Chapter 1
Introduction

1.1 Background of the Study

For most firms, especially small ones, trade credit is important. Trade credit can be defined as an arrangement between two trading parties, allowing a buyer to purchase goods or services on account. The importance of trade credit is manifested by the extent to which it is used by firms in different countries. Statistical evidence shows that about 70 per cent of the small firms in the US give trade credit to their customers (Petersen and Rajan, 1997). In the UK 80 per cent of the small firms sell on credit (Summers and Wilson, 2002; Atanasova and Wilson, 2003). In Mexico about 76 per cent of the firms grant trade credit to their customers (Van Horen, 2005). Also in Africa trade credit is important. Based on a sample of six African countries Bigsten et al. (2003) report that 62 per cent of the firms receive trade credit from their suppliers. Fafchamps (1997) finds that purchases on credit account for 81 per cent of the total purchases by Zimbabwean firms.

1.2 Aims and Contribution of the Study

The above clearly indicates that trade credit is an important phenomenon in many countries. Although the literature on trade credit is quite voluminous already, the exact role and determinants of trade credit are still unclear. This thesis aims at contributing to the growing empirical literature on trade credit. More specifically, we aim at providing new empirical evidence on three issues:

i) The determinants of trade credit demand and supply
ii) The impact of trade credit on customer switching

iii) The determinants of the length of the trade credit periods

These three issues explain different but related aspects of trade credit. The reasons for focusing on the above issues are discussed in subsections 1.2.1, 1.2.2 and 1.2.3, respectively. In analyzing these three issues, we will answer the following three research questions: (i) what are the factors that determine the amount of trade credit use by both suppliers and buyers; (ii) does trade credit prevent customers from switching suppliers; and (iii) what are the factors that determine the differences in the length of the credit period granted to customers by their suppliers.

1.2.1 The Determinants of Trade Credit Demand and Supply

Several studies focus on the determinants of trade credit. Some important studies on this theme are Chant and Walker (1988), Petersen and Rajan (1997), Fisman and Raturi (2004), McMillan and Woodruff (1999), Aaronson et al. (2004), Fisman (2003), and Giannetti et al. (2008).

In almost all cases, when analyzing the determinants of trade credit use, empirical studies (i) rely on a reduced form modeling approach. This type of analysis does not allow separation of demand and supply effects of trade credit use, which means that it becomes impossible to explicitly understand whether the effects of relationship-specific variables are related to demand, to supply or to both. Knowing the factors that affect demand, supply or both is important if one wants a better understanding of the way the market functions. The empirical studies also (ii) use information on trade credit coming from just one of the two parties involved in the transaction, i.e. information from a seller or a buyer. As such, previous studies may have incorrectly identified or even ignored important determinants of trade credit use (e.g. access to bank loans, firm
size, firm age, etc.), which may have led to econometric misspecifications and hence to biased estimates. Such important information cannot be provided by just one party in the trade transaction (Giannetti et al., 2008).

The innovation of our study lies with the methodology we use to address this topic. In particular, two innovations are worth mentioning. First, we use data from both sides of the market, i.e. demand and supply. More recently, Giannetti et al. (2008) argue that having data on bilateral relationships between the supplier of trade credit and his/her customer would be ideal to investigate the determinants of trade credit use. Second, we specify and estimate a structural model for trade credit demand and supply. Petersen and Rajan (1997) already signaled the need to estimate a structural model in this type of analysis. With this methodology we are able to disentangle demand and supply effects and show precisely which variables are related to supply, to demand or to both.

1.2.2 The Impact of Trade Credit on Customer Switching

Customer switching refers to a movement of a customer from one supplier of goods or services to another (ERGEG, 2006). Customer switching is an important issue for suppliers, since it may affect their sales in an adverse way. In particular, as some authors like Petersen and Rajan (1997) argue, whenever there are several suppliers of the same good, a customer may easily break his/her promise and establish a new trading relationship with a different supplier. Consequently, suppliers respond to customer switching behavior by using various relationship marketing strategies.

According to some studies on trade credit provision, trade credit is one of the marketing tools that can be used to prevent customer switching (e.g. Fisman and Raturi, 2004; Van Horen, 2005; McMillan and Woodruff, 1999; Cheng and Pike, 2003) and to create customer loyalty (Bigsten and Soderbom, 2006; Cheng and Pike, 2003). While these authors argue that
trade credit can prevent customer switching, they do not provide empirical evidence to support this claim.

Our study contributes to the existing literature by investigating whether trade credit reduces customer switching behavior. To the best of our knowledge, this is the first study to empirically test the role of trade credit in preventing customer switching.

1.2.3 The Determinants of Trade Credit Periods
Trade credit period refers to the length of time that a seller and buyer have agreed upon after which a complete payment of the debt for the goods/services delivered must be made (Iglesias et al., 2007). The length of the trade credit period is an important factor in business financing. Some customers consider it to be more important than the interest rate suppliers charge on the amount of credit (Neale and Shipley, 1985). The importance of the credit period lies in the fact that it may have a significant impact on the firms’ cash flow.

Iglesias et al. (2007) argue that firms in both developed and developing economies have access to different credit periods as granted by their suppliers. Also, Wilson (2008) acknowledges the existence of flexibility in trade credit periods and argues that customers are treated differently according to their importance, meaning that some buyers get a longer trade credit period than others although they are with the same supplier. Wilson and Summers (2002), for example, show that the credit period that firms in the UK obtain varies from less than seven to more than 120 days. Fafchamps (1997) finds that while some firms in Zimbabwe receive considerably less than 30 days credit, other firms get more than 30 days credit. Obviously, the question is why do these credit periods differ.

Only a few studies analyze trade credit periods, and most of them focus on firms in developed countries such as the UK. The contribution of this
chapter are twofold: (i) first, the chapter contributes to the limited empirical literature on this subject by investigating the factors that cause the variation in the length of trade credit periods among retailers in the Tanzanian rice market; (ii) second, different from the previous studies, this chapter contributes to the literature by combining in one model the firm’s characteristics that signal the bargaining power of both selling and buying firms. The literature argue that trade credit period can be affected by the characteristics of selling firms (e.g. Walker and Petty II, 1986) and buying firms (Paulo and Borden 2008; Giannetti et al., 2008). However, due to the lack of information of both parties involved in the transaction, previous studies have looked at the effect of the characteristics of only selling firm (e.g. Wilson and Summers, 2002) and or buying firm (e.g. Fafchamps, 1997; Ge and Qiu, 2007; Paul and Borde, 2008). We argue that whereas the seller wants to minimize the length of the trade credit period and the buyer wants to maximize the length of the trade credit period, combining the characteristics that signal the bargaining power of both parties involved in the transaction will provide a better understanding on whether the observed length of the trade credit period is related to the bargaining power of the selling firm, the buying firm or both.

1.3 Empirical Application to Rice Markets in Tanzania

Studying the issues of trade credit mentioned in section 1.1, 1.2 and 1.3, this thesis focuses on one market (the rice market) and one country (Tanzania). By focusing on one market in one country we are able to get detailed information and to measure these three issues much more precisely than in a cross-country study using aggregate data. Moreover, by focusing on one country, our study is far less plagued by problems of
heterogeneity of countries, and our approach ensures that the quality of the data is more uniform.

Tanzania provides particularly interesting features to investigate various issues of trade credit. First, we note that trade credit use has increased after the market liberalization in the 1990s. Second, trade credit is important for Tanzanian firms as the country has less developed financial markets. A pilot study we conducted among rice suppliers in Tanzania revealed that 70 per cent of the transactions with rice retailers involve trade credit. Third, the number of private suppliers of rice has increased, which in turn has made customer switching of suppliers possible. Consequently, suppliers in Tanzania use trade credit as a strategic tool to prevent customer switching.

We choose to study the Tanzanian rice market for two reasons. First, the rice market is the most important food market in the country. Second, as will be shown in the next chapter trade credit is widely used in facilitating transactions in this market. The insights discussed above signify the relevance of studying trade credit issues in the rice markets of Tanzania. The challenge for future research will be to see if the results of this study can be generalized for other markets in Tanzania and/or for markets in countries with characteristics that are similar to Tanzania.

1.4 General Description of the Dataset

In order to adequately answer the research questions outlined in section 1.2 we use primary data at the individual transaction level. This study is carried out in two steps. First, a pilot study has been conducted from May

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1 Before the market liberalization, most of the transactions between wholesalers (e.g. National Milling Corporation) and retailers were cash based.

2 The term ‘rice suppliers’ in this thesis refers to the rice wholesalers. In some cases it refers to the selling firms, seller, or wholesale firm. As such, these terms will be used next to each other but all mean the same.

3 The term ‘rice retailers’ refers customers buying from the wholesalers. Sometimes these are referred to as ‘buying firms’, ‘retail firms’, ‘buyer’, or ‘customer’. In this thesis these terms are interchangeable and refer to the same thing.
to August 2007. This pilot study provided information for an in-depth understanding of different issues pertaining to: how trade credit emerged and is practiced in the market; the reasons for trade credit supply and demand; and the barriers to customer switching. Next, based on the insights of the pilot study, we developed a questionnaire and conducted a survey from January to August 2008.

The survey was conducted in order to get data for the empirical analyses presented in chapters 3, 4 and 5. Face-to-face interviews were used to collect the data. This approach was used because it ensures a higher response rate than other methods (Tourangeau, 2003). The data was collected from both rice wholesalers and retailers. Given time and resource constraints, we managed to interview 141 wholesalers and 276 retailers. More details of the methodology and the sources of the data are given in the empirical chapters.

1.5 Thesis Outline

This thesis consists of an introductory chapter (chapter 1); a chapter that discusses the pilot study; three self-contained empirical chapters; and one concluding chapter. These three empirical chapters (i.e. 3, 4 and 5) are written as separate papers. Since each of the three empirical chapters can be read separately, some overlap is likely to occur. Chapter 2 discusses the pilot study. The main aim is to discuss the origin and practice of trade credit in the Tanzanian rice market. In particular, it explains how trade credit emerged and is practiced in the rice market. This chapter is important as it provides a foundation for the empirical analysis in chapters 3, 4 and 5. To get a better understanding of the rice market of Tanzania, we first discuss the agricultural market liberalization and how the liberalization stimulated the development of long-lasting relationships between rice wholesalers and retailers, and trade credit transactions. The
chapter highlights the important factors that explain trade credit provision and demand, and discusses potential barriers to customer switching. These factors are empirically tested in chapters 3 and 4, respectively. Chapter 2 also discusses issues pertinent to differences in credit period provided by suppliers to their customers. An analysis of why these differences occur is presented in chapter 5.

In chapter 3 we pay particular attention to the factors that drive the demand and supply of trade credit. This chapter attempts to answer the first research question: what are the factors determining trade credit supply and demand? In this chapter, we specify the equations for both demand and supply. From these equations we derive a reduced form model based on the equilibrium condition that supply equals demand. The reduced form is estimated in order to give a general overview of the factors that determine trade credit demand and supply. Next to the reduced form model a structural model is estimated in order to be able to separate the demand and supply effects. The reduced form equation is estimated by using Tobit regression, and the structural model is estimated by using 3SLS. The results of the two estimation techniques are presented and compared to determine whether the two produce similar outcomes. We find that several factors influence the use of trade credit. With respect to relationship-specific variables, the estimates from structural modeling show that some factors affect only supply or demand, and vice versa. For example, while trade credit supply is determined by the length of the trading relationship and the frequency of transactions, trade credit demand is determined by the volume of the transactions and ethnicity.

Chapter 4 presents empirical evidence with respect to the relevance of trade credit in preventing customer switching. The chapter aims at answering the second research question: does trade credit prevent
customer switching, as is often suggested in the literature? The chapter is also the result of the findings in chapter 3 that the risk of customer switching is a driving force for suppliers to offer trade credit to their customers. In order to test the assertion that trade credit can prevent switching, trade credit is introduced in our analysis as the main explanatory variable, along with a list of other variables that aim at measuring barriers to customer switching. We use two estimation techniques to estimate switching behavior. First, we estimate our model by using a standard Probit regression. In this approach trade credit is assumed to be exogenous. Next, we estimate the model by using Probit with instrumental variables in order to control for the fact that trade credit is endogenous. In chapter 4, we find evidence that trade credit indeed plays a significant role in preventing customer switching. Chapter 5 is about the determinants of the trade credit period. The empirical question this chapter tries to answer is: what are the factors that determine the variations in the length of trade credit period among customers? Estimating the trade credit period involves an identification problem in which the trade credit period is observed only if a customer takes trade credit. We apply the Heckman two stage estimation procedures in order to correct for the sample selection bias. For this purpose, we specify and estimate two equations: the outcome equation which represents a model for trade credit period, and a selection equation which represents a model for access to trade credit. The estimations show that ethnicity, volume of transaction, the age of the buying firm, and the age of the selling firm are important factors that determine a trade credit period.

Chapter 6 presents the summary and conclusions of the entire thesis. In the chapter, a summary of the findings of each chapter is presented and discussed briefly. It also provides a possible direction for future research