IMPACT OF LENDING RELATIONSHIPS ON TRANSACTION COSTS INCURRED BY FINANCIAL INTERMEDIARIES: CASE STUDY IN CENTRAL OHIO

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
The Degree Doctor of Philosophy in the
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By

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This study applies a transaction costs framework to characterize the performance of financial intermediaries in central Ohio. The study aims at understanding the economic behavior of financial intermediaries serving the financial needs of small business borrowers in the U.S. with intention to transfer this knowledge to improve the performance of financial intermediaries in developing countries. To achieve this aim, a survey of selected credit institutions in central Ohio was undertaken to test the hypotheses postulated by the transaction costs theory. This theory was also used to examine the potential for adoption of promising lender-borrower relationships to mitigate transaction costs incurred in financial intermediation. Transaction costs were measured by the opinions of key lending informants towards the performance of small businesses undertaking loan contracting in credit markets.

An ordered multinomial probit analysis was used to estimate the empirical model of transaction costs and hypothesized determinants. Econometric analysis was performed on two sets of equations. The first set analyzed traditional economic determinants of transaction costs, while the second set addressed both traditional and lender-borrower relationship determinants. The chi-square values generated in the analysis enabled the comparison of the significance of differences between the coefficient estimates.
generated from the two sets of equations. Results show that the model of transaction costs of financial contracting that incorporated lender-borrower relationship variables had a greater explanatory power than that which included purely traditional economic variables. Empirical results also show that relationships between lenders and borrowers are critical to financial transactions because they facilitate credit-risk management decisions, contribute to competitive advantage, and assist in customer retention.

This study draws conclusions that transaction costs incurred by financial intermediaries in financial exchange with small businesses positively respond to exchange hazards associated with credit risks in the form of collateral requirements, uncertainty, investment in specific assets, and difficulty in measuring the performance of manpower employed for monitoring small loans. Finally, since relationship lending serves to differentiate efficient loans from inefficient ones, the technique can be a powerful tool to increase efficiency in the delivery of loans to small businesses.
Dedicated to my parents
ACKNOWLEDGMENTS

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CHAPTER 1

INTRODUCTION

1.1 Importance of transaction costs in credit markets

Transaction costs in credit markets are indirect financial costs generated by various processes, including the costs of searching and collecting relevant information about agents, negotiation procedures and agreements, opportunistic behavior of agents failing to fulfill loan terms, risk-averse behavior associated with credit rationing, and monitoring and enforcement costs incurred to determine whether agents are adhering to contract terms (Gray, 1993). Transaction costs are important in credit markets because first; they directly influence the level of efficiency at which a financial institution operates and second; they have a negative effect on the volume of loan funds flowing into the economy. The net economic effect of transaction costs in credit markets is to reduce the volume of loans available for entrepreneurs leading to reduced investment, and reduced production and consumption of goods and services (Rubin, 1990; Levine, 1997).

A thorough understanding of the effects of transaction costs in the economy can be aided by an examination of the behavior of agents in credit markets regarding the supply and demand functions of loan funds illustrated in Figure 1.1.
Figure 1.1: Credit Market Equilibrium

The supply of loans by lenders involves costs which directly vary with the volume of loan transactions. Figure 1.1 shows that the marginal costs of disbursing loans exhibits an upward sloping function shown by the curve SS'. The marginal cost function indicates that as the volume of funds supplied by lenders to borrowers increases, the cost spent on labor, capital and materials used in the loan disbursement process increases. Lenders charge an interest rate, r, to cover the marginal costs incurred to disburse loan funds. On the other hand, borrowers derive different utilities from loans disbursed by lenders. The utility obtained from loans reflect the economic benefits obtained by investing funds to
increase production and consumption of goods and services. This economic benefit represents the value which borrowers attach to loan funds and is represented by the demand function DD.

The demand function in turn reflects how much borrowers are willing to pay for an additional dollar of loan funds given the financial needs of their investments. It turns out that the willingness to pay function reflects the returns borrowers derive from investing loan funds, since the borrowers’ willingness to pay will be based on the benefits borrowers expect to get from business investments. The willingness to pay can also be seen as a lending rate, \( l \), at which lenders lend to borrowers. This lending rate reflects the opportunity cost of funds to the extent that the larger the volume of funds extended as loans, the higher is the opportunity cost of funds (Jacobs, 1971). The lending rate, \( l \), is higher than the interest rate, \( r \), reflecting the fact that intermediating funds by lenders is associated with transactions costs.

The demand function is downward sloping (as shown in figure 1.1) reflecting the fact that the greater the amount of loan funds borrowed from a lender, the less borrowers are willing to pay for an additional dollar of loan funds. The loan market is in equilibrium when the marginal cost of loan funds (\( r \)) equal marginal value of loan funds (\( l \)), and this point corresponds to \( Q^* \) which is the equilibrium volume of transactions. At equilibrium, the marginal cost of funds equals the marginal willingness to pay for the loans. Assuming that all costs of disbursing loan funds are incorporated in the supply function and that all benefits associated with loans are incorporated in the demand function, then market forces equate marginal benefits and marginal costs of loan funds. This point corresponds to a volume of loan transactions, \( Q^* \), at which lenders and borrowers maximize net
benefits from loan operations, and it corresponds to an efficient volume of loans exchanged in the credit markets. In addition to lending costs associated with loan transfers, the process of loan disbursement involves transaction costs (these costs are indicated by vertical arrows traversing the two functions in figure 1.1). Transaction costs are indirect costs caused by frictions in the flow of credit funds, preventing credit markets from reaching an efficient market equilibrium (Coase, 1991) and leading to reduced volume of viable loan transactions. In the presence of transaction costs, the net effect is that lenders reduce economic activity and are only willing to supply a lower volume than the amount demanded. Consequently, the reduced economic activity leads to reduced profits accruing from financial exchange. In the limit, if transaction costs are high enough so that negative profits are generated, there would be no transactions in financial markets.

Lack of sufficient information regarding activities of agents in credit markets is the inherent source of transaction costs (Stiglitz and Weis, 1981). Information about borrowers’ business and borrowing behavior is necessary for financial institutions to assess the credit worthiness and profitability of enterprises before loans can be approved (Bardhan and Udry, 1999). If information is fragmented and/or missing, lenders’ interests in undertaking loan activities fail to match borrowers’ interests in investing funds, resulting in shortage of loan funds and credit constraints. The mismatch of economic interests also generates conflicts among agents in the lending process. Further, the existence of transaction costs in loan markets implies that financial institutions must become more actively involved in monitoring activities and strategic behavior of firms because financial institutions invest substantial amounts of funds in business firms (Williamson, 1985). Additionally, the lending process is associated with an increased
need to design loan contracts and external institutional arrangements (such as courts and the legal system) must be made to ensure that agents stick to loan contract terms and agreements. To meet the effective monitoring and enforcement needs, additional loan officers and managers must be employed to undertake monitoring and enforcement of loan contracts. The key concern associated with over employment of labor is that a serious difficulty exists in measuring team-work productivity because loan transactions are often undertaken by a team of staff, working with a group of borrowers (Macneil, 1978). Consequently, a financial institution is liable to overpay for services rendered in the monitoring process. Associated with labor employment is the need to institute incentive packages and mechanisms, including training, to encourage effective work performance of loan officers. Specialized equipment is also necessary to undertake monitoring activities. The loan disbursement system becomes very expensive because of the high probability that the loan transaction process consumes more resources to transfer and recover loan funds than is technically required to obtain the same level of loan transactions (Rubin, 1990).

To compensate for the large costs of the lending process, financial intermediaries must charge an interest rate commensurate with the magnitude of the cost thus making loans very expensive. The lending process becomes even more expensive if financial institutions must undertake monitoring and enforcement activities with a large number of borrowers who borrow small amounts of loan funds whereby the costs of monitoring outweigh the expected benefits. As a result, a financial institution that incurs significant transaction costs becomes more vulnerable to opportunistic behavior of agents (Williamson, 1985). In addition, transaction costs may prevent a firm or a nation from
achieving the advantages arising from increasingly advanced technology. This is because as loan transactions decrease, access to finance to support the complete acquisition of technology decreases. Finally, as demonstrated in figure 1.1, economies with significant transaction costs experience a high proportion of borrowers receiving costly small-size loans coupled with a high level of mismanagement due to credit misappropriation (Jacobs, 1971). Ultimately growth and expansion in the business sector is negatively affected by insufficient availability of funds for investment, and reduced production potential.

Existence of transaction costs in credit markets also implies that agents are unable to exploit economies of scale associated with greater diversification of financial products, and a limited choice of loan products is available to particular borrowers. In addition, agents must deal with bureaucratic procedures to verify financial and other documents, collateral requirements and verification, and decision rights of different positions within financial administration are decreased leading to delays (Williamson, 1985; North, 1990). This argument implies that branch managers are often unable to undertake independent decisions to approve loans unless the general manager approves. In summary, if transaction costs are significant due to lack of the necessary information to process loans, a financial institution must pay additional funds to cover the expenses associated with increased agency costs that are heavily influenced by loan monitoring and opportunistic behavior of agents (Crocker and Masten, 1991). In conclusion, it can be deduced that economic growth is preceded by the ability of a financial system to increase efficiency through resolving the agency problem, and thus enable firms to borrow at cheaper rates and invest more.
1.2 Impact of transaction costs in developing economies

In economies with significant transaction costs especially in developing countries, inefficiency in credit markets has caused serious development concerns regarding the ability of agents to take full advantage of economic opportunities in loan markets (Gabre-Madhin, 2001). Conclusions from development research indicate that market reforms instituted in the last century in Sub-Saharan Africa have failed to enhance the financial market development in terms of increased financial investment, value added to small businesses, and volume of loans extended to the poor communities (Gabre-Madhin, 2001). This is a critical issue in developing economies because high transaction costs significantly block the formation of markets and become a major cause of persistent poverty. Incentives for investment in financial markets of developing economies are often blocked by inefficiency arising from the wastage of real resources in the economy (Churchill, 1999). Further, the quantity and quality of micro-level services provided by the financial intermediation system of developing economies are heavily affected by frictions impeding the smooth flow of credit resources from lenders to borrowers. Further, the quality of financial services is negatively affected by the inability of firms to use advanced technology leading to poor information production, processing and storage of information for use in future financial transactions (Berger and Udell, 1995).

Additionally, financial issues related to efficiency have emerged in developed countries notably the U.S.A whereby the accessibility of credit from financial institutions by low-income communities and fewer-asset small firms is so costly that unavailability of credit has caused serious concerns about lowered levels of investment and increased unemployment rates (Federal Reserve Bank, 2001; ERS, 2001). For the economy as a
whole, the maximum allocation of resources in credit markets is a crucial factor determining its overall rate of growth (Levine, 1997). Implicit in this is the significance of contribution of the financial sector to overall development of the economy in that the higher the quality and quantity of services provided, the more significant is its contribution (Churchill, 1999). Thus, it can be concluded that sustainable development can be achieved by reducing inefficiency through overcoming challenges of fostering credit institutions and enhance the flow of resources. This study investigates the determinants of transaction costs, and relationship lending as an institution that can be potentially effective in reducing exchange hazards, that is, opportunistic behavior by agents.

1.3 Importance and status of lending relationships in financial intermediation

A relationship is defined as the connection in the form of long-term close ties between a financial intermediary and a borrower that goes beyond the execution of simple, anonymous, financial transactions. Current literature (Petersen and Rajan, 1995; Berger and Udell, 1995) indicates that relationship lending is the reason why large corporations often obtain credit in the public debt markets, while small firms must rely on financial intermediaries such as commercial banks for external loan financing. Similar literature further indicate that since small firms often suffer from more acute information asymmetries than large firms, financial intermediaries must incorporate risk features such as long-term relationships to help them attenuate the information problems.
In a world of fast-paced competition in the developed economies, financial institutions have devised various institutional arrangements to mitigate exchange hazards and remain competitive (Cole, 1998). Of particular importance is the fact that financial institutions must focus informational disadvantages which are a major cause of transaction costs. To capture more information advantages, credit institutions are increasingly utilizing greater relational contracting to improve their ability to watch for exchange hazards in the lending process (Tomer, 1998).

Relationship lending is regarded as a potentially vital instrument linking interests of borrowers with those of lenders through a screening mechanism that identifies reliable economic agents and selects the good from bad borrowers (Rubin, 1990). Economic contracts involving relational issues have economic viability to the extent that all parties to a financial contract gain from the lending relationship (Berger et al, 2001). Lenders have an incentive to utilize greater relationships in the lending process to take advantage of the information generated in the process and the resultant reduction in monitoring. On the other hand, royal borrowers are given the opportunity to establish the necessary reputation required for loan availability and accessibility (Petersen and Rajan, 1995). Further, because it is not necessary to undertake explicit contracting in relationship lending (Cole, 1998), bureaucratic procedures associated with verification of documents and collateral requirements are reduced.

Recent empirical research and theory have placed relationships at the center of economic transactions. Current financial literature points out that organizations that emphasize stronger and long-lasting relationships with consumers often perceive this to be a core element of the services they offer (Ongena and Smith, 2000). Recent studies
indicate that relational strategies seek to address closer and more cooperative
relationships with customers (Heide and Stump, 1995; Tomer, 1998). Lending
relationships are viewed as a form of lender-borrower interactions including partnerships,
collaborative linkages, and alliances. Further, establishment of these relationships is
viewed as an indicator that markets are evolving from emphasis on mere transaction-
oriented marketing where firms carried out transactions without prior consideration of
consumer desires, to emphasis on relation-oriented marketing involving aggressive,
integrated, goal-oriented, and systematic pursuit of customers (Hendriske and Veerman,
2001). The significant aspect of these relationships is that firms have a greater bargaining
power, and so generate potential for greater competition by capturing a greater share of
the market (Tomer, 1998).

Despite the role of relationships in nurturing efficiency, the global trends of
technological innovations appear to accelerate the transition from relationship-intensive
services to mere market- or transactions-oriented financial products. Yet relationship-
intensive financing is a potentially fundamental ingredient in the nurturing of developing
firms and economies including small and micro enterprises, as well as start-up
businesses. Empirical research about relationship lending indicates that the duration of
lending relationships in the USA is relatively short compared to other countries (Table
1.1).
<table>
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<tr>
<th>Paper</th>
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<td>1,858</td>
<td>Employees:</td>
<td>14.0</td>
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<td>Harhoff &amp; Korting (1998b)</td>
<td>Germany</td>
<td>1997</td>
<td>994</td>
<td>Employees:</td>
<td>12</td>
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Source: Ongena and Smith, 2000

Table 1.1: Evidence of Bank Relationships Internationally

Research into relationship-lending has grown to include several strands of literature. One area concentrates on the value of bank relationships to small firm financing, because small firms typically have difficulty obtaining investment funds from public sources. Using data collected in a survey of small firms, Petersen and Rajan (1994) empirically examined how ties between a firm and its creditors affect the availability and
cost of funds to the firm. The major findings of this study are, the primary benefit of building close ties with an institutional creditor is that the availability of financing increases. Secondly attempts to widen the circle of relationships by borrowing from multiple lenders increases the price and reduces the availability of credit.

Cole (1998) examined the effect of pre-existing relationships between a firm and its potential lender on the lender’s decision whether or not to extend credit. The major finding in this study is that a potential lender is more likely to extend credit to a firm with which it has a pre-existing service relationship. In addition, potential lenders are less likely to extend credit to firms with multiple sources of financial services. Berger et al. (2001) examined the effect of lending relationships on bank stress and their finding was that in times of economic distress, customers cling to their banks for fear of increasing borrowing costs when they switch banks.

Another line of research focuses on evaluating the cross-sectional differences in financial systems. Some financial systems, such as those in Germany and Japan, are said to be relationship-intensive because they are dominated by long-term bank relationships. In another literature, Hoshi, Kashyap, and Scharfstein (1990a) find that firms in Japan with close ties to their banks are less likely to be liquidity-constrained in their investments than firms that do not have such ties. Furthermore, firms with close ties are more able to invest when they are financially distressed, suggesting that banking relationships help overcome frictions impeding the flow of credit.

Other literature lies outside financial markets and explains how firms and agencies can achieve economic efficiency and competition by exploiting the advantages of establishing relationships in the form of information networks, alliances and other
governance structures that utilize relational norms among exchange parties. For instance, Goldberg and Erickson (1987), in their study of quantity and price adjustment in the coke and petroleum industries, found that relational norms such as information sharing and long-term reliance play an important role in contracting practices. Similarly Artz and Brush (1999) found that relational norms lowered exchange costs among the Original Equipment Manufacturer (OEM)-supplier alliances. A similar finding was made by Gabre-Madhin (2001) in her study on grain marketing institutions in Ethiopia the result of which was that relational norms existing among traders to enhance information sharing lowered marketing costs associated with the exchange between traders and brokers.

Hill (1990) and Dyer (1997) found that cooperation among agents is an effective tool in eliminating opportunism and possible moral hazard behavior in economic transactions, concluding that relational governance should be used to substitute for complex formal contracts and vertical integration arrangements. Alternatively, Poppo and Zenger (2000), using opinion survey data from a sample of information Service (IS) exchanges found that relational governance and norms work hand in hand with formal contracts to mitigate exchange hazards in various markets. With this finding however, Poppo and Zenger (2000) dismiss Hill’s (1990) and Dyer’s (1997) research finding that relational norms and exchange arrangements are substitutes for complex, explicit contracts and vertical integration arrangements among firms. Also, Crocker and Masten (1991) found out that in situations where uncertainty is high, relational contracting is the most likely result.
On the other hand, some empirical research has found contradicting results regarding the role of relationships in economic exchanges, and view other forms of governance, particularly contracting and vertical integration, as superior methods to relational governance. The argument for this research is based on the associated coordination costs whereby the existence of effective relationships reduces the need for contracting among economic agents. Bonaccorsi di Patt and Gobbi (2001) bases his argument on the outcomes of relational governance and suggests that learning by collaborative cooperation among agents in the European electronics industry negatively affects the stability and profitability of alliances to the extent that new assets are created which can be used outside the specific relationship that has generated them.

Additionally, Fischer (1998) found out that the presence of greater relationships in a financial intermediary that is controlled by borrowers may be prone to engagement in moral hazard with respect to savers. This situation can arise in a case where borrowers who are engaged in a credit relationship seek to satisfy their self interests by gaining monopoly to information pertaining to the financial institution and can deliberately distort the disclosure of this information to mislead good savers not to switch banks. The implications of this research lie in the fact that the establishment of long-term bank relationships can reduce efficiency of financial transactions in cases where an incumbent bank gains monopoly power over its competitors through its information advantage about its borrowers. To support this argument, Blackwell and Winters (1997) argue that long-term bank relationships arise in a competitive loan market because an incumbent bank has the ability to offer only above-cost loans to its best customers and to hold up customers from receiving competitive financing elsewhere. Moreover, high-quality firms
that try to switch to a competing uninformed bank get pooled with low-quality firms and are offered an even worse, break-even interest rate (Berger et al, 2001). Petersen and Rajan (1995) also pointed out that some banks may seek monopoly rents by charging high interest rates to small business borrowers through informational advantages obtained from a lending relationship. In addition, in her study to find out whether bank-based financial markets were more important for development than market-based financial institutions, Levine (1997) found that powerful banks operating in an environment with little regulatory intervention in Europe and some countries in Asia may exploit the informational advantage obtained through strong relationships to collude with firm managers against other creditors and may impede efficient corporate governance. Other financial intermediation literature notably by Thakor (2000) also supports this argument and they argue that through forming close ties, some powerful financial intermediaries may protect established firms from participation in competitive financial markets by blocking other financial intermediaries from accessing the borrower.

More specifically, Freeman et al.’s (1998) experience in developing countries points to the fact that financial institutions such as cooperative banks, unions and savings associations that have inherent relational governance structures have not succeeded due to poor management, high operational costs and weak governance structures. Their failure is blamed on the rampant opportunistic behavior and defection among agents resulting in high transaction costs.
Similarly in the USA, Conlin (1999) found that over 250 financial organizations who are based on relational governance structures; involving clients in decision making, have not registered much success due to high transaction costs arising from possible opportunistic behavior and the lack of contractual obligations on the side of clients.

While the above empirical literature on financial markets emphasizes the ease of availability and accessibility of loans in a relationship-oriented setting, the current study emphasizes the efficiency created by the utilization of relationship-oriented exchanges with an emphasis on lowering transaction costs. While other studies have concentrated on only the small-size loans disbursed by commercial banks, the current study will extend into the possible client-lender relationships existing in the non-bank financial sector, to capture the variations that exist among different credit management systems. Finally, the current study aims to reconcile the conflicting findings pointed out in financial literature, by basing the empirical testing on transaction costs theory.

1.4 Research Problem and its Economic Relevance

Empirical research and theory argue for more tightly crafted contracts (such as those made with public law enforcement agencies) to enable a financial system to achieve efficiency, or where the cost of rigorous contract design is high, other cost minimizing governance structures such as vertical integration are advocated. Although contracting and cost-minimizing governance structures have often served as effective tools for solving opportunistic behavior and other hazards of exchange in developed countries, by themselves may not be sufficient tools to solve the opportunism problem among the risky small businesses of developed and developing countries. This argument is supported by
the fact that formal contractual arrangements are most effective in an environment where
information pertaining to transactions is easily available and the legal enforcement
system functions effectively (Coase, 1996; Gabre-Madhin, 2001). The absence of a
system to generate accurate specific market-related information as well as information
related to the behavior of agents notably small businesses may inhibit the effectiveness of
formal contracts (Stigler, 1961).

The above arguments lead to a conclusion that in order to sustain efficient market
institutions in developing economies there must be a system guided by norms to provide
incentives for agents to engage in limited opportunistic behavior. In this regard, norms
are viewed as voluntary conventions that facilitate contract enforcement (Aoki, 1998). In
relation to this argument, theorists such as Williamson (1991) advocate that where some
markets and institutions are missing, an effective governance structure should be
complemented with a high level of relational governance. Empirical researchers such as
Zaheer and Venkatraman (1995) and Poppo and Zenger’s (2000) have also found that
various organizational structures incurring high transaction costs and face uncertainty,
have survived over a long period of time without employing contractual management
tools, but rather succeed through the use of complex collaborative exchanges.

Financial intermediaries in developing countries need to rely on greater relational
exchanges to become more competitive (Churchill, 1999). Unlike in spot markets where
prices are sufficient to summarize all information relevant to the transacting agents, loans
in small business markets necessitate a high degree of social capital\(^1\) in form of trust, to
complement loan contracts that are designed in the presence of information

\(^1\) Relationship lending is a form of social capital formed when a credit institution develops a close
relationship with a borrower over time with the aim of facilitating monitoring, screening, and overcoming
the problems of asymmetric information (Coleman, 1990).
imperfections. This is because a loan transaction involves a promise to repay in the future where opportunism and other problems may prevent the fulfillment of the obligation. In reaction to situations of opportunistic behavior, some researchers namely Hill (1990) and Dyer (1997) have argued for complete substitution of formal contracts by relational norms. Others namely Poppo and Zenger’s (2000) have found evidence for a complementary relationship between formal contractual arrangements and relational governance in specific service markets. Reasons are enumerated in literature as to why the establishment of greater relational linkages is necessary for effective exchange and reduction of exchange hazards among contracting parties. First, such governance structures as formal contracts and vertical integration, do not operate efficiently in some economic systems. Crocker and Masten (1991), Zaheer and Venkatraman (1995) and Goldberg and Erickson (1987) all argue that contracts are imperfect tools for controlling opportunism. Their basis of argument lies in the fact that reliance of firms and organizations on formal contracting may undermine trust and thereby encourage opportunistic behavior among parties to an exchange. In addition, they argue that contracting may undermine a firm’s capacity to develop relational governance. Formal contracts signal distrust as they mostly specify monitoring and penalties for non-compliance. Second, vertical integration entails a high level of specialization of a firm’s factors of production which generates factor specificity and deficiency of capacity for redeployment in case of short term closures. A high degree of specificity in turn may induce significant transaction costs (Williamson, 1985). While it has been widely believed and tested that relational norms are vital complements to contractual governance
and contribute to increased performance in other sectors, no empirical performance framework and testing of this argument has been carried out in the financial markets.

1.5 Objectives

The overall objective of this study is to understand the economic behavior of financial intermediaries in central Ohio, and transfer this knowledge to improve the performance of financial intermediaries in Uganda. Specific objectives are:

1. To evaluate the lending patterns to small businesses by financial intermediaries in central Ohio;
2. To establish the nature and importance of relationship lending as a technology that resolves information asymmetries and facilitate loan exchange between lenders and small-business borrowers in central Ohio,
3. To examine the transaction-specific and relational determinants of transaction costs incurred by financial intermediation with Small businesses in central Ohio.

1.6 Importance and Organization of the study

Examination of transaction costs in credit markets provides a foundation for the design of policies and institutional arrangements that lower transaction costs (Levine, 1997). Understanding the role of transaction costs in financial intermediation is the beginning to appreciate the fact that a country’s growth results from the efficiency with which financial institutions resolve agency problems. Further there is little attention in financial literature to understanding the structure of transaction costs.
This literature fails to provide a reliable benchmark for effective policy because the determinants of transaction costs are not quantified and although the role played by relational norms is widely documented in other markets, their role in enhancing performance of financial markets as cost-minimizing structures is not well known.

To this end, the present research seeks to examine the determinants of transaction costs and quantify their relationships; and to use the transaction costs theory to examine the potential for adoption of lender-borrower relationships in mitigating exchange hazards in the financial intermediation process.

This study is organized into six chapters. Chapter one demonstrates the importance of transaction costs and introduces the idea of relationship lending as an institution that plays a vital role in the exchange of credit among agents. Statement of the problem, its relevance and study objectives are also highlighted in this chapter. Chapter two is a review of economic status of credit markets in developed countries with emphasis on the state of Ohio. In this chapter, economic characteristics as well as credit constraints, and the role of small businesses are described in order to identify possible incentives and opportunities to increase credit via increased fostering of relationship lending. Chapter three highlights the theoretical concepts and details the operationalization of variables measuring transaction costs. Chapter four describes the data; their sources and characteristics, and the estimation techniques applied in data analysis. In chapter five, the parameters of two basic transaction-costs models, one with the traditional economic variables and the other with a combination of economic and relationship variables, are estimated.
The chapter also presents the findings and discussion of lending patterns to small businesses, and the importance of relationship lending to agents in credit markets. The analysis in chapter five leads to conclusions in chapter six about the role of relationship lending in economic performance of financial intermediaries.
CHAPTER 2

CHARACTERISTICS OF US CREDIT AND SMALL BUSINESS MARKETS

The goal of this chapter is to explore the economic and financial characteristics of financial and small business markets in the US in general, and central Ohio in particular, to identify economic characteristics that induce opportunities to increase financial innovations and the importance of decreasing transaction costs. Secondly, the intention of this chapter is to gauge whether there are any economic and financial characteristics that are similar to those of developing countries to enable a feasible transfer of knowledge to developing countries. Overall, this chapter enables the identification of opportunities and indicators for increased need to access external finance through establishment of potential innovative mechanisms which improve economic performance of the financial intermediation process.

2.1 Evolution of Financial Institutions in USA

Traditionally, the U.S financial structure is composed of credit institutions namely commercial banking companies, Loan and Savings associations, credit unions, Thrift institutions, Government agencies and institutions such as the Farm Credit Administration, Insurance companies, and Mortgage companies. Until mid-twentieth century these financial institutions played a dominant role as financial intermediaries serving individuals as well as small and large businesses in the financial market.
In the last half of the twentieth century, there has been a dramatic advance in information and telecommunications technology in financial markets. This technology has aided financial institutions to distribute financial products more efficiently especially through electronic networking. In addition, the increased technological innovation has opened up new delivery channels which consumers have of late started depending on, as alternative sources of credit (Mann, 1997). Innovations in information technology have induced entry by a large number of firms into the financial market thereby increasing competition in the market. Although these changes have improved the overall efficiency by lowering the costs of financial contracting (ERS, 2001), there has been a reduced role of the traditional financial intermediaries serving resource-constrained consumers in loan markets. In the past few decades, non-traditional credit institutions have emerged and joined the financial market and these have eroded the dominance of the traditional financial sector as a provider of financial services to consumers. Non-traditional lenders are defined here as those institutions whose historic contacts with borrowers were for products or services other than debt.

Non-traditional financial institutions that are currently active in the financial market generally include leasing companies, vendor finance operations, specialized resource bundlers, equity packagers, providers of private enhancements to support debt, and guarantors from the business sector. Specifically, however, there are various large organizations and well-known entities such as the Money Store, Microsoft, UPS, AT&T, GE Capital Services, Federal Express, American Express, and Intuit’s Quicken who can also provide financial services which were traditionally provided by credit institutions. Besides offering a wide range of retail services and products demanded by their customers, these companies also provide a greater number of financial products than that provided by the traditional financial sector.
Moreover, some of these non-traditional financial companies have not only designed strategies to get more linked to their customers through networking and creation of alliances, but also possess more complex software that permits more integrated automation, storage and distribution of funds to customers (Harker and Zenios, 2000). In a nutshell, the overall impact of competition arising from more efficient information management systems and innovations in the financial markets has been a reduced role of traditional financial institutions accompanied by a reduction in market share, and an increased role of non-traditional financial companies. Table 2.1 shows the market shares of depository institutions for the period 1980 to 1998.

Table 2.1 indicates that over the years, the market share of commercial credit institutions is decreasing, while that of the non-traditional sector is on the increase. In reaction to this emerging competition, firms in the financial market are seeking to adopt strategies towards changing aspects of their operations.

To capture a greater share of the market, financial intermediaries thus need to make greater attempts to attract more segments of borrowers from those clientele populations who perhaps cannot satisfy the requirements demanded by the commercial non-traditional sector. These potential consumers include business start-ups, small- and micro- enterprises, minorities, and the low-income population. However, since this clientele population may pose lending risks to lenders, it is necessary for the traditional financial institutions to design and articulate strategies to keep transaction costs to a minimum. Strategies should address risk management by setting up more efficient distribution channels, and appropriate product and client mix.
<table>
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<tr>
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<tbody>
<tr>
<td>Mutual Funds</td>
<td>277 (3.6)</td>
<td>1,398 (10.5)</td>
<td>4,635 (21.1)</td>
</tr>
<tr>
<td>Pension Funds</td>
<td>1,327 (17.3)</td>
<td>3,017 (22.7)</td>
<td>6,179 (28.2)</td>
</tr>
<tr>
<td>Finance Companies</td>
<td>403 (5.3)</td>
<td>722 (5.4)</td>
<td>839 (3.8)</td>
</tr>
<tr>
<td>Insurance Companies</td>
<td>1,223 (16.0)</td>
<td>2,302 (17.3)</td>
<td>3,556 (16.2)</td>
</tr>
<tr>
<td>Commercial Banks</td>
<td>2,805 (36.6)</td>
<td>4,015 (30.1)</td>
<td>5,298 (24.2)</td>
</tr>
<tr>
<td>Other depositories</td>
<td>1,628 (21.2)</td>
<td>1,865 (14.0)</td>
<td>1,414 (6.5)</td>
</tr>
<tr>
<td>All Depositories</td>
<td>4,433 (57.8)</td>
<td>5,880 (44.1)</td>
<td>6,712 (30.7)</td>
</tr>
</tbody>
</table>

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<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>7,663 (100.0)</td>
<td>13,319 (100.0)</td>
<td>21,921 (100.0)</td>
</tr>
</tbody>
</table>


Table 2.1: Trend of market shares for depository institutions

More importantly, lenders need strategies to more cheaply cut down the costs of acquiring private information about potential borrowers. To capture appropriate information pertaining to loan transactions, a lender must establish mechanisms aiming at getting closer to a borrower perhaps, in a mutually long-term beneficial relationship. As Ongena and Smith (2000) put it, the right relationship between a lender and a borrower is everything. It can be argued that establishment of relationships not only increases the level of trust royal customers put in a lending institution, but also creates a basis for lenders to establish the knowledge about the behavior of their borrowers and so can more accurately predict the repayment capabilities of their clients. In this environment of fast-pace competition, credit institutions...
need to consider the creation of stronger and long-term customer relationships to be a core element of services they offer to clients. Adoption of such strategies will go along way to alleviate information asymmetries and preserve the safety and soundness of the financial system.

As credit institutions strive to cope with the stiff competition in the financial market, various constraints posed mainly by regulators have also come into play and these have created severe consequences on economic behavior of institutions in this market. In the past decade, public laws and regulations addressing equal treatment and anti-discrimination have been enacted, and studies indicate that these public laws dominate the private laws governing the operation of firms in the financial market. Public laws followed the consensus by advocates and policy makers claiming that there are disparities and credit discrimination in the financial market. The law about equal treatment states that providers of financial services should treat like applicants alike without resort to unacceptable discriminatory criteria, and that all applicants have an equal opportunity to compete for credit. This law is called the Equal Credit Opportunity Act (the “ECOA”). The law about anti-discrimination streamlines the adoption of affirmative action on the part of the state to correct discrimination in case the equal treatment law is insufficient (Cao, 2000). This law is called the Community Re-investment Act (the “CRA”). According to the CRA, all formal credit institutions are directed to serve low-income neighborhoods within their areas of operation to ensure actual lending by financial institutions in such communities. The public laws were enacted on the presumption that inadequate credit is primarily caused by racially discriminated lending practices and propose to rectify the problem by transposing the articulation of legal rights, legal remedies, and legal sanctions into the financial market.
Although the public laws have been effective to some extent at remedying discriminatory lending, studies\(^2\) indicate that public laws only constitute a partial picture because they fail to address the economics of lending in the open market and the high transaction costs that are responsible for the reluctance of institutions in the financial market to lend to certain borrowers and certain communities.

Besides the market structure and regulatory constraints, certain lending mechanisms that operate in the traditional financial market seem to subject the structure of lending to certain segments of borrowers vulnerable to transaction costs, and limited borrowing to low-income and resource-constrained market segments. A big number of loans made in the traditional formal financial sector have got a lot of “strings attached”. Studies indicate that institutions in the formal financial sector often require borrowers to present collateral for securing loans for commercial businesses. Titled assets such as houses and land, as well as non-titled assets such as inventory and accounts receivable are some of the collateral items demanded by financial intermediaries. Directly, these secured loans are important to the extent that collateral enhances the likelihood that a lender will be able to recover a loan in case of forced liquidation. If the borrower does not pay willingly, the lender can get paid by taking possession of the collateral and selling it in satisfaction of the debt. Indirectly, collateral is expected to enhance the lender’s leverage over the borrower’s operations, repair the borrower’s risk-preferent incentives, and sometimes limit future borrowing for defaulters (Mann, 1997).

However, although secured credit has been effective in enhancing loan recovery, the features of collateral offered by certain types of small business borrowers can discourage monitoring and may not be cost-effective to resell during repossessions and forced liquidation (Cao, 2000). However, with an increasing number of financing firms targeting

\(^2\) Specific studies about public laws in financial markets are by Cao (2000) and Marcey and Miller (1993).
small businesses as financiers spot niches which are underserved by the traditional financial sector, secured credit may seem burdensome to borrowers and may be a cause for borrowers to divert to the non-traditional financial sector for loan services.

Additionally, there are procedures required by lenders in the credit institutions for small-business borrowers that might increase the burden of borrowing and increased transaction costs. Borrowers are required to sign a lot of papers in addition to filing documentation and paying filing fees with the state and county business authorities where the business is operating. The most obvious thing about small business lending market is the small size of individual loan transactions, which are on average below $100,000 (ERS, 2001). Given the small size of those loans, filing fees and other fixed-amount transaction costs that would be trivial in larger transactions may often bear the potential to become significant factors. Additionally, it may be less cost-effective for lenders to monitor projects benefiting from the extended loans because of the high enforcement and monitoring costs of many small loans. It is important to note that poor monitoring capabilities is a big cause of moral hazard incentives to borrowers, which generate further transaction costs to lenders.

Furthermore, the free-rider problem often generates transaction costs and can impede the well-functioning of the financial system. The free-rider problem occurs because people who do not spend resources on collecting information can take advantage of the information that other people have collected. This problem is particularly important in securities markets. If some investors acquire information that tells them which securities are undervalued and then buy these securities, other investors who have not paid for this information may be able to buy right along with the well-informed investors. If enough free-riding investors can do this, the increased demand for the undervalued securities will cause their low price to be bid up to reflect the securities’ full net present value given this information. As a result of all these free riders, investors who have acquired information will no longer be able to earn the
entire increase in the value of the security arising from this additional information. The weakened ability of private firms to profit from producing information will mean that less information is produced in securities markets, so that the adverse selection problem, in which overvalued securities are those most often offered for sale, is more likely to be an impediment to a well-functioning securities’ market.

Further, the economic organization of lending activities in financial intermediaries more often necessitates the need for metering (measuring) input productivity versus rewards. Unlike in other product markets where markets yield a high correlation between rewards and productivity, metering productivity and rewards may not be easy in loan markets and this may cause negative impacts on marginal productivity of resources. Studies indicate that if economic organizations meter poorly, with rewards and productivity loosely correlated, then resource productivity will be smaller; but if the economic organization meters well, resource productivity will be greater (Williamson, 1985). The nature of loan transactions creates measurement difficulties to the extent that payment of rewards may not match productivity. This is because team work accompanies output of loans disbursed to a group of borrowers, so more often the interest of a credit institution is in achieving a sizeable population of borrowers and less focus is directed to determining each individual’s contribution to this output of the cooperating inputs (Rubin, 1990). To achieve efficiency, credit institutions usually must employ external personnel to monitor performance of resources and may also install incentive schemes to motivate higher productivity of resources particularly labor.

In association with the above, given the high level of technology innovation in information processing, electronic technologies perhaps require large fixed investments resulting in increased necessity for employees in financial markets to undertake specialized training and heavy investment in development of human capital on the side of financial institutions. This trend may not only generate an increased need for firms to design more
complex contracts and bonds with employees, but also may reduce the flexibility of human resources to redeploy in other sectors of the economy. Such structures also generate transaction costs arising from the need to retrain employees in case of exits and ultimately firm inefficiency (Rubin, 1990).

Generally, technological innovations in financial markets have been a leading cause of the emergence of specialized institutions within the market to take advantage of opportunities created for employment and performance of specialized tasks on behalf of institutions in the financial market. Services offered by these subsidiary institutions include but not limited to loan collection, consumer/business credit counseling, loan assessments and evaluation. Organizations such as Credit Bureaus and others have emerged to supplement financial institutions’ role in reducing transaction costs and ensuring efficiency and control of credit services. The fact that financial intermediaries often employ services of external agencies in the market rather than creating their own structures internally within the firms raises a question whether potential hold up problems arise thus generating transaction costs for institutions in credit markets. Empirical studies and theory indicate that where specific inputs are required in the production process, it’s more efficient for firms to organize activities under one firm (Coase, 1996) to lower the hold up problem.

The above characteristics of financial markets prompted the motivation of the current study, the aim of which is to understand the economic behavior of financial intermediaries and give an insight into how institutions lower transaction costs associated with delivery of loans to small businesses. Small businesses are regarded as risky borrowers given the small size of loans demanded and the large administration costs of monitoring small loans.
Financial innovations are thus needed to enable financial intermediaries meet the challenge of their increased financing while minimizing transaction costs. Since small businesses form the core subject of understanding how financial institutions deal with transaction costs that are investigated in this study, a separate section that follows is dedicated to a review of their credit demand characteristics and importance of this sector.

2.2 Characteristics and importance of small businesses

The U.S small firms are characterized as those who employ fewer than 500 people, with less than $10,000,000 value for fiscal year sales and about $5,000,000 value of end-of-year assets (ERS, 2001). Small firms comprise about 50% sole proprietorships, 24% corporations and about 7% partnerships. In addition, 43% of small firms are business or professional services while retail trade businesses make up about 19%. Small firms are regarded as the engine of growth in the U.S mainly because of the contribution of the sector to employment growth. Small firms produce about one-third of the Gross Domestic Product of the economy (Dennis, Dunkenberg, and Van Hulle (1998)), employ half of the work force (Brown, Hamilton, and Medoff (1990), and generate an average of 37.2 millions of GDP (Federal Reserve Board, 2000). Table 2.2 shows the employment levels and percentage shares of the labor force into the small business sector industries for the period 1988-1996.

Like elsewhere in the nation, small businesses contribute to significant employment potential in central Ohio. Table 2.3 shows the current employment levels by the different sectors of the small businesses in central Ohio. Statistics presented in table 2.3 show that the proportion of central Ohioans employed in small business dominant sectors is significant. It is also clear from the table that currently Union, Pickaway, Madison, Licking and Franklin Counties heavily depend on the small business manufacturing sector for employment. In

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<table>
<thead>
<tr>
<th>Year</th>
<th>Employment in firms with fewer than 500 employees</th>
<th>Employment in all firms</th>
<th>Shares in firms with fewer than 500 employees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>47,914,723</td>
<td>87,844,303</td>
<td>54.5</td>
</tr>
<tr>
<td>1989</td>
<td>49,166,797</td>
<td>91,626,094</td>
<td>53.9</td>
</tr>
<tr>
<td>1990</td>
<td>50,166,797</td>
<td>93,469,275</td>
<td>53.7</td>
</tr>
<tr>
<td>1991</td>
<td>49,002,613</td>
<td>92,307,559</td>
<td>53.1</td>
</tr>
<tr>
<td>1992</td>
<td>49,200,841</td>
<td>92,825,797</td>
<td>53.0</td>
</tr>
<tr>
<td>1993</td>
<td>50,316,063</td>
<td>94,773,913</td>
<td>53.1</td>
</tr>
<tr>
<td>1994</td>
<td>51,007,688</td>
<td>96,721,594</td>
<td>52.7</td>
</tr>
<tr>
<td>1995</td>
<td>52,652,510</td>
<td>100,314,946</td>
<td>52.5</td>
</tr>
<tr>
<td>1996</td>
<td>53,174,501</td>
<td>102,187,297</td>
<td>52.0</td>
</tr>
</tbody>
</table>

Source: National Bureau of Economic Research, 2000

**Table 2.2: Small Business Employment and Employment Shares in all Private Firms in the U.S Economy, 1988-1996**
the proportion of people employed in the dominant sectors has been high and growing over time. For instance, the proportion of population in Madison, Franklin and Union Counties that has been employed in the small business manufacturing industries has grown by 27%, 2.8%, and 11% respectively since 1995. The proportion of the population employed by the Wholesale and Retail trade industry has grown by 34% in Union County, 10% in Fairfield County, 7.4% in Franklin County, and 4% in Madison County since 1995. The proportion of the population employed by the services sector since 1995 increased by 18% in Franklin County, 55% in Union County, 34% in Madison County, 26% in Fairfield County, 28% in Licking County, and 6% in Pickaway County.

<table>
<thead>
<tr>
<th>Sector/County</th>
<th>Delaware (%)</th>
<th>Fairfield (%)</th>
<th>Franklin (%)</th>
<th>Licking (%)</th>
<th>Madison (%)</th>
<th>Pickaway (%)</th>
<th>Union (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Forestry, Fishing</td>
<td>0.9</td>
<td>0.6</td>
<td>0.9</td>
<td>1.8</td>
<td>Na</td>
<td>Na</td>
<td>Na</td>
</tr>
<tr>
<td>Mining</td>
<td>0.2</td>
<td>0.03</td>
<td>0.1</td>
<td>0.2</td>
<td>Na</td>
<td>Na</td>
<td>Na</td>
</tr>
<tr>
<td>Construction</td>
<td>4.2</td>
<td>2.8</td>
<td>5.2</td>
<td>4.4</td>
<td>3.2</td>
<td>3.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>8.4</td>
<td>9.1</td>
<td>11.1</td>
<td>14.1</td>
<td>17.0</td>
<td>19.1</td>
<td>66.0</td>
</tr>
<tr>
<td>Transportation</td>
<td>0.9</td>
<td>1.3</td>
<td>6.1</td>
<td>3.1</td>
<td>2.0</td>
<td>3.2</td>
<td>6.0</td>
</tr>
<tr>
<td>Trade</td>
<td>18.0</td>
<td>14.4</td>
<td>32.0</td>
<td>21.0</td>
<td>12.5</td>
<td>13.4</td>
<td>18.3</td>
</tr>
<tr>
<td>Finance, Insurance, Real estate</td>
<td>5.2</td>
<td>2.0</td>
<td>11.0</td>
<td>4.6</td>
<td>1.0</td>
<td>1.8</td>
<td>2.4</td>
</tr>
<tr>
<td>Services</td>
<td>15.1</td>
<td>11.5</td>
<td>35.3</td>
<td>19.0</td>
<td>12.3</td>
<td>9.2</td>
<td>17.2</td>
</tr>
</tbody>
</table>

Source: 2000 Census of population and housing

Table 2.3: The proportion of central Ohio’s county population employed by small businesses
Based on the above statistics, the role of small businesses in the labor market cannot be understated. However, it is important to note that although small firms contributed to significant progress in employment in the country by a sizeable amount during the last decade, the current share of employment has declined lately. This is particularly true in the counties in central Ohio where this study was carried out. According to NBER (2002) the major reason given for the decline of employment shares of small firms is due to the economic recession which started in 2000 that led to closure of a significant number of the firms. However, after 2000, the decline in economic activity is blamed on the terrorist attacks of September 11, 2001. Consequently, the termination of firms, the majority of which were small businesses, increased the unemployment rate. Due to a significant decline in employment, the economy registered the largest decline in the Gross Domestic Product since 1982 (NBER, 2001). Table 2.4 shows how the trend of employment levels by small businesses has changed over time in central Ohio. Given their declining role as employment firms, it is imperative to argue that such firms lack enough assets and working capital to increase and/or exploit viable investment opportunities. Consequently, small businesses must depend on an efficient system of external financing to foster their increased investment and employment.
<table>
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Source: 2000 Census of population and housing

**Table 2.4: Unemployment rates (%) in surveyed counties during the 1996-2000 period.**

Until recently, small businesses contributed significantly to the portion of borrower population. For example, small firm loans represented one of the largest of all loan markets serving individual loan needs in the last decade. According to the Federal Reserve Board (2001), small firms borrowed over $1.3 trillion in the year 2000. This market size was about the same size as all forms of non-mortgage consumer lending put together (Federal Reserve Board, 2000). However, since the onset of economic depression, the proportion of loans flowing to small businesses was reduced tremendously because small businesses became more vulnerable to instability in economic conditions.

In light of the deteriorating economic status, the concern about unemployment has grown wider and wider throughout the country in general and the state of Ohio in particular. It is also advocated that greater availability of finance to small firms would induce larger investments to overcome scale diseconomies and grow into modern sectors that can support employment of the labor force. In response, the state of Ohio has undertaken intensive efforts
to attract investment initiatives in the small business sector. These efforts have embraced the funding motive promoting the establishment of financial opportunities and incentives to attract greater investment. The legislative organ has thus enacted the establishment of the office of small businesses to oversee the financial assistance provided by the state to start-up and expanding businesses throughout the state.

Similarly, according to NBER (2002), small firms must depend largely on financial intermediaries for their external finance, mainly because the financial institutions have comparative advantage in collecting and processing information on small firms (Berger and Udell, 1995) whose performance information is rarely available (Petersen and Rajan, 1995). However, Berger and Udell (1995) show that larger banks and market-based financial intermediaries tend to lend less to small firms, particularly to those mostly in need of bank relationships.

Apparently, financial intermediaries establish long bank-borrower relationships with small firms to generate information that is useful in the design and adjustment of loan contracts. Thus, since small firms must depend on bank-borrower relationships (Boot and Thakor, 1994) to access bank loans an investigation about the impact of bank-borrower relationships on financial performance is worth researching. These characteristics of small-business loan markets imply that financial intermediaries most often deal with financing a large number of small firms who suffer from severe information asymmetries leading small firms to access relatively small-sized loans. In addition to the large information asymmetries (Petersen and Rajan, 1995), a significant percentage of small firms are young, less than 5 years in existence; and have relatively low business experience. For example, in 2000, about thirty-two percent of small firms were young and less than 10 years in existence (ERS, 2001).
Owners of small businesses seek a variety of financial services from banking institutions reflecting a richly diversified market for financial services. These services mainly include liquid asset services (checking or savings accounts, credit lines, loans and capital leases) and financial management services (transactions, cash-management, credit-related, brokerage, and trust and pension services). Depository institutions such as commercial banks and thrift institutions, savings associations and banks, and credit unions are the major suppliers of these financial services to small businesses (NBER, 2000). These are followed by non-depository institutions including finance, mortgage, brokerage, insurance and leasing companies. Small firms also accessed financial services from non-financial sources such as individuals, family members, other businesses, and government entities who contribute about one-third of total debt (Peterson and Rajan, 1994).

Given the diverse size and age of small businesses, Bitler et al (1998) found out that the likelihood of credit access increases with both the size and age of small businesses. This argument is related to the fact that lenders require that small-business borrowers have adequate loan repayment capacity, and several years of financial history to qualify for credit. Similarly, owner characteristics such as race, ethnicity, sex and education affect the accessibility and use of credit. For instance, (Blackwell and Winters, 1997) point out that female-, black-, and Asian-owned firms are more likely to use financial services than the male- and white-owned counterparts. However, the socio-economic differences that are apparent in small-business loan markets are possible key sources of market fragmentation and generate concern about the impact of fragmentation on availability of loans to small-business owners.

Small firms depend on credit services for both transaction and financing purposes. Given the existing information asymmetries coupled by the relatively lower repayment capacity, financial intermediaries offer credit services to take into account these barriers by
designing products to compensate for the increased monitoring costs that are incurred to safeguard loan contracts. For instance, Bitler et al (1998) observed that the financing needs of the majority of small firms are met by trade credit. Trade credit is known to reduce transaction costs that businesses would incur if they had to make payment at the time of delivery, by making funds available for other uses and thus solving liquidity constraints. This trade credit is usually given for a short period (1-2 months) and is always accompanied by high interest rates especially for overdue balances (Bitler et al., 1998). However, the same literature observed that use of trade credit by small businesses varied with the characteristics of firm owners in the same way as the size and other socio-economic characteristics mentioned above.

The demand for financial services by small businesses was in the past affected by various factors including policy reforms in the financial sector, as well as the economic structure of the business sector. As far as policy reforms are concerned, Berger et al (2001) noted that restrictions on interstate branching and banking in the late 1980s limited the number of financial intermediaries available to offer financial services to small businesses. Further, reforms such as bank mergers and acquisitions (M&A) during the 1990s created high bank concentration ratios, mainly in urban areas, which led to an increase in interest rates for small business loans (Federal Reserve Board, 2000). Berger et al (2001) also pointed out that banking industry consolidation created large banks which were oriented toward transactions-lending and providing capital market services to large corporate firms and thus threatened relationship-dependent firms, mainly small-businesses and micro enterprise borrowers.

The structure of the business sector also played a role in influencing the access of external finance by the small-business sector. Berger and Udell (1995) pointed out that stiff competition posed by the large businesses is a threat for small businesses to access loans from the commercial sector.
This research points out that large businesses had more favorable terms of borrowing because of possession of an already existing repayment capacity in terms of assets and ability to absorb fixed costs and shocks. Consequently, firms in the credit sector favored large businesses for lending and discouraged small businesses (Berger et al, 2001), resulting in uneven allocation of resources in the business sector.

2.3 Credit issues and concerns with small business financing

Significant information imperfections exist with small businesses since a significant percentage of small firms are young, unstable, and very small, rendering them unlikely to be monitored by rating agencies or the financial press. Thus, for successful loan transactions to occur, financial intermediaries need to undertake significant monitoring of small-business activities thus contributing significantly to transaction costs. Ultimately, small businesses serve as an ideal testing ground for the transaction costs theory proposed in this study.

In addition, the above characteristics indicate that the small-business clientele population served by financial institutions is highly heterogeneous and dominated by a large number of small businesses that usually demand relatively small sized-loans. This heterogeneity causes concerns about unifying risk characteristics of small businesses and designing standard lending models and technologies to predict loan performance. In addition, since they possess relatively fewer assets, small firms must depend on external financing for business survival, competition and growth. However, they lack the traditional collateral and standard financial documents required to process loans by the banking sector. Being small, small businesses become more susceptible to shocks in economic environment than any other type of firms. Changes in macroeconomic policies particularly those affecting the monetary policies can induce financial institutions to contract lending activities thus negatively affecting small firm lending. A reduction in lending activities also raises the interest rates on
borrowed funds, thereby depressing the financial ratios on financial statements of prospective small business borrowers and reducing the value of collateral. The overall effect is to reduce the credit scores, the deterioration of creditworthiness and the increased difficulty of obtaining bank credit.

Therefore financial innovations aimed at preserving the credit worthiness of small businesses and other risky borrowers are worth researching. Changes in prices and the general economic conditions significantly affect the magnitudes associated with hard data gathered at the time of loan origination. Thus, transaction-based lending technologies that depend on hard data obtained from financial statements highly fluctuate with changes in economic environment. In contrast, relationship lending seems to be the right technique that preserves a lender’s credit worthiness and business viability in all potential states. The effectiveness of relationship lending relies on soft information about borrowers and this information is less affected by external shocks. Financial literature by Berger and Udell (1995), Petersen and Rajan (1994), Berger et al, (2001) characterize the technology of relationship lending as based on information that is accumulated over time about the character, trust, and reliability of borrowers. Apart from the credit information about borrowers, lenders can utilize additional information generated from the local community and the firms with which a borrowing firm interacts.

Other markets such as rental, labor, sales, supplies, and others can provide information about a prospective borrower’s reputation and cooperation that can be used to build a stock of soft information by a lender. However, transaction-based lending technologies such as financial statement lending, asset-based lending, and credit scoring are solely dependent on quantitative financial ratios, collateral ratios, and credit scores respectively (Berger and Udell, 1995). Since relationship lending is based on soft information, it allows small firms with weak financial ratios, insufficient collateral, or lower
credit scores to access bank financing. However, the ability of credit institutions to avail loans to small businesses and other risky borrowers is reflected by how credit institutions undertake efficient contracting that mitigates opportunistic behavior of borrowers by augmenting organizational structures with relationship-related technologies. Thus the following chapter outlines the contracting theories utilized by the study to examine the process of how transaction costs are determined by the organizational structures governing the financial intermediation with small businesses.
CHAPTER 3

THEORETICAL METHODS AND PROCEDURES

The purpose of this chapter is to specify the theoretical framework by which the analysis of transaction costs incurred by financial intermediaries is undertaken, develop hypotheses, and construct the variables that would be used to test the transaction costs economics (TCE) theory.

3.1 The transaction costs model and related hypotheses

The primary transaction costs model utilized in this study is drawn from Oliver Williamson (1985) and describes the transaction costs economics (TCE) at a micro level. In general, the transaction costs theory involves a paradigm focused on the design of efficient mechanisms for conducting economic transactions. The main assumption on which the paradigm is built is that economic transactions have potential costs associated with them including writing, negotiating, monitoring and enforcing contracts. On the other hand, transaction costs economics views a transaction as the basic unit of analysis and places emphasis on governance structure as a component of industrial organization that matters in economizing transaction costs (Romano, 1992).
Various definitions of transaction costs have been proposed by several theorists\(^4\). Since this study is based on financial intermediation, use will be made of the definition suggested by Williamson (1985) that relates to financial exchange efficiency. According to Williamson (1985) transaction costs refer to the costs of running an economic system. The economic importance inherent in this definition is that transaction costs is the resultant friction that arises in undertaking transactions among exchange parties. The TCE stipulates that the friction associated with transactions is mainly caused by opportunistic behavior that usually arises when parties to an exchange fail to fulfill their obligations.

Further, according to the TCE, the aim of designing governance structures is basically to search for cost-minimizing organizational linkages that reduce transaction costs in exchange. Earlier theorists placed emphasis on the acquisition of cost minimizing governance structures particularly formal contracting and specialized structures, such as vertical linkages among exchange parties, to reduce the incidence of opportunism (Bardhan and Udry, 1999). Other theorists propose the incentive mechanisms to discourage behavior that leads to diverging interests among exchange parties (Coase, 1991). More recently, theorists, notably Williamson point out that complex formal contracting and vertical linkages are only effective if they exist in a complementary relationship with relational governance. In this sense, relationships are viewed as one of the mechanisms by which frictions in the economic exchange of goods and services among agents can be reduced.

\(^4\) For other definitions of transaction costs, see North (1990), Coase (1991) and Barzel (1995).
TCE analysis of relational contracting assumes 2 types of transaction costs, *ex post* and *ex ante* costs. Ex ante transaction costs are incurred when parties initially establish contracts and so include costs of drafting, negotiating, and safeguarding agreements. Ex post costs are incurred periodically by parties when renegotiating and adjusting contracts, to include the maladaptation costs incurred when drafted contracts are misspecified, the haggling costs incurred if bilateral efforts are made to correct misspecified contracts, the set up and running costs associated with the governance structures to which disputes are referred, and the bonding costs of effecting secure commitments (Williamson, 1985). Although both types of costs are critical in operation of financial intermediation services, this study focuses on *ex post* transaction costs of relational contracting which comprise a significant portion of coordination costs of financial exchange (Stiglitz and Weiss, 1981).

The most critical factors influencing transaction costs arising from opportunistic behavior of agents in financial exchange are (a) the degree of asset specificity, (b) the level of uncertainty associated with exchange, and (c) the degree of ease with which performance measurement of loan officers can be effected (Klein, et al., 1978; Williamson, 1985).

### 3.1.1 Importance of transaction-specific assets

Asset specificity is defined as the degree to which transaction-specific investments are incurred to operate business with a particular set of agents. An asset is considered to be specific if it is less transferable to other uses or users because it is tailored to a particular exchange relationship. Asset specificity is investigated in
industrial organization literature by finding out how specialized investments are, that is, whether firm assets are redeployable. For instance, in manufacturing industries, Klein, et al., 1978 (1978) demonstrated that if the supplier can easily find other suppliers, or if other suppliers are available to the buyer, both parties are protected by the availability of alternative partners so that they incur few transactional risks. This literature further points out that if an asset is designed for a particular person, and the value of the asset would be significantly reduced if the asset were used otherwise or by another person, a breakdown of this relationship would cause serious costs.

TCE classifies 3 types of asset specificity, which are also important in financial intermediation namely human, physical, and inter-temporal asset specificity. Human asset specificity addresses such areas as acquisition of technical knowledge specialized in financial activities, for example information processing skills such as data entry, client applications, training and counseling, and the drafting of financial statements. Physical asset specificity refers to items such as specialized equipment, computer technology and related inter-organizational systems that link customers to financial institutions. Inter-temporal asset specificity refers to the extent to which a depository institution shortens its procedures to enable clients get financial services in a timely manner. The more timely it is to obtain financial services from a particular financial institution, the greater the opportunity of seeking financial services from a particular institution (Artz and Brush, 1999).

Institutions also undertake a significant amount of activity searching for customers, processing borrower information, collateral appropriation and verification, and monitoring of loans.
Additionally, a financial company may require significant transaction-specific investments in physical and human assets. Considerable resources are invested in training personnel to handle specific lending operations and monitoring particular customers in developed countries (Cole, 1998). Personnel employed by financial intermediaries are often equipped with specialized knowledge and skills for undertaking specialized tasks such as monitoring intermediation activities. Consequently, the costs associated with retraining staff may represent a strong disincentive to redeploy such personnel.

Costs involved in training new staff put a financial company at a big economic disadvantage if staff turn-over is relatively high. Other sources of asset specificity arise in financial intermediation of financial institutions are located in specific areas to serve financial needs of a specific clientele population. The costs involved in relocating business to find other customers, and adapting to new competition pressures may prevent an institution from changing premises. Businesses for which loan funds are sought are also at an economic advantage if they involve asset investments that can be easily redeployed in case of business eventualities (Mann, 1997). The level of business asset specificity in terms of ease of finding other uses of assets may be a factor that determines the decision to finance a business by financial intermediaries. Lenders also may need to obtain specialized knowledge about the client and enterprise characteristics before credit applications are approved.
Similarly, borrowers may need to develop knowledge of the routines, procedures, language and services provided by a specific lending institution before acquiring its financial services.

In general situations where assets are specific and a change is desirable, all parties have an incentive to bring about a fundamental transformation, to move their relationship out of the market and into a hierarchical governance structure to obtain additional safeguards (Williamson, 1985). In line with this argument, Coase (1991) proposed that the decision whether to have a transaction occur within a firm or in the market place is determined by the magnitude of transaction costs. He suggested that the form of organization chosen should be the one with the lowest transaction costs. This literature and transaction costs theory suggest that, if given a choice, individuals will choose the set of institutions, contracts and transactions that will minimize the transaction costs of doing business. It is further emphasized that the organizational structure that would evolve or survive, would be one that would minimize the total of production and transaction costs (North, 1990).

Although theoretical literature leads to a conclusion that increased investment in specific assets would negatively affect performance in terms of increased monitoring costs and the increased need to design complex contracts by agents, empirical literature (such as Zineldini, 1995) found contradicting evidence that investments in transaction specific assets can provide benefits in terms of decreased production costs and increased product quality. However, Heide and Stump (1995) found support for the TCE theory whereby they found out that investment in specific assets creates a heavy dependence on
specific assets so that suppliers may lose control over their customers, and so necessitating more complex contracting and bargaining before agreements are reached.

Based on the above characteristics and theoretical literature about firm investments, it is implied that when firms increasingly invest in transaction-specific assets, continuity of relationships between the contracting parties heavily influences their economic performance. Thus, a financial relationship that promotes long lasting continuity and trust between the transactors adds value to those economic relationships and exchanges where heavy investment is made in transaction-specific assets. Financial literature suggests that relationship lending is one of such models that promotes repeated interaction among agents in financial exchange, and by this model it can be hypothesized that investment in specific assets leads to more efficient outcomes (Artz and Brush, 1999). Therefore, the following hypothesis follows:

**H1(a).** In the absence of relationship lending, when investment in specific assets by a financial intermediary increases, transaction costs increase.

**H1 (b).** In the presence of relationship lending, when investment in specific assets by a financial intermediary increases, transaction costs decrease.

In light of the importance of asset specificity in the analysis of transaction costs in the financial intermediation process, this study extends the idea of inter-temporal asset specificity to include the importance of specific additional requirements such as collateral in financial transactions serving financial needs of small businesses and farmers. When lenders realize that certain borrowers lack sufficient credit-worthiness, the requirement for collateral comes into play. The collateral requirement is often in place before loans are issued in order to enhance the likelihood that a financial institution will be able to
recover its loan through liquidation of collateral (Cole, 1998). The aim of the collateral requirement is that in case a borrower fails to repay the loan willingly, a lender can get paid by taking repossession of the collateral and selling it in satisfaction of the debt (Mann, 1997). Collateral not only serves as a secondary source of repayment in case of loan default, but is also useful in classifying risky groups of borrowers more precisely (Cole, 1998). However, availability of credit may be seriously restricted by the degree to which a borrower can present assets to a lending institution that are easily verified and acceptable as collateral. Credit institutions in developed countries usually require borrowers to present specific assets as collateral especially before long-term loans are approved. In case a loan is defaulted, a financial institution takes direct control over the assets until a loan is completely paid off (Mann, 1997).

Financial institutions may incur costs to verify and attach value to collateral before loans are issued to borrowers, or when repossession of collateral takes effect. These costs tend to be larger when collateral assets are located in remote areas, possess lower marketability value after use, or when the ownership verification process is complicated (Tomer, 1998). Further, financial institutions may face liquidity risks when collateral assets are liquidated at a price lower than the expected in case of loan default. This is true for assets whose value seriously deteriorates over time due to use or if assets cannot be resold after use. Liquidation issues may also arise for some assets that may not be legally possessed until certain legal clearances are effected.
In summary, when loans are substantially associated with collateral, frictions are likely to arise in form of collateral appropriation and ownership verification, diversion of useful production assets, as well as the difficulty in dealing with repossessions leading to delays and possible losses in financial exchange.

When a borrower repeatedly and successfully transacts with a credit institution for a long time, it creates reputation and thus provides evidence that a particular borrower is not liable to default. Thus in this lending relationship, a bank may reduce its demands for collateral from such a borrower (Cole, 1998). In line with the above argument, it is anticipated in this study that if a longer bank-borrower lending relationship exists, collateral requirements may be reduced or waived, thus a credit institution does not necessarily have to incur costs associated with collateral verification and valuation. Thus the following pair of hypotheses follows:

**H2 (a):** In absence of relationship lending, as collateral specificity increases, transaction costs increase.

**H2 (b):** In presence of relationship lending, as collateral specificity increases, transaction costs decrease.

### 3.1.2 Importance of uncertainty

Uncertainty is another critical factor stipulated by the TCE that positively influences the magnitude of transaction costs incurred by financial intermediaries. Generally, uncertainty in financial exchange occurs because firms lack appropriate information necessary to predict opportunistic behavior of customers.
Uncertainty also arises due to unexpected changes in technology, competition, interest rates, and factors affecting the demand for credit (McNaughton, 1997). When the environment within which credit markets are operating becomes increasingly uncertain, different expectations and goals about future loan repayment and performance are formed. Consequently, lenders will likely desire different and most likely more stringent repayment terms in form of interest rates, loan maturities, and loan installments, from the borrowers. In addition, the presence of uncertainty requires managers of financial intermediaries to design governance structures aimed at protecting their businesses (Coase, 1991) by mitigating the agency problem. Governance structures specify the hierarchical administrative organ to undertake monitoring activities, formulation of rights and rules by which loan contracts are adjusted throughout the exchange process. In this regard, formal loan contracts must specify loan terms, monitoring activities, and enforcement mechanisms in case of noncompliance. Consequently, in the presence of uncertainty, a financial institution will increasingly engage in non-committal behavior to avoid the large costs of monitoring and losses when loans are defaulted. This behavior results in credit rationing.

When relational linkages such as joint planning and collaboration in coordinating activities exist between a financial intermediary and borrowers, certain costs such as screening and monitoring are likely to decrease. Relational linkages are likely to reduce the need for crafting complex, explicit contracts due to availability of sufficient information to predict loan performance.
In a related study, Poppo and Zenger (2000) found that managers of information services in the insurance industry employed greater levels of relational governance as environmental uncertainty increased. This allowed them to take advantage of the increased flow of information through networking and the establishment of alliances. Based on these arguments, it is assumed that by creating greater relationships among firms and clients, the information set about client characteristics and firms becomes increasingly available to both exchange parties. Hence the future cost of acquiring such information is reduced.

A similar argument can be made about financial exchanges whereby the existence of regular long-term borrowers creates an opportunity to generate information about economic performance of businesses that is necessary for a financial institution to process future loans. Existence of long time borrowers creates a community that is royal and keen to the successful running of the economic system, thereby would not willingly contribute to its failure (Williamson, 1985). Existence of a stock of regular borrowers makes it possible for a financial institution to more accurately predict future loan demand.

Therefore, the following pair of hypotheses follows:

**H3(a):** In the absence of relationship lending, as the degree of uncertainty increases in financial intermediation, transaction costs increase.

**H3(b):** In the presence of relationship lending, as the degree of uncertainty increases in financial intermediation, transaction costs decrease.
3.1.3 Importance of difficulty in measuring performance of loan officers

A third determinant of transaction costs specified by TCE theory grows out of the existing difficulty of measuring certain attributes of individual performance in a financial institution. The chain of command of a credit institution is generally structured into layers of organizational hierarchy that are governed by contracting. An ordinary credit institution that serves the loan needs of small businesses and focuses relationship lending may be structured in such a way that the small businesses contract with loan officers. Then the loan officers in turn contract with the senior management of a credit institution. The senior management in turn contracts with the bank’s stockholders, and the stockholders in turn may contract with government regulators. At each level of organization, certain agency problems arise because agents may have different incentives.

For example, at the first level, loan officers usually have authority over loan contracts in relationship lending because they are at the forefront of gathering information about borrowers, business owners, and the community at large. They engage in negotiations and drafting of tailored contracts with small businesses, and in monitoring the contracts. If different incentives exist, loan officers may pose difficulties that must be monitored by senior managers because the soft relationship information they have about borrowers is difficult to observe, verify, and transmit to others. Measuring difficulty also often arises when loan officers’ teamwork is expected in production performance, including borrower screening and monitoring, information processing, and other aspects regarding team assignments. In such circumstances, managers may need to craft complex contracts specifying delivery of financial services, the monitoring of staff performance and firm behavior by third parties, measuring work accomplished, and the use of benchmarks to
gauge performance. In this regard, Zaheer and Venkatraman (1995) found out that there is a strong positive correlation between reciprocal investments and relational norms in the insurance industry. Consistent with this research finding and theory, it is assumed that by establishing collaborative linkages and joint planning among staff of a financial institution and between a financial intermediary and clients, measurement difficulty would be reduced because information about individual performance would be easily available from the established relationship. Promotion of greater relationship lending practices in financial exchange would imply that the information advantage available to a financial institution would reduce the opportunistic behavior of employees and borrowers and so less personnel deployment will be required to undertake monitoring and enforcement activities. Therefore, the following hypotheses follow:-

**H4(a):** In the absence of relationship lending in the governance of financial institutions, when difficulty in the measurement of performance increases, transaction costs are likely to increase.

**H4(b):** In the presence of relationship lending in the governance of financial institutions, when difficulty in the measurement of performance increases, transaction costs are likely to decrease.

The importance of relationships in economic exchange has been studied by theorists such as Williamson (1985) and researchers in the field of development economics. Some researchers have quantified the impact of relational linkages on coordination costs. For example, classifying the relationships as the degree of participation in civic activities, Ostrom (1992) found out that by encouraging greater participation and trust of local communities at the planning and implementation stage of
irrigation projects, confidence of the local communities and a sense of ownership of the project by the people for whom it is built. When local communities develop a sense of ownership, they identify low-cost means and inputs such as labor towards project work performance. This also reduces the potential for opportunistic behavior since local communities are able to identify information networks and safeguards towards the success of their projects.

Most importantly, organizational arrangements that encourage greater relational contracts among transactors, tend to build trust in economic relationships (Tomer, 1998). Trust reflects the extent to which negotiations are fair and commitments are upheld (Anderson and Narus, 1990) and one party’s belief that its requirements will be fulfilled through future actions undertaken by the other party (Anderson and Weitz, 1989). According to TCE theory, trust is viewed as a relational norm that can substitute formal contracts which are usually costly to craft by transacting parties. In addition, a high degree of trust is associated with lower levels of hierarchical governance (Williamson, 1985). Thus it can be argued that trust can reduce transaction costs by eliminating both *ex ante* and *ex post* opportunism.

### 3.1.4 Coordination costs and relational norms

Other social capital issues embedded in organizational structures that encourage greater relational interactions are evident in transaction costs literature. Artz and Brush (1999) found that expectation of continued relationships and communication strategy have a significant influence on coordination costs of the Original Equipment Manufactures (OEM) and equipment suppliers.
Similarly Poppo and Zenger (2000) found out that communication strategies that encourage long lasting relationships significantly reduce information costs in Information Exchange systems.

Consistent with the above research, this study examines the influence of three relationship variables on the behavior of coordination costs incurred in exchanges involving financial intermediation. Ultimately, it is assumed that a significant reduction of transaction costs is expected in the presence of a high degree of trust, expectations of continuity of relationships, and appropriate communication strategies. Consequently, these relational variables characteristic of social capital have a significant relationship in the transaction cost model below. Therefore, the following hypothesis is formulated:

**H5: A model of coordination costs in financial intermediation that includes both the traditional and relationship lending variables will have a significantly greater explanatory power than a model based only on traditional variables.**
3.2 Operationalization of study variables

1. Coordination costs

Financial institutions offer a wide range of financial services to a wide range of clients. This study will focus on loans to small businesses. Secondly, financial intermediaries incur numerous transaction costs coordinating financial activities with small businesses. These costs include search costs, screening, training and counseling, monitoring and enforcement costs, to control for possible opportunistic behavior of clients (moral hazard) and adverse selection (Gray, 1993). This study will categorize these costs as coordination costs. Coordination costs in this study are defined as the resources a financial institution dedicates to ensuring that clients adhere to terms stipulated in loan contracts. Coordination costs affect the day-to-day running of financial activities, and determine the successful completion of a financial transaction (Cole, 1998). Monitoring activities are necessary to enable lenders obtain full knowledge of the business enterprises receiving loans. It is such activities that influence the strength of the relationships between lenders and clients (Cole, 1998) and so ensure continuity of exchange activities between economic agents.

Empirical research on financial intermediation has placed coordination costs at the center of total transaction costs incurred in conducting financial exchanges. Coordination costs are the equivalent of what Williamson (1985) suggests in his definition of transaction costs as the costs of safeguarding contracts, and the bargaining and haggling costs of moving contracts from one point to another. In this regard, coordination costs also include revisions and adjustments made to loan contracts to take into account prevailing changes in the economic environment. Coordination costs also involve travel
expenses, calling time, computer time, and all labor-related expenses incurred in coordinating financial activities. This study measures coordination costs as the amount of time spent by a financial institution in monitoring loan activities. Disputes or conflicts also arise in loan disbursement activities and conflict resolution can divert a significant amount of time. Therefore time and extent of conflict resolution are the observable indicators of the dependent variable (coordination costs) in this study.

2. The degree of contract complexity

This is an institutional variable that contributes significantly to monitoring costs of a financial institution. The degree of complexity of formal contracts determines the magnitude of monitoring costs in particular, and coordination costs in general. To predict coordination costs focus here is placed on the degree of asset specificity, the difficulty in measuring work performance, and the amount of uncertainty, that is, the three factors suggested by the transaction costs framework. As pointed out by TCE theory, existence of the three factors mentioned above increases the likelihood of opportunistic behavior by transactors to an exchange (Williamson, 1985). Thus parties to a financial exchange can develop cost minimizing governance structures, particularly formal contracts, to safeguard against opportunism due to asset specificity, difficulty in metering work performance, and uncertainty. Similarly financial intermediaries stipulate the terms and conditions for the financial obligations of borrowers such as interest rates, collateral requirement, grace periods, repayment schedules and penalties for late payments.
The more precise these financial contracts, the less likely the specified terms in the contracts will be violated. Should noncompliance arise, it becomes easier for either party to take the other to court to apply corrective action (Coase, 1996).

In the presence of substantial exchange hazards, it is extremely difficult to craft precise contracts. The degree of contract precision is critical to an exchange because the more precise the contract specifications, the less likely it is that the specific terms of the agreement will be violated (Macneil, 1978).

Depending on the precision of contracts, Williamson (1991) suggests three categories of contracts namely classical, neoclassical and relational contracts. Classical contracts are efficient because they are drawn in an environment where exchange is simple, neither associated with uncertainty nor asset specificity. With such transactions, the terms pertaining to the exchange are easily defined (Williamson, 1985). On the other hand, neo-classical contracts are complex contracts because they are drawn for an exchange that is associated with an increasingly uncertain and a high degree of asset specific environment. The complexity of neo-classical contracts is attributed to the increased incentives for contracting parties to design detailed contracts that take into account the eventualities and contingencies associated with each party’s behavior. Further, a relational contract is one that is drawn in a more flexible environment and focuses on the characteristics of societies that are involved in the exchange. Since a society’s behaviors are influenced by norms defining the social relationship among agents, this component is also injected in the design of a relational contract.
Consequently, relational contracts do not necessarily spell out the complete set of terms and conditions for the entire contract ex ante, but rather define the general process for adjusting the terms over the life of the contract (Goldberger, 1987).

Whereas most empirical work is based on classical and neoclassical contracts, the current study focuses on relational contracts\(^5\) specified by relationship lending. While classical and neo-classical contracts are effective in markets involving spot transactions, relational contracting is most suitable for financial intermediation because financial exchange takes place over a lagged period of time creating an opportunity for contract adjustment according to the behavior of economic agents.

“Relations” reflect the characteristics of a subset of society possessing a vast array of norms beyond those centered on economic exchange. Relational contracting replaces the assumption that contracting is discrete, made between autonomous parties with limited communication (Williamson, 1991). Relational norms imply that a significant relationship component is important, for completion of certain economic transactions (Macneil, 1978). In fact, Crocker and Masten (1991) have discovered that in presence of uncertainty, less structured relational contracts are more likely to be utilized in the natural gas industry and Air Force procurement services.

\(^5\) For details of the definition of classical and neoclassical contracts see Williamson (1991), Artz and Brush (1999).
3. Relationship lending

Broadly speaking, social relations define the characteristics of financial exchanges that govern relationship lending. Through establishment of long term relationships between a lender and a borrower, soft information is acquired over time and this information reflects the character, reliability, and trust of a prospective borrower. This information becomes a valuable input in the reduction of information imperfections about the credit worthiness of a borrower and thus reduces transaction costs. This study focuses on the degree of trust, continuity expectations and pre-existing relationships established between lenders and borrowers, as specific relationship determinants of coordination costs incurred in financial intermediation. Literature categorizes trust into (a) characteristic-based trust, which is formed within a group on the basis of factors such as ethnicity and religion (b) process-based trust, which arises from changes in past and future expectations; and (c) institutional-based trust, which stems from embedded relationship practices such as norms (Zucker, 1986).

Williamson (1991) further identifies three types of trust namely calculative, personal, and institutional trust. Calculative trust refers to a rational form of trust fostered by mutual hostages and built upon reputation effects. Personal trust applies only in close personal relations whereby it is built on altruistic behavior and does not depend on calculations of self-interest for its formation or continuation. Williamson (1991) still categorizes institutional trust as calculative. Based on his characterization of trust as
depending on sanctions of some type for its existence, all types of trust can be viewed as
calculative to some extent. Therefore, the maintenance of characteristic-based trust
depends on sanctions of some kind by members of an ethnic or religious group, process-
based trust relies on the expectations of future exchange, and institutional-based trust
depends on legal or other sanctions to enforce trust.

This study treats trust as a relational factor captured by the mutuality intrinsic in the
notion of inter-organizational trust, and there is belief that there is some element of trust
in economic exchange that occurs between financial intermediaries and their clients.
Consistent with Zaheer and Venkatraman (1995) and Williamson (1991), this study will
conceptualize trust both as a mutuality and a behavioral element by establishing whether
there exists a high level of mutual trust and fair dealing between financial intermediaries
and their borrowers.

Certain empirical analysts notably Cole (1998), Petersen and Rajan (1995) and
Berger et al. (2001) discovered that the most significant factor in lending relationships
that signify trust and has a positive impact on transaction costs, is the number of sources
from whom a borrower seeks external funding. Some borrowers stick to one lender for
loans whereas others seek loans from multiple sources. The consensus reached in this
research is that lenders prefer extending loans to borrowers who have only a single source
of credit rather than those with multiple sources. Berger et al. (2001) points out that
borrowing from multiple sources not only increases intermediation costs but also
decreases personal trust between a lender and a borrower. The conceptual aspect of trust
in this study is exhibited in form of the likelihood that borrowers will switch to other
lenders and/or hold multiple lenders concurrently. When a borrower switches to other
lenders or borrows from multiple sources, this is accompanied by high transaction costs due to duplication of effort, free-rider problems and informational inefficiency (Berger et al, 2001). On the other hand, a small firm incurs significant search costs and/or disruption in finding another lender and may face less favorable terms such as higher interest rates and greater collateral requirements. Consequently, such borrowers may be unable to obtain replacement funding (Cole, 1998).

It is equally important in financial intermediation to maintain a long lasting relationship between financial institutions and clients, and among financial institutions. Expectations of a long-term relationship seems to encourage cooperation by providing an opportunity to either transacting party to retaliate in case of opportunistic behavior. Churchill (1999) found out that the continuity of relationships reduced coordination costs reflected in training, counseling and monitoring activities in developing countries. Similarly, Cole (1998) found out that continuity of relationships between a banking company and small-enterprise borrowers reduced the collateral requirement demanded for loans by lenders in the USA.

The above literature imply that long-term relationships are important for counteracting information asymmetries which are usually characteristic of financial markets and the likely causes of financial constraints. In addition, Petersen and Rajan (1995) point out that significant investment is usually made by financial intermediaries to maintain relationships with borrowers because it is not necessary to either train clients or offer more extensive counseling as well as the monitoring of projects each time a new contract is signed.
Most important is the fact that when parties to an economic exchange anticipate a long lasting relationship, not only are cost minimizing organization structures put in place, but also trust becomes an issue in the exchange (Rubin, 1990). To capture the impact of relationships on transaction costs, emphasis will be placed on the pre-existing relationships in form of existence of checking and savings accounts which borrowers hold with the banking companies.

Firms also make significant efforts to reduce opportunistic behavior by investing in appropriate communication strategies that are used in exchanges to influence borrowers. According to Tomer (1998) communication strategies are grouped as coercive or non-coercive. Frazier et. al (1991) found out that negotiations involving coercive communications attempt to achieve their desired goal by applying direct pressure on clients, with adverse consequences of non-compliance stressed. Marketing literature points out that coercive communications include using threats or legalistic pleas by contracting parties, and they are known in the relationship literature as exploitative rather than accommodative. The current study will seek opinions of managers of financial intermediaries about appropriate communication strategies that reduce opportunistic behavior and ultimately reduce coordination costs.

4. Size

Relationships associated with size of a financial institution are not hypothesized by the TCE theory. However based on industrial organization literature, this study assumes that the organization of a financial institution can have a positive influence on transaction costs. For example, empirical research on vertical integration has often included size as a
variable, since larger supplier or customer firms will be less likely to prefer to integrate than smaller counterparts (Anderson and Narus, 1990). Further, recent empirical work in financial intermediation shows that small banks have a greater information advantage in evaluating and monitoring loan quality compared to large banks. Nakamura (1994) suggests that small banks are better information processors than large banks with respect to loans to resource-constrained and risky borrowers. This is because their organizational structure creates their ability to access confidential information about the borrowing firm on a regular basis. Contradictions also exist in literature about the ability of small banks to resolve the agency problem. Churchill (1999) argues that small banks lack the infrastructure to control transaction costs associated with lending to small firms and small individual loans. However, this study assumes that as the size and complexity of a financial intermediary increases, there is less likelihood for lending to small businesses since organizational diseconomies may increase the costs of lending. Since no concrete evidence exists to confirm this argument, no direction of relationship can be specified.

3.3 Theoretical model specification

Model specification is based on the new institutional economics (NIE) which specifies that organizational structures evolve in response to the degree of uncertainty, asset specificity, and difficulty of measuring performance associated with economic transactions. Under the NIE, the maintained hypothesis underlying transaction-costs analysis is that transactors choose organizational arrangements to minimize the expected costs of governing the transaction over the life of the relationship (Williamson, 1991). NIE assumes that the choice of institution selected depends on the magnitude of
exchange hazards that create transaction costs. Transaction costs are difficult to quantify in the traditional economic theory. In light of this difficulty, transaction cost theory suggests that the incidence of transaction costs be related to observable characteristics governing the transaction and then base predictions of organizational form on those observed features (Williamson, 1985). Following this argument and Macneil (1978) it can be concluded that the true cost of organization varies linearly with the observable attributes thought to influence the respective organizational costs. This relationship is presented as follows:

\[ G = \alpha X + e \]  

(3.1)

Where

\( G \) is the cost of organization

\( X \) is a vector of attributes thought to influence organizational costs,

\( \alpha \) is the coefficient vector, and

\( e \) is a normally distributed random variable.

The NIE theory then suggests that hypotheses regarding organizational form can be based on the signs and relative magnitudes of the coefficient vector \( \alpha \), rather than on the magnitude of costs \( G \) (Williamson, 1991).

Following the above theoretical framework, two models describing the characteristics of transaction costs as generated by organizational structure are specified. First, a model involving only the traditional transaction costs arguments is specified as indicated in equation (3.2) below.
Second, another model incorporating both economic (traditional variables) and relationship lending variables is specified as in equation (3.3) below. Specifically the research models to be tested and analyzed in this study are summarized as follows:

1. Coordination cost = $\alpha_0 + \alpha_1$ Specific Assets + $\alpha_2$ Collateral specificity + $\alpha_3$ Uncertainty + $\alpha_4$ Measurement difficulty + $\mu$ ................................................ (3.2)

2. Coordination cost = $\alpha_0 + \alpha_1$ Specific Assets + $\alpha_2$ Collateral specificity + $\alpha_3$ Uncertainty + $\alpha_4$ Measurement + $\alpha iX' + e$ .................................................. (3.3)

Where

$\alpha_i$s are parameter coefficients,

$X'$ is a vector describing relational attributes

e is the error term

Equations in (3.2) and (3.3) above portray two types of independent variables. Equation (3.2) implies that exchange hazards associated with financial intermediation are influenced by transaction-specific variables as specified in the TCE, while equation (3.3) exhibits a more complementary relationship and implies that exchange hazards are influenced by both transaction-specific and relationship lending variables.

Finally, in light of the specified difficulty of quantifying the arguments specified by the transaction costs model, this study structures qualitative variables to represent indicators of the TCE arguments, and highlights the data requirements for the fitted theoretical model formulation.
Once the data are identified and assembled, then suitable statistical methods to analyze the data are applied to generate coefficients that enable interpretation and generation of conclusions from the data. Statistical methods and data are discussed in chapter four that follows.
CHAPTER 4

STATISTICAL METHODS AND DATA

The purpose of this chapter is to describe the key statistical methods that are employed in the study to collect and analyze the relevant data that are used to test the hypotheses specified by the transaction costs theory highlighted in chapter three. The chapter also describes the nature of the data, sources of data and procedures followed in collecting primary data using the mail survey method.

4.1 Survey, Data and data sources

Data for this study were obtained from key informants in credit institutions through a survey instrument. After the survey was designed it was pre-tested with a small group of loan officers, branch managers, marketing managers and relationship managers from various financial institutions in central Ohio. The survey sample comprised 85% of loan officers and 15% of other respondents. Loan officers comprised a biggest set of respondents because they are the personnel who are actively and directly involved in processing loans for small businesses and other borrowers. Secondly, as dictated by the administrative structure of credit institutions, loan officers had the most personal contact with small businesses, business owners and firms and thus were

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8 Details of the survey are indicated in section 4.2.
presumably able to generate a more accurate set of opinions about relationship lending and transaction costs. In addition, the preliminary discussion revealed that loan officers had the greatest access to relationship information about borrowers, individuals, and the community with which small businesses undertake business transactions. Loan officers work and often reside in the same community as borrowers and other firms that are in contact with specific borrowers and these served as potential sources of relevant proprietary information required in relationship lending. In summary, loan officers have a more thorough knowledge about local markets and business conditions and a stronger social linkage with borrowers than other individuals at the surveyed credit institutions.

After a few rounds of revisions, the survey was administered by mail during the period April –September 2002 to 385 respondents. The survey was distributed by first-class mail to every respondent selected in the sample of credit institutions. Respondents were selected from large, small and non-bank financial institutions serving the financial needs of the small businesses as well as farmers who own businesses in the state of Ohio. The list of credit institutions came from the local phone directory, and the location of respondents was facilitated using the banking center locator\(^9\). In the design of the survey, it was estimated that the appropriate sample would consist of about 550 respondents, but approximately 30% of potential respondents did not participate in the survey. Consequently, the completed sample of 146 respondents comprised the data set for statistical analysis.

\(^9\) The Banking Center Locator, available on the website www.yahoo.com/loancenter on the internet was used to search addresses and telephone numbers of credit institutions under particular credit companies present in specific locations. Initially, the reference point was The Ohio State University, and a search of all existing credit institutions within a 50-mile radius was made in the seven study counties.
Table 4.1 shows the distribution of respondents in the final survey sample.

Respondents were sampled from central Ohio’s seven counties including Delaware, Fairfield, Franklin, Licking, Madison, Pickaway and Union. The questionnaires were self-administered by respondents in the various financial institutions.

<table>
<thead>
<tr>
<th>Type of financial institution</th>
<th>Number of questionnaires mailed</th>
<th>Number of questionnaires returned</th>
<th>Response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Commercial Banks</td>
<td>125</td>
<td>44</td>
<td>11</td>
</tr>
<tr>
<td>Large Commercial Banks</td>
<td>160</td>
<td>50</td>
<td>13</td>
</tr>
<tr>
<td>Credit Cooperatives</td>
<td>100</td>
<td>52</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>385</td>
<td>146</td>
<td>38</td>
</tr>
</tbody>
</table>

Table 4.1 Distribution of survey respondents

4.1.1 Sampling frame and procedure

The sample frame was composed of a published list of all top “small-business friendly”\(^{10}\) credit companies in central Ohio. Franklin County was the major area of interest because it houses the city of Columbus that had a diverse type of credit institutions as well as a large concentration of small businesses and borrowers. Additionally, Franklin County is one of the counties with a large concentration of economic activity that attracts both private and public entrepreneurs, who in turn attract a large financial activity in the state. The six counties bordering Franklin were surveyed to find out whether the differences in economic conditions among the rural and urban communities, as well as the geographical and spatial distributional differences, affected the size of loans as well as the perceptions.

\(^{10}\) The Small Business Administration (2001) classifies a financial intermediary as “small-business friendly” when a particular organization has a significant lending activity in loans less than $100,000.
about relationship lending. The survey population was stratified into two categories, namely small and large credit institutions. This classification was based on the published dollar amount of business assets possessed by the various credit companies. The small credit institutions were classified as those financial intermediary companies with assets worth less than $50 billion, while the large financial intermediary companies were those institutions with greater than $50 billion in assets.

Since the sampling frame consisted of most of the financial intermediaries located in Franklin County, a random sample from each of the two categories of financial intermediaries was drawn as the respondent sub-sample. The other six counties were dominated by the small financial companies and these comprised the smaller portion of the sampling frame. Because this sub-sample was relatively smaller, all the financial intermediaries were included in the survey sample. Ultimately, a total of 550 respondents were obtained from this sampling process.

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11 The sample size was determined based on the choice of the following statistical parameters:

i) a sampling error of ± 3%

ii) a confidence interval of statistical estimation of 95%

iii) the total population of potential respondents in the financial intermediaries was estimated at 5,000.

iv) The variation of responses among the respondent population was estimated to be split at a rate of 80/20.

v) Using the statistical tables, the nearest value of the sample size was chosen to be 550 based on the stipulated statistical parameters.
4.1.2 Procedures to increase the response rate

A. Multiple Contacts

Following Dillman’s (2000) and other associated literature on survey research, emphasis was put on multiple contacts as a technique that would likely increase the response rates on self-administered questionnaires conducted by mail. Multiple contacts were made during the survey implementation stage with the aim of achieving reasonable response rates from the selected credit institutions. The contact sequence was as follows:

1) A pre-notice telephone call

A few days prior to mailing the questionnaires, telephone calls were made to branch managers, loan officers, and other key informants namely marketing and relationship managers at study sites. The telephone calls served two purposes namely, to inform respondents about the research purpose and the researchers and the academic institution conducting the survey, and to provide a notice that a research questionnaire would be mailed to them in a few days. During the telephone conversations, it was also stressed that this survey was important to credit institutions and so individuals’ responses would help make the study a success. Additionally, contact respondents were assured that their responses would be kept confidential, and that a copy of the publication would be available to them.

2) Mailing of Survey Package

A questionnaire was mailed to each respondent by name, with a cover letter explaining why and how the respondent participation in the survey was vital to the success of the current research. A stamped return envelop was included.
3) A thank you postcard was mailed to respondents. This card was mailed one week after the questionnaire mailing. The card expressed written appreciation for the participation of respondents, and indicated that if the completed questionnaire had not yet been mailed, it should be turned soon.

4) A replacement questionnaire was sent to non-respondents 5 weeks after the previous questionnaire mailing. This questionnaire indicated that the person’s completed questionnaire had not yet been received and would argue the recipient to respond.

3) A final contact was made by telephone 4 weeks after the fourth contact to encourage response.

B. Financial Incentives

To ensure increased participation and timely response to the questionnaire, an inducement was instilled whereby respondents were promised that a lottery drawing for 2 football tickets and 2 basketball tickets for Ohio State University games, would be held. All respondents returning questionnaires had an equal chance to win. This drawing was made after 3 months of the questionnaire mailing, winners were contacted by telephone, and tickets were mailed to the winners.

C. Cover Letter

The survey included a cover letter from the director of the Swank Program in Rural-Urban Policy, sponsor of the research, describing the objectives and importance of the survey and gave an explanation why the responses of the recipients were important.
D. Use of supplementary methods

After two months of mailing the survey package, only 51 completed questionnaires were returned comprising only 13% response rate. To ensure a higher response rate, a follow-up with the respondents was done whereby physical collection of the questionnaires was done to supplement the mail survey response. This approach yielded an additional 94 questionnaires comprising a total response rate of about 40%, and increased the response rate by 73%.

4.2 Data and measurement

This section describes the nature of the data utilized in the study highlighting the rationale for data type, and the variables that formed the bulk of the data.

4.2.1 Data type

Data used in this research were basically unavailable in an assembled, quantified, and condensed form from the traditional secondary sources (such as census reports and internet-based resources), and so the study sought subjective data based on a survey of views and judgments of key informants from a selected number of financial institutions. Apparently, survey data were the preferred form of data suggested by literature (Godwin and Shepard (1976); and Sigelman and Smith (1980) on transaction costs as the most appropriate for analyzing structural variables stipulated by the transaction-costs model. Further, transaction-costs theorists (such as Macneil, 1978; and Williamson, 1985) observe that by their nature, transaction costs are often indirectly related to production activities and so are difficult to quantify in a traditional economic relationship. In light of
this difficulty, theorists suggest that the incidence of transaction costs be related to observable characteristics governing the transaction and then predictions of organizational form be based on those observed features associated with asset specificity, difficulty of performance measurement, and uncertainty. Further empirical literature (Williamson, 1985; Artz and Brush, 1999; Poppo and Zenger, 2000) on industrial organization recommends that survey data seek opinions of key informants in the financial sector. The major argument for the support of survey data is that the stock of subjective answers in the data set reflects the manner in which the financial intermediation activities are structured, and the processes by which loan contract adjustments are made. Further, contrary to secondary data that seek objective responses, survey data can generate subjectively gathered observations on how financial intermediaries deal with enforcement, conflict resolution, and any behavioral actions such as norms specifying disciplinary actions for defaulters (Gabre-Madhin, 2001). Additionally, associated specific literature (Gabre-Madhin, 2001; Elster, 1989) indicate that some relational values that are vital to improving performance of production and marketing activities were impossible to quantify and/or condense in a logical sequence. Finally, the model of relationship lending investigated in this study heavily relies on soft information that is accumulated over time through financial transactions between lenders and borrower firms as well as the local community that hosts the potential borrowers. Consequently, unlike hard information that is obtained at the time of loan origination and utilized in the spot transaction-based lending, soft information is not easily observed by others, and also cannot be verified and transmitted to others. Therefore the usefulness of this information can only be evaluated subjectively by those individuals who come in
contact with it. Apart from the suggestions made in theory and empirical work, the general interest of this research was to use simple subjective data to generate findings and draw comparable and realistic conclusions that would be applicable to other financial environments such as those prevailing in developing countries.

4.2.2 Empirical measurement

Statements and questions describing observable attributes of transaction costs were specified on the questionnaire and were rated on a 1-6 Likert scale ranging from 1= Strongly Agree to 6= Strongly Disagree. Respondents answered the questions by checking alternatives which best reflected their views, judgments and experiences with the financial intermediation process. Qualitative responses were sought because given the fact that respondents were drawn from the most busy portion of the staff of the credit institutions, it was simply easier and faster to give qualitative instead of quantitative assessments which involve retrieving and checking company records, as well as record manipulations. Thus asking questions that sought ordinal answers helped to save the respondents’ time and hence improved the total response rate.

4.2.2.1 Survey design and description of variables

The survey consisted of seven parts as indicated below.

a) General questions

This part sought general information about the overall operation of lending activities in selected financial institutions. Information sought was used to assess lending
patterns and explanations about concentration of lending activities as well as the evaluation of the importance of lending relationships by the financial institutions.

b) **Coordination costs:**

Seven variables were selected to reflect indicators of coordination costs incurred by financial intermediaries, and respondents were asked to indicate their level of agreement (1= strongly agree, 6= strongly disagree) with the following statements:

(i) This credit institution has invested a considerable amount of funds to operate small business loans (CC2),

(ii) It takes considerable time for our employees to visit and train the small business borrowers at their premises before loans can be issued (CC3),

(iii) Our borrowers occasionally get agitated when applications for small business loans are disapproved (CC4),

(iv) Our clients get agitated when additional information about loan applications is sought from them (CC5),

(v) Our staff spends a significant amount of time preparing reminders about repayment obligations of our borrowers (CC6),

(vi) Our staff spends a significant amount of both computer and telephone time relaying information to small business borrowers (CC7),

(vii) Loan staff, top supervisors and loan committees become actively involved in the loan approval process involving small business loans (CC8).
c) **Transaction Specific Assets**

Fourteen items were used to measure the degree to which credit institutions invest in specialized assets tailored to specifically deal with operations of small business loans, and respondents were asked to indicate their level of agreement with the following statements:

i) On average, the skill levels of our loan officers dealing with small-business loans are higher, compared to loan officers from other departments (AS1),

ii) Our staff must acquire significant training to serve our small business borrowers (AS2),

iii) Our small business borrowers must receive financial management skills before they are qualified/approved for loans (AS3),

iv) This financial institution has made significant investments in tools and equipment required to serve our small business borrowers (AS4),

v) Approving our small business borrowers for loans involves substantial commitments of time and/or money (AS5),

vi) Our small business borrowers are offered a wide range of credit options to choose from (AS6),

vii) Our small business borrowers are required to use bank-owned and/or licensed software for reporting purposes to qualify for a loan (AS7).

viii) On average, the information about ownership and property values for the collateral we require from our small business borrowers is not easily available (AS8),
ix) It takes a lot of time and/or money to find a suitable price and buyer for rural assets demanded as collateral from our small business borrowers, when they fail to repay loans (AS9),

x) It takes a lot of time and/or money to find a suitable price and buyer for urban assets demanded as collateral from our small business borrowers, when they fail to repay loans (AS10).

xi) On average, we have experienced a high turn-over of trained loan officers in this organization (AS11),

xii) A large number of small business borrowers are one-time borrowers who do not re-apply for loans (AS12),

xiii) A significant portion of the small business loans is approved for long-term investments (AS13), and

xiv) A significant portion of small business loans is approved for short-term loans (AS14).

d) Environmental Uncertainty

Nine indicators were selected to measure the degree of uncertainty that surrounds the environment in which small loans are delivered. Respondents were asked to indicate their level of agreement with the following statements:

(i) It is difficult to predict the number of small business borrowers seeking loan services at this loan center (UN1),

(ii) On average, 25% of small business loan applicants become future customers at this loan center (UN2),
(iii) On average, 25-50% of small business loan applicants become future customers at this loan center (UN3),

(iv) on average, 50-75% of small business loan applicants become future customers at this loan center (UN4),

(v) On average, 75-100% of small business loan applicants become future customers at this loan center (UN5),

(vi) On average, small businesses for which loans are issued are volatile in terms of unsteady returns, prices, product demand, and/or volume of business at a particular time (UN6),

(vii) it is difficult to establish the right interest rates to charge for loans issued to small business borrowers (UN7),

(viii) On average, it is extremely difficult to predict whether our small business clients will meet their repayment obligations on time (UN8), and

(ix) it is extremely difficult to predict the volume of small business loans to be issued in a particular financial period (UN9).
e) Performance measurement difficulty

Statements representing the indicators of difficulty in measuring the performance of
loan officers by credit institutions included five items; and respondents were asked to
indicate their level of agreement with the following statements:

(i) it is extremely difficult to measure individual worker performance servicing small
businesses in this financial institution (MD1),

(ii) our top managers put in substantial effort to monitor loan officers’ performance
with small businesses (MD2),

(iii) our company usually disciplines employees who do not work to supervisors’
satisfaction (MD3),

(iv) our company has employed significant specialized manpower to handle small-
business loans (MD5).

f) Relationship lending

Relationship lending was viewed as a set of norms aimed at building trust and using
relational information in lending transactions and are characterized under the
following dimensions:

ii) small business borrowers who already have checking accounts with our
organization more easily comply with loan terms than first-time borrowers with no
previous history with our credit institution (pre-existing relationships)(R2),

iii) small business borrowers who already have savings accounts with our
organization more easily comply with loan terms than first-time borrowers with no
previous history with our credit institution (R3),
iv) our small business borrowers who hold multiple accounts with other financial organizations rarely comply with our loan terms and repayment obligations (multiple relationships) (R4)

v) this company trusts all information and documents presented by regular small business customers without further checks, before loans are issued (R5)

vi) the majority of regular small business borrowers are more reliable than the first-time small business borrowers (R6).

g) Economic Characteristics of Borrowers

Fifteen indicators reflecting the economic characteristics of borrowers and business activities that are likely to influence the magnitude of transaction costs were selected, and respondents were asked to indicate their level of agreement with the following statements:

i) our small business borrowers who are just starting their businesses usually experience difficulty in meeting timely repayment obligations (EC1),

(ii) our small business borrowers generally have other sources of income besides their businesses (EC2),

(iii) our small business borrowers with business experience of 5 years or less have more difficulty in meeting repayment obligations, than borrowers who have greater than 5 years of business experience (EC3);

(iv) our small business borrowers who are first-time borrowers have more difficulty to repay loans than repeat borrowers (EC4);
(v) on average, our farmer borrowers have more difficulty to repay loans than other
clients with other types of businesses (EC5);

(vi) our small business borrowers whose businesses are located in rural areas have more
trouble complying with repayment terms than those whose businesses are located in
urban areas (EC6);

(vii) A significant portion of our small business loans are second mortgage loans (EC7);

(viii) On average, small business borrowers who receive greater than $5,000-loans find
difficulty to repay their debt (EC8);

(ix) On average, as the debt-to-income ratio of small-businesses increases, small business
borrowers have difficulty to repay loans (EC9);

(x) On average, small business borrowers who receive loans greater than $100,000
encounter more difficulty to repay their debt, than borrowers who borrow a smaller
amount (EC10);

(xi) On average, small business clients who borrow for the first time require a down
payment before loans are approved (EC11);

(xii) On average, as the percentage of down payment increases, there is less likelihood of
loan default (EC12);

(xiii) This organization has a special interest in conducting joint planning with staff,
supervisors and top management (EC13);

(xiv) small business firms who are first-time borrowers are required to submit collateral
for loans (EC14);
(xv) as the number of loan renewals for small business borrowers increases, the time taken for a borrower to repay a loan decreases (EC15), and

(xvi) small business clients who are borrowing for the first time require repayment insurance (EC16).

4.3 Data reliability test

The data utilized in this study are subjective, based on personal views and opinions about behavior towards some particular financial exchange hazards encountered in financial intermediation. As can be seen in section 4.2, the reliability of the data generated in the survey largely relied on personal judgments of respondents and therefore are unduly affected by diversity of ideas, misunderstanding and misinterpretation of questions, possible ignorance, a narrow focus on local information about financial exchange, personal moods and feelings. Additionally, at the time of the survey there was a big regulatory concern about the amount of loan financing that was being allocated to small-businesses. Various examinations were carried out with financial intermediaries to determine their loan performance regarding small-business loans. One possible consequence was that in order to renew the annual registration, a financial intermediary had to have committed a significant amount of loan portfolio to small-businesses (ERS, 2001). Consequently, it is possible that some responses were deliberately distorted. The list of distorting elements can greatly affect the accuracy of these data and thus can make it problematic to deduce reliable comparisons across the different institutions in the financial sector (Nicoletti and Pryor, 2001) especially since the entire respondent sample was drawn from financial intermediaries.
In addition, the pooled responses from individuals who participated in the survey may be difficult to aggregate over the entire financial intermediation industry (Pedhuzhar, 1991).

Therefore, the above observations made regarding the data calls for the need to estimate the reliability and internal consistency of the data. According to Pedhuzhar (1991), reliability assessment of data aims to account for errors that arise due to individual differences of respondents. Following this literature, statistical determination of the reliability and internal consistency of the variable constructs was carried out by use of the Chronbach’s alpha\textsuperscript{12} coefficient. The choice of this indicator was influenced by the simplicity and its prominence in transaction costs literature.

The Cronbach’s alpha coefficient was computed for each of the groups of surveyed items measuring transaction costs and was estimated using the following formulation:

\[ \alpha = \frac{k}{k-1} \left\{ 1 - \frac{1}{n} \sum_{i=1}^{n} \frac{\sigma_{x_i}^2}{\sigma_x^2} \right\} \]

Where,

\[ \alpha = \text{Chronbach’s alpha coefficient}, \]
\[ k = \text{number of items (indicators) describing a specific measure of transaction costs} \]
\[ X_i = \text{observational individual score on items describing various measures} \]
\[ X = \text{total score of a specific group of items} \]
\[ \sum_{i} \sigma_{x_i}^2 \text{ represents the sum of variances of the items used to measure transaction costs} \]
\[ \sigma_x^2 \text{ represents the composite variance of the total score for a specific group of items.} \]

\textsuperscript{12} Various Measures of reliability are available in literature and they mainly focus on collecting data from same respondent more than once, however, the Chronbach’s alpha coefficient reliability measure was chosen because the computation of the data reliability is based on a one-time data collection. Using the technique, the values of Chronbach’s alpha obtained for variables “coordination costs”, “specific assets”, “uncertainty”, “measurement difficulty”, “relationship lending” and “economic characteristics” were 0.70, 0.77, 0.81, 0.73, 0.62 and 0.78 respectively. For details of technique see Cooper & Schinder, page 216.
The required values of means and standard deviations were generated for all responses regarding specified variables and the resultant values incorporated in the above formula to generate the Chronbach’s coefficient. Theoretically, a statistically reliable estimate should have a value of the Chronbach’s coefficient in the range 0.5 to 1 (Pedhuzhar, 1991). The closer the value of the coefficient to one, the more reliable is the estimate. Following this statistical rule, the variables whose α’s fell in the range 0.5 to 1 were acceptable and used for the regression analysis.

4.4 Testing for multicollinearity

Apart from establishing the reliability of the data, the study also established whether there was any significant correlation between any two independent variables. For example, certain investigative variable indicators of the independent variable measuring ‘uncertainty’ were highly correlated with some of the control variables measuring indicators of ‘economic characteristics’ of borrowers. Specifically, the following pairs of independent variables had a high value of the correlation coefficient:— the value between UN6 and EC1 was 0.73, UN8 and EC1 was 0.81, and that between UN6 and EC4 was 0.65. This regressor correlation could potentially lower the correlation of each of these variables with the dependent variables. The effect of regressor inter-correlation is that the regression coefficients generated can be unstable due to high variance, and so it is extremely difficult to be able to isolate the contribution of specific independent variables to the variation of the dependent variable (Greene, 1997). Consequently, it is possible that the coefficients for the theoretically specified independent variables become insignificant, or can come with signs opposite of the ones expected from theory and/or previous results.
Given this observation, it was thus essential to undertake steps in data analysis to test for multicollinearity and find solutions before the actual procedure of econometric analysis.

In addition to the above diagnosis, and as proof of existence of multicollinearity, a Variance Inflation Factor (VIF) was computed as follows:

\[
VIF = \frac{1}{1-R^2} \quad \text{.......................................................... (4.1)}
\]

Where \( R^2 \) is the value of the coefficient of determination obtained by regressing any of the inter-correlated independent variable with other independent variables. Since the value of \( R^2 \) shows the proportion of the total variation in the assumed dependent (independent) variable that is explained by the variation of the other independent variables, then a high value of \( R^2 \) in equation 4.1 implies that the independent variable in question has a strong correlation with the other independent variables and so multicollinearity exists. This argument is in accordance with Greene (1997), who demonstrates that a highly positive value of the VIF indicates that there is significant multicollinearity in the regression model. According to similar literature, the threshold value of the VIF is 10. The use of VIF\(^{13}\) to test for multicollinearity is popularly used in primary survey data and this is the reason for its use in this study.

Following the above procedure, regressions were conducted at the preliminary phase to determine the degree of the incidence of multicollinearity in the data defining independent variables. It was found that regression results on the data defining independent variables in certain model formulations showed a high incidence of

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\(^{13}\) The Ridge regression is widely used for detecting multicollinearity in time series data. See Green (1997).
multicollinearity as showed by the high Variance Inflation Factor (VIF)\textsuperscript{14} of the regressions. The decision to eliminate the collinear independent variables from the affected model formulations as suggested by Greene (1997) was hampered by serious misspecification errors however. Consequently, it was decided that the model formulations that suffered from multicollinearity be omitted from the overall analysis.

4.5 Estimation procedure for the transaction-costs function

This section outlines the econometric techniques employed in establishing statistical relationships in the specified transaction costs function, as well as the rationale for the choice of the techniques. The anticipated output from these techniques formed the coefficients and marginal effects upon which interpretations and conclusions made in chapter 5 are based.

4.5.1 Discrete-Choice Analytical Techniques

Given the data characteristics described in section 4.2, the most meaningful method of estimating the transaction-costs function was by the use of Probit Models (Greene, 1997). The probit model was the most suitable approach for the analysis of data collected in this study because the technique is suitable for a more accurate analysis of variables generated from data that have a large random variation due to differences in views, experiences and opinions among respondents.

\textsuperscript{14} Multicollinearity is documented to become a serious problem when the VIF value equals 10 or above (Greene, 1997).
Further, the probit model allows for the unrestricted substitution of variables, and the model can ably handle data which exhibits unobserved factors which are correlated for each respondent.

The data obtained in this study represented polychotomous responses reflecting the opinions and experiences of respondents and were graded on an ordered (likert) ordinal scale ranging from 1-6. For example since this study evaluates the severity of transaction costs, an opinion rating of 1 was worse than a rating of 2, which was worse than 3, and so forth. The inherent ordering of these data implies that any chosen alternative is similar to those close to it and less similar to those further away from it (Maddala, 1996). As a result, the correlation between responses 1 and 2 is greater than the correlation between 1 and 3, and the correlation between 2 and 3 is greater than the correlation between 2 and 4, and so on. Consequently, estimation techniques that assume that errors associated with each alternative are independent, were obviously inconsistent with the analysis in this study (Greene, 1997). As such the Logit model technique and all the associated models such as the Nested Logit and the Multinomial Logit were ruled out. Further, Ordinary Least Squares technique was not suitable for the analysis because of the fact that the regression would not account for the ordered nature of the responses. This difficulty could be explained by the fact that an ordinary regression would treat the difference between 1 and 2 the same as the difference between 3 and 4 and so on, whereas in fact they were only a ranking (Greene, 1997). As a result, ordinary regression analysis would yield heteroskedastic coefficients as well as an underestimation of the model (Maddala, 1996).
Therefore, a special technique that fully caters to the above mentioned structure of the data as well as the inherent correlations was the Ordered Multinomial Probit model.

**4.5.2 The Ordered Multinomial Probit Model**

A probit model is a discrete choice model that incorporates discrete choice variables in the structure of a cumulative standard normal probability function (Greene, 1997). In this literature, theoretical analytical techniques suggest that the multinomial probit function is used for analysis when the dependent variable is dichotomous and unordered.

Additionally, according to statistical analysis techniques, there are many cases when a qualitative dependent variable can take only two values (such as *yes* or *no*, *on* or *off*). If this binary variable represented as 0-1 is modeled as a linear function of a set of explanatory variables, the resultant predicted values must lie in the range 0-1 suggesting that they could be interpreted as probabilities that the independent variable takes the value 0 (or 1). However, the dependent variables representing coordination costs in this study were not only polychotomous, but also ordinal in nature. Thus using a multinomial probit function would not yield efficient results because these models would mis-specify the data-generating process in assuming that there was no order in the different categories that the dependent variables could take (Maddala, 1996).

The ordered multinomial probit (OMP) model was used for estimation in the context of the existence of ordinal polychotomous dependent variables because the model captures explicitly the correlation among all choice alternatives. OMP is an extension of the probit model that handles the analysis of multinomial choice-variables whose responses are categorically ordered in nature.
Further, the model is most suitable for a multinomial probit analysis if the qualitative dependent variable can be classified into more than two categories, i.e., polychotomous variable; followed by a set of polychotomous explanatory variables (Green, 1997).

In the opinion study survey, responses generated reflected the intensity of feelings of respondents and these ordinal responses were ordered by use of likert scales. It is important to note that the likert scales used in the data-generating process reflect only a ranking; it is not known to what extent going from 1 to 2 is different from (or equivalent to) going from 2 to 3, and so on. Thus the OMP also assumes that the size of the difference between any two adjacent values is not known but does not matter to the carrying out of the analysis, unlike, for example, the Ordinary Least Squares regression technique, where the size of the difference between adjacent elements is known and matters to the carrying out of the analysis.

The OMP analysis assumes that the choices made by the different respondents reflect their utility or preferences about the behavior of agents in credit markets. A further assumption is that the error terms of the utility functions are normally distributed. The utility function can be decomposed into observed and unobserved portions as follows:

\[ U_{nj} = V_{nj} + e_{nj} \quad \forall j \]

Where

- \( U_{nj} \) is total utility vector
- \( V_{nj} \) is a vector of the observed portion of the utility/preference
- \( e_{nj} \) is a vector of the unobserved portion of the utility/preference
- \( n \) is sample size
- \( j \) represents possible responses, in this case \( j = 1, \ldots, 6 \)
Equation 4.2 implies that the utility of respondents regarding the severity of transaction costs depend on certain observable factors represented by the explanatory (structural) variables, as well as unobserved factors represented by the error term $e$.

The vector $e_n$ is composed of error term components as follows:

$$e_n = [e_{n1}, e_{n2}, \ldots, e_{nJ}]$$

The Ordered Multinomial Probit model assumes that $e_n$ is distributed normal with a mean vector of zero and covariance matrix $\Omega$. Therefore the density of $e_n$ follows a cumulative standard normal distribution and is represented as follows:

$$\Phi(e_n) = \frac{1}{(2\pi)^{J/2}} \left| \Omega \right|^{1/2} \exp \left( -\frac{1}{2} e_n^\prime \Omega^{-1} e_n \right)$$

In the survey, respondents were allowed to evaluate the attributes measuring the severity of transaction costs in a choice set of likert scales to determine a desired choice. Since the modeling of behavior in financial markets is based on the utility theory inherited by the OMP model, then the assumption made is that agents’ preferences for an alternative choice is captured by a value called utility, and the agent chooses the alternative in the choice set with the highest utility. Since human behavior is complicated by a variety of factors, a probabilistic dimension is attached to decision rules involving utility actions (Maddala, 1996). Then any choice or alternative $i$ chosen by a particular respondent from the likert scales is represented in form of choice probabilities as follows:

$$P_{ni} = \text{Prob}(V_{ni} + e_{ni} > V_{nj} + e_{nj} \ \forall j \neq i) \ ...................................................... (4.3)$$

$$= \int I \left( V_{ni} + e_{ni} > V_{nj} + e_{nj} \ \forall j \neq i \right) \Phi(e_n) \, de_n \ ...................................................... (4.4)$$

These two expressions imply that if a respondent chooses alternative $i$, then his opinion represents a greater utility to this alternative than the utility associated with another
alternative \( j \). For example, in estimation of equation 4.3, suppose \( C_i \) is a set of error terms \( e_n \) that result in the respondent choosing alternative \( i \):

\[
C_{ni} = \{ e_n \text{ s.t. } V_{ni} + e_n > V_{nj} + e_{nj} \quad \forall j \neq i \}. \]

Then the probability of a respondent choosing alternative \( i \) is as follows:

\[
P_{ni} = \int_{e_n \in C_{ni}} \Phi(e_n) \, d e_n \quad \text{………………………………………………………………………………(4.5)}
\]

Equation 4.5 represents an integral over only some values of \( e_n \) rather than all possible values, namely, the \( e_n \) ‘s in \( C_{ni} \). The chosen alternative \( i \) as opposed to alternative \( j \) represents differences in utility about the severity of transaction costs among respondents and so, the probability of making choice \( i \) can be estimated as a difference in the utilities as follows:- Define \( \tilde{A}_{ij} = U_{nj} - U_{ni}, \tilde{A} = V_{nj} - V_{ni}, \) and \( \tilde{e}_{nji} = e_{nj} - e_{ni} \). Then \( P_{ni} = \text{Prob}(\tilde{A}_{ij} < 0 \quad \forall j \neq i \)\). That is, the probability of choosing alternative \( i \), is the probability that all the utility differences when differenced against \( i \), are negative (Greene, 1997).

Questions answered on the survey allowed six possible responses on likert scales ranging from 1-6. A respondent was allowed to choose a response based on his/her utility about the severity of transaction costs. The likert scales imply that respondents answered questions based on an ordinal scale having a threshold model in mind. They indicated “strongly agree” if their perception about transaction costs associated with an attribute of financial intermediation is above a certain threshold \( \phi_1 \). Likewise, if their perception of costs associated with an attribute was below threshold level \( \phi_1 \) but above \( \phi_2 \) they indicated “agree”, and so on. In summary, if the utility \( U \) is above a particular cut off point \( \phi_1 \), the respondent chooses the answer “Strongly agree”.

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If $U$ is below $\phi_1$ but above another cut-off point, $\phi_2$, then he answers “Agree” and so on. This threshold model is a form of censoring and can formally be represented by the scheme below:

1. “Strongly Agree” if $U > \phi_1$
2. “Agree” if $\phi_1 > U > \phi_2$
3. “Weakly Agree” if $\phi_2 > U > \phi_3$
4. “Weakly Disagree” if $\phi_3 > U > \phi_4$
5. “Disagree” if $\phi_4 > U > \phi_5$
6. “Strongly Disagree” if $\phi_5 > U$

In practice, the utility vector $U$ represents a set of functions modeling the behavior of explanatory variables ($x$) on the dependent variable ($y$) as specified in equations 3.2 and 3.3 in chapter 3. Assuming that the unobserved continuous measure of coordination costs ($y$) is a linear function of a set of explanatory variables $x$, with parameter vector $\alpha$, and an error term $\varepsilon$:

$$y = \alpha'x + \varepsilon$$

(4.6)

However, $y$ is unobserved and what is observed are the opinion values ranging from 1-6 representing the order of severity of coordination costs as perceived by a respondent sample drawn from the various institutions.

$$y = 1 \quad \text{if} \quad y \leq \phi_1,$$

$$y = 2 \quad \text{if} \quad \phi_1 < y \leq \phi_2,$$

........

$$y = 6 \quad \text{if} \quad y \geq \phi_5$$
Since $\varepsilon$ is normally distributed across observations, and the mean and variance of $\varepsilon$ are assumed to be zero and one (through normalization), the following probabilities result:

$$\text{Prob (y=1)} = \Phi(\phi_1 - \alpha'x),$$
$$\text{Prob (y=2)} = \Phi(\phi_2 - \alpha'x) - \Phi(\phi_1 - \alpha'x),$$
$$\cdots$$
$$\text{Prob (y=6)} = 1 - \Phi(\phi_5 - \alpha'x)$$

Where $\Phi$ is the cumulative function of a normal distribution.

To determine the marginal effects of how the probabilities of the various outcomes would change when the value of one of the explanatory variables changes, a derivative of equation 4.6 is taken with respect to each of the explanatory variables. The parameters representing the cut-off points are estimated together with the coefficient vector $\alpha^{15}$. Empirical optimization proceeded with the Maximum Likelihood Estimation (MLE) technique. The MLE technique was suitable because the ML estimators possess asymptotic properties namely consistency, normal distribution and efficiency (Greene, 1997). A likelihood function was formed as follows:

$$L(y/x) = \sum_{k=1}^{n} Y_{ik} \cdot \log \Phi(\phi_i - x_k \cdot \alpha) + \sum_{i=2}^{5} Y_{ik} \cdot \log[\Phi(\phi_i - x_k \cdot \alpha) - \Phi(\phi_{i-1} - x_k \cdot \alpha)]$$

$$+ Y_{ik} \cdot \log[1 - \Phi(\phi_5 - x_k \cdot \alpha)]$$

where $y_{ik}$ is an indicator variable that takes on the value one if the realization of the kth observation $y_k$ is the ith choice of perception about coordination costs, and zero otherwise.

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15 In the analysis the intercept in the equation for $y$, was normalized by setting $\phi_1$ equal to zero. See Greene (1997) page 875 for details.
The estimated cut-off points, $\phi$’s along with the estimated $\alpha$’s, maximize the log-likelihood function stated above. During empirical estimation the parameter estimates inherited by the likelihood function stated above were generated by the LIMDEP computer software program which incorporates all the described techniques of OMP.
CHAPTER 5

EMPIRICAL RESULTS, INTERPRETATION AND DISCUSSION

In this chapter, survey results are reviewed with particular reference to the outcomes sought by the three specified objectives of the research work. The goal of this chapter is to determine whether the survey results support the conclusion that in modeling the behavior of financial markets, incorporating lender-borrower relationship variables leads to a better model of the determinants of transaction costs incurred by lenders, than a model that disregards these relational variables. Outcomes of the survey that correspond to objectives 1, 2 and 3 are presented in sections 5.1, 5.2 and 5.3 respectively.

5.1 Lending practices with small businesses by credit institutions

The pattern of small-business lending reflects the ability of each type of credit institution to deal with information asymmetries that exist in small business loan markets. In addition, this ability reflects the nature of safeguards in place to protect against loan risks. A striking feature noted in the findings documented in this section is that access to small business loans is to some extent biased towards borrowers who are able to accumulate significant social capital in form of character, reputation,
cooperation, and other attributes that signify the trustworthiness of a prospective borrower. The following sub sections are a review of findings regarding the prevailing lending practices showing indicators of safeguards available to deal with loan risks.

5.1.1 Lending patterns

The survey found out that the volume of commercial loan transactions with the small-business sector is relatively small but increasing due to competitive pressures that are facing lending institutions (Ongena and Smith, 2000). As credit institutions increase business in extending small-business loans, some credit institutions (notably the farmers’ cooperatives) reported that they extended as much as 97% of all bank loans to small businesses with revenues below $10,000,000. Although the general commercial activity with these loans is small, the volume of loans extended to small businesses by the small financial intermediaries and cooperatives is larger than the average loan transactions by the large financial intermediaries. Survey results show that the small commercial credit institutions allocated up to 75% of the total loan portfolio to small-business borrowers at each loan center. The farmers’ credit cooperatives allocated up to 100% of loan portfolio for farm loans, while the large commercial credit companies allocated an average of up to 25% of the loan portfolio for small-business borrowers at each loan center.

As expected, one of the most pressing lenders’ concerns regards the risk of loan default or late payment on a loan by prospective small-business borrowers since information about the probability of individual default risk is difficult to obtain. Thus, in the selection of loan customers, the credit institutions emphasize minimizing credit risk by having a number of precautions in place that are defined in the lending policies of
each institution. Following are some precautionary practices by financial intermediaries who extend small loans to small businesses:

i) generally a small amount of loan portfolio is allocated to start-up borrowers who lack enough credit history and experience in the operation of the businesses for which loans were sought. In this regard, a consensus prevailed among the credit institutions surveyed that the credit history and business experience are most important criteria used to select successful loan applicants. The small commercial credit institutions allocated less than 5% of the small-business loan portfolio for start-up borrowers. While the large commercial credit companies allocated less than 25% of the small-business loan portfolio to start-up businesses, the farmers’ credit cooperatives allocated up to 30% at each loan center. One manager from a large financial institution in Columbus pointed out that his company would allocate a loan to a start-up borrower as long as there was sufficient evidence that a borrower had operated the small-business long enough to gain experience in running that business. However, this cautious lending behavior implies that transacting small loans is potentially unprofitable in the short-run but may become profitable as a lending relationship grows and lasts longer.

ii) Given no credit history, some start-up business borrowers were allowed access to loans on condition that they held stable employment (on average a prospective borrower must have been in current employment for not less than three years) and lived on the current address for at least
seven years. The concern about customer stability with employment and rental markets seemed to be in line with borrower qualities which are prescriptive of character, reputation, and cooperation that a prospective borrower possessed. As Berger et al., (2001) point out, the information about character and reputation comprises soft information as a desired input in loan approval decisions. Apparently, because of the economic instability prevailing at the time of the survey, many small businesses ceased operation and/or moved to other locations seeking better market environments which led to loss of interaction.

iii) Favorable considerations are given to borrowers who have successfully borrowed several times in the past, never made late payments, and have no outstanding balances on past loans. Having this principle in mind, the survey found that the proportion of loan portfolio disbursed to repeat borrowers was higher than that allocated to start-up borrowers. In this respect, while the large commercial credit institutions allocated up to 75% of the small-business loan portfolio to repeat borrowers at each loan center, the small commercial credit institutions and the farmers’ credit cooperatives allocated up to 73% and 62% respectively of small-business loan portfolio to repeat borrowers. As Ongena and Smith (2000) point out, this pattern indicates that Small businesses who repeatedly borrowed loan funds with same lenders allowed institutions to gather both financial and private information that enabled favorable loan consideration over time.
iv) Small loans issued to Small businesses are more often collateralized. For example, a significant number of loans issued by the farm credit cooperatives must be secured by collateral. A significant fraction of financial intermediaries surveyed relied heavily on collateral as a method of enhancing the likelihood that they would be able to recover the loans through forceful liquidation of the collateral in the event of loan default. This action was meant to guarantee that in the event a borrower failed to repay willingly, the lender could get paid by taking possession of the collateral and selling it in satisfaction of the debt.

v) Financial intermediaries indicated that they often undertake intensive monitoring programs to allow loan officers to regularly interact with managers of small businesses by making regular site visits, telephone calls, regular reminders and other actions that enable them to gauge loan performance, and detect any early indicators of loan delinquency.

The general consensus by respondents was that the above activities reflecting cautious behavior of financial institutions make the lending process difficult, leading to non-committal behavior, and making loans unavailable especially when activities involve transacting small-size loans. The major difficulty cited lies with the relatively low expected returns from small loans due to significant unit cost of monitoring and thus non-profit maximizing. Respondents mentioned that each time a loan transaction is arranged, financial institutions must incur fixed costs to undertake credit and collateral evaluation and administration.
Given the fact that incurring costs would warrant that a high interest rate be attached to small loans, these loans tend to be very expensive and unattractive to commercial financial intermediaries compared to big loans.

Secondly, respondents remarked that the small businesses generally operate without sufficient insurance and the lack of insurance coverage often reduces the lenders’ willingness to exchange loans with small-business borrowers. Because of this deficiency, business assets are not protected from market volatility and/or claims of creditors thus creating instability and uncertainty, and leading to further non-comittal behavior. Further, in a situation where business assets are not adequately protected, collateral administration would be very frustrating since assets pledged as collateral can easily be repossessed by other debt claimants. Apparently, the proof of repayment insurance was a big issue at the time of the survey because the impact of the prevailing economic instability created adverse shocks that rendered most small businesses more vulnerable compared to other businesses (Federal Reserve Board, 2000).

In summary, relatively low volumes of loans are delivered to small businesses due to lack of business and borrower stability, insurance coverage, and the large administration costs associated with exchanging small loans. Further, given the difficulty of dealing with small-loan transactions and existence of information imperfections, the lending practices indicate that availability of small business loans is highly correlated with relational linkages between lenders and borrowers as well as the local community.
5.1.2 Key players in the small business loan markets and lending technologies

Major credit institutions serving financing needs of small businesses in central Ohio are categorized as institutional and non-institutional financial organizations. Major institutional lenders include financial intermediaries notably commercial banks, the Farm Credit System (FCS), the Farm Service Agency (FSA), and life insurance companies. Non-institutional lenders include suppliers of merchandise and trade credit, and agricultural inputs and equipment dealers. Commercial banks are the leading lenders of both small businesses and farmers, serving on average 80% of commercial small-scale enterprises (ERS, 2001), followed by cooperative societies, insurance companies, and to a smaller extent equipment and merchandise suppliers in the informal sector. The Federal government, through the farmers’ credit cooperatives, also play a key role in supplying credit to farmers. The small business entrepreneurs also sought financing from private and informal lenders.

The source of loans for small businesses in the surveyed area seemed to coincide with the ability of an institution to offer more favorable terms by utilizing information available through relational linkages between lenders and borrowers. The survey revealed that borrowers sought informal and non-institutional sources of financing because of the high interest rates charged for commercial loans. For example, respondents from the farmers’ credit cooperatives pointed out that in many cases in the rural areas, farmers preferred buying agricultural inputs and merchandise on credit from machinery dealers and input suppliers who have knowledge about the borrowers’ financing requirements, income patterns, and repayment reputation that enabled them to lower interest rates; than applying for a commercial loan that was often associated with a high interest rate.
Besides the lower interest rates, the informal loan markets allowed much flexibility in the financial exchange process such that borrowers are allowed an opportunity to repay after prospective crops were marketed or during peak sales of merchandise for non-farmer borrowers. In addition, the non-farm small-business borrowers were offered cash discounts by the suppliers to motivate early repayment. The study found that up to 5% discount from the invoice amount was made by suppliers to small businesses that made timely repayments on trade credit. Moreover, the terms of repayment are flexible to the extent that some lenders occasionally tolerate late repayment at no cost. Respondents also pointed out that the lending policies of suppliers are flexible such that while some customers who have transacted for a long time are allowed to make timely repayments, others may pay late. Some farm loan officers from the Farm Credit System mentioned that in the rural setting, it was difficult to deny a loan to a farmer at a country store.

The survey also found out that the small firms and micro-businesses obtain informal credit from friends through a local arrangement similar to rotating credit schemes. Such arrangements are very common among international entrepreneurs and foreign immigrants who may not be able to satisfy the standard conditions to obtain credit from institutional sources. Communities with similar ethnicity, religious beliefs, nationality, and other relational attributes often undertake informal credit and saving schemes to facilitate the financing of their businesses. A financial intermediation system apparently has emerged among the immigrants in form of rotating credit institutions that generate and disburse loans among trading communities. The system is

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16 A respondent from central Ohio mentioned that communities from Mexico and other Latin American states, Somalia, Kenya, Nigeria, Ghana, the Carrebean, India, China and Korea commonly use the rotating credit schemes to meet the financing requirements of their small trade businesses.
governed by relationships described as cultural affiliates and comprises cultural cohesiveness existing among the traders participating in the rotating credit schemes. Apparently, the cultural cohesiveness existing in community loan markets facilitate the screening, monitoring, and enforcement processes of small loans, thus reducing the transaction costs tremendously.

On the other hand, the commercial form of credit involves designing small business loan contracts that stipulate interest rates charged on certain amounts of borrowed funds, grace periods, fixed repayment amounts and repayment terms, as well as collateral requirements. This form of credit is typically transaction-based and is offered by the institutional lenders specifically registered to undertake financial exchange. Decisions made to extend loans to borrowers make use of spot and hard information generated from financial statements, amount and quality of assets, and credit scores at the time of loan origination. This form of lending does not utilize soft information obtained over time through lending transactions to reduce transaction costs. Rather, credit institutions have adopted information technologies aiding the acquisition of hard information in a more timely manner, thereby allowing loan evaluations to proceed more accurately and within the shortest time possible. A typical process\textsuperscript{17} of loan evaluation involves filing a simple application, usually 1-2 pages. A loan officer enters the information provided on the application into a computer system. This information is electronically mailed to a credit bureau, which in most cases is an external agency operating outside a specific lending institution. The computer system then automatically obtains credit information related to the business and the individual principals of the

\textsuperscript{17} This description of credit-scoring systems is based on a site visit made to two branches of commercial financial institutions located at the outskirts of The Ohio State University in Columbus. During this visit loan officers demonstrated how loan applications are processed in a credit-scoring system.
business, analyzes that information, and assigns a score to the proposed loan. In scoring the loan, the system relies on a database of previous loan transactions to assess the correlation between the likelihood of repayment and the various items of objective information available to the lender upfront, including, the cash flow characteristics of the business, the time the business has been in operation, the experience of the borrower in a related business, the personal credit history of the operator, and other related financial matters. The score generated is reported to a loan officer in just a few minutes later.

There is already a standard range possessed by the lending institution against which a specific score is compared. Typically, there is a presumption that the loan officer will approve loan requests above a certain score, a presumption that the loan officer will reject loan requests below a certain score, and a certain middle range in which the officer is free to exercise his/her discretion on approving or rejecting the loan request. However, some of the large commercial banks internally operate an information department that is in charge of further information evaluation about borrowers.

The above findings indicate that although transaction-based lending is widely spread among credit institutions and benefiting from hard spot information, a significant part of financial intermediation activity benefits from soft information gained through repetitive interaction of agents over time. The emphasis on repetitive interaction allows potential lenders an opportunity to accumulate information about financing needs of borrowers as well as gaining the ability to predict their own receipts more accurately.
In summary, particular credit institutions possess risk features involving long-term relationships to solve information asymmetries and increase loan availability by setting loan contract terms that improve borrower incentives.

5.2 Relationship lending and importance

Although financial literature (Ongena and Smith, 2000) indicates that technological advancement is driving relationship lending out of U.S. financial markets, there is evidence of relationship lending at least with small businesses, in central Ohio. The survey found out that credit institutions regard relationship lending as a powerful tool to eliminate the wedge between the borrower’s incentives and those of loan officers on one hand, and between loan officers’ incentives and those of the top managers on the other. The following sub section highlights the importance attached to relationship lending.

5.2.1 Importance of relationship lending to lenders

A survey of credit institutions deduced that relationships are useful in financial exchange in credit markets as a mechanism for enhancing greater risk management, competition, and customer retention.

a) Relationship lending as a credit risk management tool

The financial market that serves small businesses is often constrained by the presence of severe information asymmetries because information about small firms is not readily available publicly since these firms are unlikely to be rated by rating agencies (Petersen and Rajan, 1994). Consequently, project performance, credit and business reputations and
loan repayment ability cannot be accurately predicted. To surmount the problem, credit institutions interviewed in this survey reported that they are able to deal with the problem of information asymmetries by striving to become the “Main Bank” of small business customers to take advantage of increased flow of information about performance of customers’ businesses. To achieve this, a main bank expects that in addition to the acquisition of loans, its customers are able to buy other products from this bank and to execute most of their payments via this bank. Thus the bank is able to monitor the periodic turnover on customers’ accounts and consequently reduce its monitoring costs as well as the cost of borrowed funds if the turnover is favorable. To achieve even a greater information advantage, a majority of credit institutions demanded that customers consolidate their loans with the main bank to avoid any information asymmetries a main bank may have about alternative credit sources. Therefore by monitoring the borrowers’ accounts available with the main bank, monitoring costs are reduced and so are the risks associated with business information asymmetries.

Another advantage credit institutions strive to achieve is to create a long-term relationship with customers. As Petersen and Rajan (1994) found out, over time, there is a negative relationship between the length of credit service and monitoring costs as well as the interest rate on loan funds. A financial relationship is expected to start when a firm buys a loan for the first time from a credit institution, and is expected to get stronger in the course of lending as agents strive to gain reputation with lenders. The survey found out that by allowing long-term relationships, a borrowing firm gets an opportunity to experience all the bank’s products and services as well as the flexibility in fulfilling implicit contracts.
By the same token, a bank gets an opportunity to gain private information about the borrowing firms and so may tailor its products to suit the needs of the firms in question.

b) Relationship lending as a competitive tool

The capacity to collect and evaluate information efficiently is critical to lending and other credit-related activities, and is regarded as a competitive strength of a credit institution. By promoting strong relational linkages, credit institutions permit the exploitation of informational advantages necessary to achieve greater quality services. After a credit institution obtains considerable private information about firms through lending activities, it can cut the cost of acquiring this information, increase returns per risk taken and ultimately gain market power over the course of the lending relationship. By being able to offer high-quality loans at a cheaper cost, a credit institution can alleviate competitive pressures due to its ability to offer more unique credit services relative to its competitors. This argument is in agreement with Petersen and Rajan (1995) who found out that small credit companies were able to gain market power and compete in loan markets serving small businesses because their operations generated sufficient capacity to process information about small-business loans. In addition, the information gained about customers in the long-term exclusive relationship may serve as a further competitive tool in that new potential lenders may be unlikely to give favorable terms to borrowers who engaged in previous lending relationships, creating higher switching costs for borrowers already engaged in a relationship.
This additional argument is in agreement with Stiglitz and Weiss (1981) who found that the result of exclusivity of lending relationships is the reluctance of long-term customers to switch to new lenders, and alternate new lenders to enter new relationships for fear that the previous lender may have detected new adverse developments in the relationship.

Additionally, the survey found out that the efficiency associated with collecting and use of credit information is one of a bank’s most valuable contributions to a financial intermediation market. In this regard, the greater use of relationships seems to respond to the need for increased competition in the market in order to enable credit institutions capture a greater share in credit markets. Respondents mentioned that the fact that lenders in financial markets lack tangible products to display to attract the public’s attention, lenders emphasize the establishment and building of good will through building of business and personal relationships with prospective individual borrowers and organizations by showing the willingness to support their financial needs. To this end, although information technologies exist to screen customers based on financial and business information, some credit institutions have incorporated additional features in their internal organization to accommodate relationship lending techniques. For instance, some commercial credit institutions mentioned that they have established a separate department to handle relationship lending. Depending on the amount and quality of private information available about a loan applicant, this department generates an in-house credit score in addition to the external score from a credit bureau. The credit institution then compares the in-house to the external credit score and makes a judgment. It was found out that it is possible for a disapproved loan applicant to still get a loan when an internal score overrides the external credit score.
A further competitive strength that arises from greater use of relationship lending is that credit institutions can offer differential prices for the same type of loan delivered to different categories of borrowers. It was found out that relationship-related competitive market power is generated by manipulation of interest rates on loans to make loans attractive to particular categories of borrowers. For example, discussions with respondents indicated that credit companies may charge relatively lower interest rates to repeat borrowers than the first-time and/or other borrowers. Credit institutions further mentioned that continuing customers have an opportunity to apply for interest rate reductions in the course of lending which is not possible for new borrowers. When applications are submitted, the Board of Directors reviews the applications for interest rate reductions and, depending on past loan performance regarding delinquency and timeliness of loan repayments, may approve or disapprove the applicant’s request.

However, this finding is contrary to Berger et al., (2001) who discovered that banking companies in some European locations tend to charge higher interest rates to repeat customers and lower interest rates to new customers in a typical lending relationship. They further argue that the motive behind charging differential interest rates is that repeat customers avoid switching to other banks for fear to be pooled with low quality customers during the loan selection process. This practice was regarded as a competitive tool in that the high interest rates charged is a mechanism to block potential entrants into the financial market.
(c) Relationship lending as a customer retention tool

The survey revealed that credit institutions aim to retain customers through the provision of friendly environment while ensuring that institutions are consistent with their organizational objectives. In addition, financial institutions are continually employing communication strategies with their customers to emphasize two-way communication whereby financial companies regularly contact their customers about new and desired products. Customers are expected to provide a feedback upon which financial institutions base their subsequent decisions about product sales promotions. Some financial companies indicated that they provide positive reinforcements to royal long-term customers in form of gifts and special privileges. Experience shared with the researcher by loan staff shows that credit institutions spend a significant amount of money, time, labor cost and other resources to search for new customers. In addition, credit institutions tie significant capital resources in the form of inventories of loan funds during the search process leading to loan demand risks. Therefore search cost must be compensated by retaining the customers in order to ensure continuous flow of revenue to the institution. Actually at one bank, there is a saying that “It takes months to find a customer, but just seconds to lose one”. This statement emphasizes that customer search is one of the significant indirect costs to credit agencies, and caution and measures are inevitable to ensure long-term transactions with regular borrowers.
The finding about customer retention is in agreement with literature whereby Tomer (1998) found out that Individual Inc. newspaper company was able to retain 85% to 90% of its customers by utilizing a two-way communication approach allowing customers to decide the relevance of published articles, and new sources and ways of receiving information.

5.2.2 Importance of relationship lending to small business borrowers

Established relationships between a lender and a borrower generally improve loan terms on future transactions to the benefit of borrowers in the following ways:-

i) increased availability and amount of loans to continuing customers

The survey found out that the availability of loans increases for borrowers who have in the past transacted with particular credit institutions. The increased availability of loans allows access to loan funds almost progressively. It can be noted that repetitive lending leads to a continuous flow of information about economic activities and repayment behavior of borrowers. It is not necessary for a lender to go through the underwriting process involving project appraisal, submission of fresh documents and papers, training and counseling exercises, as well as collateral evaluations every time a repeat loan is made. As a result, lenders may find it cheaper to make loans to continuing borrowers than loans extended to first-time borrowers. This observation concurs with the argument made by transaction costs theorists that economic agents would be reluctant to transact in environments with large information asymmetries that generate high transaction costs (Stigler, 1961).
ii) **offering lower or no down payments**

Survey findings revealed that credit institutions also seek to attract and maintain a long-term relationship with borrowers by reducing down payments and cash contribution requirements, as well as accepting lower qualifying incomes and non-traditional credit histories.

iii) **reducing or extinguishing collateral requirements**

The survey revealed that borrowers who have had repeated interaction with certain lenders have eventually had the collateral requirement reduced. It was observed that over time, the probability that a lender would demand collateral for loans decreases because there is enough evidence that royal borrowers will repay the loans. However, this trend is more widely observed among the small banking companies and the farmers’ credit cooperatives, and least widely observed among the large banking companies.

iv) **improved services**

Seventy-two percent of the credit institutions surveyed indicated that they improve loan terms on future loans for borrowers who meet their financial obligations in a timely manner. In addition, a majority of financial institutions surveyed have taken advantage of advanced and more efficient information and communication technologies in effecting lending operations with regular customers. A significant number of repeat loans are applied for on the internet and applications are e-mailed to the credit institution immediately. Loan officers receive electronic applications within a matter of minutes and are able to take a decision about whether to extend a loan or not within the shortest time
possible. A significant number of repeat transactions is carried out by telephone enabling a quick and immediate processing, and completion of loan transactions, without customers having to visit credit institutions physically. It can be argued that the improved efficiency of credit delivery services not only reduce the amount of time required to complete a loan transaction but also there is indication of increased trust credit institutions establish with their customers over the course of the lending process.

5.2.3 Forms of relationships among institutional credit markets

Existing lender-borrower relationships in credit institutions surveyed are mainly first formed as deposit relationships. For the purpose of the lending process, deposit relationships exhibit in form of pre-existing relationships between a borrower and a potential lender. Pre-existing relationships are also in form of existing programs and services offered by the lender in which participation of a potential borrower is often required. The preliminary survey with respondents in the credit institutions revealed that the most crucial bargaining point in the process of loan processing is the prior existence of a deposit account with the lending institution. Financial intermediaries reported that borrowers are strongly encouraged to hold business deposit accounts in the bank from which they borrow funds.

It was further found out that the presence of deposit accounts partly plays a screening role for potential borrowers in that a borrower who maintains a large deposit balance on a regular basis self selects as a profitable borrower and enjoys favorable terms on loan contracts. In addition, it can be deduced that the prior interaction with borrowers enable a financial intermediary to obtain private information about a borrower’s financial
prospects that are useful in speeding up loan processing procedures, lessen documentation; collateral and legal requirements. Apart from operating deposit accounts, certain credit institutions expect particular customers to undertake activities in programs such as leasing services, lock-box services, cash flow management, letters of credit, and business insurance. Besides offering secondary needs for business customers, utilization of the additional bank-provided services gives an opportunity to potential lenders to explore the quality of customers in terms of reliability, trust, inventory turnover and profitability, business stability and quality, cash inflows and outflows, debt burdens, and any other information that a lender needs to know about a potential borrower.

The survey also revealed that lending procedures vary depending on the length/duration of a relationship between a borrower and a lender in that long-time borrowers occasionally get prompt approval of loans compared to first-time borrowers. 18 Generally, a first-time borrower was required to submit a series of documents including a loan application, tax returns, financial statements (balance sheet, cash flow budget and income statement), insurance policies, and legal documents confirming ownership of a business and any collateral submissions. In addition, a prospective loan applicant is required to show proof of substantial experience in conducting a similar business as the one for which a loan is sought.

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18 During the preliminary survey, one of the managers from a large commercial bank remarked that Longs Bookstore had been the oldest customer in this bank before merging with the OSU Bookstore (since 1919). Much as Longs Bookstore received prompt approval of large loan sizes, it required about a week to approve a loan of similar size for a first-time customer.
Other types of relationship-related loans include but not limited to the following:

i) **Loans to related entities**

Credit institutions also foster the interaction of potential borrowers with other markets that in turn can be useful in contributing to the accumulation of personal (private) information necessary for future loan transactions. Loans extended to related entities is a lending practice where loans are largely extended to a company that is effectively controlled by or controls a financial institution through ownership, or other links, or where both entities are controlled by the same parent company, owner, or group. The survey found that the Federal Credit Unions operating in the USA mainly follow this principle whereby between 70-90% of the loan portfolio is extended to borrowers employed by certain companies. Loans to Small businesses are channeled as loans to employees who are employed by particular companies. This lending practice exploits the potential of employment agencies to acquire private information about the stability, earnings, and general relationship behavior of employees who are likely to be potential future borrowers for particular credit institutions. In addition, the survey discovered that a distinct credit institutional bias exists regarding increased lending towards those enterprises where there are links in directorships, joint ownerships and various other common financial dealings between credit institutions and borrowing firms. Although this was reported as a rare practice with small businesses, it was indicated to be a dominant practice with the large corporate companies.
ii) Third-party relationships or guarantees

This type of lending is also referred to as character lending. With this lending practice, a borrower obtains a loan with the approval of a guarantor who is either a government agency or an individual with a good known character and is a regular customer to the credit company in question. For example, a large proportion of prospective small firm borrowers lack adequate requirements in form of collateral and repayment capacity and the Small Business Administration (SBA) serves as a guarantor for such loans. Similarly farmers who are unable to obtain credit from conventional sources can obtain credit when a Credit Cooperative acts as a guarantor for these loans. The Farm Service Agency (FSA) is also commonly used as a guarantor, and guarantees up to between 90-95% of the loan losses sustained by farmers due to defaulted loans. Guaranteed loans are also often originated by the cooperatives, and some informal lenders such as suppliers of production equipment. The survey found out that until 1985, the farmers’ credit cooperatives largely performed as guarantors of farm loans until recently when they became formal lenders of credit directly to farmers. With this function, the role of guaranteeing loans is becoming smaller and smaller (ERS, 2001). Although this mode of lending is limited to some extent, the relationship established between lenders and borrowers is important in reducing certain costs. For example, personal guarantees act as a useful substitute for collateral.
iii) Interagency relationships

Federal credit agencies and other agencies enter into partnerships with the aim of reducing particular loan-related transaction costs incurred by the credit agencies. These partnerships offer flexibility and usually the ability to mobilize private support and capacity to provide local knowledge. Through the participation of borrowers into other local/state/federal programs, local knowledge is acquired that is related to performance of loans. An example in this perspective is provided by the Farm Service Agency (FSA), which is a USDA supported credit agency that handles government farm credit programs. The FSA seeks land trusts’ help in educating farmers about FSA’s program to reduce debts in exchange for conservation easements, and in monitoring those easements. By establishing such partnerships, credit agencies can significantly cut down transaction costs associated with training prospective borrowers and monitoring of loans.

5.3 Regression Analysis

This section discusses the results of the ordered multinomial probit regression analysis on survey data that was conducted to test the hypotheses stipulated by the transaction costs theory that are specified in chapter 3. This discussion is supported by results presented in tables 5.1 through 5.6, and figures 5.1 through 5.6. Although the survey sought responses on seven indicators of the dependent variable, three indicators namely CC2, CC3 and CC7 yielded the best results of the maximum likelihood estimation and so formed the key results of this analysis. As mentioned in sectioned 4.4, results involving regressions with the rest of the dependent variables namely CC4, CC5, CC6, and CC8 showed a high
incidence of multicollinearity as showed by the high Variance Inflation Factor (VIF)\(^{19}\) of the regression with the stated variables. Elimination of the collinear independent variables from the models as suggested by Greene (1997) and other econometrics literature would have been a solution to the multicollinearity problem but this was not used because severe specification errors arose in the model. The VIF values for the regressions with CC2, CC3, and CC7 were 2.8, 3.5, and 1.9 respectively and these values are acceptable for a reliable regression analysis (Greene, 1997). The results that appear in tables 5.1, 5.3 and 5.5 show the coefficients, standard errors, and cut points obtained in the regressions with CC2, CC3, and CC7 following the procedure described below.

Three equations are selected to correspond to the predetermined dependent variables defining coordination costs; and analysis is performed on each of the three dependent variables with all the traditional determinants of transaction costs. The three other equations correspond to the regression analysis of each of the three dependent variables with both the traditional and relationship lending -related variables. In this analysis, model fit is estimated to be significant at 1\% if the outcome of the probability values is 0.01 or below (p \(\leq 0.01\)). In addition, model fit is estimated to be 5\% significant when probability values fall in the range 0.01 and 0.05 (0.01 \(> p \leq 0.05\)). Finally, model fit is estimated to be 10\% significant when probability values fall in the range 0.05 and 0.1 (0.05 \(> p \leq 0.1\)).

Secondly, in addition to regression analysis, a further analysis utilized the computed marginal effects of the independent variables on the dependent variables. Marginal effects show how the probabilities of the various outcomes would change when

\(^{19}\) Multicollinearity is documented to become a serious problem when the VIF value equals 10 or above (Greene, 1997).
the value of one of the explanatory variables changes by one unit. The marginal effects on choice probability of occurrence corresponding to each of the dependent variables are expressed as the partial derivatives of the choice probability outcomes with respect to the independent variables, and the aim of their computation is to facilitate the interpretation of the coefficients generated on the dependent variables (Greene, 1997). Tables 5.2, 5.4 and 5.6 present the marginal effects. Computation of marginal effects utilizes the coefficient estimates, probability values, and cutpoints indicated in tables 5.1, 5.3 and 5.5 as well as the mean values obtained in the analysis.

The marginal analysis applied in the OMP model basically facilitates the answer to the question: Given a specific credit institution serving a small business’s financing needs, what is the probability that the increased investment in transaction-specific assets, uncertainty, and presence of difficulties in measuring worker performance; will increase transaction costs of lending? Recalling that a score of 1 indicates that a respondent judges a statement describing transaction costs as most severe and so most costly and least desirable, combining the probabilities for scores of 1 and 2 provides the insight into the credit exchange features associated with high transaction costs. The presentation of the outcome of response scores regarding these features for the two models is presented in figures 5.1 through 5.6. The interpretation and discussion of key findings of the multinomial probit analysis is then done with reference to the magnitude and sign of the marginal effects. In this case, a positive coefficient means that the variable in question increases the probability of a respondent’s perception of a specific attribute of financial intermediation as increasing transaction costs, and decreases the probability of a respondent’s perception of the same attribute as decreasing transaction costs. The
discussion further proceeds by presenting and discussing the outcomes of each of the investigated category of transaction costs which are documented under a separate heading in sub sections A to C.

It can be seen that the coefficients presented in tables 5.1, 5.3, and 5.5 above are all significantly different from zero at 1%, 5%, and 10% confidence intervals. Threshold parameters reflecting the cutpoints\(^{20}\) of the magnitude of the dependent variable, \(\phi_1, \phi_2, \phi_3, \phi_4\) are also significantly different from zero at least at 10% confirming that the following relationship; \(0 < \phi_1 < \phi_2 < \phi_3 < \phi_4\) is true. Highly significant and ordinal \(\phi\) estimates indicate that the six categories in the response structure are indeed ordered. It can also be observed that the chi-square values are higher in a transaction costs model that incorporates both the traditional and relationship lending variables than those in the model that incorporates only the traditional variables. The higher and more significant chi-square values in the second model are indicative of a better explanatory power for a model of transaction costs that incorporates relationship lending variables. Following is a detailed interpretation of results.

\(^{20}\) Cutpoints are demarcations defining the boundaries between one choice outcome and another over the range of the specified likert scale.
<table>
<thead>
<tr>
<th>Explanatory variable influencing coordination costs of lending institutions</th>
<th>Analysis w/ trad. Var. (Equation 1)</th>
<th>Traditional &amp; relationship variables (Equ.4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-4.63 (0.01)</td>
<td>-5.96 (0.04)</td>
</tr>
</tbody>
</table>

1. **Asset specificity, and collateral specificity variables**

| Diversification of credit options: AS6 | 0.30 (0.08) | 0.31 (0.06) |
| Use of specific computer software: AS7 | 0.52 (0.02) | -0.67 (0.01) |
| Time to find a buyer for repossessed assets: AS10 | 0.22 (0.00) | -0.05 (0.12) |
| High incidence of one-time borrowers: AS12 | 0.31 (0.04) | -0.20 (0.31) |

2. **Uncertainty of business environment**

| Uncertainty with loan demand: UN1 | 0.31 (0.01) | -0.30 (0.07) |

3. **Difficulty of measuring performance of loan officers**

| Monitoring of loan officers: MD2 | 0.08 (0.10) | -0.02 (0.91) |

4. **Business characteristics and borrower behavior**

| Location of borrowers (rural): EC6 | 0.80 (0.01) | -1.06 (0.01) |
| High Debt-to-income ratio: EC9 | 0.66 (0.00) | 0.78 (0.00) |
| Large loan sizes: EC10 | -0.66 (0.00) | -0.81 (0.00) |
| Requirement of down payments: EC11 | 0.48 (0.01) | -0.58 (0.00) |
| Requirement of loan repayment insurance: EC16 | 0.61 (0.01) | -0.30 (0.20) |

5. **Relationship Lending variables**

| Regular borrowers with checking accounts: R2 | - | -0.34 (0.05) |
| Regular SME borrowers with multiple accounts: R4 | - | 0.45 (0.02) |
| Reliability of SME borrowers: R6 | - | -0.44 (0.02) |

6. **Size of lending institution**

| Large commercial credit company: D1 (dummy1) | 1.14 (0.11) | 1.70 (0.01) |
| Small commercial credit company: D2 | -0.08 (0.14) | -0.43 (0.35) |
| Log likelihood | -179.55 | 93.88 |

| Chi Squared value | 136.14 | 153.83 |
| φ1 (cutpoint 1) | 2.32 (0.00) | 2.44 (0.00) |
| φ2 (cutpoint 2) | 3.20 (0.00) | 3.49 (0.00) |
| φ3 (cutpoint 3) | 3.74 (0.00) | 4.28 (0.00) |
| φ4 (cutpoint 4) | 4.97 (0.00) | 5.95 (0.00) |

Table 5.1: Ordered multinomial probit analysis with dependent variable: ‘additional investments of funds to operate small-business loans’ (CC2), n =146 (probabilities in parentheses).
<table>
<thead>
<tr>
<th>Variable</th>
<th>Analysis with traditional variables (choice probabilities)</th>
<th>Analysis with traditional and relational variables (choice probabilities)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS6</td>
<td>-0.12</td>
<td>0.17</td>
</tr>
<tr>
<td>AS7</td>
<td>-0.14</td>
<td>0.12</td>
</tr>
<tr>
<td>AS10</td>
<td>-0.10</td>
<td>0.14</td>
</tr>
<tr>
<td>AS12</td>
<td>-0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>UN1</td>
<td>-0.01</td>
<td>0.10</td>
</tr>
<tr>
<td>MD2</td>
<td>-0.07</td>
<td>0.08</td>
</tr>
<tr>
<td>EC6</td>
<td>-0.08</td>
<td>0.16</td>
</tr>
<tr>
<td>EC9</td>
<td>-0.12</td>
<td>0.18</td>
</tr>
<tr>
<td>EC10</td>
<td>0.14</td>
<td>-0.12</td>
</tr>
<tr>
<td>EC11</td>
<td>-0.04</td>
<td>0.10</td>
</tr>
<tr>
<td>EC16</td>
<td>-0.08</td>
<td>0.11</td>
</tr>
<tr>
<td>R2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R4</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>R6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>D1</td>
<td>-0.11</td>
<td>0.10</td>
</tr>
<tr>
<td>D2</td>
<td>0.02</td>
<td>0.01</td>
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</table>

Table 5.2: Marginal effects of independent variables on dependent variable “CC2”
<table>
<thead>
<tr>
<th>Analysis w/ econ. Variables (Equ. 2)</th>
<th>Analysis w/ econ. &amp; relation (Equ. 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient 1</td>
<td>Coefficient 2</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
</tr>
<tr>
<td>2.07 (0.00)</td>
<td>3.55 (0.01)</td>
</tr>
</tbody>
</table>

1. **Asset specificity, and collateral specificity variables**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill levels for loan officers serving Small businesses : AS1</td>
<td>0.36 (0.00)</td>
<td>0.45 (0.00)</td>
</tr>
<tr>
<td>Investments in tools and equipment : AS4</td>
<td>0.48 (0.00)</td>
<td>-0.60 (0.00)</td>
</tr>
<tr>
<td>Time and/or funds committed to loan process: AS5</td>
<td>0.25 (0.02)</td>
<td>-0.32 (0.01)</td>
</tr>
</tbody>
</table>

2. **Uncertainty of business environment**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty in predicting loan repayment: UN8</td>
<td>0.20 (0.01)</td>
<td>-0.25 (0.04)</td>
</tr>
</tbody>
</table>

3. **Difficulty of measuring performance of loan officers**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring of loan officers : MD2</td>
<td>0.41 (0.00)</td>
<td>-0.40 (0.00)</td>
</tr>
</tbody>
</table>

4. **Relationship Lending variables**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular borrowers with multiple accounts: R4</td>
<td>-</td>
<td>0.54 (0.01)</td>
</tr>
<tr>
<td>Trust : R5</td>
<td>-</td>
<td>-0.60 (0.00)</td>
</tr>
<tr>
<td>Reliability of SME borrowers: R6</td>
<td>-</td>
<td>-0.31 (0.01)</td>
</tr>
</tbody>
</table>

5. **Size of lending institution**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient 1</th>
<th>Coefficient 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large commercial credit company: D1 (dummy1)</td>
<td>0.60 (0.01)</td>
<td>0.92 (0.00)</td>
</tr>
<tr>
<td>Small commercial credit company: D2 (dummy 2)</td>
<td>0.46 (0.15)</td>
<td>-1.23 (0.00)</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-199.23</td>
<td>-178.34</td>
</tr>
<tr>
<td>Chi Squared value</td>
<td>55.82</td>
<td>103.00</td>
</tr>
<tr>
<td>( \phi_1 ) (cutpoint 1)</td>
<td>1.65 (0.00)</td>
<td>1.97 (0.00)</td>
</tr>
<tr>
<td>( \phi_2 ) (cutpoint 2)</td>
<td>2.26 (0.00)</td>
<td>2.64 (0.00)</td>
</tr>
<tr>
<td>( \phi_3 ) (cutpoint 3)</td>
<td>2.87 (0.00)</td>
<td>3.32 (0.00)</td>
</tr>
<tr>
<td>( \phi_4 ) (cutpoint 4)</td>
<td>4.30 (0.00)</td>
<td>5.18 (0.00)</td>
</tr>
</tbody>
</table>

Table 5.3: Ordered multinomial probit analysis with dependent variable: ‘time for loan officers to train and visit business sites for small-businesses’ (CC3), n = 146 (probabilities in parentheses).
### Table 5.4: Marginal effects of independent variables on the dependent variable

"Time for small business site visits and training by loan officers (CC3)"

<table>
<thead>
<tr>
<th>Variable/choice Probability</th>
<th>AS1</th>
<th>AS4</th>
<th>AS5</th>
<th>UN8</th>
<th>MD2</th>
<th>R4</th>
<th>R5</th>
<th>R6</th>
<th>D1</th>
<th>D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>P(y=1)</td>
<td>-0.04</td>
<td>-0.02</td>
<td>-0.01</td>
<td>-0.04</td>
<td>-0.01</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>P(y=2)</td>
<td>-0.08</td>
<td>0.20</td>
<td>-0.04</td>
<td>0.18</td>
<td>-0.08</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.06</td>
<td>0.08</td>
</tr>
<tr>
<td>P(y=3)</td>
<td>-0.07</td>
<td>-0.10</td>
<td>-0.12</td>
<td>-0.01</td>
<td>-0.05</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.08</td>
<td>0.01</td>
</tr>
<tr>
<td>P(y=4)</td>
<td>0.01</td>
<td>0.01</td>
<td>-0.09</td>
<td>0.01</td>
<td>0.07</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.02</td>
<td>-0.07</td>
</tr>
<tr>
<td>P(y=5)</td>
<td>-0.01</td>
<td>-0.04</td>
<td>0.15</td>
<td>-0.16</td>
<td>0.02</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>P(y=6)</td>
<td>0.04</td>
<td>0.05</td>
<td>0.03</td>
<td>0.02</td>
<td>0.04</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Choice probabilities with traditional variables</th>
<th>AS1</th>
<th>AS4</th>
<th>AS5</th>
<th>UN8</th>
<th>MD2</th>
<th>R4</th>
<th>R5</th>
<th>R6</th>
<th>D1</th>
<th>D2</th>
</tr>
</thead>
<tbody>
<tr>
<td>P(y=1)</td>
<td>-0.11</td>
<td>0.01</td>
<td>-0.03</td>
<td>0.01</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.03</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>P(y=2)</td>
<td>-0.02</td>
<td>-0.12</td>
<td>-0.11</td>
<td>-0.10</td>
<td>-0.15</td>
<td>0.08</td>
<td>-0.12</td>
<td>-0.07</td>
<td>0.10</td>
<td>-0.07</td>
</tr>
<tr>
<td>P(y=3)</td>
<td>-0.05</td>
<td>0.09</td>
<td>-0.08</td>
<td>0.02</td>
<td>0.08</td>
<td>-0.01</td>
<td>-0.08</td>
<td>0.03</td>
<td>-0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>P(y=4)</td>
<td>0.09</td>
<td>0.08</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.02</td>
<td>0.02</td>
<td>0.07</td>
<td>0.08</td>
<td>-0.01</td>
<td>-0.04</td>
</tr>
<tr>
<td>P(y=5)</td>
<td>0.09</td>
<td>-0.00</td>
<td>0.06</td>
<td>0.09</td>
<td>0.07</td>
<td>-0.06</td>
<td>0.05</td>
<td>-0.02</td>
<td>-0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>P(y=6)</td>
<td>0.00</td>
<td>-0.02</td>
<td>0.01</td>
<td>-0.02</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.00</td>
<td>-0.00</td>
<td>0.01</td>
<td>0.03</td>
</tr>
</tbody>
</table>
### Table 5.5: Ordered multinomial probit analysis with dependent variable: ‘computer and telephone time for communication to small businesses’ (CC7), n = 146 (probabilities in parentheses)

<table>
<thead>
<tr>
<th>Explanatory variables influencing coordination costs of lending institutions</th>
<th>Analysis w/econ. Variab.(Equ. 3)</th>
<th>econ. &amp; relationals (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.31 (0.15)</td>
<td>-0.80 (0.45)</td>
</tr>
</tbody>
</table>

1. **Asset specificity, and collateral specificity variables**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient (α1)</th>
<th>Coefficient (α2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training for loan officers serving Small businesses: AS2</td>
<td>0.30 (0.00)</td>
<td>0.25 (0.01)</td>
</tr>
<tr>
<td>Time and/or funds committed to loan process: AS5</td>
<td>0.46 (0.00)</td>
<td>0.37 (0.00)</td>
</tr>
</tbody>
</table>

2. **Uncertainty of business environment**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient (α1)</th>
<th>Coefficient (α2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very few (25%) returning customers: UN2</td>
<td>-0.12 (0.14)</td>
<td>-0.22 (0.01)</td>
</tr>
<tr>
<td>Uncertainty (75-100%) about customers: UN5</td>
<td>-0.15 (0.04)</td>
<td>-0.22 (0.01)</td>
</tr>
<tr>
<td>Unpredictability of interest rates: UN7</td>
<td>-0.39 (0.01)</td>
<td>-0.52 (0.00)</td>
</tr>
<tr>
<td>Difficulty in predicting loan repayment: UN8</td>
<td>0.41 (0.00)</td>
<td>-0.54 (0.00)</td>
</tr>
</tbody>
</table>

3. **Difficulty of measuring performance of loan officers**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient (α1)</th>
<th>Coefficient (α2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialized manpower to handle SME loans: MD5</td>
<td>-0.23 (0.00)</td>
<td>-0.10 (0.026)</td>
</tr>
</tbody>
</table>

4. **Business characteristics and borrower behavior**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient (α1)</th>
<th>Coefficient (α2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submission of collateral for loans: EC14</td>
<td>0.29 (0.00)</td>
<td>0.12 (0.10)</td>
</tr>
<tr>
<td>High Debt-to-income ratio: EC9</td>
<td>0.14 (0.07)</td>
<td>-0.10 (0.10)</td>
</tr>
</tbody>
</table>

5. **Relationship Lending variables**

<table>
<thead>
<tr>
<th></th>
<th>Coefficient (α1)</th>
<th>Coefficient (α2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular borrowers with multiple accounts: R4</td>
<td>-</td>
<td>0.29 (0.01)</td>
</tr>
<tr>
<td>Reliability of SME borrowers: R6</td>
<td>-</td>
<td>0.50 (0.00)</td>
</tr>
<tr>
<td>Log likelihood</td>
<td>-163.63</td>
<td>-203.14</td>
</tr>
<tr>
<td>Chi Squared value</td>
<td>79.00</td>
<td>106.42</td>
</tr>
<tr>
<td>ϕ1 (cutpoint 1)</td>
<td>1.88 (0.00)</td>
<td>2.13 (0.00)</td>
</tr>
<tr>
<td>ϕ2 (cutpoint 2)</td>
<td>2.68 (0.00)</td>
<td>3.01 (0.00)</td>
</tr>
<tr>
<td>ϕ3 (cutpoint 3)</td>
<td>3.01 (0.00)</td>
<td>3.38 (0.00)</td>
</tr>
<tr>
<td>ϕ4 (cutpoint 4)</td>
<td>5.21 (0.00)</td>
<td>5.87 (0.00)</td>
</tr>
<tr>
<td>Variable/choice probability</td>
<td>AS2</td>
<td>AS5</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>P(y=1)</td>
<td>0.04</td>
<td>-0.06</td>
</tr>
<tr>
<td>P(y=2)</td>
<td>0.10</td>
<td>-0.01</td>
</tr>
<tr>
<td>P(y=3)</td>
<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td>P(y=4)</td>
<td>-0.08</td>
<td>0.03</td>
</tr>
<tr>
<td>P(y=5)</td>
<td>0.05</td>
<td>0.01</td>
</tr>
<tr>
<td>P(y=6)</td>
<td>-0.01</td>
<td>0.00</td>
</tr>
<tr>
<td>Choice probabilities with traditional variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P(y=1)</td>
<td>-0.07</td>
<td>-0.13</td>
</tr>
<tr>
<td>P(y=2)</td>
<td>-0.09</td>
<td>-0.01</td>
</tr>
<tr>
<td>P(y=3)</td>
<td>0.06</td>
<td>0.09</td>
</tr>
<tr>
<td>P(y=4)</td>
<td>0.09</td>
<td>0.02</td>
</tr>
<tr>
<td>P(y=5)</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>P(y=6)</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 5.6: Marginal effects of independent variables on the dependent variable “Computer and telephone time for communication to small businesses
Fig. 5.1: A charting of opinion responses based on ordered probit probabilities: Analysis of variable CC2 with traditional determinants
Fig. 5.2: A charting of the opinion responses based on ordered probit probabilities: Analysis of variable CC2 with traditional and relational determinants
Fig. 5.3: A charting of the opinion responses based on ordered probit probabilities: Analysis of variable CC3 with traditional determinants

Fig. 5.4: A charting of the opinion responses based on ordered probit probabilities: Analysis of variable CC3 with traditional and relational determinants
Fig. 5.5: A charting of the opinion responses based on ordered probit probabilities: Analysis of variable CC7 with traditional determinants

Fig. 5.6: A charting of the opinion responses based on ordered probit probabilities: Analysis of variable CC7 with traditional and relational determinants
Table 5.2 and Figure 5.1 show that in the analysis of the transaction costs model with traditional determinants as the sole predictors, there is a higher probability that the independent variables increase the probability of scoring 1 and 2 on the likert scale than the probability that the same independent variables would increase the probability of scoring 1 and 2 in a model where lending institutions focus relationship lending (see table 5.2 and figure 5.2 for a comparison). This result implies that in general, the independent variables in the model of traditional determinants of transaction costs increase the probability of respondents’ perception that transaction costs are increased in the presence of the specified variables. It is also true that the independent variables decrease the probability of respondents’ perception that transaction costs decrease in the presence of the specified variables.

In a model of traditional determinants of transaction costs, the absolute value of marginal effects indicate that for a greater number of variables, the probability of scoring 1 and 2 on the likert scale is relatively higher than scoring 3 and higher. Since marginal probabilities indicate the ratio of respondents whose perception reflects a specific choice on the likert scale (Maddala, 1996), it can also be seen that the proportion of respondents who selected the choices “strongly agree” and “agree” in a model of traditional determinants is greater than the proportion of respondents who selected the same choices in a model of traditional and relational variables.
Specifically, in a model where relationship lending is not focused the variables namely AS6 (diversification of credit options offered to small businesses), AS10 (financial decisions associated with repossessing collateral assets by a financial institution resulting from a defaulted small business loan), UN1 (uncertainty of loan demand), MD2 (monitoring of loan officers), EC6 (location of borrowers in rural areas), EC9 (high incidence of borrowers with a high debt-to-income ratio), and EC10 (small-size loans) increase the probability of the respondents’ perception that transaction costs are increased. In the model where relationship lending is focused however, these independent variables decrease the probability of respondents’ perception that transaction costs increase. In this set of results, 11 out of 13 (85%) of the independent variables decrease the probability of respondents’ perception that transaction costs increase when relational variables are incorporated in the transaction costs model.

Except for presence of borrowers with multiple loan accounts with different lenders (R4), the scoring of 1 and 2 for variable indicators of relationship lending (R2 and R6) is less than the scoring of 3 and higher. This scoring implies that respondents agree more that the presence of multiple relationships increase transaction costs, and they agree less that trust and reliability of borrowers increase transaction costs.

Results imply that credit institutions that focus relationship lending are likely have decreased perceptions on certain elements of loan contracts namely collateral and insurance and so may not opt for designing complete loan contracts since certain elements of the contracts may not be required to process loans for long-time, trusting and reliable customers. Hence, the value of relationship lending in financial intermediation is likely to be manifested in form of increased ability of agents to design flexible loan
contracts that are potentially effective in all possible states of financial exchange. By eliminating some features in loan contracts, a lender-borrower relationship accommodates less rigid terms which offers loan contracts ‘less strings attached’ and makes contract renegotiation much easier. Lesser resources are needed to operate the financial exchange process because there is less need to contract safeguarding arrangements to ensure that borrowers’ incentives match those of lenders.

Apparently the flexibility inherited with the relationship lending technique is likely to reduce the costs of loan contracting and enforcement probably because implicit loan contracts require much less enforcement as they are based on non-contractable information and mutual commitment based on trust. This argument can be reinforced by considering a loan contract that is associated with a grant of collateral. In transaction-based lending where the degree of cooperation and reputation of borrowers is not known, little information exists upfront to ascertain that a borrower will be able to repay the loan. Consequently, submission of a grant of collateral is required before loans can be approved to mitigate moral hazard and adverse selection problems in loan contracting. Despite the importance of collateral, severe difficulties may arise (and which may be the reasons for lesser importance of collateral) when collateral administration must be associated with significant monitoring, verification, and exchange costs. This is true for the commonly preferred collateral assets for small business loans namely inventories, accounts receivable, and automobiles. On one hand, the collateral involving inventories and accounts receivables may be a useful source of information regarding payment habits and income inflows in the business.
With the semi-illiquid collateral assets however, lenders must design arrangements to ascertain that their turn-over is restricted so that by the end of the sales period, the balances are equivalent to the value of collateral submitted for a loan. A similar situation is related to submitting automobiles as collateral assets whereby the value of such assets deteriorates over time and with use. The cost of monitoring the inflows and outflows of collateral assets may be unnecessarily high because possibly a loan officer has to be stationed at each trading unit that borrowed funds. This is even more costly considering the fact that small business owners in the US are relatively mobile. Consequently, the administrative cost per unit value of collateral can be very high and can significantly reduce the profitability and viability of lending transactions. This argument supports Stiglitz and Weiss (1981) who showed that collateral requirements in loan contracting can be effective in ensuring loan repayment only if its value can be monitored at low cost.

On the other hand, where relationship lending is focused, the norms of cooperation, trust and reliability of borrowers are likely to substitute for collateral and so standard collateral is not always a necessary part of the loan contract. In this case, character loans can also become important where collateral substitutes exist in form of guarantors to guarantee loan repayment. This finding is in agreement with Artz and Brush (1999) who argued that since a relation reflects the social characteristics of trading partners, relational contracting allows for periodic renegotiations to adjust contract terms over time and so it is not necessary for contractors to spell out the complete set of contract terms and conditions ex ante.
Results further show that the respondents’ scoring of 1 and 2 indicate a greater probability of agreement that the variable indicator of uncertainty (UN1) increases the probability of respondents’ perception that transaction costs of financial intermediation increases in presence of the variables when relationship lending is not emphasized, than when relationship lending is emphasized. This result implies that when relationship lending is emphasized, the available information about the borrowers is likely to increase the ability of financial institutions to make accurate predictions of changes in the business environment associated with lender-borrower financial exchanges. The increased accuracy of prediction likely facilitates financial markets to reduce the variability of loan demand that can arise due to changes in the economic environment thereby increasing the return per unit of risk of loan portfolios allocated to small businesses.

As the prediction about changes in future loan demand becomes more perfect in the lending relationship, lenders in turn are more likely to develop certain expectations of future loan supply arrangements such that loan contract terms are commensurate with expectations of returns. Consequently, lenders can commit a specified stock of funds to lending activities without any fear of being stuck with costly excess capacity and possible interest rate risks on borrowed funds if loan disbursements do not materialize.

For lending activities that do not involve relationship lending, it is possible that lenders are likely to commit significant resources to design loan contract terms detailing how the terms should change in the case of unfavorable changes in the operation of small business loans. This uncertainty can also lead to non-committal behavior by lenders and the ultimate failure of extending a significant volume of loans to risky borrowers.
This finding supports Zaheer and Venkatraman (1995)’s finding that when uncertainty surrounds contracting, it is extremely difficult to negotiate contracts because the exchange partners would spend more time and effort forging complex contracts detailing safeguards to protect them from adverse changes in the economic environment. This literature further argues that suppliers necessarily have to cut down quantities and increase non-committal behavior to avoid being stuck with costly capacities if sales do not materialize.

Results further show that the respondents’ scoring of 1 and 2 indicate a greater probability of agreement that the variable indicator (MD2) of difficulty of measuring loan officers’ performance increases the probability of respondents’ perception that transaction costs of financial intermediation increases in presence of the variable when relationship lending is not emphasized, than when relationship lending is emphasized. This result implies that when relationship lending is emphasized, there is likely to be less need to undertake elaborate monitoring programs and supervision for loan officers to reduce shirking. Additionally, it is likely that there is reduced need for top management of a lending institution to design complex contracts detailing the monitoring and supervision of loan officers’ activities to encourage desired performance. Less monitoring implies that the ability of a financial institution to delegate authority to loan officers to undertake loan contracting with borrowers increases. The increased delegation in turn leads to a decrease in the amount of resources necessary to meet fixed costs of supervision and monitoring of loan officers’ activities.
Apparently, the delegation of authority accords to loan officers a sense of ownership and attachment to financial projects they are in charge of. This increased sense of ownership potentially reduces the cost of contracting between any disjointed management and loan officers by promoting the merging of the two layers in the chain of command and eliminating possible conflict of interest further reducing hazards of asymmetric information. By promoting this linkage within the chain of command, it is obvious that the costs of becoming informed about the operations of the financial intermediary as well as communicating with loan officers for the purpose of exchanging information and making loan approving decisions is reduced substantially. Further, the increased sense of ownership to a credit institution by loan officers increases their empowerment and control of financial activities thereby allowing them to design mechanisms to bear risks associated with exchanging loans with risky borrowers. Since loan officers are directly in contact with borrowers, they have access to information that can enable them to assess loan quality and undertake diversification of loan portfolios for allocation to different types of borrowers in a manner that safeguards the business interests of the credit institution.

A further argument is that the increased delegation of authority is indicative of a trusting relationship between loan officers and top managers. Since loan officers are individuals in a financial intermediary that are directly involved in the loan contracting process, the trust accorded to them by management certifies honest behavior and acts as a non-pecuniary benefit that loan officers enjoy in financial intermediation.
As the degree of trust increases, it is expected that information flow in the chain of management increases and the threat of shirking on the side of loan officers decreases. The above findings are in support of literature by Art and Brush (1999) who argued that when agents in a trading relationship emphasize cooperation and trust as a norm, incentives are created in the economic process that prevent shirking and increase the alignment of the principal’s and the agent’s incentives thereby reducing the agency cost.

The direct impact of relationship lending variables on the transaction costs model implies that except for the independent variable R4, the increased existence of relational variables have a negative impact on the transaction costs model that emphasizes relationship lending. Specifically, the respondents’ scoring of 1 and 2 indicate a more agreement that the pre-existence of checking accounts with a lender by the borrower (R2) decreases transaction costs of financial intermediation. This finding implies that borrowers who already have a deposit relationship with the bank are likely to receive more favorable conditions on loans than borrowers who are non-depositors. It can be noted that the favorable conditions on loans for long-term customers are likely to make such loans much cheaper over time. This argument is in support of Ongena and Smith (2000), and Petersen and Rajan (1995) who argued that the proprietary knowledge gained through a deposit relationship enables an informed judgment for a lender to offer below-cost loans to long-term customers, and recoup the losses by charging a higher interest rate to other customers.
In addition to having an already available access to knowledge about a borrower’s incomes and payment habits that give the insight about whether a loan is worthwhile thus speeding up the loan application process, a deposit relationship also reduces the need for monitoring of borrowers’ financial activities thus reducing loan administrative costs. It can also be noted that information available on deposit accounts enhances the amount of trust a lender can have especially with royal borrowers. This explanation is likely to be the case in financial markets especially in light of the highly competitive financial environment where lenders are necessitated to forego short-term gains in anticipation of long-term future gains when borrowers and lenders engage in repeated transactions and be able to deliver cheaper loans and prevent new entrants in the same loan market.

The high scoring of 1 and 2 on R4 implies that respondents agree more that multiple relationships increase transaction costs. This finding implies that a high incidence of borrowers who often switch from a single to multiple relationships likely lead to increased investment of funds to monitor small business loans and hence increased transaction costs of lending. As expected, if a borrower possesses accounts with many other banks, the lack of concentration of loans requires increased monitoring and tracking of credit records of borrowers. This behavior also reflects that potentially bad borrowers may seek to cover up their mishaps by seeking loans from multiple sources. This argument is in support of Petersen and Rajan (1995), Berger et al., (2001), and Levine (1997) who demonstrated that there is a high probability that borrowers with multiple bank relationships possess poorly performing businesses and seek loans outside a specific relationship if loans are turned down.
The study finding can also be complemented by Longhofer and Santos (2000)’s finding that the existence of multiple relationship lending induces borrowers to tell lies about their accounts and to default on loans thus increasing opportunistic behavior and moral hazard.

Results in table 5.2 further show that the size of a credit institution matters in the structure of transaction costs, and the importance of relationship lending in ensuring efficiency of credit delivery to small businesses. The analysis indicates that for the large credit institutions (D1), the respondents scoring of 1 and 2 indicate that there is more agreement that relationship lending increases transaction costs of financial intermediation. However, for the small credit institutions (D2) the respondents scoring of 1 and 2 indicate that there is less agreement that relationship lending increases transaction costs of financial intermediation. The findings imply that transaction costs are likely to increase as the large credit institutions increasingly incorporate relationship lending with small business loan transactions whereas in the small credit institutions, its clear that relationship lending likely decreases transaction costs. This result reflects the fact that as the size of a financial intermediary increases contracting complexity is likely to increase possibly due to the increased number of intervening layers in management, and this complication can be exacerbated by the relationship lending technology which requires that more authority be delegated to loan officers and individuals who have direct access to private information about borrowers. The complexity of the intervening management layers may also curtail the efficient ramification of information pertaining to small business loans and transactions.
Beside, the core business of the large credit institutions is to produce transaction-driven loans and other services mainly for large firms and so producing the information-driven small business loans may introduce organizational diseconomies. On the other hand, small credit institutions tend to solve contracting problems by having simple organizational structures involving a few layers of managers participating in decision-making regarding loans. In support of the above argument, results of discussions with respondents revealed that in some small credit institutions it is possible that the president of the bank is often actively involved in the loan approval process whereas this is not often the case with a large bank. The discussion also found out that most of the time, the delegation of authority to approve loans does not exist among the large credit institutions and loans are approved at the head office.

The above finding concurs with the structure of credit institutions in the surveyed area where small banks, commonly known as community banks, aim at reducing costs of financial intermediation by assessing loan quality through the use of intangible qualities such as trust and borrower reputation in communities and other markets. The findings are also not contradictory with financial literature especially by Nakamura (1994) who found out that because of their simplified organizational structure that incorporates relational norms with firms, small credit institutions have the ability to resolve agency cost within all the management layers of a bank and are able to handle a large amount of loan transactions with small businesses because they are better information processors than other banks.
This literature attributed the observed success in lending to small businesses to the ability of the small credit institutions to accumulate private information about small-business owners, firms, and the local community more efficiently through monitoring business activities than the large credit institutions.

B: Determinants of variation of transactions costs: investment of time for loan officers to train and visit business sites for small businesses (CC3)

Table 5.4 and Figure 5.3 show that for the analysis of the transaction costs model with traditional determinants as the sole predictors, the variables namely AS1 (investment in personnel training), AS5 (time and funds committed to loan approval), and MD2 (monitoring of loan officers) increase the probability of respondents’ perception that transaction costs increase. Table 5.3 and figure 5.4 show that for the analysis of the transaction costs model that incorporates both the traditional and relational determinants, the above variables decrease the probability of respondents’ perception that transaction costs increase. In this set of results, 4 out of 7 (57%) of the independent variables decrease the probability of respondents’ perception that transaction costs increase when relational variables are incorporated in the transaction costs model.

In a model of traditional determinants of transaction costs, the positive marginal effects indicate that for a greater number of variables, the probability of scoring 1 and 2 on the likert scale is relatively higher than scoring 3 and higher. In the model where lending institutions focus relationship lending, figure 5.4 and table 5.3 show that the probability of scoring 1 and 2 on the likert scale is relatively lower than scoring 3 and higher. As expected, and similar to the finding in A, the incidence of borrowers with
multiple loan accounts with other credit institutions is likely to increase respondent perception that transaction costs increase, while the presence of other indicators of relationship lending (R4 and R5) decreases the respondents’ perception that transaction costs increase. These results also support the stated hypotheses.

When information about a small business for which financing is sought is not available credit institutions often must incur transportation costs to visit the borrowers’ premises before loans are approved. Continuous monitoring is also necessary to enforce loan contracts. Transportation and monitoring costs naturally increase in distance so that businesses that are located far away from a credit institution are often associated with higher costs. This is a typical concern regarding the availability of commercial credit to small businesses in central Ohio where the majority of commercial credit institutions are urban-based and yet the majority of farms are rural-based.

Study visits to business sites and training largely involve labor related expenses as well as human capital investment in form of specialized training required for loan officers to ably handle small business loans. In addition, as shown above, the decision to expand credit to more borrowers by financial institutions automatically involves increased investment in specialized assets particularly the time and effort for loan officers that go into learning about the specific credit requirements of borrowers, as well as physical equipment such as computers and automated systems to process the acquired information.
To ensure their critical role of maintaining competitiveness and efficiency in extending more loans and overcome risks, credit institutions also undertake extensive investment in information technology mostly to save on the labor costs of monitoring. Information technology is often in form of automation of processes, controls, and information production by use of computers, telecommunications, software, and ancillary equipment such as automatic teller machines and debt cards. For example, the survey found out that a significant number of the commercial banking companies are undertaking significant investment in retail on-line and other internet services at each branch to enable the provision of immediate access to current retail banking information pertaining to customers. While the information technologies arm loan staff with more timely and accurate data and thus increase efficiency, the dependence on specific investments by financial institutions who do not practice relationship lending is likely to increase opportunistic behavior due to loss of control of borrowers by financial institutions and thus necessitating the increased intensity of monitoring, policing and enforcement of loan contracts with small businesses. This argument is also in agreement with Artz and Brush (1999) who found out that increased transaction costs in electronic equipment marketing arose as the manufacturers who did not operate relational governance mechanisms increased investment in specific assets to deal with transactions with input suppliers. Thus given the above findings, it is possible to deduce that rapid changes in financial technologies in presence of asset specificity can be more profitable with administrative structures that incorporate relationship lending.
C: Determinants of variation of transactions costs: investment in computer and telephone time for communication to small business borrowers (CC7)

Table 5.6 and Figure 5.5 show that for the analysis of the transaction costs model with traditional determinants as the sole predictors, there is a higher probability that the independent variables increase the probability of scoring 1 and 2 on the likert scale than the probability that the same independent variables would increase the probability of scoring 1 and 2 in a model where lending institutions focus relationship lending (see table 5.6 and figure 5.6 for a comparison). In this set of results, 7 out of 9 (78%) of the independent variables decrease the probability of respondents’ perception that transaction costs increase when relational variables are incorporated in the transaction costs model. In a model of traditional determinants of transaction costs, the positive marginal effects indicate that for a greater number of variables, the probability of scoring 1 and 2 on the likert scale is relatively higher than scoring 3 and higher. In the model where lending institutions focus relationship lending, figure 5.6 and table 5.5 show that the probability of scoring 1 and 2 on the likert scale is relatively lower than scoring 3 and higher. When the relationship lending technique is not focused by credit institutions, respondents agree that the following determinants are likely to increase the magnitude of transaction costs namely:- uncertainty of loan demand (UN2 and UN5), difficulty in predicting loan repayment (UN8), investment in manpower to handle small business loans (MD5), collateral requirements (EC14), and the high incidence of small businesses borrowers with a high-debt-to-income ratio (EC9). In a model where relationship lending exists, the lesser scoring on 1 and 2 indicate that respondents agree less that transaction costs increase when the above factors occur.
Since there is a similar change in the magnitude and sign of marginal effects, the interpretation of the impact of relationship lending variables on the two models of transaction costs is still unambiguously similar to observations made in sections A and B above. The above results are in agreement with the study hypotheses specified in chapter three, specifically that asset specificity, uncertainty, measurement difficulty all increase transaction costs of financial exchange and that relationship lending is a financial intermediation technology that permits the crafting of more informative loan contracts based on a better exchange of information; reduces opportunistic behavior and renders the information-opaque borrowers gain access to more credit. Thus, incorporating relationship lending in financial intermediation yields both cost-minimizing and welfare improving outcomes.

Finally it can be deduced that the results of this study have implications for optimizing behavior among economic agents. The financial market adjusts by individuals selecting cost-minimizing relational information technology to reduce the transaction costs of reaching market equilibrium conditions. Over time, once private information is fully obtained, the cost of administering loans decreases and credit markets adjust by increasing the amount of loans flowing to resource-constrained borrowers. For efficient activities and survival of financial intermediaries, the ability to gain a monopoly access to private information about unpopular borrowers facilitates them to gain market power over other financial intermediaries thereby being able to survive in a highly competitive environment. The mechanism does not go without costs however. Lenders undertake micro-level monitoring to ascertain that borrowers use standard business practices and exert effort to maximize business returns and be able to repay loans. It is argued that this
practice gives an opportunity for a more complete process of monitoring, which makes relationship lending a superior approach to transaction-based lending approaches that are inflexible and undertake partial spot monitoring. Consequently, a more complete system of monitoring enables a lender to gather inside information pertaining to a borrower’s activities and thus reduces opportunistic behavior of borrowers. The inherent costs incurred with the relationship lending approach are associated with sacrifices in the short run to ensure flexibility of loan contracts, lower interest rates, and so on in exchange for a long-run return in terms of the acquired stock of information about risky borrowers. Similarly, borrowers pay costs to create reputation by ensuring cooperation and repetitive interaction in the short-run in exchange for increased availability of loans in the long-run. Thus it can be emphasized that relationship lending is a competitive mechanism that enables lenders to offer lower prices for cooperating long-term borrowers and thus financial intermediaries can increase profits by preventing entry into this market. Further, relationship lending emphasizes a long-term process of acquiring information about borrowers thereby being able to observe customer adjustments in the different states. This characteristic also deems relational information a better quality type compared to hard information that is obtained at a single point in time.
CHAPTER 6

CONCLUSIONS, RECOMMENDATIONS AND POTENTIAL BARRIERS TO RELATIONSHIP LENDING

6.1 Conclusion

In response to increasing competition in financial markets, credit institutions have adopted relationship lending as a specific mechanism aimed at improving the quality and quantity of private information pertaining to the behavior of economic agents. While it is widely documented that greater use of relationship lending improves overall loan market performance, implications for financial intermediaries is thinly documented. Specifically, the value in a modern economy of long-term close relationships instigated by relationship lending, and how the relationships reduce information asymmetries is unclear. Legal concerns have arisen among credit markets regarding the increased allocation of credit to resource-constrained small firms. Although increased lending is advocated by institutions with a development motive, lenders are willing to supply lesser proportions of loan portfolios to small businesses due to lack of sufficient appropriate information about small business activities. Additionally, because of the costly activities involving the administration and monitoring of small loans, lenders find it necessary to impose additional requirements for small loan processing, rendering these loans relatively costly and having a lot of strings attached.
Ultimately, the financial exchange process between credit institutions and small businesses is accompanied by significant transaction costs due to complex contracting causing market imperfections, lower profitability and inefficiency. These concerns have formed the background analysis of this study that has utilized the framework of transaction costs theory to model how financial performance indicators increase with greater use of relationship lending.

Using the TCE framework, several hypotheses were generated and focused on whether incorporation of relationship lending variables with the traditional Williamson (1985)’s transaction-specific variables would improve the loan contractual exchange process. The study used the multinomial probit analysis to explore the factors that influence transaction costs associated with the exchange of credit between financial intermediaries and small business firms. Utilizing primary survey data collected from key informants in financial institutions, the study has focused on the relationship lending technique to examine the potential of lending relationships to reduce the information asymmetries between small firms and financial intermediaries in selected counties in central Ohio.

Econometric tests support the TCE hypotheses that hazards to financial exchange are positively influenced by the degree of asset specificity; that is, the degree to which assets employed to operate small business loans can be redeployed to alternative uses and by alternative users without loss of productive value.
In addition, financial exchange hazards are influenced by the degree of uncertainty surrounding the financial exchange process, and the degree to which the input of productive resources can be easily measured. Additionally, transaction costs are positively influenced by the economic and business characteristics of agents that participate in the financial exchange process, as well as the size of financial intermediaries. These last two determinants of transaction costs are the new variables introduced in the TCE theory whose effect on transaction costs has not been analyzed by other researchers. The econometric tests also support the hypotheses associated with relational governance that incorporation of relationship lending decreases transaction costs of financial intermediation.

Findings of the study demonstrate that relationships play a critical role in financial intermediation with small firms and can be regarded as potential cost-minimizing institutional arrangements that are built on the foundation of repetitive interaction of agents in credit markets. This study argues that repetitive interaction of lenders and borrowers creates gains from substantial proprietary knowledge acquired by lenders and directly resolves problems of asymmetric information. Further, by investing in relationship lending, financial intermediaries can form social capital skills that enable agents to reap market returns arising from increased flow of credit to resource-constrained borrowers at a lower cost.
Specifically, relationships established between lenders and borrowers enhance the value of loan contracts by allowing special contractual features namely flexibility and discretion, predictability, borrower control, and the ability to delegate authority; thereby rendering the use of relationship lending welfare improving; and a cost minimizing input into the process of financial exchange. The soft information generated from repeated interaction with small firms and the local community generates pareto-improving outcomes due to the fact that it facilitates decision-making regarding the increased allocation of credit, and enhances the precision of decision-making in all possible states. Further, by engaging relationship lending, financial institutions are able to curb information imperfections to ensure greater efficiency that enables them to survive in the economically competitive environment, retain customers (since the likelihood of relationship termination decreases with duration of relationship), and cut down administrative costs by delegating more authority to the loan officers who are in immediate contact with the borrowers.

This study has implications for optimizing behavior among economic agents. For market clearing to occur, the financial market adjusts by individuals selecting cost-minimizing relational information technology to reduce the transaction costs of reaching market equilibrium conditions. Over time, once private information is fully obtained, credit markets adjust by increasing the amount of loans flowing to resource-constrained borrowers. In this regard, this study is in agreement with Petersen and Rajan (1995) Levine (1997), Cole (1998), Berger et al (2001), Berger and Udell (1995) who found out that the overall effect of establishing relational linkages is to increase the availability of credit to credit-constrained borrowers.
This study also responds to calls made by Zaheer and Venkatraman (1995), Artz and Brush (1999) and Tomer (1998) to undertake more research that examines the economic outcomes of cooperation among agents.

6.2 Recommendations

Given the insights that this study has generated, while small loans per se may be unprofitable due to relatively high administrative cost per dollar of loan funds, overall relationship lending with small businesses that is established during the course of transactions is vital to increasing credit delivery efficiency and are worth pursuing. By utilizing information generated through deposit and other additional services that the bank provides, the private information generated and required in relationship lending may be valuable to the success of the unexploited opportunities particularly regarding increased small business lending.

Since small businesses rely largely on external finance for their investment opportunities, small business lending is highly susceptible to economic shocks (Hoshi et al., 1990a). Thus relationship lending is highly susceptible to economic changes surrounding the financial environment. Hence the effectiveness of relationship lending can better be achieved through a policy framework that aims at stabilizing the macroeconomic environment. A stable macroeconomic environment would in turn lead to increased lending to small businesses and other risky borrowers through establishing greater relationship lending techniques.
On the other hand, an unstable macroeconomic environment would create shocks to the financial system thereby leading to a contraction of lending activities to small businesses and an obvious decline of relationship lending. In this regard, the role of federal, state and local governments in protecting lending activities to small businesses cannot be overlooked. Since there is already an existing legal mechanism to regulate and supervise credit institutions under other acts such as the CRA, another act addressing expansion of relationship lending to small businesses can be enacted to influence all credit institutions’ credit management decisions. Relationship lending should be preserved and expanded as a technique that would contribute to the nurturing of small firms particularly when unstable economic conditions prevail. This is due to the fact that under the alternative modes of lending that heavily depend on scoring techniques, financial ratios on financial statements deteriorate when negative economic shocks prevail thereby rendering small business lending extremely difficult. Thus since information obtained by a credit institution about a borrower can be reused for a long time, relationship lending would foster the preservation of credit-worthiness of small firms in all states. Therefore, incorporating the technique would go along way to stabilize lending activities to small businesses since customer viability and credit worthiness are preserved in situations where economic environment changes.

Specific results have also generated insights calling for research innovations to increase flexibility in the loan contracting process. Collateral substitutes is one element of loan contracting that can be advocated to suit the flexibility nature of relationship lending, and most of all, reduce the administrative cost of loan contracting, monitoring and enforcement. Although relationship lending technology potentially reduces
transaction costs incurred by credit institutions, the multi-layered management structure makes the process of acquisition of information necessary for relationship lending complicated and so makes the large credit institutions suffer transaction costs. Therefore this study makes a call for further research to evaluate possible innovations to increase the ramification of relationship lending-based information through large and complex – structured credit organizations. In the increasingly competitive financial environment, there is need to measure the precise indicators of relationship lending that add value to the economy by identifying the distinct costs and benefits in order to gauge the viability and scale of relationship lending.

6.3. Barriers to the formation of relationship lending linkages
Various factors discussed below including transaction costs, restricted trade, monopoly relationships and mobility can influence formation and use of relationship lending. The purpose of the discussion is to call for further research and innovations into possible solutions to some of the identified problems that are likely to reverse the progress of relationship lending.

First of all, opportunistic behavior might arise on the side of loan officers who are delegated with authority to undertake loan contracts and monitoring on behalf of the credit institution when different incentives exist. With differing incentives, as Berger and Udell (1995) point out, loan officers may often overinvest in generating new loans rather than focusing on monitoring the existing relationships with borrowers because greater remuneration may be based on short-term revenues generated from new loans.
Further, too much authority delegated to loan officers may exacerbate untruthfulness leading loan officers to hide deteriorating condition of certain friendly borrowers, or firms in which a loan officer may have interest, or unauthorized commissions given to the loan officer.

The exclusivity of relational information advocated by relationship lending practices can cause inefficiencies and market failure in financial transactions since multiple relationships potentially erode the benefits of lending relationships. The formation of a strong long-lasting relationship might then preclude establishment of new and possibly better relationships with other lenders. This can be regarded as the hold up problem that arises in form of the reluctance of agents to break the reputation already created with a credit institution, even though more costly terms are stipulated in the loan contract. This observation also supports Ongena and Smith (2000)’s argument that relationship lending can create competition leading some credit companies to charge relatively lower interest rates to attract new and low-quality customers in anticipation of charging higher interest rates as the relationship progresses. This is related to switching cost such that the exit of borrowers is constrained by the fear that they would be pooled with low quality borrowers when they entered new relationships with other financial intermediaries.

The mobility of small business communities in developed economies may present challenges and prevent the effective formation of social capital that is required for the relationship lending technology. In addition, private information available by lenders about borrowers is often more likely to decrease as agents expand market domains.
This observation can also be related to potentially mobile borrowers who occasionally would wish to switch lending institutions. Without constant contact and interaction to build trust with the lenders, the weak social linkages established with small businesses may kill the advantages of relationship lending. The problem can be aggravated by the cultural, racial and ethnic heterogeneity commonly observed with owners of small firms (Bitler et al., 1998) who practically do not face similar risks. Since lenders tend to avoid such customer categories who differ in several ways, social capital in form of trust tends to fall apart with small business clientele population.

In addition it can be argued that relationship formation may curtail opportunities for financial intermediation outside relational boundaries and probably restricts lending opportunities to close partners, friends, neighbors, and relatives. This problem may be a potential constraint to the expansion of business opportunities, and prevents agents from gaining comparative advantages that accrue from diversifying trading opportunities. Consequently, it is possible that relationship lending is most viable in small institutions and that as efforts to expand business opportunities increase, relationship lending can decrease.

Finally, at the market level, efforts to form strong relationships may be hampered by the free-rider problem in financial intermediation to the extent that financial intermediaries who never paid for the information gathering can still access and use the information in processing transactions. Apparently proprietary information can spill over to other credit institutions when loan officers switch jobs. It is also possible that in switching jobs to other institutions, loan officers can take clients with them.
Another concern about the free-rider problem is similar to that brought out by Bonaccorsi di Patt and Gobbi (2001) that outcomes of relational governance become detrimental to the stability of markets to the extent that collaborative linkages among agents can negatively affect the long-run profitability of alliances. This is so with learning skills since new assets created and information generated could still be used outside of the relationship.
BIBLIOGRAPHY


