURN. 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.

By supporting above results the pictorial form is also presented in the study. A scatter plot matrix is given in figure 4.1

Figure 4.1: Scatter plot Matrix



Trade credit supply has a negative correlation with GDP, LIQ, PD, SIZE and TURN. GDP have a positive correlation with SIZE and TURN and negative with PD and LIQ. LIQ only have a positive correlation with PD and negative with other independent variables. PD has a positive correlation with SIZE and TURN. SIZE and TURN have negative correlation.

4.3 ESTIMATION RESULTS

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

At the first stage, by using first lag of dependent variable as an explanatory variable, GMM technique has been used. Second and third lag of dependent variable and first and second lag of GDP, LIQ, PD, SIZE and TURN has been used as instruments. At the second step when industry dummy variables have been introduced in the model then all explanatory variables of first model and industry dummy variables used as independent variables. Dummy variables also used as instruments in this stage. Summary of the results is presented in Table 5.2.

The following Tables 4.3 and 4.4 contain the information regarding the empirical findings of the estimated model estimated at first stage.

Table 4.3: Significance of the Model

No. of observations	R-squared	Adjusted R-squared	J-statistic	p-value
1397	0.444955	0.442960	3.88E-17	0.5782

Results report the value of R^2 that is 44 percent indicating that the model is explanatory up to 44 percent for the supply of trade credit in non financial firms of Pakistan. The value of adjusted R^2 is almost equal to the value of R^2. J-statistic is indicating towards the validity of instruments and its p-value is also suggesting towards the rejection of hypothesis that over identified restrictions holds.

Table 4.4: GMM Results

	Coefficient	Standard Error	t-Statistic	Prob.
Constant	46.30661	5.249271	8.821532	0.0000
GDP	-4.740663	0.626072	-7.572076	0.0000
LIQ	-1.041878	0.296964	-3.508433	0.0005
PD	3.028585	0.831351	3.642968	0.0003
SIZE	-0.723527	0.062942	-11.49509	0.0000
TURN	-0.482397	0.016122	-29.92255	0.0000
TCS(-1)	0.462314	0.021293	21.71182	0.0000

Trade credit supply (TCS) can be measured as account receivable over total sales. GDP is gross domestic product and can be measured as by taking the log of the annual values of GDP. Liquidity (LIQ) is ratio measured as firm liquid assets to total assets. Price discrimination (PD) is operating margin to sales. SIZE can be calculated as natural log of book value of assets. TURN is a proxy for product quality and calculated as sales over assets deducting receivables. All variables are significant at 0.01 level of significance.

Gross Domestic Product (GDP) shows a negative relationship with trade credit supply. That is significant at p-value<0.01. Niskanen & Niskanen (2006) also build the same argument that accounts receivable also have an inverse relationship with macroeconomic conditions. Justification behind the argument is that when country's GDP goes down every industry affected through this downfall as a result banks will also not 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 we would not reject our hypothesis.

Liquidity (LIQ) indicating a negative and significant relationship with trade credit supply. 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 our 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 holds 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, we will not reject our hypothesis regarding relationship between liquidity and trade credit supply.

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 our hypothetically 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 our results. Niskanen and Niskanen argues that account receivables of large firms are due to their huge contribution margin which suggest that price discrimination is used by large firms.

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 & 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 well 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 our 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 standardize one. As our sample consists of the firms which are listed in KSE index and are producing standardize goods. We may have got a positive relationship of size of the firm with the trade credit supply if we 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 for as this study is concerned we will not reject our hypothesis of having a significant relationship between firm size and trade credit supply which is negatively related to each other.

Last firm specific variable of TURN is also in line with 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 & 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.

To check the effect of industry dummy variables second models have been estimated. Results of Table 4.5 are showing all dummy variables are insignificant which concludes that there is no

effect of industry dummy variables on trade credit supply. However, some authors (Ng et al., 1999; Nilsen, 2002; 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. Results of the equation estimated after including the dummy variables have been reported in the Table 4.5 given below.

Table 4.5: GMM Results after Including Dummy Variables

	Coefficient	**Standard Error**	**t-Statistic**	**Prob.**
Constant	45.14962	5.259830	8.583855	0.0000
GDP	-4.752222	0.621555	-7.645699	0.0000
LIQ	-0.598968	0.309262	-1.936768	0.0530
PD	3.050623	0.894592	3.410072	0.0007
SIZE	-0.666293	0.067115	-9.927680	0.0000
TURN	-0.496525	0.016563	-29.97863	0.0000
TCS(-1)	0.450114	0.021293	21.71182	0.0000

Continued

	Coefficient	Standard Error	t-Statistic	Prob.
D1	1.192197	0.795138	1.499358	0.1340
D2	0.658030	0.875716	0.751420	0.4525
D3	1.271075	0.871598	1.458327	0.1450
D4	0.894144	0.825935	1.082585	0.2792
D5	0.575274	0.842057	0.683177	0.4946
D6	0.595650	0.859313	0.693170	0.4883
D7	0.065449	1.017844	0.064302	0.9487
D8	0.353406	0.859151	0.411344	0.6809
D9	-1.505992	0.921403	-1.634455	0.1024
D10	-0.600659	1.020074	-0.588838	0.5561
D11	0.236093	1.039092	0.227211	0.8203
D12	0.266869	0.888319	0.300420	0.7639

After including dummy variables all independent variables remain significant. All twelve dummy variables are insignificant at 0.05 level of significance. Thirteenth dummy has used as reference dummy in the analysis.

Chapter 5

CONCLUSION

Last chapter concludes the study by summarizing the analysis and further highlighting the implications our research would have for the academia and business sector of Pakistan.

This research undertakes to explain the relationship among the determinants and trade credit supply based on non financial firms listed at Karachi Stock Exchange (KSE) from 2001 to 2011. As looking at the objective of this research this study analyse the determinants of trade credit supply. The find, that firms with greater size enhance their sales without involving in credit transactions. Moreover there no firm needs to do insure their product quality because there already have a good reputation and product quality. Firms having enough capacity for internal cash generation has no need to get involved in credit transactions. In other words they grant less trade credit.

It is also observed that the firms with low quality products not need to get involved in credit transactions. As they are scared from losing their customers after measure the quality of their products they grant less trade credit.

Results are useful for non financial firms listed at Karachi Stock Exchange. They can derive useful information regarding granting trade credit to customers before making any strategy regarding trade credit supply.

5.1 IMPLICATIONS

The study adds to the literature by analyzing the determinants of trade credit supply in context of Pakistan. May 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 (Emery, 1984; Solano et al. 2012). Thus our research has tried to sort the supply side of trade credit prevailing in Pakistan. Furthermore, we 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 gives 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 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 we 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 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.

Also according to one study firms increased their trade credit supply in the times of financial crises. Strikingly, firms which extended more trade credit were left least affected by the crises. Keeping in view this finding, one policy implication for the government would be to devise some policies and rules that may facilitate trade credit practices in our country as well. Such a policy may ensure lesser effect of any such disastrous situations such as the financial crises.

5.2 LIMITATIONS OF RESEARCH AND FUTURE DIRECTIONS

There are a number of limitations of this research; first of all we have taken only the KSE listed firms. Secondly, there were some data constraints like most of the firms do not clearly mention the account of trade credit in their balance sheets. Balance sheets of the firms were also not available for three to four years back. Even Financial Statement Analysis published by State Bank of Pakistan (SBP) unable to provide the data of trade credit before 2006.

As mentioned earlier, a number of avenues are available for future research to be carried out in context of Pakistan. First and foremost, trade credit demand side should be explored in the industrial sectors so that we may be able to come up with some kind of an understanding of the equilibrium equation in context of Pakistan. This will help the policy makers and the players of the trade credit markets to design strategies to use trade credit which would be best suited in our scenario. 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. Such a research would be using primary data from these market players and would have a high value in coming up with the true picture of trade credit patterns at work.

Lastly, one very promising avenue for future research would be find out the optimal level of trade credit as it is evident that the level of trade credit has a profound effect on the firm value. (Solano et al., 2012).

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