SOFT AND HARD INFORMATION IN BANK-FIRM RELATIONSHIPS

– The Effect of Relationship Intensity and Reporting Conservatism on Loan Pricing and Relationship Value

Antti Fredriksson

TURUN KAUPPAKORKEAKOULU
Turku School of Economics

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Abstract

Soft and hard information in a bank-firm relationship plays a major role in a bank's corporate loan contracting. However, the nature of soft information is difficult to capture, and the balance between the sources of information leans towards the use of hard information. This thesis examines the information role of the intensity of bank-firm relationships as soft information and reporting conservatism as hard information in relation to corporate loan pricing and bank-firm relationship value. A thorough examination sets the focal constructs and their interdependencies into a comprehensive model. A uniquely large sample of bank-firm relationship information and related financial statements from privately-held firm allowed the rigorous structural equation modeling of the focal constructs by means of partial least squares (PLS). The findings support the view that both the intensity of bank-firm relationship and reporting conservatism affect loan pricing and relationship value. The results suggest that an information deficit of hard information regarding a firm's reporting conservatism for corporate loan contracting is compensated for with soft information gained by using relationship lending technology. The findings on the use of different lending technologies, with reference to difference in asymmetric information, contribute empirically to Berger and Udell's (2006) study and provide insights for the further theoretical development of their framework.

Keywords: bank-firm relationship, conservatism, corporate loan pricing, relationship value, partial least squares (PLS)

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1 INTRODUCTION

The crucial information sources for a borrower's repayment risks for a bank are the relationship between the bank and firm and the borrower's financial accounting reports. Bank-firm relationships have attracted much attention from academics and practitioners in last two decades (Petersen and Rajan 1994; Berger and Udell 2006). Prior research has investigated the benefits and costs of bank-firm relationships, especially for small and medium-sized firms (Elyasiani and Goldberger 2004; Zhang 2008). Another widely studied field in financial accounting research is financial reporting quality,[1] and especially reporting conservatism. Kothari, Ramanna and Skinner (2009) have added to the on-going debate on the use of fair values versus conservative reporting and argue that conservatism is one of the critical features of accounting principles used under efficient contracting. Reporting conservatism in this study is defined in a similar sense to that of a closely related study by Peek, Cuijpers and Buijink (2010) as being the timeliness of the financial statement recognition of economic losses. Timely loss recognition increases financial statement usefulness particularly in corporate loan contracts, because timely loss recognition provides more accurate ex-ante information for loan pricing. Studies that combine information from bank-firm relationships and reporting conservatism are extremely scarce. Reporting conservatism and loan contracting in the loan markets in a privately-held firm context has been a minority interest, whereas the research and measurement issues of conservatism in equity markets is more pronounced (Peek et al. 2010; Ryan 2006; Watts 2003a; Watts 2003b).

There is a void in accounting and finance literature on the effects of soft and hard information on loan pricing (Ball, Robin and Sadka 2008; Berger and Udell 2006). Gigler, Kanodia, Sapra and Venugopalan (2009) analyzed reporting conservatism and loan contract efficiency and specifically call for further research on this setting in which accounting provides the only hard contractible information. This is because there are other sources of information that provide soft information about a firm's future cash flows[2]. In this study I will analyze soft information as bank-firm relationship intensity and hard information as a firm's reporting conservatism. This thesis contributes to the overall

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[1] Schipper and Vincent (2003) discuss further the use of the term financial reporting quality.
[2] There is also a very recent working paper by Beatty, Liao and Weber (2009) investigating how private information and monitoring affect the role of accounting quality in investment decision.

need for research (Berger and Udell 2006) and the specific need (Gigler et al. 2009) for further research on the effects of soft and hard information on corporate loan contracting.

The purpose of this study is to examine the effects of the elements of bank-firm relationship intensity and reporting conservatism on corporate loan pricing and bank-firm relationship value. Ball et al. (2008) examined the differences between loan and equity markets and stated that there is a differential demand for financial reporting in these markets. The fundamental differences in their study suggest that financial reports are shaped to a larger degree by the loan market[3]. The loan contracts can include covenants that are connected to a firm's financial reports and thereby affect firm's financial reporting practice (Watts and Zimmerman 1986). Bharath, Sunder and Sunder (2008) studied accounting quality and loan contracting and found that borrowers of poorer accounting quality prefer bank loans[4]. Therefore, there would seem to be a need for the study of financial reporting quality in the loan market context.

Information asymmetry[5] between a bank and a firm plays an important role in the loan market. The information asymmetry from a corporate loan pricing perspective is mainly related to a firm's financial performance and creditworthiness. Hence, it is relevant to explore the question of how information asymmetry is mitigated in loan contracting, as seen in very recent studies (Costello and Wittenberg-Moerman 2009; LaFond and Watts 2008; Wittenberg-Moerman 2008). A natural expectation would be that banks favor both hard information in form of reporting conservatism and soft information gained from intensive bank-firm relationships. Consistent with this expectation, prior empirical literature has found the importance of creditors' demands for asymmetric timeliness in recognizing economics gains and losses (Ahmed, Billings, Morton and Stanford Harris 2002; Ball et al. 2008; Wittenberg-Moerman 2008). The evidence of the preference for intensive bank-firm relationships is more disputed and at least the cost element confines the production of information. In this thesis both relationship intensity and reporting conservatism are expected to decrease the information asymmetry between a bank and a firm regarding a firm's financial performance and creditworthiness. Overall, this research problem is studied in sense of how soft and hard information affects corporate loan pricing and relationship value.

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[3] This view has been critically discussed in Monahan S. J. (2008).

[4] Denis and Mihov (2003) examined borrowers' credit quality and choice of financing, and found that firms with the highest credit quality borrow from public sources, firms with medium credit quality borrow from banks and firms with lowest credit quality borrow from non-bank private lenders.

[5] A firm's manager knows more about the current condition and future plans of the firm in question than a bank's representative. Traditionally information asymmetry is broken into problems of adverse selection and moral hazard. The classic articles by Akerlof (1970) and Myers and Majluf (1984) evoked many studies to examine information asymmetry in different settings.

A topical question is the information role of soft and hard information on loan pricing and relationship value. Petersen (2004) discussed the advantages and disadvantages of hard information. He found advantages for hard information on lower transaction costs that are achieved with a standardized format of information and the automation of the process of information production. On the other hand, Petersen (2004) found that accounting numbers, as an example of hard information, are prone to discretion and even manipulation and therefore not all information is included in those figures. In consequence, it becomes evident that soft information can at least complement in these circumstances, although it remains unclear whether soft or hard information is more crucial for loan pricing purposes and what the balance may be between these information sources. From the contracting point of view it would be expected that hard information is needed in every case and soft information is voluntarily composed and exploited in loan pricing decisions.

This thesis focuses on relatively small privately-held firms because small firms obtain most of their external funding from banks. Bank-firm relationships are therefore expected to be especially important for small and medium-sized privately-held firms (Berger and Udell, 1998). The analysis is based on 1945 firm-year observations obtained from the database of one major bank in Finland. The sample consists of both bank-firm relationship and the financial statement information of small and medium-sized privately-held firms between 2001 and 2005.

The research design is based on the structural equation model by means of partial least squares (PLS) that allows me to examine the simultaneous effect of relationship intensity and reporting conservatism on loan pricing and relationship value. To the best of my knowledge, the simultaneous effect of relationship intensity and reporting conservatism on loan pricing and relationship value has not been studied and the structural equation is a more suitable method for such an analysis when compared to traditional regression analysis. This is due to the fact that it ameliorates the reliability on models of moderation and mediation (Hopwood 2007). Additionally, this methodology allows a flexible analysis of the interdependencies of the constructs of interest.

The research setting in Finland is well motivated, because privately-held firms and publicly listed firms face substantially equivalent regulation in financial reporting, but the markets for private and public financial reporting are substantially different. The market's demand for financial reporting information is lower within privately-held firms due to the fact that the governance of privately-held firms is less subject to other regulation, like securities law and the recommendations of corporate governance. However, lending contracts are bound to financial reports and there is an endogenous need for financial reporting quality within privately-held firms. In addition to being an interesting

market, the banking industry in Finland is well developed in its use of the electronic documentation of the attributes of bank-firm relationships. Thus, combining a set of relationship information with financial statement information allows the rigorous examination of the effects of relationship intensity and reporting conservatism on loan pricing and relationship value.

1.1 Contribution to the Literature

The incremental contribution to prior literature was sought from several sources. There are very few studies on the core of this thesis: one published article by Choi (2007) and an on-going work by Bigus, Schachner and Stein (2009). Both these studies have strengths of their own and provide new insights into this research field. However, there are many differences even between those two studies, and many opportunities to contribute to prior knowledge on the issue.

The first contribution of my thesis is to introduce the information role of relationship intensity and reporting conservatism on privately-held firm loan contracting, and in particular to analyze their simultaneous effect on loan pricing and relationship value. Furthermore this study contributes to prior literature by positioning the relationships between relationship intensity, reporting conservatism, corporate loan pricing and bank-firm relationship value in a more comprehensive model.

The second contribution of my research is to provide empirical evidence on the role of relationship intensity and reporting conservatism on loan pricing and relationship value. The results support the view that the elements of relationship intensity have various effects on loan pricing whereas the effects on relationship value are consistently positively associated. While prior evidence has been mixed on the direction of the effect of relationship intensity on loan pricing, the evidence on the direction of the effect of reporting conservatism on loan pricing is more consensual. The results provide evidence that reporting conservatism has a negative effect on loan pricing and that the effect on relationship value seems to be minimal. Findings in this study are consistent with the majority of prior literature (Ahmed et al. 2002; Wittenberg-Moerman 2008). The findings suggest that both relationship intensity and reporting conservatism should be taken into account in loan decisions if we are to understand the information role of these factors. From a practical point of view these findings are particularly important for small and medium-sized privately-held firms that acknowledge information risks and are seeking efficient contracting.

The third contribution is the unique, large sample of evidence on both relationship information and financial statements, which has been examined by means of structural equation modeling. Banks play an important role in small and medium-size firms' finance, and therefore it is important to understand the effects of relationship intensity and reporting conservatism on loan pricing and relationship value. The theory in this field is developing and empirical evidence is still scarce due to a lack of suitable data. In the Finnish privately-held firms context information uncertainty is relatively high and the loan market is dominated by few banks. The unique data in this study allows a more sophisticated measuring of relationship intensity and an application of reporting conservatism that can be measured in the privately-held firm context. Structural equation modeling by means of partial least squares (PLS) provides empirical evidence on the relations between the focal constructs that is both enlightening and useful.

Fourth, this study contributes to the need for further research based on the conceptual framework devised by Berger and Udell (2006) on relationship lending and financial statement lending technologies. The results support the view that loan pricing affects relationship value in firms that are segmented in financial statement lending technologies, and that value in the bank-firm relationship among relationship lending firms is generated from sources other than loan pricing. The moderation effect of lending technology reflecting differential levels of information asymmetry seems to fit well with the empirical examination of the conceptual framework of Berger and Udell (2006). These results enhance our understanding of privately-held firms, which are major facilitators of growth and innovation in the economy.

1.2 Literature on Soft and Hard Information

There is an increasing amount of literature on the role of soft and hard information in organizations. This literature mainly studies the effect of soft and hard information on organizational structure (Stein 2002; Berger and Udell 2002). Contracting theory forms a basis for the recent applications of the concept of soft information in financial intermediation. A necessary condition for the relevance of soft and hard information is the pricing of information risk and the question "Does information risk really matter?" (Cohen 2008). This question is not yet completely solved but Christensen, Feltham and Sabac (2005) studied the contracting perspective on earnings quality and Cohen (2008) and Francis, LaFond, Olsson and Schipper (2005) empirically examined the pricing of financial reporting quality. Their findings suggest that financial reporting quality as hard information is priced in the loan market.

The most important recent studies that combine soft and hard information in a banking context are found in Petersen and Rajan (2002), Petersen (2004) and Berger and Udell (2006).

Petersen (2004) provided a conceptual study focusing on the characteristics of soft and hard information and the potential advantages or disadvantages of hard information. The differentiation of soft and hard information in the sense Petersen (2004) uses it is based on the collection and processing of such information; hard information is usually collected and processed electronically whereas soft information is collected in person and the information user is usually the same person as the information collector. The challenges of analyzing the advantages and disadvantages result from the cost of information production, the durability of the information, the processing of lost information and gaming in the system (Petersen 2004). Berger and Udell (2006) conceptualized the idea of soft and hard information into a framework that has been examined from the point of view of the choice of lending technology (Uchida, Udell and Yamori 2006) and information verifiability (Kano, Uchida, Udell and Watanabe 2006).

In the context of corporate banking financial statements represent a natural source of hard information. This hard information aims to incrementally add to the assessment of a firm's creditworthiness. The collection and processing of financial statement information is standardized and automatically handled. However, the collection and processing of soft information in corporate banking is not well established. The main challenge in soft information is the relevance of information for the decision. Soft information is already used in credit ratings and many studies provide evidence that soft information adds incrementally to the information value of credit ratings (Grunert, Norden and Weber 2004). Soft information gives an advantage to a bank that wants to decrease capital allocation. Godbillon-Camus and Godlewski (2005) provided theoretical evidence that access to soft information allows banks to decrease their capital allocation for Value-at-Risk coverage. A current need for soft information in internal ratings is found in regulatory capital adequacy (Basel Committee on Banking Supervision 2006). However, the success of the exploitation of soft information depends greatly on the context.

There is a demand for a universally accepted definition of soft information. However, this may be never accomplished. Some studies suggest that soft information is difficult to communicate to outsiders (Stein 2002) because it is, as Petersen (2004) puts it, "non-numeric input into a decision-making process". One solution for increasing the value of soft information is to "harden" the soft information. This means that soft information is quantified with a relevant criterion and then processed further. Hardened soft information that may be shared electronically would have several benefits for a loan decision process.

Hence, the hardening of soft relationship information is an issue that this study aims to.

1.3 Limitations of the Study

This thesis naturally has potential limitations and yet simultaneously offers avenues for further research. The research design, setting and their examination involves limitations that should be noticed. The explanatory power of the models is relatively low at some points, although that is relatively common in the social sciences (Hair et al. 2009). However, the research models in this thesis aim at achieving simplicity[6] rather than complexity in order to gain a better understanding of the equivocal relations between the focal constructs.

The major design choice for the empirical study imposes limitations on the study. The pooled analysis combines time-series data for several cross-sections. Using pooled data as a research design has the advantages of a larger sample size and the potentially higher variability of the data, which a simple cross-section or time series research design does not have (Hair et al. 2009). The use of pooled data is relatively common in the field of accounting and finance. However, it should be emphasized that pooled data tend to generate limitations for the analysis. For example, the error terms of the statistical analysis tend not to be independent from one period to the next and the error terms may be correlated across firms. In addition, one should avoid the analysis of cause and effect because the causal relation can, at best, only be tentative as there is no possibility to test the dominant orientation of the causal paths in the model due to the research design.

The research setting involves several limitations that are typical in this kind of common research orientation. Firstly, endogeneity occurs when there is a correlation between a variable and the error term, or when a variable that is modeled as exogenous is, in fact, endogenous (Hair et al. 2009). There are several sources of potential endogeneity including omitted-variable bias, measurement error and simultaneity. The risk of omitted-variable bias is acknowledged in the development and testing of the conceptual model. The problem of the omitted-variable was also discussed in the panel discussion with six representatives from the bank and we noted no material deficiencies in the model (Appendix 2: Panel discussion, May 27, 2009). Therefore, the parsimony of the model is preferred. Measurement error and simultaneity are controlled by

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[6] In addition to structural austerity the shape of the linear relationship model is used instead of the non-linear model due to a lack of indisputable theoretical guidance about the interdependencies between the constructs. These choices explicitly limit the interpretation of the results.

means of the methodology used, although not completely eliminated. Secondly, the sample is limited to small and medium-sized privately-held firms domiciled in Finland. In the global context these firms are considered relatively small in size and the inferences drawn from the results may not be transferable to large global firms. The use of national data sets may also be one reason for the mixed results in prior research. This notion is mainly due to differences in the loan market between, for example, Finland and the U.S.

The data in this thesis is from one bank and it could be argued that the sample is not representative or that the sample firms reflect the strategy of the bank. This is unlikely to be the case as this bank operates throughout Finland and its customers consist of all kinds of firms. However, there may be industry effects that are not captured in the analyses. The use of the industry-level measure of reporting conservatism prevents the examination of the potential moderating effect of the industries. The demand for conservative reporting may be due to other sources than loan contracting, such as taxation, litigation or other institutional factors (see Peek et al. 2010). Naturally privately-held firms have different stakeholder requirements than publicly listed firms and face them in different ways, which should be kept in mind when interpreting the results. In order to enhance the study's representativeness, the sample firms were obtained from different regions throughout Finland. However, due to local legislation the results may not be fully transferable to firms domiciled in other countries, although Finnish banking services, as such, do face international competition in their domestic market.

The methodology of the study has its own advantages and limitations. The objective of PLS, used as one of the methods of the study, is to explain variance in endogenous variables in a relevant model. One disadvantage is that PLS tends to underestimate path coefficients and overestimate loadings (Hahn et al. 2002). Additionally, the choice between covariance-based structural equation modeling and the variance-based method should be made clear. In either case, one should treat the issues of reliability and validity diligently.

Overall, the limitations of the study are common to every empirical research design. The limitations and methodological problems related to this study are further emphasized by the analysis of the data. However, the limitations of this study also open up opportunities for future research.

1.4   Outline of the Study

This research aims at understanding the role of soft and hard information in bank-firm relationships. Petersen (2004) conceptualized the characteristics of soft and hard information and Berger and Udell (2006) presented a more com-

plete conceptual framework for the financing of small and medium-sized firms.

This research outlines soft and hard information based on relationship and financial information from the perspective of bank-firm relationships. The viewpoint of the research is mainly taken from bank's perspective, although a study of bank-firm relationships necessarily involves an analysis of the inter-dependencies between banks and firms. Relationship information is examined as the elements of relationship intensity, and financial information is examined as an attribute of accounting quality, namely reporting conservatism. In brief, the effects of relationship intensity and reporting conservatism on loan pricing and relationship value are examined.

The lack of a prior comprehensive theory and disputed empirical results make this research challenging. Prior literature has not been able to provide an established outcome of the relations between the focal constructs i.e. relationship intensity, reporting conservatism, loan pricing and relationship value. Therefore, several methods are employed to gain a more comprehensive view of the research problem. These methods allow an enhanced examination of both the effects and the effect types of the constructs. In particular, the need for research on the effects of lending technology on loan pricing and relationship value is responded to by the conducting of the empirical tests of the research model. The control environment in analyzing bank-firm relationships is included by means of the most critical aspects of loan pricing and relationship value, which are loan size and firm size. Finally, this study provides a multi-group analysis for extending the examination of the main results.

Figure 1 outlines the theoretical concepts of the study starting from the broader concepts of soft and hard information before moving on to relationship and financial information. The focal constructs in this study stem from relationship and financial information, and they are presented in elliptic form. The arrows in Figure 1 mark the associations to be tested. In addition, the effect of the lending technology and the control environment is included.
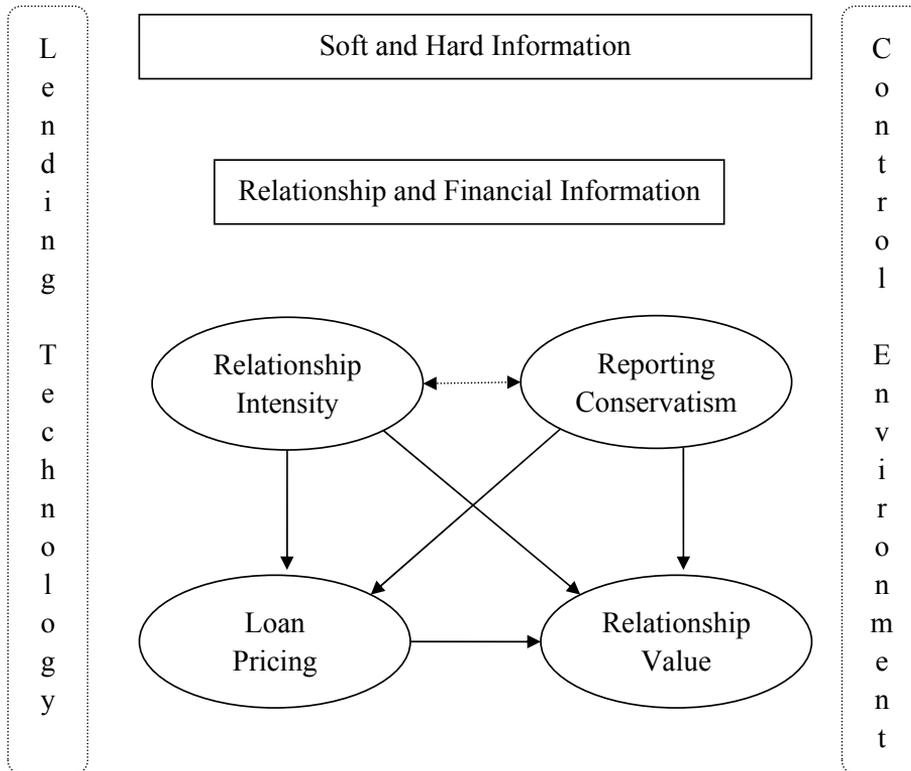
Figure 1   Outline of the Theoretical Concepts

This research proceeds as follows: Chapter 2 reviews the relevant theoretical and empirical literature and develops the hypotheses. Chapter 3 describes the data and the variables of interest. Chapter 4 presents the research methodology, the effect types and the evaluation methods for the structural equation modeling. Chapter 5 presents the empirical implementation of the research and specifies the structural equation model for the hypotheses on loan pricing. The hypotheses are tested by means of partial least squares (PLS), which is a structural equation model technique. Chapter 6 presents the empirical results of the effects on loan pricing. Chapter 6 also specifies the value-based structural equation model and presents the related empirical results, and finally it presents alternative explanations for the results with the aid of a multi-group analysis. Chapter 7 summarizes and concludes.

2 PRIOR RESEARCH AND HYPOTHESES

In this chapter I present theoretical and empirical insights derived from prior literature. Theory in this field is developing and there are very few theoretical and analytical[7] articles about the core topics of this study[8]. First, the review of prior literature starts with a discussion about information asymmetry between banks and firms and continues with the topical issue of the information role of relationship intensity and reporting conservatism. Second, I review prior literature on relationship intensity and its effect on loan pricing. Third, I turn to information uncertainty and discuss accounting's role in loan contracts. I review empirical literature on reporting conservatism and its effect on loan pricing. Fourth, I shed light on the relationship between loan pricing and relationship value to build up a more comprehensive picture of the implications of loan pricing on relationship value. Fifth, I present a framework of lending technologies that can be used to strengthen the examination of the relations of the constructs and their effect types. Lending technologies based on a measure of information asymmetry bring together the aspects of prior literature, and finally I present my hypotheses for the empirical tests.

2.1 Information Asymmetry in the Pricing of a Privately-Held Firm's Loan

From an efficient contracting perspective, for example Watts and Zimmermann (1986), it would be desirable to find ways to reduce information asymmetry between a lender and a borrower. The literature of information asymmetries in bank-firm relationships builds on the theoretical work initiated by Diamond (1984), Greenbaum, Kanatas and Venezia (1989), Sharpe (1990) and Rajan (1992) that analyzed financial intermediation and bank financing.

Bosch (2006) examined both private and public borrowers to explore the effect of information asymmetry on loan spreads. He found that lenders charge higher spreads when the borrower lacks publicly available information. How-

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[7] Sridhar and Magee (1997) analyzed disclosure management within financial contracts and opportunism.

[8] It should be highlighted that the review of the literature is strongly weighted towards very recent articles on the research problem. The root articles in the field are acknowledged to some extent, although not exhaustively listed.

ever, they found that a bank-firm relationship mitigates this information asymmetry and can help reduce the spread. They concluded that loan spreads are affected by the amount of publicly available firm information and the nature of a bank-firm relationship. Their findings suggest that there is higher demand for deeper and more intensive bank-firm relationships for privately-held firms than for public firms, which is necessary in order to mitigate information asymmetry.

Creditors demand conservatism based on the rationale that conservatism increases efficiency in loan contracting (Watts 2003a). Peek et al. (2009) examined creditors' and shareholders' differential demand for reporting conservatism in European firms and found that the creditors of public firms demand greater conservatism than those of privately-held firms especially in countries where privately-held firms develop close relationships with their creditors. Their findings suggest that privately-held firms' creditors complement the information deficit in reporting conservatism with a more intense bank-firm relationship.

In the next two subchapters I further analyze the information role of relationship intensity and reporting conservatism. Their role in mitigating information asymmetries is discussed in Chapter 2.2.1 and Chapter 2.3.2.

2.1.1 The Information Role of Relationship Intensity

Relationship lending is based on soft information obtained through close relationships between a bank and a firm. Theoretical and empirical findings in prior literature indicate that the more intense the relationship becomes the more soft information is accumulated (Berger and Udell 2006). To capture the intensity of the relationship, several different variables are used in the literature: the relationship length, a measure of the breadth of services, and the depth of the relationship. Scott (2004) introduced an index of a composite measure of soft information production based on the ratings of bank performance on characteristics deemed important for small firms in the conduct of their financial business. Usually these studies test the hypothesis that a more intensive relationship leads to certain credit terms. From a bank's point of view the credit terms mean, for example, interest rates and from a firm's perspective they mean better credit availability[9].

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[9] Bornheim and Herbeck (1998) reviewed the benefits of bank-firm relationships from banks' and firms' perspectives especially in the environment of small and medium-sized enterprises.

Relationship information is difficult to document and transfer. The role of soft relationship information in loan pricing is theoretically digestible, but disputed in prior empirical literature due to the nature of soft information. The framework by Berger and Udell (2006) enhances the detailed analysis of the information role of relationship intensity. In this framework the soft information of bank-firm relationships is analyzed as the ingredients of differential lending technology, and therefore it is separated from transaction technologies.

2.1.2 The Information Role of Reporting Conservatism

Lenders utilize both financial statement information and relationship information in pricing decisions for the issuance of the loan and thereafter. But a loan differs from equity in that many of the contractual rights of lenders are contained in the terms of the financial statement variables alone. Information that is not reflected in a financial statement does not affect those rights. The timely recognition of gains and losses is therefore important for lenders.

LaFond and Watts (2008) examined conservatism's information role in equity markets and examined why information asymmetry between inside and outside investors affects a firm's stock price. They found that changes in information asymmetry lead to changes in reporting conservatism. This finding runs contrary to FASB's proposition that conservatism produces information asymmetry among equity investors[10]. In addition, they found that the greater the information asymmetry was the more conservative a firm's financial statements were. Thus, there is a difference between LaFond and Watts (2008) and FASB regarding the direction of causality.

The findings in LaFond and Watts (2008) are based on equity markets. The rationale in their study lies on the expectation that information asymmetry varies with the firm's investment opportunity set. Changes in information asymmetry and in conservatism occur because of the changes in investment opportunity set and some of those changes are reflected in the accounting numbers. In this sense, it would be reasonable to expect that firms in loan markets should respond in similar fashion. The rationale underlying creditors' demand for conservatism is that conservatism increases efficiency in loan contracting by producing a lower degree of information asymmetry between bank and firm (Watts 2003a). The demand for conservatism arises, because credi-

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[10] Financial Accounting Standards Board (2008) exposure draft concluded that "describing prudence or conservatism as qualitative characteristic or a desirable response to uncertainty would conflict with the quality of neutrality". Accordingly, the proposed framework does not include prudence or conservatism as desirable qualities of financial reporting information.

tors assume the downside risk but have little or no upside potential. Creditors therefore have the incentive to protect their claims by requiring firms to report conservatively.

Ball et al. (2008) examined whether the primary demand for financial reporting arises from loan markets or equity markets. They argued that loan markets demand higher timeliness and conservatism than equity markets, because equity markets do not rate financial reporting consistently. Instead, equity markets assess the total information incorporated in equity prices. Although their proposition is somewhat premature for several reasons, the rationale, as such, makes sense. Because financial reporting is a costly activity, they expect the resources devoted to it depend on demand. Their proposition therefore is that loan markets generate more demand than equity markets for financial reporting, and this difference in demand may have an effect on a firm's financial reporting quality.

Financial reporting theory that incorporates the costs of a bank's response to alternative accounting methods is essential. Due to the verification problems of different accounting methods, it would be costly to assess the level of conservatism for every corporate lending decision. Ahmed et al. (2002) found that public firms in the U.S. use conservative accounting to reduce borrowing costs, and Wittenberg-Moerman (2008) showed that increased conservatism reduces the bid-ask spread in secondary loan trading.

2.2   Relationship Intensity in Loan Pricing

Prior research is inconsistent about the elements of intensity in bank-firm relationships that are associated with loan terms. Different variables of relationship intensity have been empirically tested, but inconsistent results are still found in prior literature. A large body of earlier studies, for example Petersen and Rajan 1994, found that the component of relationship length is related to loan pricing due to the accumulation of private information, which is often proprietary in nature. More recent studies (Ongena and Smith 2001; Elsas 2005) have found that the length of the relationship is not related to closer ties between borrowers and lenders, but the intensity of a relationship is found in variables related to the information access that a bank has and that bank's share of the financing.

Bank-firm relationships are intentionally developed to gain overall customership and information advantage on firm-specific financial and relationship information. Financial information in bank-firm relationships is usually based on yearly financial statements. Firms' statutory reports are publicly available and usually banks require firms to prepare business plans. Business plans are

utilized as a description of the overall understanding of the business, and also for banks' risk management purposes. Negotiations between a lender and a borrower create valuable information about a firm's operations and, more specifically, how the loan repayment will be arranged. However, usually this incremental information is not systematically documented and may vary depending on the bank's own policies (Berger and Udell 2006). Loan contracts are typically prepared on a going concern assumption. However, when the loan is for investments, the monitoring of cash flows and the validity of investment calculations are more carefully reviewed.

Financial and relationship information are both important for loan decisions. Financial information builds the basis for risk categorization and relationship information further adds to the practical details of loan decisions. Both types of information are variously priced in loan contracts. Baas and Schrooten (2006) theoretically analyzed relationship banking and small and medium-sized enterprises (SMEs). They pointed out that the market for SMEs lacks high quality accounting data, which makes these firms more dependent on relationship banking than large firms. It is argued that this specific lack of information can be compensated for by relationship banking. Baas and Schrooten (2006) argued that relationship lending leads to high loan interest rates due to high monitoring costs. However, they do not empirically test their arguments, and their theorizing may not capture the whole phenomenon.

2.2.1 Theoretical and Empirical Literature on Bank-Firm Relationships

Early bank-firm relationship theory focused on banks' information advantage over other fund providers. Kane and Malkiel (1965) argued that strong deposit relationships also reduce the variability in loanable funds, which in turn increases the return-per-unit-of risk of the bank's loan portfolio. Wood (1975) proposed that in order for the bank to have the ability to charge higher rates in the future, some mechanism must lock the customer into the current relationship. The literature speaks about the "hold-up problem" or "lock-in situation", which may occur when the borrower faces search costs in transferring a business to a competing lender. A widely studied feature of bank-firm relationships is a lender's ability to reduce information asymmetries between lenders and borrowers. The lender has access to private information about its borrowers (Leland and Pyle 1977; Diamond 1984; Ramakrishnan and Thakor 1984; Fama 1985; Boyd and Prescott 1986). Fama (1985) emphasized the lender's role as a provider of short term loans, in which periodic evaluation and subsequent renewals are features of a developing bank-firm relationship.

Boot (2000) focused primarily on the theoretical insights that relate to relationship banking. Their study linked the modern literature on financial intermediation[11] to bank-firm relationships.

First, when considering the origin and the nature of bank-firm relationships, Boot (2000) defined relationship banking as the provision of financial services by a financial intermediary that:

- invests in obtaining customer-specific information, often *proprietary* in nature, and
- evaluates the profitability of these investments through *multiple interactions* with the same customer over time and/or across products.

Boot's (2000) definition of relationship banking is applied in this thesis. The definition emphasizes the proprietary nature of all available information. This information is borrower-specific and not available from public sources. In addition, the definition emphasizes multiple interactions that together create an opportunity to benefit from inter-temporal information reusability.

Second, Boot (2000) analyzed the potential benefits and costs of bank-firm relationships. The benefits were found in the improved exchange of information and the accommodation of several contractual features that can improve or strengthen at bank-firm relationship. These contractual features create flexibility in contracts and also constraints in the form of extended covenants. The contracts may involve collateral in various forms that need to be monitored. Inter-temporal transfers in loan pricing can be understood as smoothing the terms of a contract (Berlin and Mester 1998; Petersen and Rajan 1995).

Petersen and Rajan (1994; 1995) studied the benefits of lending relationships and the effect of credit market competition on lending relationships. They found that the stronger effects of bank-firm relationships were on the availability of financing rather than on the pricing of relationship information. Their interpretation is that the relationship increases its informational monopoly when the lender generates substantial durable and non-transferable private information during the course of a relationship, which is in line with the theoretical work by Sharpe (1990) and Rajan (2002). Furthermore, they studied credit market competition among banks and found that a young firm in a concentrated market receives more institutional finance than similar firms in a competitive market do. Lenders seem to smooth interest rates over the life of a firm in a concentrated market by charging a lower than competitive rate when a firm is young. They expect that they will recover the initial subsidy via higher interest rates in the future.

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[11] See further Healy and Palepu (2001).

A well-developed bank-firm relationship facilitates the lender to make a more precise reaction to a firm's operational changes. Ennew and Binks (1998) proposed a comparison across different types of bank-firm relationships suggesting that there are considerable benefits associated with more participative relationships, because information flows between a lender and a borrower can be improved by creating a closer relationship. In the banking area the importance of the active commitment and participation of both parties is vital, particularly when the lender does not have control over decision-making. Adequate collateral can mitigate the problems of asymmetric information by signaling the status of the borrower. A lack of information on collateral calls for other devices for assuring the recovery of a loan. While collateral may be one mechanism for reducing the adverse effect of information asymmetries, the development of a closer bank-firm relationship is an alternative.

The development of a bank-firm relationship is formed to obtain benefits in the form of cost reduction or increased revenues. It is likely that more and more economic work will be done this way due to the increase of interdependence in such relationships. Knowledge about the basic nature of bank-firm relationships and how they are affected by various factors is needed in order to understand the motivation that lies at the bottom of such developing relationships. An illustrative model of customer-supplier relationship has been developed by Hallen, Johanson and Mohamed (1987) that relies on the assumption that business transactions are based on the information exchange between those involved. They proposed that business relationships are intensified through the interplay between adaptation[12] processes and information exchange processes. Benefits are achieved by tailoring resources to best deal with a specific borrower, in particular by making "durable transaction specific investments". These investments would mark major adaptations by a borrower to a relationship.

In addition, there is much literature on ending relationships (Silke 2004; Halinen and Tähtinen 2002) and switching costs in bank lending (Vesala 2007). The determinants of relationship commitment can be viewed as the study of the antecedents of the likelihood of relationship dissolution. Hocutt (1998) proposed a relationship dissolution model that defines relationship commitment as being influenced by three key constructs: satisfaction with the service provider, the quality of the alternative providers and investments in the relationship.

More recent theoretical analysis is found in Baas and Schrooten (2006) and Berger and Udell (2006). Both articles concentrate on SME financing. How-

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[12] Adaptation is interpreted as a mutual process in which the parties mutually adapt their operations to each other over time.

ever, theoretical research on bank-firm relationships remains relatively unexplored, and specifically the effect of a bank-firm relationship on loan contracting is ultimately an empirical question.

2.2.2 The Characteristics of Bank-Firm Relationships

A large body of bank-firm relationship literature concentrates on the characteristics of relationship financing. These are found in borrower, bank and market characteristics. The most common proxy for relationship lending is the length of a bank-firm relationship. The main idea is that the length of a relationship reflects the degree of relationship intensity over time. The length then accumulates private information and this is also reflected in the switching costs (Petersen and Rajan 1994). However, Ongena and Smith (2001) find that length itself does not greatly influence the likelihood of ending a relationship.

Ongena and Smith (2000) reviewed the empirical bank-firm relationship literature from the perspectives of bank relationships and firm performance (event studies), measures of relationship intensity (length, scope and extended bank relationships), multiple bank relationships and credit market concentration (total banking system assets accounted for by the largest three banks in 1993) and the importance of bank relationships in the macro economy.

Elyasiani and Goldberg (2004) prepared a survey of relationship lending literature. First, they reviewed literature on the effect of relationship lending on firm value. This literature focuses on event studies and the unique role of the bank in the information exchange process. The banks have access to inside information and the question is how the exploitation of inside information in bank-firm relationships may increase firm value. As a solution they proposed that a lender's access to such information provides the lender with a comparative cost advantage for information collection about the borrower. This is beneficial regarding risk assessment, and also for monitoring the loan afterwards.

Second, Elyasiani and Goldberg (2004) analyzed the literature on the effect on funding availability, loan rates, and collateral requirements. In particular, funding availability is crucial for small businesses. Petersen and Rajan (1994) examined the value of bank-firm relationships and find that a relationship with an institutional lender increases the availability of financing to a small business. Cole (1998) also examined the availability of funds and found that lenders are more likely to extend credit if they have a pre-existing relationship with a borrower. The literature on loan rates and collateral is very extensive, for example, Berger and Udell (1995) found that lenders offer borrowers lower

rates if they have already had a longer relationship with them, and therefore they are less likely to require collateral.

Other characteristics of bank-firm relationships are examined in studies focusing on the effect of the length of the relationship (Berger and Udell 1995; Petersen and Rajan 1994; Blackwell and Winters 1997), multiple relationships (Thakor 1996; Cole, Goldberg and White 2004) and distance from the lender (Petersen and Rajan 2002; Cole et al. 2004). There is also some literature on the effect of bank consolidation on relationship banking (Cole et al. 2004) and the effects of deregulation and technology on community banks (DeYoung, Hunter and Udell 2004).

Peltoniemi (2004) tabulated recent studies about the effect of relationship banking on the cost of credit and did the same for the wide range of studies on the role of collateral and borrower risk. The findings were that there are more empirical studies related to the effects of relationship banking on the cost of credit, whereas the theoretical aspects of the role of collateral and borrower risk played a more dominant role in studies on that issue.

2.2.3 The Empirical Determinants of Relationship Intensity

Many articles within accounting and banking literature[13] have argued that there is a positive correlation between the length and the intensity of a relationship suggesting that the length variable can be used as a measure of the private information that the lender has about the borrower. However, there are contrary arguments on the direction of the effect of the intensity in the bank-firm relationship. The empirical statistics of Niskanen and Niskanen (2000) stated that the length variable only partly fits the elements of bank-firm relationships. In the shortest quartile of firms, according to the length of their relationship, the interest rate margin was set at the firm-specific base level, but when one moved to other quartiles with a longer length the interest rate margin first decreased but as the length increased the interest rate margin started to increase. Finally the highest quartile firms, according to the length of the relationship, paid the highest interest rate margins. There may be multiple explanations for these implications. This nonlinear relation suggests that intentionally developed bank-firm relationships exist and a deeper understanding of these relationships is needed.

Ongena and Smith (2001) have summarized the literature on the length of a bank-firm relationship. It seems that the length of Japanese and continental European bank-firm relationships tends to be greater than their counterparts in

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[13] For example, Petersen and Rajan (1994; 1995).

the US. This reflects the bank-based[14] economies of Japan and Europe. The estimates in the studies of relationship length vary due to the characteristics of the sample firms and how the length is estimated. There is also a censoring problem, because inconsistent estimates of length occur when either the beginning of the relationship, the end of the relationship, or both is not observed by the researcher. The benefits obtained from a bank-firm relationship may accrue only in the earlier part of the relationship (Ongena and Smith 2001). There are also findings that indicate the opposite of the effect of length on bank-firm relationships. Petersen and Rajan (1994) found that the length of a relationship has no statistically significant influence on the loan rate offered by a bank to a firm. Age was found to be the most important explanatory variable in explaining cross-sectional variation in loan rates, with older firms receiving more favorable terms. Berger and Udell (1995) found that interest rates charged on lines of credit fall as time in a relationship lengthens. Berger and Udell (1995) argued that the reason for their results contrasting with Petersen and Rajan (1994) is ignorance of commercial bank lending in the form of lines of credit.

Elsas (2005) empirically studied the determinants of relationship lending in small and medium-sized firms. There are three determinants in relationship financing: borrower, bank and market characteristics. Elsas's (2005) study identified several factors that were systematically related to closer bank-firm relationships. First, variables such as a lender's share of financing or its share of payment transactions turn out to be important determinants. Second, the length of the bank-firm relationship was not related to closer bank-firm relationships. A noticeable observation among others was that the length of the bank-firm relationship did not unambiguously explain the intensity of the relationship[15]. This second notion stands in opposition to many prior studies that have length of the relationship as a commonly used proxy for the intensity of a relationship.

Based on Elsas (2005) the factors that determine the main bank's status are as follows:

- high share of debt financing,
- high share of payment transactions,
- high share of either long-term or short-term financing, and
- undertaking special, exclusive or intensive business with the firm.

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[14] A comparison of bank-based and market-based economies can be found in Allen and Gale (1995). The distinguishing features of the bank-based system are also found in Niskanen and Niskanen (2006).

[15] Niskanen and Niskanen (2000) also found similar characteristics regarding the length variable. They also found evidence that the relation between the length of the relationship and the interest rate margin is not linear.

The scope of the bank-firm relationship is usually measured by a number of other banking services besides the loan. The primary reason for the paucity of evidence stems from the data demands required of the rigorous analysis of the scope variable. Cole (1998) found the dependence between the purchase of financial services and credit availability to be negative. Degryse and van Cayseele (2000) found that the purchase of other information-sensitive services from a lender lowers the interest rate charged to the borrower.

Blackwell and Winters (1997) studied the bank-firm relationship and the effect of monitoring on loan pricing. The firms with more concentrated borrowing at a given lender pay lower interest rates (for example Elsas 2005), which holds credit risk and other control variables constant. The borrowers with longer relationships are monitored less frequently by the lenders and the less frequently monitored firms pay lower interest rates on average. Small borrowers can lower their cost of capital by concentrating most of their borrowing to a single lender. This finding signals an information advantage over other lenders.

This study views relationship intensity as the length, scope and depth of a bank-firm relationship. The other measures from prior literature are controlled as constructs of loan size and firm size.

2.3 Reporting Conservatism in Loan Pricing

Privately-held firms are essential drivers for growth and innovation in the economy. Differences in publicly listed and privately-held firms' financial reporting have been widely studied (Beatty, Ke and Petroni 2002; Ball and Shivakumar 2005). However, very little is known in financial accounting about the effects of a privately-held firm's financial reporting on loan contract terms.

The design of loan contracts is affected by investor characteristics and information uncertainty (Bharath et al. 2008). The investor characteristics in private and public loan markets are different. Investors in private loan markets are more concentrated than in the public loan market, where lenders are more dispersed (Bharath et al. 2008). Bharath et al. (2008) found that the differential effect of accounting quality on private and public markets reflects the underlying institutional differences in these two markets. Bushman and Piotroski (2006) examined the institutional differences between private and public loan markets and concluded that usage of public bonds is positively correlated with accounting conservatism. The interpretation is that there is more demand for

accounting conservatism in public markets due to mitigating information uncertainty.

Bharath et al. (2008) examined information uncertainty in publicly listed firms in terms of accounting quality in private and public markets. They found that publicly listed firms with lower accounting quality face a substantially higher interest spread that is well above the median value. Information uncertainty in privately-held firms is higher than in listed firms due to a lower demand for reliable accounting information (Ball and Shivakumar 2005). The principal claim in Ball and Shivakumar (2005) was that timely loss recognition, as a measure of accounting quality, is substantially less prevalent in privately-held firms than in listed firms.

The findings in Bushman and Piotroski (2006) and Bharath et al. (2008) are based on publicly listed firms examining the effects of private and public loan markets. However, the institutional regime in the market of privately-held firms and publicly listed firms is different, and those differences could lead to different outcomes in loan contracts. The more concentrated investor characteristics and the higher information uncertainty within privately-held firms would both indicate lower accounting quality. Therefore, it is important to examine the effect of reporting conservatism on loan pricing in firms that are both privately-held and domiciled in a bank-based market, like Finland.

2.3.1 Information Uncertainty in Loan Contracts

A firm's management has incentives to use their private information to manipulate earnings and other financial information and transfer wealth to themselves (Healy and Palepu 2001). As a result, this effect provides incentives for all contracting parties to the firm to find ways to reduce the management's private information relative to public information.[16] The level of information uncertainty between a firm's manager and a bank's lending officer is mainly due to the different proportion of private and public information. Let's assume that there are two different managers in two firms of the same internal risk classification: The first manager$_{FV}$ reports fair values[17] in the firm's financial information and the second manager$_{CONS}$ reports conservative financial infor-

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[16]Lambert, Leuz and Verrecchia (2007) show that information quality directly influences a firm's cost of capital and that improvements in information quality unambiguously reduce non-diversifiable risks.
[17] Fair value is assessed by active markets. I acknowledge that fair value is used in accounting with several meanings depending on the context. In addition, Christensen and Nikolaev (2009) showed that most of the firms choose historical cost over fair value as valuation method. Thus, the use of fair values in financial statements is demarcated mainly to firms with financial instruments and investment property owned by real estate firms.

mation. The manager$_{FV}$'s presentations of future investments and past financial performance are based on fair value financial reporting. In theory, this means that the proportion of public financial information is larger than the proportion of private information. On the other hand, the manager$_{CONS}$'s presentations of future investments and past financial performance are based on conservative financial reporting, which means that the proportion of private information is bigger than the proportion of public information. This creates a difference in information uncertainty between the firm's manager and the bank's lending officer.

The essential source of financial information for a lending decision is financial statement data. In this sense, the manager$_{FV}$ provides financial information that reflects the firm's positive and negative changes in a timely manner. On the other hand, the manager$_{CONS}$ is committed to conservative financial reporting and reports the firm's negative earnings changes sooner than its positive changes (asymmetric timeliness). From the lending officer's perspective the manager$_{FV}$'s financial reporting is theoretically useful for lending decisions and the pricing of a loan is set to the normal level of a risk adjusted loan price. In this sense, the accounting information reflects the firm's economic information. However, in practice the estimation of fair values includes several measurement problems that are difficult to solve, especially in the context of privately-held firms. The manager$_{CONS}$'s accounting information may be more conservative than the firm's economic information. This should be reflected in the decreased risk adjusted loan price being used as compensation for the mitigated information uncertainty. The incremental level of information uncertainty between the manager$_{FV}$ and the bank's lending officer is higher than the information uncertainty between the manager$_{CONS}$ and the bank's lending officer because of the caveats in the measurement of fair values.

2.3.2 Accounting's Role in Mitigating Asymmetric Information in Loan Contracts

Watts and Zimmerman (1986) formulated three hypotheses of accounting's role in contracts: bonus plan hypothesis, loan covenant hypothesis and political cost hypothesis. The opportunistic form of the loan covenant hypothesis asserts that the closer a firm is to the violation of accounting-based loan covenants, the more likely the manager is to select accounting procedures that shift reported earnings from future periods to the current period (Scott 2003). These hypotheses of accounting's role in contracting involve continuous financial information. Loan contracts basically use reported accounting numbers and require them to be consistent with generally accepted accounting principles

(GAAP)[18]. GAAP leaves firm managers with discretion in the choice of accounting procedures. Moral hazard problems, however, will exist in financial reports as long as the reports' accounting measures inform investors about managerial performance and affect investors' asset allocation decisions and managers' welfare. Conservative accounting is a means of addressing the moral hazard caused by parties to the firm having asymmetric information. Accounting choices are shaped by incentives to improve a costly contracting process between a bank and a firm (Watts and Zimmermann 1986). Watts (2003a) also examined alternative explanations for conservatism in accounting and their implications for accounting regulators. Alternative explanations are contracting, shareholder litigation, taxation and accounting regulation. In this study the main focus is on contracting role of reporting conservatism with external parties. Shareholder litigation is not a highly relevant explanation in the Finnish context because of the low number of litigation cases. Taxation and accounting regulation has traditionally influenced Finnish financial reporting practices in the direction of conservative reporting. However, these alternative explanations of reporting conservatism do not demarcate the contracting explanation of reporting conservatism and loan pricing considerations.

Basu's (1997) article on the conservatism principle and the asymmetric timeliness of earnings opened up a new path for reporting conservatism research. He found systematic differences between bad news and good news periods in the timeliness and persistence of earnings. He calls this differential response the asymmetric timeliness of earnings and uses it as a measure of conservatism. In this sense reporting conservatism means that bad news is reported in a more timely fashion than good news in financial reports. If a firm has a reputation for a conservative reporting policy, the benefits should be allocated to the firm in efficient markets. Otherwise the firm has no incentive to release bad news in a timely manner. It should be noted here that the institutional demand[19] for reporting conservatism is set out in legal frameworks, capital structures and taxation. Bushman and Piotroski (2006) have explored how reported accounting numbers are sharpened by the institutional structure of the country in which firms are domiciled. They find that firms in countries with high quality juridical systems reflect bad news in reported earnings faster than firms in countries with low quality juridical systems.

Wittenberg-Moerman (2008) studied how information asymmetry and the quality of financial reporting affect the trading spreads of private market loan

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[18] Leftwich (1983) showed evidence of differences in the negotiated set of rules and the regulated set of accounting rules in private markets. Fredriksson (2005) highlighted the linkage between loan contract terms and accounting standards within the adoption of International Financial Reporting Standards.

[19] See Peek et al. (2010).

securities. First, she finds that the bid-ask spread in secondary loan trading is positively related to firm- and loan characteristics associated with a high information asymmetry environment. Second, the timely incorporation of economics losses into a borrower's financial statements reduces the bid-ask spread at which their loans are traded. Brown and Hillegeist (2007) studied the effect of disclosure quality on the level of information asymmetry and found that the negative relationship between disclosure quality and information asymmetry is primarily caused by reducing the likelihood that investors discover and trade in private information.

2.3.3 Empirical Literature on Conservatism in Loan Contracts

Watts (2003b) reviewed the empirical literature on reporting conservatism. He noted that there were several measurement approaches to conservatism: net asset measures, earnings and accrual measures, and earnings/stock return relation measures. The Feltham-Ohlson (1995) valuation model has, among other purposes, been used to estimate the extent of the undervaluation of net assets. Earnings and accrual measures have been studied in Basu (1997) and Givoly and Hayn (2000).

Basu (1997) studied the conservatism principle and the asymmetric timeliness of earnings and found that negative earnings changes are less persistent than positive earnings changes. Givoly and Hayn (2000) studied the changing time-series properties of earnings, cash flows and accruals and found that the patterns of earnings, cash flows and accruals were consistent with an increase in conservative financial reporting over time.[20]

In the next subchapter I examine the prior empirical findings related to loan pricing and reporting conservatism, and in the second subchapter I further review the findings on measurement issues as they relate to reporting conservatism.

2.3.3.1 Loan Pricing and Reporting Conservatism

Guay and Verrecchia (2006) acknowledged that a large body of literature supports the asymmetric recognition of gains and losses, and that the efficiency of contracts is improved by implementing conservative reporting conventions. One of the more straightforward contracting settings that could create a de-

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[20] Lara and Mora (2004) extended prior research on the international analysis of accounting conservatism by comparing firms' balance sheet and earnings conservatism in Europe.

mand for conservative reporting is loan contracts. Lenders have a relatively greater demand for reliable information about bad news, if it occurs. And if firms fail to provide such information, lenders will price protect and impose a higher cost of capital on a firm.

A bank's internal credit ratings are increasingly used to assess the overall credit risk of the firms. The role of reporting conservatism in the rating process is discussed in Jorion, Shi and Zhang (2009). They analyzed the rating process based on Standard & Poor's credit rating stages, but many banks employ similar stages in their processes (Standard & Poor's 2008). A critical part of the credit ratings analysis involves the assessment of the quality of the accounting data. This would be relevant since a significant source of information used in ratings analysis comes from financial statements.

Zhang (2008) analyzed the ex-post and ex-ante benefits of conservatism to lenders and borrowers. The first argument is that conservatism benefits lenders ex-post through a timely signal of default risk in the form of accelerated covenant violations by more conservative borrowers. The second argument is that conservatism benefits a borrower ex-ante through lower initial interest rates to those borrowers who commit to or have a reputation for more conservative reporting. Conservative reports enable lenders to receive a timelier signal of deteriorating financial performance through a tightening of covenants or a triggering of covenant violations. A timely signal of deteriorating financial performance allows lenders to take protective action, thereby reducing their risk. Consistent with these notions Nikolaev (2010) found that more extensive use of covenants is positively associated with the degree of timely loss recognition.

Ahmed et al. (2002) provided an empirical test of efficient contracting[21] within reporting conservatism and the cost of loan. They document that firms that face severe conflicts over a dividend policy tend to use a more conservative reporting. They found that firms that choose a more conservative reporting have a lower cost of loan. Specifically, they used Standard & Poor's senior loan rating as a proxy for the cost of a loan, and found a negative relationship between conservatism and loan rating after controlling for profitability, leverage, firm size, equity risk and different industries.

Bharath et al. (2008) studied reporting quality and loan contracting. They found that bank loan borrowers with a lower reporting quality face a substantially higher interest spread. Sengupta (1998) provided similar evidence that

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[21] See also Gigler et al. (2009) on the theoretical analysis of the efficiency of loan contracting. They do not contradict the prior empirical findings of a negative correlation between reporting conservatism and loan price, but suggest that reporting conservatism detracts from the efficiency of loan contracts.

firms with high disclosure quality ratings from financial analysts enjoy a lower effective interest cost regarding the issuing of a loan.

Ball and Shivakumar (2005) studied earnings quality in privately-held U.K. firms and found that within privately-held firms the quality of financial reporting is lower than in listed firms due to different market demands. They hypothesized that earnings quality is determined primarily by the economic uses of financial statements. Although the audit requirements, accounting standards and tax laws are the same for listed and privately-held firms, the financial reporting of privately-held firms is nevertheless lower in quality, because of the demands of the market. They found that the timely recognition of economic losses is reflected in different earnings skewness between listed and privately-held firms, despite similar skewness in revenues. The interpretation is that the difference in average earnings quality between listed and privately-held firms is an equilibrium outcome in the market for corporate financial reporting, which reflects differences in the demand for financial reporting. The findings were tested by comparing privately-held and listed firms' reporting using Basu's (1997) time-series measure of timely cost recognition and their own accrual-based method.

Overall, there is a demand for conservative reporting in loan contracts. Publicly listed and privately-held firms have differential demand for financial reporting. Ball and Shivakumar (2005) found a lower financial reporting quality in privately-held firms. Several prior studies (Zhang 2008; Ahmed et al. 2002; Bharath et al. 2008) have studied the path of financial reporting quality in listed firms, where the demand for reporting conservatism is high. They found that a higher financial reporting quality decreases the cost of loan for listed firms. The demand for conservative reporting in privately-held firms is concentrated towards major stakeholders. This means that a firm's financial reporting is also shaped by the interests of major stakeholders. The financial system in Finland is traditionally referred to as a bank-based system and banks are one of the firms' major stakeholders.

2.3.3.2 Measurement Issues in Reporting Conservatism

Research on reporting conservatism represents a vast area of current financial accounting research. The phenomenon "conservatism" is an understandable concept, but its detection and measurement brings up many challenges. The measurement of conservatism as the asymmetric timeliness of earnings has developed extensively during the last decade (Ryan 2006). However, empirical research on reporting conservatism lacks a firm-year measure that would detect reporting conservatism. This measure would have many practical impli-

cations. A couple of new approaches in this direction have been taken (Khan and Watts 2009; Callen, Segal and Hope 2009). Additionally, Sunder, Sunder and Zhang (2009) work on the role of realized conservatism on loan contracting to isolate its effect from the widely studied conditional conservatism. Meanwhile, it is reasonable to lean on established research methods of reporting conservatism.

A conservative financial reporting practice is difficult to observe and measure. It can be observed in the closer relationships a bank has with a firm, but still the overall level of reporting conservatism is hard to measure. The measurement of reporting conservatism has developed enormously in the last decade, but models for assessing a privately-held firm's reporting conservatism are rare. This is due to a focus on the capital market-based research of reporting conservatism.

Ball et al. (2008) stated that contracting theory predicts conditional conservatism. Examples of conditional conservatism include the write-downs of goodwill following impairment testing and the asymmetric recognition of contingent losses and contingent gains. Contracting theory also predicts that the degree of asymmetry increases in its importance to a country's loan markets, but not the importance of the equity markets. In contrast, value relevance theory suggests a symmetric and strong relationship between earnings and returns, regardless of the signs of returns.

Gassen, Fulbier and Sellhorn (2006) showed that conditional conservatism, unconditional conservatism and income smoothing are theoretically separable concepts yielding different earnings distributions. First, they investigate whether unconditional conservatism and the income smoothing affect conditional conservatism. They found that these attributes are predictably correlated with conditional conservatism. They also verified that income smoothing explains international differences in conditional conservatism. Conditional conservatism appears to be driven more by firm-specific factors than by institutional factors.

Ball and Shivakumar (2006) studied the role of accruals in mitigating noise in operating cash flows. The role of accrual accounting helps to explain why stock returns are more highly correlated with earnings than cash flows. They compared linear and non-linear accrual models and found that non-linear accrual models incorporating asymmetry in gain and loss recognition offer a substantial specification improvement for explaining variations in accruals than equivalent linear specifications. They concluded that conditional conservatism is an important property of accrual accounting. Their non-linear model states that accruals are a piece-wise linear function of current period operating cash flows. Incorporating the asymmetric gain and loss recognition role increases our understanding of accounting accruals and improves the specifica-

tion of non-discretionary accruals that are central to studies of earnings management and earnings quality.

Dietrich, Muller and Riedl (2007) critically evaluate conservatism in reported accounting earnings using an asymmetric timeliness measure within stock market data. They demonstrated that the design of asymmetric timeliness research induces biases that lead to empirical results that are interpreted as evidence of conservatism even in the absence of asymmetric timeliness in reported earnings.

Ryan (2006) provided guidance for measuring conditional conservatism and for interpreting associations of those measures with variables of interest. He documents the current state of conditional conservatism and suggests ideas that could develop an understanding of conservatism. His two most promising routes towards improving the estimation and interpretability of asymmetric timeliness involve exploiting the context of the industry a firm operates in and the stage of their business cycle as fully as possible. Further, he suggests conducting an analysis at the industry level and using industry-specific non-financial information to apply this approach.

Gassen et al. (2006) stated that conservatism is driven more by firm-specific factors than institutional factors. The importance of a country's loan market has an effect on the degree of information asymmetry (Ball et al. 2008) and changes in information asymmetry leads to changes in conservatism (La Fond and Watts 2008). Ball and Shivakumar (2006) offered a substantial specification improvement for measuring reporting conservatism. The criticism of by Dietrich et al. (2007) is pointed to studies using stock market data, and thereby a research setting that considers private firms is an important contribution to prior literature.

Overall, prior literature points to the relevance of conditional conservatism instead of unconditional conservatism for contracting purposes. Therefore, the measurement of reporting conservatism in this study is conditional conservatism.

2.4   Loan Pricing and Relationship Value

Relationship banking as a term is widely understood in the corporate context as an intentionally developed relationship between lender and borrower. Analyzing the relationship between lender and borrower usually involves several simplifications of reality due to a lack of confidential and extensive data requirements. The banking relationship has been studied from a relationship value perspective (Niskanen and Niskanen 2000; Berger and Udell 2002; Peltoniemi 2004). Most of the studies concentrate on the firms' perspective, al-

though there are some studies (for example Bharath, Dahia, Saunders and Srinivasan 2007) from the banks' perspective.

Information in bank-firm relationships varies and it is difficult to capture and analyze. Empirical data on bank-firm relationships for research purposes is also scant. Loan negotiations are documented in written form, but these are not usually available in a single specified form. In addition, the notes usually focus on the additional selling potential of the borrower. This hidden relationship information is primarily held by a loan officer and the representative of a firm.

Peltoniemi (2004) studied the elements of relationship banking in small Finnish firms. The conclusion was that length and scope were the main determinants of relationship banking. Consistent with Degryse and van Cayseele (2000) he found that longer banking relationships decrease the cost of loans and the wider scope decreases the collateral requirements. These findings emphasize the value of a tighter relationship that mitigates the problems of asymmetric information.

The expectations of this thesis are consistent with the basic idea in relationship banking that a low number of firms provide the majority of the relationship value (Bharath et al. 2008). Furthermore, the concentration of borrowing at one bank would increase the loan pricing for a group of firms. From a bank's perspective this can be seen as a well-developed relationship in which a firm is locked into a relationship suffering from high external financing costs. In this kind of setting these firms may have high switching costs or other important reasons for the continuity of a lending relationship. The benefits of intensive bank-firm relationships remain with the bank and the benefits are not shared with its group of firms. In a more balanced setting the bank may share the benefits of a well-developed relationship with firms and encourage the relationship in the long run.

2.5 Framework of Lending Technologies

The conceptual framework presented by Berger and Udell (2006) can be applied to study the effects of soft and hard information on loan pricing and relationship value. Their framework was initially conceptualized for the analysis of credit availability for small and medium-sized enterprises. This study adopts the same framework for the analysis of loan pricing and relationship value.

Berger and Udell (2006) proposed two lending technologies: transactions technologies and relationship lending. The distinction between these two lending technologies can be found in the nature of the information that is used as a

basis for a lending decision. The transactions technologies utilize primarily hard information, whereas relationship lending technologies focus on soft information. Berger and Udell (2006) classified transactions technologies into financial statement lending, small business credit scoring, asset-based lending, factoring, fixed-asset lending and leasing[22]. Arguably, financial statement lending is the most common lending technology within transactions technologies (Kano et al. 2006). Berger and Udell (2006) defined financial statement lending as a transactions technology based primarily on the strength of a borrower's financial statements. A necessary condition for the strength of a financial statement is that it requires audited financial statements[23]. The primary source of repayment is expected from the future cash flows of the firm.

Berger and Udell's (2006) framework of lending technologies has been analyzed from several perspectives. The conceptual framework, as such, analyses ownership types and bank size, a nation's lending infrastructure, specialties in SME financing and bank competition. Details of the framework concentrate on the lending technologies. Uchida et al. (2006) examined different technologies and the extent to which they are used and what determines the choice of each technology. Information verifiability, bank organization, bank competition and bank-firm relationship has been examined in Kano et al. (2006). Specifically, Kano et al. (2006) compared financial statement lending and relationship lending technologies in Japanese SMEs. They pointed out that information verifiability was a distinctive trait between the lending technologies.

Berger and Udell (2006) conceptualized SME credit availability issues and proposed that different lending technologies have important effects on credit availability. They argued that the commonly used framework in SME financing is oversimplified and unsuitable for opaque SMEs. Further, Baas and Schrooten (2006) showed that there is a close linkage between the lending technique of a bank and the interest rate offered to a firm.

Uchida et al. (2006) examined SME financing and the choice of lending technology. In addition, they examined the conceptual framework developed by Berger and Udell (2006) which proposed that lending technologies are segregated into transactions technologies and relationship lending. They found that these lending technologies are often used in tandem and are highly complementary. A specific detail in their survey was that transaction technologies are based on hard information about whether the financial statements are audited or not.

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[22] They also list trade credit as an important source of financing. However, they stated that trade credit could be classified either a transactions based or a relationship based technology. Therefore, trade credit is excluded in the empirical tests.

[23] In Finland all sample firms were required to be audited during the empirical period 2001-2005.

The framework is difficult to apply to empirical research due to the imperceptibility of the components of different technologies, which is due to the fact that financing decisions are made based on the available information as a whole. However, Berger and Udell (2006) argue that more research is needed on the use of individual lending technologies and how they affect the lending infrastructure.

This thesis also studies the Berger and Udell's (2006) framework. The distinction between soft and hard information is based on relationship and financial statement information. Soft information is accumulated in longer and closer bank-firm relationships whereas hard information is captured from financial statements. In this study I focus on the specific elements of relationship and financial statement information. Prior literature has indicated that there are at least two interesting themes to investigate. First, relationship information is a widely studied field, especially regarding the intensity of bank-firm relationships. Second, reporting conservatism is a large research field that has inspired accounting researchers. Therefore, this study analyses the effect of relationship intensity and reporting conservatism on loan pricing and relationship value. Although there are individual studies that have examined the relationship between relationship intensity and loan pricing as well as the relationship between reporting conservatism and loan pricing, the prior literature lacks a simultaneous analysis of these constructs. In addition, this study increases our understanding of the effects of lending technologies on relationship value perspectives.

The expectations of this thesis are consistent with these notions and this thesis contributes to prior findings by analyzing how lending technologies affect the relationship between loan pricing and relationship value.

2.6   Research Hypotheses

Constructs were created for bank-firm relationship intensity and reporting conservatism. By including both of these constructs in the analysis, I was able to examine whether they simultaneously affect corporate loan pricing and relationship value. There is empirical evidence that the level of reporting conservatism decreases loan price (Ahmed et al. 2002; Wittenberg-Moerman 2008). However, the empirical evidence on the effect of relationship intensity on loan pricing has been the subject of some dispute (Ongena and Smith 2000; Elsas 2005). Current theory suggests a negative association between relationship intensity and loan price and the majority of empirical findings indicate that a closer relationship between a firm and a bank decreases loan pricing. In this

study, I combine these findings in a structural equation model that allows me to examine this issue simultaneously.

2.6.1 The Effect of Relationship Intensity and Reporting Conservatism on Loan Pricing

I present four hypotheses (H1a, H1b, H2a and H2b) of the interdependencies between relationship intensity, reporting conservatism and loan pricing.

Firstly, prior evidence on the effect of bank-firm relationships on loan pricing is mixed. Existing theories do not completely explain the nature of the relationship intensity and especially its effect on loan pricing. However, prior literature agrees that the information content of a bank-firm relationship has an effect on loan pricing. In my opinion the mixed results are due, at least partly, to the different definitions of relationship intensity and the lack of data regarding the comprehensive examination of the elements of bank-firm relationships. Due to the mixed results in prior literature, I do not have a definitive expectation for the direction of the effect of relationship intensity on loan pricing, so my first testable hypothesis will be:

H1a: There is a positive or negative relationship between relationship intensity and loan pricing.

Using the length of a relationship has been questioned as an indicator for relationship intensity in many studies although it is widely used in prior literature (Ongena and Smith 2000; 2001). Elsas (2005) found that the length of a bank-firm relationship is not associated with a close relationship. Increasing the length of a relationship has been found to not favor the borrower (Petersen and Rajan 1994; D'Auria, Foglia and Reedtz 1999). The median length in Elsas (2005) study is 15 years, while my sample has a median length of 14 years. In this respect the samples are comparable. Blackwell and Winters (1997) also find that by holding the bank's monitoring effort constant, the length of the banking relationship has no direct effect on the pricing of a loan.

It is expected that the scope of the relationship has a stronger effect on relationship intensity than the length of the relationship. Although continuity of customer relationship is important to a bank, the variety of services other than loans has been highlighted in prior literature as also being important (Elsas 2005). A negative effect can be expected to be seen with regard to firm size and the depth of bank-firm relationship, which suggests that enhanced information access and more concentrated customer behavior decreases the pricing of a loan.

Secondly, banks reward firms by giving lower loan prices to firms that are committed to conservative reporting and this is based on the following three reasons. First, lower values for the assets pledged as collateral to the loan provide a greater margin of safety. Therefore, this is recognized as lower risk for interest and loan capital repayment. Second, conservative reporting draws financial covenants tighter and thus decreases the monitoring and enforcement costs of the bank (Watts 2003a, 2003b). And third, understated earnings and assets limit the expropriation of wealth by managers and shareholders, because they reduce dividend payouts and managerial compensation, thus keeping more resources in the firm.

Healy and Palepu (2001) argued that demand for financial reporting and disclosure arises from information asymmetry and agency conflicts between managers and outside investors. Bharath et al. (2008) stated that the design on loan terms is affected by investor characteristics and information uncertainty. A privately-held firm's funding is characterized as being made up of a group of concentrated investors, whereas publicly listed firms' investors are more diverse. Hence, the characteristics of the investors are, in this sense, different in the loan market for publicly listed and privately-held firms. Therefore, it is expected that the design of loan contracts also varies due to the differential demand for financial reporting.

Guay (2006) studied demand for timely loss recognition in loan contracting. He argued that lenders have a greater demand than equity holders for timely loss recognition due to the valuation of their claims. Ball and Shivakumar (2005) found differences in the financial reporting quality of publicly listed and privately-held firms, although these firms comply with the same accounting regulation, and stated that the differences are due to differential demand for financial reporting.

There is a lack of academic literature on reporting conservatism in privately-held firms, which results from a lack of accounting-based conservatism measures and data requirements. Finland is defined as a code-law and bank-based country and the requirement of conservative accounting policy[24] has been included in local GAAP during the sample period. My next hypothesis tests a privately-held firm's financial reporting on whether or not reporting conservatism has a negative effect on loan pricing. It is expected that reporting conservatism decreases the pricing of loans in privately-held firms due to the mitigation of information uncertainty. Based on prior theories and empirical findings I present the hypothesis:

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[24] Conservative accounting may be known better as a term of the prudence principle in the Finnish environment.

*H1b: There is a negative relationship between reporting conservatism and
loan pricing.*

Conservatism allows for the consideration of the asymmetric timeliness of negative and positive earnings, and focuses on the negative side. Francis, La-Fond and Schipper (2004) found that the most favorable values of each earning attribute individual decreases to the cost of capital, but they do not perform any empirical testing on the cost of a loan. Furthermore, prior literature documents that reporting conservatism decreases the price of a loan (Wittenberg-Moerman 2008; Beatty, Weber and Yu 2008; Zhang 2008; Bharath et al. 2008; Sengupta 1998). However, these findings are based on publicly listed firms that have differential demand for conservatism. In Finnish accounting legislation the prudence principle has been emphasized for several years by publicly listed and privately-held firms. This principle has directed Finland's financial reporting policies towards conservative reporting. In this context, it is important to study whether the demand for conservative reporting is also priced in a privately-held firm's loan contracts.

Thirdly, Choi (2007) examined bank dependence and income statement conservatism in publicly traded small and medium-sized firms. His results indicated that conservatism increases as a firm's bank dependence increases. However, there is a gap in the empirical literature regarding the possible simultaneous effects of conservatism and relationship intensity on loan pricing. Theoretically, both of these should decrease information asymmetry between bank and firm, and therefore also decrease the loan price. This is, to my knowledge, the first study addressing this question and because the direction of any potential mediation effect on loan pricing is eventually an empirical question. I include both the moderation and mediation effect types[25] in the analysis.

H2a: Reporting conservatism moderates the relationship between relationship intensity and loan pricing.

H2b: Reporting conservatism mediates the relationship between relationship intensity and loan pricing.

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[25] According to Baron and Kenny (1986) the moderator function "partitions a focal independent variable into subgroups that establish its domains of maximal effectiveness in regards to given dependent variable". Additionally, a mediator functions as "the generative mechanism through which the focal independent variable is able to influence the dependent variable". The effect types of moderation and mediation are carefully analyzed in Chapter 4.

Figure 2 links and examines the most relevant literature on hypotheses H1a, H1b, H2a and H2b, extracts the theory from that literature and tests it empirically in Chapter 6. I view the comprehensive model of the effect of soft and hard information on loan pricing as well as the empirical testing of the model as an incremental contribution to the current literature on loan contract design.
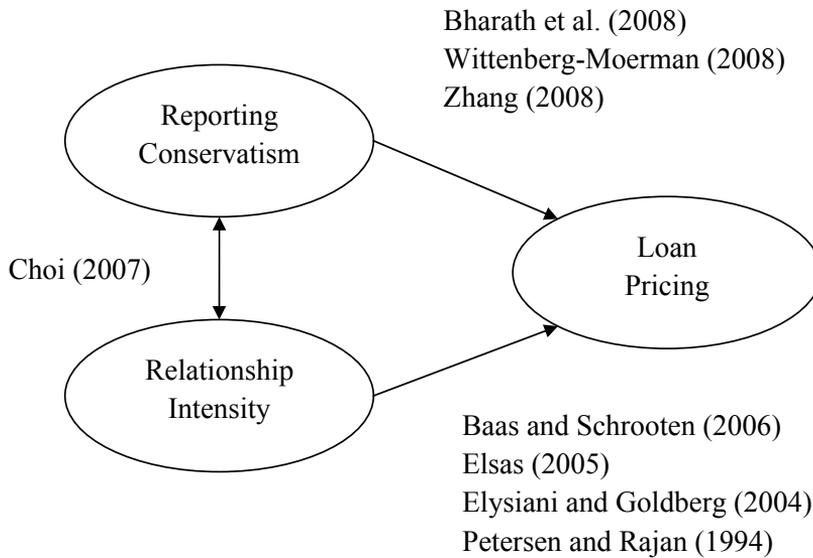
Figure 2   Literature Links and the Constructs

2.6.2   The Effect of Relationship Intensity and Reporting Conservatism on Relationship Value

Prior literature suggests that value-based differentiation is needed in business relationships. Naturally, a lender would be more interested on spending time and effort on more valuable firms to increase internal profitability. In particular, marketing literature acknowledges that relationships represent a source of competitive advantage beginning with Jackson (1985) and many empirical studies thereafter.[26] My hypothesis tests the effect of the relationship intensity on relationship value.

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[26] The extant marketing literature lies beyond the scope of this study. The need for value-based examination is merely driven by the study's practical orientation. However, a limited scope examination was performed to gain an understanding of the relevant marketing literature.

*H3a: There is a positive relationship between relationship intensity and rela-
       tionship value.*

Furthermore, I follow the rationale in relationship banking that states that a lower information asymmetry between a firm and a bank in form of reporting conservatism has an effect on relationship value. However, there is limited knowledge on the direction of the effect and therefore it remains primarily an empirical question.

*H3b: There is a positive or negative relationship between reporting conser-
       vatism and relationship value.*

In summary, these hypotheses allow that there are firms that have a lower loan price due to relationship intensity and / or reporting conservatism, but still have a higher relationship value due to the overall pricing of customer-ship.

2.6.3 The Effect of Loan Pricing on Relationship Value

Loan pricing is a key element in bank-firm relationships. However, it is just one crucial element in customer relationship management. The value of a rela-tionship will build on issues regarding loan pricing as well as other services offered to a firm. Marketing research has widely studied customer relation-ships from several perspectives. However, this research determined the value of a relationship based on an internal realized contribution that is calculated in Euros. This measure may not reflect all aspects of relationship value, but it is used for the bank's internal customer profitability purposes.

Loan pricing is one component of relationship value. Due to the complexity of a bank-firm relationship a lower loan price could lead to a higher relation-ship value. The reason for a lower loan price could be due to the competitive-ness of the loan markets or other reasons in the pricing of an overall relation-ship. Loan pricing may be viewed as way to get customership that would open up opportunities for additional selling. However, the Basel II Accord empha-sizes the risk-based pricing of corporate loans (Basel Committee on Banking Supervision 2006).

This field is highly unexplored and therefore the direction of the hypothesis is difficult to assess. The basic intuition in banking is that loan pricing would have a positive effect on relationship value. This leads to the fourth hypothe-sis:

H4:   There is a positive relationship between loan pricing and relationship value.

Due to the heterogeneity of the sample firms there could be several segments of firms. For a group of firms loan pricing may have a positive effect on relationship value and for another group it could be negative. Next, the lending technology is analyzed as a potential moderator of the relationship between loan pricing and relationship value.

2.6.4 The Moderating Effect of Lending Technology on Loan Pricing and Relationship Value

In line with Berger and Udell (2006) different lending technologies can be segregated into two main categories: relationship lending and financial statement lending. Relationship lending is merely based on soft information and financial statement lending represents a technique that is merely based on hard information.[27] In this study soft information is analyzed as a construct of relationship intensity, and hard information as reporting conservatism, respectively.

As discussed earlier, the relationship between loan pricing and relationship value may vary between firms. The framework devised by Berger and Udell (2006) is a useful tool for further analyzing this relation. The Basel II Accord states that firm loan pricing should be based on the risk related to the firm. Therefore, a bank should evaluate their lenders before granting a loan (Basel Committee on Banking Supervision 2006). This is usually based on a bank's internal rating in the context of SME financing.

Berger and Udell (2006) proposed that there are group of firms that are classified as firms using relationship lending technology. This lending technology is merely based on the soft information of the bank-firm relationship. Soft information is difficult and costly to capture in a form that could be used for relationship management purposes. Many banks have their own corporate analysis department for deepening the analysis of a group of firms. As a result, a bank builds up its information advantage on a firm's soft information by lowering information asymmetry between itself and the firm.

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[27] Uchida et al. (2006) found that these technologies are used in tandem. I acknowledge that soft information is also used for a bank's customer relationship management purposes.

In this study I segregate a firm's lending technology based on whether they have been analyzed by the corporate analysis department or not[28]. The firms that have been analyzed use relationship lending technology and the rest of the firms use financial statement lending technologies. This leads to the fifth hypothesis:

H5:   Lending technology has a moderating effect on the relationship between loan pricing and relationship value.

It is expected that lending technology significantly affects the relationship between loan pricing and relationship value, and that firms using relationship lending technology have a negative association between loan pricing and relationship value in contrast to Hypothesis 4.

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[28] In a similar sense Berger, Espinosa-Vega, Frame and Miller (2005) measured information asymmetry based on whether and how the banks employ credit scoring technology to determine loan maturity.

3 DATA AND VARIABLES

In this chapter I present the data and variables used in the empirical tests for the hypotheses stated in Chapter 2. The first part presents the sample selection process and the second part presents the variables of interest and further analyses the control variables needed in the tests. The third part explores the descriptive statistics of the bank-firm relationship and the financial statement characteristics.

3.1 Sample Selection

The sample in this study is obtained from one major commercial bank in Finland. I collected the yearly data covering the years 2001 to 2005. The created database includes a rich set of both financial statement information and firm-specific loan information relevant for the purposes of this study. According to the bank's strategic objective this bank is customer oriented and actively utilizes customer specific information in order to improve its service. The sample is taken from one of the major banks in Finland, and I acknowledge the notion that the bank's business culture may affect the results. However, all major commercial banks in Finland have quite a similar strategy and business logic, so the probability of this concern is low. The other main banks in Finland have quite a similar customer strategy and there is unlikely to be any major differences that could impact on loan pricing. In addition, the enforcement of bank regulation between countries may differ, although banks should follow the requirements of the Basel Framework and Solvency Framework Directive (Basel Committee on Banking Supervision 2006). However, the fact that the sample is from one bank eliminates the possibility to have certain variables, for example, the number of banking relationships that each firm has.

First, I collected firm-specific information from the bank's database. These variables contain basic information on the firm's industry, risk classification and firm-specific information about the bank-firm relationship. Second, I combined the relationship information with the corresponding financial statement information. The financial statement information contains profit and loss statement and balance sheet figures. Based on financial statement information, certain key ratios are calculated. The data has been cross-checked to ensure its reasonableness. There are also advantages in using the data from only one

bank, for example, there are uniform definitions of the variables and continuity in the data processing.

The sample consists of small and medium-sized privately-held firms domiciled in Finland. The original loan database incorporates 2524 firm-year observations from the period December 2001 to December 2005. All the firms' reporting periods end in December, and firm-specific relationship information is captured at the end of December. Connecting these two sources of information allows the identification of their characteristics, such as the loan amount, return on equity and other key ratios. All firms are required to have the bank's internal rating and either short or long-term loan price. These internal ratings collect information about firm quality and credit risk in broad terms, and they are automatically determined by firm-specific information. A lower credit quality as reflected in ratings is likely associated with a higher loan price.

Consistent with prior literature, the sample includes only non-financial limited liability companies. In particular, the financial companies would have special characters in their financial reporting, and therefore these are usually excluded. After merging the relationship data with financial statement data, the final sample is reduced to 1945 firm-year observations. The reason for the missing observations is the absence of the bank's internal rating (216 observations) and the absence of a loan from the subject bank (363 observations). These variables are needed for the analysis and missing observations are not likely to affect the main results. The methodology in this study requires no missing observations (Ringle, Wende and Will 2005). Therefore, there is no need for further exploration of systematic bias due to missing observations in this sample. The final sample has no missing values for any of the variables.

Data availability and constraints tend to select large and profitable firms and survivorship bias may rear its head. This potential bias was examined by creating a sample excluded from the original sample that includes only one firm-year observation. This group of firms may contain firms that have gone bankrupt since the first year of the observation period[29]. The unreported results seem to be qualitatively similar, although the explanatory power is better. So, survivorship bias is not likely to affect the main results. The sample is relatively large when taking into consideration the Finnish corporate loan market. This unique sample contains much cross-sectional variability and thus provides many interesting possibilities for studying bank-firm relationships and reporting conservatism in the related financial statements.

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[29] The firms observed in the sample were required to have had at least a five year of relationship with the bank.

3.2 Variable Definition and Measurement

This chapter provides details on variable definition and measurement. The first subchapter presents a definition of the loan price, the bank's internal rating and the relationship value. The second subchapter presents the variables used for measuring the intensity of the bank-firm relationship. The third subchapter presents the method for measuring the reporting conservatism captured from financial statements. The last subchapter discusses the control variables used in the tests.

3.2.1 Loan Pricing and Relationship Value

Data in this study contains information on the terms of the loan and firm characteristics in a single specified form. The loan data consists of long-term and short-term corporate bank loans. The median loan size of a long-term loan is 1126 thousand Euros and the median firm size is 737 thousand Euros based on turnover.

The key indicator variable of interest is loan price. I define loan price as an indicator variable for the construct of loan pricing. Originally, the loan price was determined separately for short-term and long-term loans. I calculated the loan price as the average price weighted by a proportion of the long-term and short-term loan. The price is presented as a percentage unit over the underlying basis interest[30]. Due to the notion that the amount of a long-term loan is usually larger than that of a short-term loan this definition of loan price emphasizes the interest rate on long-terms loans. However, including the weighted proportion of the short-term interest rate reflects and completes the overall pricing of a firm's loans. Performance pricing[31] and revolving credits are excluded from the loan data due to their special characteristics.

Another indicator variable for loan pricing is the bank's internal ratings[32]. These ratings are used to account for the information content of the bank's firm-specific credit risk. These ratings collect information about financial position and credit risk and they are determined by firm-specific information. A lower credit quality as reflected in ratings is likely to be associated with a higher loan price. In the analyses the internal ratings are coded so that the first

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[30] The underlying cost of capital within the sample period has been relatively low decreasing from 4.09% in year 2001 to 2.33% in year 2005 based on the 1-year Euribor (European Central Bank 2010).

[31] Performance pricing means that the interest rate is dependent of firm's performance.

[32] The Basel II Framework presents an Internal Ratings Based (IRB) approach to assess the credit risk of corporate exposures (Basel Committee on Banking Supervision 2006).

rating group gets value 1, and the second value 2, and so on until the firms with the lowest internal rating get the biggest value. In this sense, when the coded value of the internal rating increases the loan price is expected to increase relative to it.

For relationship value purposes the indicator variable is the natural logarithm of realized contribution in Euros. This variable is presented from the bank's perspective and is based on the bank's internal calculation of firm-specific realized contributions in a one-year period. At this point it is worth mentioning that realized contribution is calculatory and, for example, in corporate loans the contribution is realized in total after the loan has been fully paid back. This bank uses the realized contribution for decision making, and therefore it is reasonable to use this variable for the basis of the relationship value.

3.2.2 Relationship Intensity

From the lender's point of view, the risk of losing the borrower is a threat that dominates operative actions (Bharath et al. 2008). Refining the current bank-firm relationship creates the intensity in a bank-firm relationship. When negotiations are held with a firm, the usual outcome is a signed contract regarding a certain product or service. One relevant measure of refining the firm base is the amount of services per firm.[33] The intensity of the relationship can also be estimated by analyzing the loans to the subject bank compared to the total liabilities. It is obvious that certain products or services increase the intensity of the relationship more than others. The main idea of creating commitment in a relationship is to slow down the potential change in a bank-firm relationship, or even constrain the possibility to change a bank-firm relationship. These constrains are usually technical bonds such as payment software. The internal processes between the lender and borrower can be developed to be so tight as to make a change of bank too costly and harmful to operational affairs.

Blackwell and Winters (1997) studied the bank-firm relationship and the effect of monitoring on loan pricing. The firms with more concentrated borrowing at a given lender pay lower interest rates (see Elsas 2005), holding credit risk and other control variables constant. The borrowers with longer relationships are monitored less frequently by lenders and the less frequently monitored firms pay lower interest rates on average. Small borrowers can lower their cost of capital by concentrating most of their borrowing with a single lender. This notion signals an information advantage over other lenders.

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[33] This conclusion in based on the interview completed in August, 5 2005. Also Peltoniemi (2004) used the amount of financial services as a variable of bank-firm relationships.

However, data availability is a constraint that prevents the inclusion of all relevant indicators in the research model. In this study the bank-firm relationship intensity is measured based on length, scope and depth of relationship. The first measure is length of a relationship as defined by the total number of years of a bank-firm relationship has lasted, the second measure is the relationship scope as measured by the number of banking services taken by a firm other than the loan and the third measure is relationship depth as a percentage of a firm's loans with the subject bank as a proportion of its total liabilities. The related literature on length, scope and depth in a bank-firm relationship was discussed in Chapter 2.

3.2.3 Reporting Conservatism

In this study I implement a measure of the important attribute of financial reporting: the timeliness in financial statement recognition of economic losses. I employ Ball and Shivakumar's (2005) accrual-based test, which is based on the relation between accruals and cash flow from operations.

Measuring reporting conservatism can be accomplished with models utilized in earlier studies (Jones 1991; Basu 1997; Ball and Shivakumar 2005). Guay, Kothari and Watts (1996) scrutinized the five discretionary accrual models,[34] which had been evaluated earlier by Dechow, Sloan and Sweeney (1995). Guay et al. (1996) found that only the Jones and modified Jones models appeared to have the potential to provide reliable estimates of discretionary accruals.

Ball and Shivakumar (2005) hypothesized that a private firm's financial reporting is lower in quality because that is what the market demands. They modeled reporting conservatism using the Basu (1997) regression and also an accruals-based test of loss recognition. This accrual-based model employed an adaptation based on Dechow's (1994) and Guay et al's. (1996) model. In their model the role of accruals both mitigate noise in operating cash flows and, more particularly, expresses the timely recognition of economic gains and losses. They hypothesized that the timely recognition of economic gains and losses is a source of positive but asymmetric correlation between accruals and contemporaneous cash flows. The asymmetry in this accruals model arises because economic losses are more likely to be recognized on a timely basis, as unrealized accrued charges against income. Economic gains are more likely to be recognized when realized, and hence accounted for on a cash basis. This

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[34] The five discretionary accrual model were Healy (1985), DeAngelo (1986), Jones (1991), Jones as modified in Dechow et al. (1995) and Dechow and Sloan (1991).

asymmetry implies that the positive correlation between cash flows and accruals is greater in the case of losses. Both accruals and cash from operations are standardized by the beginning of a period's total assets.

In this study I model reporting conservatism by adapting Ball and Shivakumar's (2005) accrual-based model. A solid justification for choosing this model is based on the prior literature that has evaluated the accrual models (Dechow et al. 1995; Guay et al. 1996). In selecting the appropriate model for this research design it has been highlighted that the sample of this study is non-listed companies. The model is further elaborated and tested in Chapter 5.

3.2.4 Variables in Multi-Group Analysis and Control Variables

All the variables are derived from prior literature and are gradually added to the research model. Only statistically significant variables are kept in the final model. Other important variables for multi-group analysis are profitability, profit / loss and tangibility.

Industry affiliation is based on the classification by Statistics Finland. Only the main branch categories are analyzed, which consist of seven[35] industries. Data consists of three legal forms: partnership, limited partnership and limited company. A firm's legal form has no effect on the main results and therefore they are not further reported. All publicly listed firms are excluded from the sample.

In the following I present the variables as they are when separated into the controls in the main analysis and the other variables are separated in the multi-group analysis. The variables in the multi-group analysis are used for both control purposes and for deepening the main analysis in Chapter 6.

Loan Size: This variable is important in the bank-firm relationship. In the analyses I use the natural logarithm of long-term loan size as a control for the borrower's risk exposure[36]. Smaller loans are expected to be priced with lower margins in comparison to larger ones.

Firm Size: This variable is computed as the natural logarithm of total assets. The firm size variable is probably the most important control variable, because larger firms are able to obtain better loan terms given their reputation and tangible asset size. There is usually less information asymmetry associated with them.

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[35] Minor branch categories are combined due to a lack of observations.
[36] I acknowledge that there may also be different expectations regarding the effect of loan size on loan pricing. In the global context, the market for small and large loans differs in many ways due to, for example, liquidity and competition. I assume that the market for loans in my sample is substantially homogenous and that loan size mainly controls the borrower's risk exposure.

Lending Technology: This is a dichotomous variable that takes the value of one when the bank's corporate analysis department has specified a firm's initial internal rating, and the value zero when the internal rating is generated based on financial information in a specified form.

The initial internal rating is assessed for all firms and only a group of firms has been further assessed by the corporate analysis department. The corporate analysis department is able to scrutinize in detail the firm-specific characteristics based on the in-depth customer relationship information. According to the terms of Berger and Udell (2006)[37], the firms analyzed by the corporate analysis department are users of the relationship lending technologies and the other firms are users of the financial statement lending technologies. Information asymmetry is related to lending technology and it is expected to be lower in the cases of firms that have been assessed by the corporate analysis department. However, due to the requirements of confidentiality in the business processes of the bank the selection method for the firms scrutinized by the corporate analysis department was not available. Therefore, the selection of firms may be based on reasons other than the proposed categorization made by the lending technology. This notion may have inferences for the interpretation of the results.

Profitability: This variable is the return on equity (percentage). It controls for a firm's ability to generate profits to pay back its loans. Firms with low profitability are expected to have higher loan prices.

Profit / Loss: This variable is a dichotomous indicator of whether a firm has a positive or a negative net result.

Tangibility: Asset tangibility is a proxy for a firm that has access to available collateral. A firm that has more tangible assets will probably have more collateral, which may affect the loan pricing and relationship value.

3.3   Descriptive Statistics

In Table 1 panel A presents the descriptive statistics of the relationship information. Panel A shows that the loan price (margin) ranges from 0 to 4 %. The mean value of the loan price is 1.462 % and standard deviation is 0.591. The actual range in the bank's internal rating is from 1 to 11, but in this sample I do not have firms in the two highest rating groups, and therefore the range in the sample is from 3 to 11. The realized contribution has a mean value of

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[37] The terms of the framework were initially conceptualized based on the U.S. market. The authors aimed at a conceptual framework for SME finance in developed and developing nations. However, the framework, as such, may not be fully suitable to SME finance in the Finnish environment.

8.199 and a maximum value of 11.416. This means that there is a small group of firms that have a relatively high value with regard to their realized contribution.

The original range of a relationship length is from 1 to 66 years. The logarithmic mean value is 2.567 and the standard deviation is 0.581. The original range of scope is from 1 to 103 for the number of other services than loan. The logarithmic mean value is 2.603 and standard deviation is 0.532. The mean values and standard deviations of the relationship intensity are within a range of similar magnitude.

Loan size and the depth of a relationship reflect the concentration of the bank-firm relationship. Loan size has a mean value of 13.942 and a standard deviation of 2.557. The depth of the relationship has a minimum value of -2.286 due to a few very low original values (below 1 %), and therefore the lowest logarithmic values are negative. Omitting these values does not affect the main results and therefore these values are kept in the sample. The actual range of depth of the relationship is from 0 to 100 %.

Table 1   Descriptive Statistics

Panel A: Relationship Information

Variable	Mean	Range	Minimum	Maximum	Std
Loan Price	1.462	4.000	0.000	4.000	0.591
Rating	7.359	8.000	3.000	11.000	1.215
Realized Contribution	8.199	11.416	0.000	11.416	1.066
Length	2.567	4.190	0.000	4.190	0.581
Scope	2.603	4.635	0.000	4.635	0.532
Loan Size	13.942	15.420	4.554	19.974	2.557
Depth	3.406	6.891	-2.286	4.605	0.859
Number of observations	1945				

Variable definitions:
Loan Price is the margin above the basis interest (%); Rating is the bank's internal rating; Realized Contribution is in Euros (ln); Length is in years (ln); Scope is number of services other than loan (ln); Loan size is the bank loan amount in thousand Euros (ln); Depth is the ratio of bank loans from the subject bank to the firm's total assets (ln). The actual range of internal ratings is from 1 to 11.

Panel B: Financial Statement Information

Variable	Mean	Range	Minimum	Maximum	Std
Turnover	6.618	12.591	-0.693	11.897	1.396
Net Result	3.561	12.561	-2.303	10.258	1.561
Total Assets	6.332	11.612	1.629	13.241	1.264
Accruals (ACC)	-0.198	5.503	-4.800	0.703	0.450
Cash Flow (CFO)	0.341	6.376	-0.693	5.683	0.678
Number of observations	1945				

Variable definitions:
Turnover (ln), Net Result (ln) and Total Assets are in thousand Euros (ln); Accruals (ACC) is ΔInventory + ΔDebtors + ΔOther current assets – ΔCreditors
– ΔOther current liabilities – Depreciation standardized by beginning total assets.
Cash Flow from Operations (CFO) is measured as earnings before exceptional and extraordinary items less accruals standardized by beginning total assets.

Table 1 panel B presents the descriptive statistics of the financial statement information. Turnover and net result have a range of 12.591 and 12.561, respectively. They have also very few small original values (below 1000 euro), and therefore the logarithmic values are negative. Omitting these values does not affect the main results and therefore these values are kept in the sample. Total assets have a mean value of 6.332 and a standard deviation of 1.264. I also calculated the median value for the total assets (6.238). This suggests that the distribution of total assets is relatively symmetric. Accruals have a range of 5.503 and a standard deviation of 0.450 and cash flow has a range of 6.376

and the standard deviation is 0.678. The accruals and cash flow from the operations are standardized by the beginning values of the total assets.

The industry classification is based on seven main industries: agriculture and forestry, industry, construction, wholesale and retail sale, transportation and telecommunications, professional services, health care and welfare services. Table 2 presents the distribution of observations according to firm size and industry classification.

Table 2   Firm-Year Observations by Size and Industry

Panel A: Firm Size		
Turnover (1000 Euros)	n	%
0-500	749	39 %
501-1000	411	21 %
1001-5000	615	32 %
5001-50000	170	9 %
Total	1945	100 %

Panel B: Firm Industry		
Industry Classification	n	%
Agriculture and Forestry	156	8 %
Industry	458	24 %
Construction	235	12 %
Wholesale and Retail sale	441	23 %
Transportation and Telecomm.	308	16 %
Professional Services	198	10 %
Health Care and Welfare Services	149	8 %
Total	1945	100 %

The correlation matrix includes the variables of interest (Appendix 1). The univariate analysis shows that many of the variables are significantly correlated. Overall, the magnitudes of the Pearson correlations are relatively small. The biggest significant correlations are found between accruals and cash flow (-0.809), which is consistent with Dechow's (1994) results. The realized contribution is positively correlated with scope (0.423) and total assets (0.477). The scope variable seems to have a correlation with total assets (the correlation is 0.292) consistent with the notion that the number of banking services increase with the magnitude of firm operations. The univariate correlation between internal ratings and total assets is (-0.309) indicating that larger firms seem to have a better internal rating.

4 METHODOLOGY AND METHODS

In this chapter I present the methodological choices for the study. First, I sharpen my view on the research topic through several qualitative interviews. Second, I present the quantitative methods that will be employed in Chapter 5. The focus in this chapter is on the effect types of the research model. I will consider whether the effect type is the moderation or mediation effect and whether there are indirect effects of relationship intensity or reporting conservatism on the loan pricing. Finally, I present the structural equation modeling used to address the research problem. In order to seek a convergence of the results I employ two types of triangulation: data triangulation between all the expert interviews and discussions, and methodological triangulation combining both qualitative and quantitative methods (Denzin 1978).

4.1 Qualitative Method

The question related to reliability and validity is more often discussed in qualitative than in quantitative studies. An almost unanimous view of reliability and validity is that different "goodness-of-fit" measures should be used in qualitative and quantitative studies. In other words the one measure of good reliability or validity in a qualitative study may not be the desirable outcome in a quantitative study (Syrjälä, Ahonen, Syrjäläinen and Saari 1994). However, a researcher should be able to access most of the available information sources regardless of the methodological barriers and find the best possible approach to answering the research problem. In this sense, I decided to interview several experts in the banking area to sharpen my view on the topic and to understand the relevant issues that may have an effect on this research project.

The interviewees were chosen based on their position in their organization and expected knowledge in this research area. Most of the interviewees were from the bank, but one was academic. The interviews were conducted during different phases of the research project: before, during and after the quantitative data collection. The aim of these interviews was to help the researcher in acquiring the relevant empirical variables for the study, to strengthen the analysis of the data and to validate the results by exploiting the comments of the experts in the field. The collected expert interviews help to focus on relevant managerial issues and to ensure the validity of the research. The emphasis on

analyzing data is, nevertheless, based on prior academic literature and the evidence gained from these interviews operates only as a supporting tool.

The interviews were recorded and the findings documented diligently. The structure and appropriation of the interview was modified to meet the aim of each interview. The outline for the interview was semi-structured based on Hirsjärvi, Remes and Sajavaara's (2000) classification and it was sent a week before the interview to the interviewee. Overall, I acknowledge that the mixture of qualitative and quantitative methods is not usual in financial accounting research. However, in this context, where theory in this field is developing and the empirical findings are disputed the qualitative interviews help to sharpen the use of the quantitative methods.

4.2   Regression Analysis

This study analyzes interdependencies of bank-firm relationship intensity and reporting conservatism and their effect on loan pricing. The software used for the regression analyzes is SPSS 15.0. The dependent variable was estimated as a function of the independent variables and the error term. The error term is treated as a random variable and represents an unexplained variation in the dependent variable. SPSS 15.0 uses the ordinary least squares method to estimate the parameters.

Regression analysis has several underlying assumptions that should be acknowledged. The sample should be representative and the error term is assumed to be a random variable with a mean of zero. Regression analysis usually comes up against the problem of multicollinearity where the assumption of an independent variable as a linear combination of the others is violated. The independent variables should be linearly independent to avoid multicollinearity i.e. they should not be highly correlated. If multicollinearity is found in multiple regression models the estimates of the independent variables may not be valid, although they could sufficiently predict the dependent variable. There are different alternatives for detecting multicollinearity. This study exploits the VIF values (Variance Inflation Factor) in which the VIF values of 5 or 10 and above are suggested in order to indicate a multicollinearity problem (VIF values are not reported if this criteria is met). A large data set also reduces the bias of multicollinearity (Hair, Black, Babin and Anderson 2009).

Every variable in multiple regression models is initially measured with error. The deficiency in multiple regression analysis is that this error is normally aggregated to one error term. Therefore the information content of the errors of each independent variable may not be revealed. This may lead to substantial measurement error and the independent variables may not achieve acceptable

levels of predictive accuracy. Hair et al. (2009) presents two approaches on how this problem of measurement error may be addressed: summated scales and structural equation modeling. The summated scales method is recommended as a first choice whereas structural equation modeling uses a completely different technique. However, regression analysis is used in this study solely for the measurement of reporting conservatism, whereas the main analysis is based on structural equation modeling. The methodology of the structural equation modeling is presented further in this chapter.

4.3 Effect Types

In this chapter I present indirect, moderation and mediation effect types that involve variables or sets of variables that influence relations between interventions and outcomes. Furthermore, I select the effect type based on theory and prior empirical evidence and introduce structural equation modeling to scrutinize the research problem.

4.3.1 Indirect Effect

In relation to the indirect effects I constructed my research model so that it allows relationship intensity to have an indirect relationship to loan pricing. Figure 3 clarifies the specification.
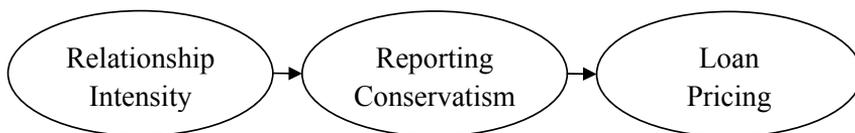
Figure 3   Full Indirect Effect of Relationship Intensity via Reporting Conservatism on Loan Pricing

The total effects in a model can be decomposed into direct effects and indirect effects. A full indirect effect would mean that relationship intensity affects loan pricing only via reporting conservatism. However, prior literature points out that both relationship intensity and reporting conservatism have an incremental effect on loan pricing (Bharath et al. 2008; Wittenberg-Moerman 2008). These notions suggest that neither the full indirect effect of relationship intensity via reporting conservatism nor the full indirect effect of reporting conservatism via relationship intensity may, in actual fact, explain variance in

loan pricing. Next I focus on two indirect effect types namely moderation and mediation in more detail.

4.3.2 Moderation Effect

Related to the moderation effect I consider whether reporting conservatism moderates the relationship between relationship intensity and loan pricing. Figure 4 presents the moderation effect.
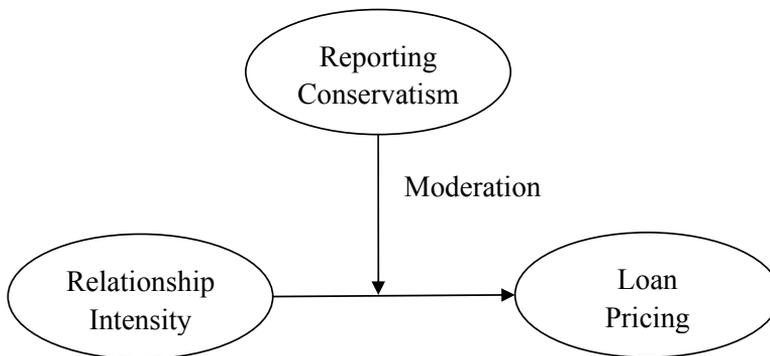
Figure 4   Moderation Effect of Reporting Conservatism

The moderation effect is apparent, when the independent variable and the moderator variable are independent of each other (Mueller, Judd and Yzerbyt 2005). However, if the correlation between relationship intensity and reporting conservatism is high, it is suggested that the moderation effect cannot be employed to describe the role of reporting conservatism on the relationship between relationship intensity and a loan pricing from a theoretical perspective. At least the empirical results in Choi (2007) show that a close bank-firm relationship and conservatism are highly correlated and therefore the moderation effect should not be employed. Specifically, the univariate correlations in my data set, presented in Table 3, show evidence of significant positive correlation between the two elements of relationship intensity (length and scope) and reporting conservatism, although the correlations are relatively low.

Table 3   Pearson Correlations between the Elements of Relationship Intensity
               and Reporting Conservatism

	Reporting Conservatism	Length	Scope	Depth
Reporting Conservatism	1.000			
Length	0.041	1.000		
	*			
Scope	0.125	0.249	1.000	
	***	***		
Depth	0.008	-0.041	-0.081	1.000
		*	***	

***, ** and * denote significance of 1%, 5% and 10% level of Pearson correlations.

However, these notions lead me to conclude that the moderation effect is a possible approach for investigating this research problem. A detailed empirical analysis of moderation effects is presented in Chapter 6.

4.3.3 Mediation Effect

Baron and Kenny (1986) presented a seminal study scrutinizing the conceptual, strategic and statistical considerations in properties of moderation and mediation effect types. First, a necessary and sufficient condition for establishing mediation is to find the overall effect of the independent variable on the dependent variable (Relationship Intensity => Loan Pricing). Further, according to Baron and Kenny (1986) a variable functions as a mediator when it meets the following three conditions (see Figure 5):

1. variations in levels of the independent variable significantly account for variations in the presumed mediator (Relationship Intensity => Reporting Conservatism)
2. variations in the mediator significantly account for variations in the dependent variable (Reporting Conservatism => Loan Pricing)
3. when the above conditions are controlled, a previously significant relation between the independent and dependent variables is no longer significant.

With the reference to the mediation effect I present the variables used in the model. In this approach, the relations between an independent variable and a dependent variable are decomposed into direct and indirect (mediated) effects. Mediation can be either full or partial mediation depending on how the coefficient reacts when controls are introduced. The relative size of a mediation effect is calculated by using Variance Accounted For (VAF) (Shrout and Bolger 2002). Figure 5 depicts the mediation effect type.
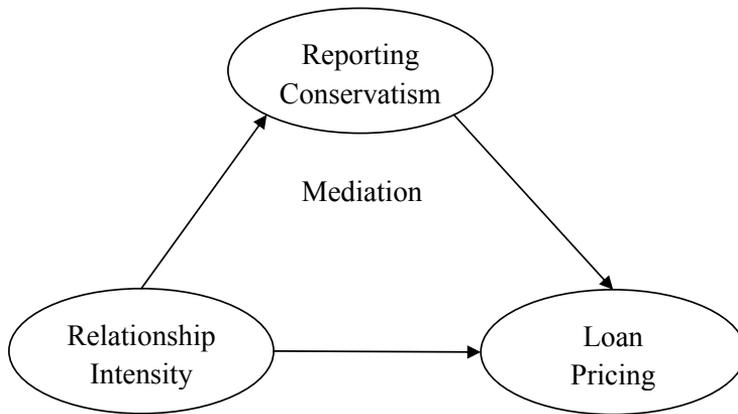
Figure 5   Mediation Effect of Reporting Conservatism

A simple mediation effect can be calculated in at least two ways[38]: regression based and structural equation model based tests. According to the first way, and following the *causal steps strategy* of Baron and Kenny (1986), one should estimate three regression equations: first regressing the mediator on the independent variable, then regressing the dependent variable on the independent variable, and finally regressing the dependent variable on both the independent variable and the mediator. Separate coefficients for each equation should be estimated and tested. If these estimations show a significant effect on the variable under investigation, then the effect of the independent variable on the dependent variable must be lower in the third equation than in the second.

The usual test of significance is based on Sobel's (1982) test. This test is for examining the indirect effect of the independent variable on the dependent variable via the mediator. However, there are two assumptions that should be noted. First, it is assumed that there is no measurement error in the mediator and second, that the dependent variable does not cause the mediator. Even the first assumption suggests that a regression based evaluation may not be successful as, due to the mediator effect, reporting conservatism in this study is likely to be measured with error.

Preacher and Hayes (2008) discussed mediation in behavioral research in detail. They discussed different methods for testing mediation that does not impose the assumption of normality of the sampling distribution. This method

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[38] Preacher and Hayes (2008) pointed that there are at least a dozen methods for testing hypotheses about mediation.

is widely known in statistics as *bootstrapping*. It is a nonparametric re-sampling procedure that estimates the effects in each re-sampled data set. By computationally repeating this procedure thousands of times an empirical approximation of the sampling distribution is built. This distribution is used to construct the confidence interval for the effects. In this study, the number of subsamples requested is 500. The bootstrapping method requires a sample to have no missing values in its data in order to obtain its results. However, there are different ways to cope with this problem depending on the available software.

From a methodological perspective the mediation effect would be a potential effect type for explaining the effect of relationship intensity and reporting conservatism on loan pricing. There is no prior theoretical framework or empirical literature that could assess the direction of the mediation effect. Thus, the issue of whether it is reporting conservatism or relationship intensity that is the mediator variable remains an empirical question.

4.3.4 Evaluation of Effect Types

It is important to note that the framework developed by Baron and Kenny (1986) is not the only perspective on issues related to moderation and mediation. Other methods can be more sensitive to the effects of intervening variables. It is not necessary that moderator and mediator models specify observed variables, and in many cases there are advantages in specifying latent variables. These latent variables are commonly used in structural equation modeling. The basic Baron and Kenny (1986) framework requires assumptions that are often not met in research design. Their framework induces problems with multicollinearity, biased estimates due to measurement error in the mediator variable, among other statistical problems. One advantage of using latent variables is that they tend to estimate the desired effect more reliably. This holds because any variance associated with measurement error in a particular observed variable is unlikely to be shared across other observed variables, and thus will not contribute to the score on a shared latent variable. Because of assuming this property, the unreliability and method effects on a model of moderation and mediation can be ameliorated through the use of structural equation modeling (Hopwood 2007).

Preacher and Hayes (2008) examined indirect effects in multiple mediator models and their software implementation, while Muller et al. (2005) have also looked closer into the subject of whether moderation is mediated or mediation is moderated. In this thesis these methods are left for future studies.

Thus, theoretical considerations suggest that reporting conservatism may function as a moderator or mediator in the relationship between relationship intensity and loan pricing, and structural equation modeling is a suitable method for testing the interdependencies between reporting conservatism, relationship intensity and corporate loan pricing. Therefore, these moderation and mediation effect types are scrutinized in detail in Chapter 6. The moderation effect type is also considered in the latter part of Chapter 6.

The strength of the moderating effect is calculated as follows (Effect size):

$$f^2 = \frac{R^2{}_{model\ with\ moderator} - R^2{}_{model\ without\ moderator}}{1 - R^2{}_{model\ with\ moderator}} \tag{1}$$

where R^2 is the explanatory power of the model.

The calculation of total effects (TE):

$$TE = a \times b + c \tag{2}$$

where

a is the path coefficient between the independent and the mediator variable,

b is the path coefficient between the mediator and the dependent variable, and

c is the path coefficient between the independent and the dependent variable.

The relative size of the mediating effects (Variance Accounted For):

$$VAF = \frac{a \times b}{a \times b + c} \tag{3}$$

where $a \times b$ is the mediating effect and $a \times b + c$ is the total effect.

The Sobel test statistics associated with mediation are calculated as follows:

$$z = \frac{a \times b}{\sqrt{b^2 \times s_a^2 + a^2 \times s_b^2}} \tag{4}$$

where s_a is the standard error of the relationship between the independent and the mediator and s_b is the standard error of the relationship between the mediator variable and the dependent variable. The assumption of the sampling distribution in the original Sobel test is normality (Sobel 1982). However, the Sobel test can be calculated using the standard errors of bootstrapping results,

and that method is recommended in cases which use PLS path modeling (Shrout and Bolger 2002).

4.4 Structural Equation Modeling

Structural equation modeling (SEM) has developed enormously during the last three decades[39]. The methods for modeling unobserved variables can be segregated into two groups: prediction oriented and parameter oriented. The prediction oriented (for example SmartPLS software) approach is variance based estimation whereas the parameter based approach is covariance based (for example AMOS, LISREL software). In this study I employ a variance based approach by using SmartPLS 2.0 (Ringle et al. 2005) software. The core characteristics of the variance based approach include the explicit estimation of latent variable scores and the possibilities that the research model will have a high complexity (Chin 1998). Ideally this method is based on the prediction analysis of a specific model, in which the aim of the research is more on prediction accuracy than parameter accuracy. Variance based estimation is also called PLS (Partial Least Square) path modeling. PLS path modeling does not require distributional assumptions, like regression analysis or covariance based approach[40]. One advantage of PLS path modeling is that single-item measures can be estimated, whereas covariance based models require at least two indicators. PLS methodology also has less stringent requirements for data including robustness with different scale types and the allowance of interrelated observations. The distribution of variables in accounting research tends to be somewhat non-normal including skewness or kurtosis. Therefore a variance based method may be more suitable for accounting research (Chin 1998). Overall, Chin (1998) lists the advantages of structural equation modeling compared to factor analysis and regression analysis as a researcher's flexibility to:

- model relationships among multiple predictor and criterion variables,
- construct unobservable latent variables,
- model errors in measurements for observed variables, and

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[39] Herman Wold was a prominent statistician known for his work on time series analysis and path modeling. His publication from 1982 titled "Systems under Indirect Observation" was a cornerstone of the development of structural equation modeling. Wold's doctoral student Karl Jöreskog cultivated the ideas of unobservable variables into computable form when LISREL software was released. There are now several more advanced paths based on the basic methodology (Hair et al. 2009).

[40] Tenenhaus, Esposito Vinzi, Chatelin and Lauro (2005) present a more theory–oriented article on PLS path modeling.

- statistically test a priori substantive and/or theoretical and measurement assumptions against empirical data.

This study examines relationships among multiple latent variables and focuses on prediction and theory development rather than the empirical confirmation of parameter estimates on loan pricing and relationship value. Therefore, a variance based approach is chosen for this study[41].

4.4.1 Reflective and Formative Indicators of Constructs

In structural equation modeling one should be careful with describing the direction of the causal relationships. First, measures differentiate fundamentally as to whether they are effect (reflective) or causal (formative) indicators of constructs (Jarvis, MacKenzie and Podsakoff 2003). The analysis of indicators should results from a theory-driven solution for each research model, where the effect indicators are caused by constructs. On the other hand, the formative constructs are caused by its indicators. The differentiation between reflective and formative measurement should be evaluated due to the fundamentality of its influence on the results.

In reflective measurement models the causality develops from construct to measure. Indicators are expected to be correlated and measurement error is accounted for at the item level. In formative measurement models the direction of causality is from measure to construct. There is no reason to expect indicators to be correlated. Formative measurement resembles multiple regression analysis including only one measurement error in a measurement model. In a sense, the relationship between a construct and a measure based on a reflective indicator model is probabilistic, whereas the relationship between an item and the underlying construct in a formative indicator model is deterministic (Visvanathan 2005).

In this study the measurement of indicators is reflective due to the prediction orientation of the research problem. This means that the constructs of the study causes the indicators with item level error. Specifically, loan pricing is reflected in internal ratings and loan prices. However, the other constructs are measured with a single-item indicator, which means no difference between the reflective and formative measurement. It should be noted that constructs in the

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[41] Reinartz, Haenlain and Henseler (2009) compared the efficacy of covariance-based and variance-based SEM and showed evidence that justifies the use of PLS especially in research questions related to prediction and theory development instead of the empirical confirmation of theoretically indicated relationships.

same model can be measured by both reflective and formative ways and the final decision is made by the researcher. (See further discussion in Visvanathan (2005) and Hair et al. (2009)).

4.4.2 The Elements of Model Structure

A structural equation model consists of one or several measurement and structural models. A measurement model specifies the indicators for each construct and enables an assessment of construct validity. A structural model is a set of one or more dependence relationships linking the hypothesized model's constructs. A structural model represents the interrelationships of the variables between the constructs (Hair et al. 2009).

Before analyzing the results one should evaluate the reliability and validity aspects of the measurement model and assess the effects in the structural model. The elements of the model structure are separately evaluated regarding certain quality criteria for the measurement model and the structural model. The validation of the measurement model is a requirement for assessing the structural model. The following sections discuss the evaluation aspects in detail and further present the threshold values for a "good" research model. The tests for reliability and validity are presented within the model's specification in Chapter 5. As in covariance based methodology, "global" goodness of fit measures for variance based methodology have not been agreed (Chin 1998), therefore goodness of fit measures are not calculated.

4.4.2.1 Evaluation Methods for the Measurement Model

A measurement model specifies the rules of correspondence between the measured and latent variables. Measured variables (indicators) are measured with error and this error consists of random and systematic error. Both error types should be minimized in order to enhance the reliability and validity of the results. In cases where random error is low and systematic error is high the results may be reliable, but as a consequence the results still may not be valid (Hair et al. 2009).

Hair et al. (2009) defines *reliability* as a measure of the degree to which a set of indicators of a latent construct is internally consistent based on how highly interrelated the indicators are with each other. The evaluation of a measurement model can be assessed using the method of common factor analysis or component analysis.

The internal consistency reliability of a measurement model can be assessed using composite reliability (Werts, Linn and Jöreskog 1974) or Cronbach's Alpha (Cronbach 1951). Both the measures are reliability coefficients that measure the reliability of a set of indicators. The values of measures are between 0 and 1 and results representing a good consistency are over 0.700 (lower values are also allowed in explorative studies Nunnally 1978). However, in the case of Cronbach Alpha all indicators are required to have a positive correlation for reliable results. Composite reliability is the preferred alternative to Cronbach's alpha as a measure of reliability because Cronbach's alpha may over or under-estimate scale reliability (Hair et al. 2009). Additionally, Cronbach's Alpha weights all indicators equally, which is appropriated in a summated scale context. However, in PLS path modeling summated scales are not used, because the latent variable score is computed as a weighted sum of their indicators (Tenenhaus et al. 2005). For this reason composite reliability is recommended (Chin 1998) and composite reliability is used in this study as a measure of internal consistency reliability. Composite reliability can be calculated as follows (Werts et al. 1974):

$$\rho_j = \frac{\left(\sum_{i=1}^{k_j} \lambda_{ij}\right)^2 \emptyset_{jj}}{\left(\sum_{i=1}^{k_j} \lambda_{ij}\right)^2 \emptyset_{jj} + \sum_{i=1}^{k_j} \theta_{ii}}, \tag{5}$$

where k_j is the number of indicators, λ_{ij} is the loading of the ith indicator, ϕ_{jj} is the empirical variance of the latent variable ξ_j, and θ_{ii} is the error variance of the ith indicator.

Indicator reliability denotes the proportion of indicator variance that is explained by the respective latent variable. In a standardized solution the indicator reliability equals the squared indicator loading (Nunnally 1978).

Measurement model *validity* is defined in Hair et al. (2009) as the extent to which one or a set of measures correctly represents the concept of study with reference to the degree to which it is free from any systematic or nonrandom error. Validity can be split into convergence validity and discriminant validity. A measure for convergence validity is average variance extracted (AVE), and it can be calculated as follows (Fornell and Larcker 1981):

$$AVE_j = \frac{\emptyset_{jj} \times \sum_{i=1}^{k_j} \lambda_{ij}^2}{\emptyset_{jj} \times \sum_{i=1}^{k_j} \lambda_{ij}^2 + \sum_{i=1}^{k_j} \theta_{ii}}, \tag{6}$$

where k_j is the number of indicators, λ_{ij} is the loading of the ith indicator, ϕ_{jj} is the empirical variance of the latent variable ξ_j, and θ_{ii} is the error variance of the ith indicator.

AVE is interpreted as the proportion of explained variance. The values of AVE are between 0 and 1, and a rule of thumb is that the values should be higher than 0.500 (Fornell and Larcker 1981; Chin 1998).

Discriminant validity is based on the idea that a latent variable should better explain the variance of its own indicators than the variance of other latent variables. The realization is that the AVE of a latent variable should be higher than the squared correlations between the latent variable and all other latent variables (Fornell-Larcker-Criterion, Fornell and Larcker 1981). Another measure for discriminant validity is cross loadings. The loading of an indicator on its assigned latent variable should be higher than its loadings on all other latent variables.

4.4.2.2 Evaluation Methods for the Structural Model

A structural model is a set of one or more dependence relationships linking the hypothesized model's constructs (Hair et al. 2009). The structural model aims to represent the interrelationships of variables between constructs. The evaluation of latent variables in a structural model is based on their explanatory power, squared multiple correlation (R^2). Chin (1998) describes the R^2-results of 0.670 as "substantial", 0.333 as "moderate" and 0.190 as "weak". SmartPLS software (Ringle et al. 2005) produces path coefficients of unstandardized and standardized regression weights. When evaluating a structural model the standardized estimates should be assessed with respect to what the sign is and how big they are. The estimated values for path relationships in the structural model should be at significant levels.

It should be noted here that the meaning of the latent variables depends on the "wording" of the indicators as well as on the sign of the loadings and weights. In this study the constructs may also have a negative correlation to loan pricing and relationship value and therefore this should be carefully interpreted[42]. The problem of the wording of indicators is not that severe in this study, because the indicators are based on concrete figures.

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[42] An allowable solution to ease the evaluation of the structural model is to change the sign of the variable.

5 EMPIRICAL IMPLEMENTATION

In this chapter I present the empirical implementation of the methodology presented in Chapter 4. First, I analyze the qualitative aspects of the interviews and focus on the gained insights of the relationship intensity and loan granting process. In the pursuance of these analyses I constantly bore in mind the implementation of the findings that emerged from the qualitative review. Second, I present the implementation of the accrual-based measure of reporting conservatism and the regression results, which are applied in the next chapter. Third, I implement structural equation modeling by means of partial least squares (PLS) and specify the model for the testing of hypotheses on loan pricing.

5.1 Qualitative Analyses

I conducted several semi-structured interviews and discussions with interviewees that have relevant expertise on corporate banking. Two interviews were held before collecting data and two more informal discussions were held during the data collection process and finally one interview and a panel discussion was held after the data collection. Most of the interviewees were from the bank, especially during and after the data collection, but one interview before the data collection was with an academic in order to sharpen my view on the research problem. A list of expert interviews and discussions is found in Appendix 2.

I studied the research problem by interviewing an assistant professor that has conducted research on banking relationships. We discussed in detail the definition of relationship banking that is often loosely defined in the literature. From the bank's perspective relationship banking would often be defined based on customer profitability (for example a customer's net present value or potential value), whereas academic definitions seek the fixity of banking relationships by using, for example, relationship length as a proxy for the strength of a banking relationship. The basis for creditworthiness information is found in financial statements and business plans. A bank's internal ratings are mainly based on financial statements and relevant collateral would add to the final rating. However, the interviewee still expects to see firms that have no collateral, a low interest margin and an average financial performance. In this in-

terview we found that unexplored information content exists within banking relationships because it is hard to capture information that is not included in written form. In the Finnish environment the interviewee expects that bank officers board membership in firm or share ownership is not that relevant an issue in small and medium-sized firms. However, relationship banking may have a number of benefits for small and medium-sized firms, including lower costs or the greater availability of loans due to the efficient gathering of information, and protection against credit crunches. These notions are in line with Berger and Udell (1998) regarding the economics of small business finance.

I continued gaining more insight about the financial and non-financial information that banks use for lending decisions. I interviewed the bank's manager who specializes in corporate finance. He noted that the analysis of a financial statement is the usual starting point of a corporate banking relationship as it provides the basic information for a loan decision. In a normal situation a bank has a going-concern assumption about a firm's future performance and the growth in a firm's operations is expected to be quite static. With bigger loans and, for example, project financing the screening of a firm is more detailed. The non-financial information of a firm's creditworthiness is gained in discussions between a loan officer and a firm's representative. These discussions are focused on future expectations and growth opportunities. However, the documentation in these discussions between a loan officer and a firm's representative varies quite a lot, and therefore there may be a substantial amount of relevant information that is held back by the loan officer.

In the same interview I went deeply into the timeliness of financial statement information. I challenged the loan officer to ponder the reasons for a firm to record the financial information in timely manner. On this point he said that the strength of a banking relationship may enhance a firm's ability to provide timely information, because of the confidentiality of the relationship and personal relationships. From the bank's perspective a firm's significance to the bank is considered when evaluating financial reporting timeliness. In addition we noted that loan contracts do not usually include any provisions for changing accounting methods, and that performance pricing is not very common among small and medium-sized firms. Additionally, loan covenants are still quite rare and a covenant breach is usually seen as just a beginning for further discussions.

In the next phases I worked with data collection and had two separate discussions with the bank's personnel: one with a manager specialized in client relationships and another with a data mining specialist. This phase included the signing of non-disclosure agreement and several informal hours with data mining. During the data collection process we found that it was difficult to

find all the desired information in electronic form and therefore we had to assess data requirements accordingly. Unfortunately, information about collateral was not possible to obtain and therefore I will use a different proxy for collateral. A further deficiency in this data is the absence of covenant information. Covenants are common in larger loans but are still quite rare in corporate banking overall. At the end of this phase I received the preliminary data for the analyses and after the preliminary analyses of the data I finally received the final data for this study. The data was described in detail in Chapter 3.

I worked with the data for several months to familiarize myself with its properties and prepared the variables that are needed for the analyses. In the course of working with the data I conducted an interview with the bank's vice president of corporate finance. The aim of the interview was to scrutinize what factors have an effect on loan prices. In theory, collateral is important in small firm financing and financial rating has a significant effect on the loan price. A bank's internal rating for a client is automatically created using financial statement information. This internal rating is the basis for the loan officer's loan pricing decision and usually the loan officer is able to offer the loan price of the rating group or a loan price of one better or worse rating group depending on the client. The bank has developed its loan granting processes in recent years and in this study I use the old version of the loan granting process because the empirical data is from the years 2001 to 2005. The new version of the loan granting process also includes a retention plan for customers that are not desired and this is enforced with pricing considerations.

The earlier interview was confirmed when he stated that financial statements are the essential basis for internal ratings and for larger loans additional analyses are performed. Financial statement timeliness seems to be difficult to capture in loan granting process, but nevertheless he concluded that timely information may have an effect on loan price. An interesting finding in this interview was that a prior banking relationship sets the standard for the loan pricing in a way that makes it difficult to change the loan price without sufficient reason. Therefore, there may be relatively long relationships where loan prices have not changed substantially, although financial performance would have changed. In addition, he noted that company form does not usually affect the loan pricing.

Finally, I organized a panel discussion with the bank's personnel related to my research findings. In the panel discussion I presented the results of the study to six representatives from the bank. The aims of the panel discussion were to validate the results among banking experts and to gain incremental information for further studies. The bank representatives included managers from several lines of expertise. First, I presented the theoretical background and the main results of the study. After that the panelists discussed the find-

ings, and the researcher's role was to act as a chairman and present additional questions.

During the discussion it was highlighted that the corporate analysis department has a significant role in financial statement analysis. For example, the parent company's willingness to finance a firm is recognized in internal ratings made by the corporate analysis department. In public firms loan officers also want to assess the reliability of the predictions of financial results. In line with earlier interviews, one explanation for the positive association between relationship length and loan price found in prior literature would be that firms are passive when renegotiating their loan contracts. Therefore, there are likely to be longer relationships that were negotiated when loan prices were higher than in recent years. Additionally, a firm's negotiating power would be a good explanation for its loan price in certain cases, as modeled in Rajan (2002). Furthermore, we noted that ownership may have an effect on loan prices, because, for example, family-owned companies are conducted differently. However, the analysis of the potential effect of ownership, including managerial ownership, is excluded in this study due to a lack of data availability.

In summary, I conclude that small and medium-sized firms and a bank may have a number of mutual benefits for creating long and flexible banking relationships. In addition, it seems that a substantial amount of soft information is held back by loan officers. Additionally, an interesting point for further examination would be to analyze the negotiating power of different firms.

5.2   Accrual-Based Reporting Conservatism

Ball and Shivakumar (2005) hypothesized that a privately-held firm's financial reporting is lower in quality compared to publicly-listed firms due to limited market demand. They modeled reporting conservatism by using the Basu (1997) regression and also the accruals-based test of loss recognition. The accrual-based model employed was an adaptation of Dechow (1994) and Guay et al's. (1996) model. The role of accruals is seen in both mitigating noise in operating cash flows and in expressing the timely recognition of economic gains and losses. The mitigation role suggests that accruals and cash flow are negatively correlated (Dechow 1994). On the other hand they suggest that the timely recognition of economic gains and losses is a source of positive but asymmetric correlation between accruals and contemporaneous cash flows. The asymmetry in this accrual model arises because economic losses are more likely to be recognized on a timely basis as unrealized accrued charges against income. Economic gains are more likely to be recognized when realized, and

hence accounted for on a cash basis. This asymmetry implies that the positive correlation between cash flows and accruals is greater in the case of losses.

In this study I model reporting conservatism by adapting the Ball and Shivakumar (2005) accrual-based model. A solid justification for choosing this model is that it is based on the prior literature that has evaluated the accrual models (Dechow et al. 1995; Guay et al. 1996). When selecting the appropriate model for this research design, it was emphasized that the sample for this study is non-listed companies.

In the Ball and Shivakumar (2005) accrual-based model the relation between cash flows and accruals is estimated with the following equation:

$$ACC_t = \beta_0 + \beta_1 \times DCFO_t + \beta_2 \times CFO_t + \beta_3 \times DCFO_t \times CFO_t + v_t \quad (7)$$

Cash flow from operations (CFO_t) is measured as earnings before exceptional and extra-ordinary items less accruals. v_t is the error term. Accruals (ACC_t) initially are measured as:

$ACC_t = \Delta Inventory + \Delta Debtors + \Delta Other\ current\ assets - \Delta Creditors - \Delta Other\ current\ liabilities - Depreciation$ (8)

$DCFO_t$ is a dichotomous variable which takes the value of 1 if CFO is negative and 0 otherwise. Both accruals and cash from operations are standardized by the total assets at the beginning of the financial period.

I separately estimate a regression of accruals on cash flows for each industry (Equation 7). I excluded the outliers at the 1% and 99% level for both deflated accruals and cash flow variables in line with Ball and Shivakumar (2005).

The Equation 7 can be split into two equations:

When cash flow is positive we have

$$ACC_t = \beta_0 + \beta_2 \times CFO_t + v_{t,pos}\ and; \quad (9)$$

when cash flow is negative we have

$$ACC_t = (\beta_0 + \beta_1) + (\beta_2 + \beta_3) \times CFO_t + v_{t,neg.} \quad (10)$$

The mitigating role of accruals expects that there would be a negative correlation between accruals and cash flows (Equation 9). The accruals' role in the timely recognition of economics gains and losses expects that there would be a positive correlation between accruals and cash flows in years of negative cash

flows (Equation 10). The predicted sign of estimate β_2 is negative and estimate β_3 is positive. The main idea behind this is that in years when cash flows are positive the level of accruals is negatively associated with cash flows. So, in positive cash flow years there is no need to accrue. In negative cash flow years the level of accruals is positively associated with cash flows reflecting a conservative reporting practice.

The timely recognition of economic losses in a borrower's financial statements is estimated by the sum of the coefficients β_2 and β_3 alike, as used in Peek et al. (2010), and in this study the sum is defined as reporting conservatism. In a similar way Wittenberg-Moerman (2008) measured Basu's (1997) initiated timely loss recognition by the sum of the coefficients of positive and negative returns.

Table 4 presents the regression results of the accrual-based model. The regression results show that on average 53.1 % of cash flow is offset by accruals in years it is positive (β_2).

Table 4   Regression of Accruals on Cash from Operations

	Prediction	Coefficient	Sign.	Std. Error	t-stat
INTERCEPT $_t$ (β_0)	?	-0.016	**	0.007	-2.224
DCFO$_t$ (β_1)	?	-0.028		0.019	-1.460
CFO$_t$ (β_2)	-	-0.531	***	0.009	-59.321
DCFO$_t$ x CFO$_t$ (β_3)	+	0.280	**	0.113	2.482
Adj-R^2 (%)		63.3			
No. of observations		1945			

Variables:
Dependent variable: ACC_t accruals in year t, standardized by beginning total assets. Accruals are defined as earnings before exceptional items and extra-ordinary items minus cash from operations. Independent variables: CFO, cash from operations in year t, defined as earnings before exceptional items and extra-ordinary items in period t + Depreciation – Δ (Working capital), standardized by total assets at end of t-1. Δ (Working capital), = Δ Debtors +Δ Other current assets – Δ Creditors – Δ Other current liabilities. $DCFO_t$ = 1 if CFO_t < 0; = 0 otherwise. The regressions exclude extreme 1 % on each side for ACC_t and CFO_t. ***, ** and * denote significance at the 1%, 5% and 10% levels, respectively.

As predicted, β_3 is positive (0.280) and significant, which is consistent with asymmetrically more unrealized loss recognition via accruals than gain recognition. The adjusted R^2 is 63.3 %, which indicates a good explanatory power for the model. This can be compared to Ball and Shivakumar (2005), who reported statistically significant estimates of -0.613 for β_2 and 0.344 for β_3 in their regression of accruals on cash from operations (REGN I, as stated in their

study). These findings are consistent with prior literature on conservatism and suggest that this model captures reporting conservatism in privately-held firms in a similar way to of Ball and Shivakumar (2005).

5.3   Specification for the Structural Equation Model

This section presents the assessment of reliability and the validity of the model using the evaluation criteria presented in Chapter 4. The specification used in the research model for the hypotheses on loan pricing is followed.

First, the model specification is based on the prior literature elaborated on in Chapter 2 and the related variable measurement discussed in Chapter 3. Second, a two-stage approach is taken which involves first an analysis to examine the reliability and validity of the multiple-item variables and then the estimation of the structural model. This approach is recommended when the nature of the study is explorative and the theory is tentative. In my study the theory is based on several points of prior literature and this approach is suitable for the examination (Hair et al. 2009).

Theory links proposed that relationship intensity and reporting conservatism would have an incremental effect on loan pricing. The indicator variables of the model specification are based on prior literature. The indicators that are significant on conventional levels are included in the analysis to examine the construct validity.

Due to the objective nature of the indicators single-item measures are preferred to multiple-item measures. Bergkvist and Rossiter (2007) compared the validity of single-item versus multiple-item measures of the same constructs and concluded that for decision making purposes the single-item measures of the constructs are equally as valid as multiple-item measures. Many survey studies use multiple-item measures to capture the content of a latent construct. Arguments for multiple-item measures are found when assessing the internal consistency, in which unidimensionality can be established and reliability measures can be calculated. However, if the indicator of the construct is concrete there is no specific need for multiple-item measures. In fact, using multiple-item measures with an objective indicator may lead to validity problems (Bergkvist and Rossiter 2007). The main decision criteria when choosing between single and multiple-item measures has to be based on the research problem and the related indicators. The on-going debate of this issue is seen in Sarstedt and Wilczynski (2009).

Data in this study is concrete[43] and in this sense more objective than, for example, survey data. I acknowledge that the figures from financial statements and relationship information are the outcomes of information production processes, but they are not influenced, for example, by the phrasing of the questions as in survey studies. Therefore, I use mainly single-item measures in this study. However, loan pricing is measured with a multiple-item measure where the construct of loan pricing is reflected in the loan price granted a firm and the firm's rating. The loan price seems to be significantly correlated with internal rating (Appendix I). These indicators have a positive correlation that means the better a firm's internal rating the lower its loan price is (internal ratings are coded as described in Chapter 3). Unreported results also show that this relation is consistently found in every rating group. By including these two indicators of loan pricing instead of two single-item measures increases the explanatory power of the model, but the results remain qualitatively similar.

The factor loadings for the loan pricing are for the loan price 0.771, and, for the rating, 0.777. The significance assessed by means of t-values with 500 bootstrapping samples is 29.560 and 30.831, respectively. At this point all the significant variables are kept in the model due to theory links. Marcoulides and Saunders (2006) showed that lower factor loadings than 0.700 can be used in large samples, although it is suggested that loadings above 0.700 be reconsidered in the model (Nunnally 1978). However, the factor loadings are over 0.700 and statistically significant. It seems that loan pricing is adequately well reflected by the indicators of the loan price and the internal rating.

Figure 6 presents the model specification of the structural equation. The model consists of unobservable constructs (latent variables indicated in Figure 6) and observable indicator variables. The focal constructs are reporting conservatism, relationship intensity and loan pricing. In the model relationship intensity is broken down into the elements of relationship intensity: the length, scope and depth of a relationship. The control constructs in the main analysis are firm size and loan size. For reflective measurement the model includes multiple-item and single-item measures.

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[43] The word concrete is used in Bergkvist and Rossiter (2007), although it may provoke disparate opinions.
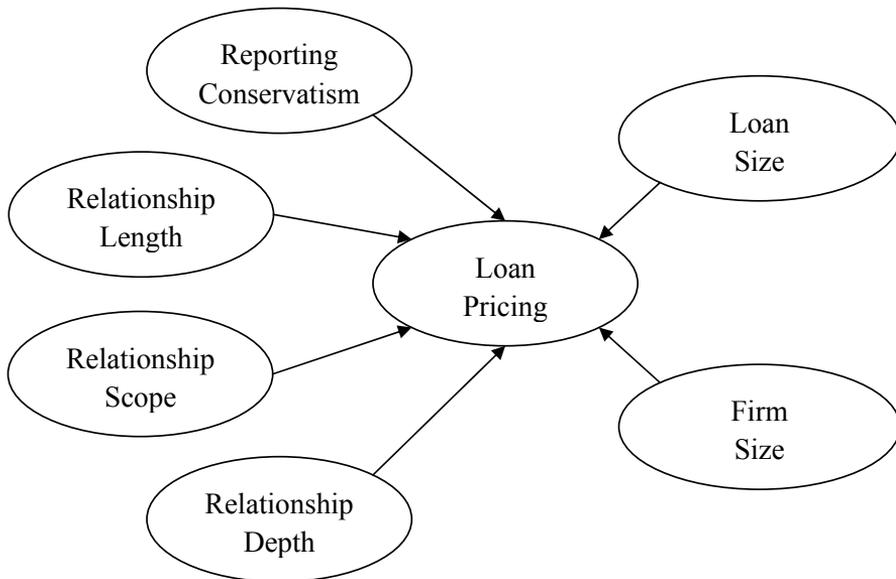
Figure 6   Model Specification for the Effects on Loan Pricing

The internal consistency reliability shows the composite reliability value of 0.750 for loan pricing indicating acceptable levels (Nunnally 1978). The AVE for loan pricing (0.597) as such is above the conventional guideline of 0.500 for adequate convergent validity (Nunnally 1978). The discriminant validity of the measurement model is assessed by the square root of the average variance extracted and comparing that with the correlations between the constructs. The square root AVE for loan pricing is 0.774 and the latent variable correlation is at the range of -0.388 to 0.010. The highest negative correlation was found for firm size and the weakest correlation was found for loan size. The square root AVE for loan pricing is higher than the correlations among the latent variables, indicating that more variance is shared between the loan pricing indicators than another block of different indicators.

The examination of the structural model is then provided to assess the relationship between the constructs. SmartPLS (Ringle et al. 2005) generates standardized path coefficients within the structural model. A bootstrapping procedure is used to evaluate the parameter estimates and their significance. The results of the bootstrapping and the model's explanatory power (R^2) are presented in Table 5.

Table 5   Assessment of the Structural Model

Statistical Significance of Path Coefficients on Loan Pricing		
	T-value	Sign.
Reporting Conservatism	2.797	***
Relationship Length	0.672	
Relationship Scope	4.155	***
Relationship Depth	7.329	***
Loan Size	4.790	***
Firm Size	20.388	***
T-statistics of bootstrapping procedure. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.		
R^2 of Loan Pricing	0.188	

The path coefficients are statistically significant at the 1% level, except for the path coefficient of the length of relationship. The R^2 for loan pricing is 0.188, which is somewhat low. However, in accounting research the R^2's gained with similar methods seem to be quite low (see, for example, Chenhall (2005) reporting R^2's ranging from 0.173 to 0.320). In summary, the assessment of the measurement and structural model shows an acceptable fit with the empirical data and there is equilibrium between comprehensiveness and parsimony in the model. The main analysis of the study follows in the next chapter.

6 MAIN RESULTS

In this chapter I present the empirical tests for the hypotheses. First, I test the first and second hypotheses. Second, I specify a value-based model to test hypotheses three, four and five. The main results of the study are presented and discussed within the tests of the hypotheses, and multi-group analysis is followed in order to elaborate the findings and to search for alternative explanations for the results.

6.1 Test for the First and Second Hypotheses

This section examines whether privately-held firm loan pricing is associated with relationship intensity and reporting conservatism. The first hypothesis stated that there is a positive or negative relationship between relationship intensity and loan pricing (H1a) and there is a negative relationship between reporting conservatism and loan pricing (H1b). In addition, I examine whether reporting conservatism moderates (H2a) or mediates (H2b) the relationship between relationship intensity and loan pricing.

The structural equation model was developed in Chapter 5 to examine the way in which relationship intensity and reporting conservatism influence loan pricing. In the assessment of the hypothesized results I examine the direct and the total effects and their significance. The total effects are calculated as a sum of indirect effects and direct effects. Therefore, the results of the total effect of the path coefficient between the independent and dependent latent variable may deviate from the direct path coefficient.

The results in Table 6 show that all path coefficients are statistically significant, except the element of a relationship's length. The direct effect of reporting conservatism on loan pricing is -0.057. The effect of relationship scope on loan pricing is 0.094 and the effect on relationship depth is -0.158, respectively. Loan size seems to increase loan pricing as expected, whereas firm size decreases loan pricing. These findings support the first hypotheses indicating that the elements of relationship intensity have various effects on loan pricing and reporting conservatism has a negative effect on loan pricing.

Table 6   PLS Results of the Direct and the Total Effects on Loan Pricing

Direct and Total Effects on Loan Pricing				
	Direct Effects	Sign.	Total Effects	Sign.
Reporting Conservatism	-0.057	***	-0.057	***
	(0.019)		(0.019)	
Relationship Length	-0.016		-0.016	
	(0.022)		(0.022)	
Relationship Scope	0.094	***	0.087	***
	(0.023)		(0.023)	
Relationship Depth	-0.158	***	-0.159	***
	(0.022)		(0.022)	
Loan Size	0.104	***	0.104	***
	(0.022)		(0.022)	
Firm Size	-0.460	***	-0.460	***
	(0.023)		(0.023)	

Standard errors in parenthesis using the bootstrapping procedure. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

The relation between firms reporting conservatism and bank-firm relationship intensity is an interesting matter and there is a lack of theoretical and empirical evidence on it. The theoretical evidence there is suggests that there is a lender's preference for reporting conservatism, but only a few studies provide empirical evidence. It should be noted that the preference for reporting conservatism is not an issue of course, because a bank could have, for example, incentives for non-conservative reporting in the case of performance pricing (Asquith, Beatty and Weber 2005; Beatty et al. 2008). However, there is at least one empirical study by Choi (2007) that examined a firm's bank dependence and the timely loss recognition of publicly traded small companies. The bank dependence was defined as the dollar value of the bank loan from the lead bank divided by the total assets of the borrower. Choi (2007) examined this relation and found that the timeliness of the economic loss recognition increases as a firm's bank dependence increases. This result provided support for the argument that the reporting conservatism varies with a firm's bank dependence.

To examine hypotheses H2a and H2b I allow for moderation and mediation effects. First, I examine the moderation effect of reporting conservatism on the relationship between relationship intensity and loan pricing. The moderation effects are calculated using the product-indicator approach (Kenny and Judd 1984). I include the moderation effect of reporting conservatism for each of the elements of relationship intensity on loan pricing. The moderation effects of reporting conservatism are included each at the time and the initial R^2 increases maximally from 0.188 to 0.193. The total moderation effect size of the

relationship intensity is 0.006 (f^2-value), and is below 0.020. Cohen (1988) presents a rule of thumb for the effect sizes of 0.020, 0.150 and 0.350 as being weak, moderate and strong. The path coefficients remain on the same level and there are no sign changes when including these moderation effects. Therefore, I do not further analyze the moderation effects of each element of the relationship intensity and hypothesis H2a is rejected.

Second, I examine the mediation effect of reporting conservatism on the relationship between relationship intensity and loan pricing. Each of the elements of relationship intensity is expected to have a direct effect on loan pricing and a mediation effect via reporting conservatism. The total effects are calculated as a sum of the mediation and direct effect. The results in Table 6 show that the relationship scope has a mediation effect via reporting conservatism of -0.007 (Sobel test value 2.474) that is interpreted as a suppression effect due to it being a negative value. The relationship depth has a mediation effect via reporting conservatism of 0.001 (Sobel test value 0.844) that is not significant. The direct and total effects of the relationship length are both -0.016 so there is no evidence of a mediation effect via reporting conservatism. Sobel test statistics are calculated using the standard errors of the bootstrapping results. The univariate path coefficients in sense of Baron and Kenny (1986) are statistically significant before and after the inclusion of the mediation effect, which indicates partial rather than full mediation process (Hair et al. 2009). Thus, there is a weak support for the hypothesis H2b in sense that reporting conservatism may mediate the relationship between relationship scope and loan pricing.

Beyond the results reported in the tables the relationship between the reporting conservatism and the relationship scope shows a positive coefficient of 0.121 when allowing for the mediation effect of the relationship scope via reporting conservatism (T-value using bootstrapping 5.615). The positive relationship between these variables is consistent with Choi (2007), as he reported a positive correlation between the timeliness of economic loss recognition and a firm's bank dependence. This notion indicates that a firm that has more other banking services than loans with the bank, in the scope of its relationship, tends to report more conservatively.

I further analyze the mediation effect of the relationship scope on the relationship between reporting conservatism and loan pricing. This showed that the total effect of reporting conservatism on loan pricing is -0.047. This consists of a direct effect of -0.057 and a suppression effect via the relationship scope of 0.010. The Sobel test indicates that this suppression effect is statistically significant (Sobel test statistics 3.286). Variance Accounted For (VAF) shows the relative size of the effect of reporting conservatism as a mediator value of 0.080 and for the relationship scope as a mediator it was 0.175. In line

with Shrout and Bolger (2002), it is recommended that negative VAF-values be set at the upper limit of 1. Due to the relative size of the effects, these notions suggest that the relationship scope may suppress the relationship between reporting conservatism and loan pricing.

In summary, these findings support the view that relationship intensity and reporting conservatism affect loan pricing in the way hypothesized. The reporting conservatism has a negative effect on loan pricing. The elements of the relationship intensity have various effects on loan pricing when simultaneous analysis in the structural equation model is allowed. The analyses lend support to the conclusion that the relationship scope positively affects loan pricing and that relationship depth negatively affects it. However, the relationship length does not have a significant effect on loan pricing. The empirical evaluation of the moderation and mediation effects provides evidence that the relationship scope may suppress the relationship between reporting conservatism and loan pricing. However, the magnitude of the suppression effects is weak and therefore these suppression effects should be interpreted with caution and furthermore they are not included in the following tests.

6.2   Value-Based Model and Test for the Third Hypothesis

To test the third hypothesis I included a new focal construct namely Relationship Value in the structural equation model. This construct reflects the relationship value measured as a firm-specific internal margin that is annually realized (Realized Contribution). This indicator is used by the bank to assess the internal profitability of a firm for the bank and thereby it would a useful indicator for the value of bank-firm relationship. It is supposed that a loan pricing decision precedes relationship value and therefore the direction of the effect is from loan pricing to relationship value. However, there are many approaches for assessing value in bank-firm relationships and especially in marketing research, the definition of relationship value is analyzed in detail, whereas the focus in this study is simplified into a financial measure.

Figure 7 presents the model specification of the relationship value-based approach to my research problem. Hypothesis H3a stated that there is a positive relationship between relationship intensity and relationship value, and hypothesis H3b stated that there is positive or negative relationship between reporting conservatism and relationship value.
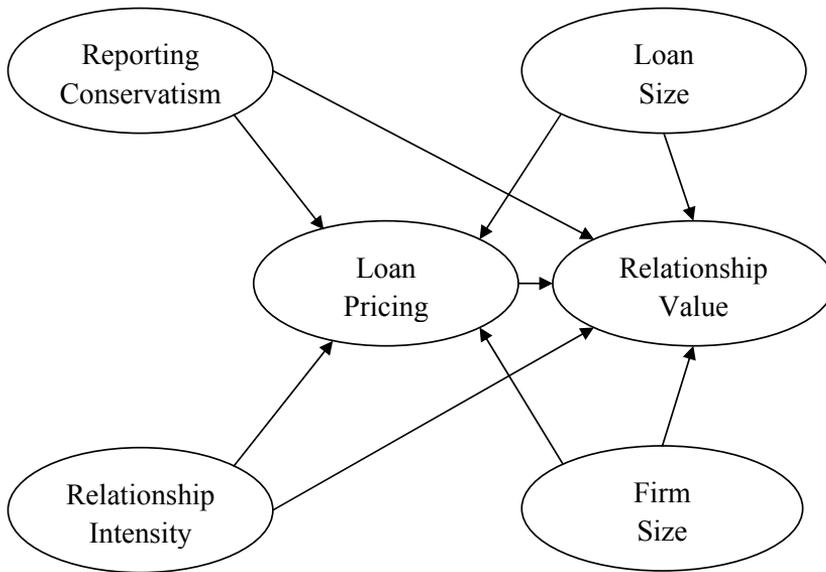
Figure 7   Model Specification for the Effects on Loan Pricing and Relationship
                Value

Before moving on to the analysis of the results I assess the measurement and the structural model. The factor loadings for the loan pricing are for loan price 0.772 and for the internal rating 0.776. T-values using 500 bootstrapping samples are 29.272 and 28.341, respectively. The internal consistency reliability shows a composite reliability of 0.750 for loan pricing indicating accepted levels (Nunnally 1978). The AVE for loan pricing (0.597) as such is above the conventional guideline of 0.500 for adequate convergent validity (Nunnally 1978). The square root AVE for loan pricing is 0.774 and latent variable correlations are at the range of -0.388 to 0.478. The square root AVE for loan pricing is higher than the correlations among latent variables, indicating that more variance is shared between the loan pricing indicators than any other block of different indicators. The highest negative correlation is between firm size and loan pricing (-0.389). The highest positive correlation is between firm size and relationship value (0.478). Also the correlation between relationship scope and value (0.423) is relatively high.

The examination of the structural model is then provided in Table 7 in order to assess the relation between the constructs. The path coefficients on loan pricing are statistically significant, except for the element of the relationship length. The path coefficients on relationship value are statistically significant, except for reporting conservatism. The R^2 of loan pricing is 18.8 % and the relationship value is 42.2%. The R^2-results are described as moderate by Chin

(1998). In summary, the value-based model seems to fit with the empirical data.

Table 7 Panel A presents the result of the direct effects of reporting conservatism and relationship intensity on loan pricing. These results are qualitatively similar to the results presented in the first structural model. Table 7 Panel B presents the direct and total effects of reporting conservatism and relationship intensity on relationship value.

Table 7   PLS Results of the Direct and the Total Effects on Loan Pricing and Relationship Value

Panel A: Direct Effects on Loan Pricing		
	Direct Effects	Sign.
Reporting Conservatism	-0.057	***
Relationship Length	-0.015	
Relationship Scope	0.094	***
Relationship Depth	-0.158	***
Loan Size	0.104	***
Firm Size	-0.459	***
R^2 of Loan Pricing	0.188	

Significance using the bootstrapping procedure. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

Panel B: Direct and Total Effects on Relationship Value				
	Direct Effects	Sign.	Total Effects	Sign.
Reporting Conservatism	0.011		0.003	
	(0.013)		(0.013)	
Relationship Length	0.048	***	0.046	***
	(0.017)		(0.018)	
Relationship Scope	0.287	***	0.299	***
	(0.019)		(0.018)	
Relationship Depth	0.272	***	0.253	***
	(0.022)		(0.022)	
Loan Size	0.107	***	0.120	***
	(0.020)		(0.020)	
Firm Size	0.475	***	0.417	***
	(0.026)		(0.022)	
Loan Pricing	0.127	***	0.127	***
	(0.022)		(0.022)	
R^2 of Relationship Value	0.422			

Standard errors in parenthesis using the bootstrapping procedure. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively.

The total effect of reporting conservatism on relationship value is 0.003, but this is not statistically significant (Table 7, Panel B). The total effects of rela-

tionship length (0.046), scope (0.299) and depth (0.253) on relationship value are statistically significant. These results support the view that the elements of relationship intensity have a positive effect on relationship value. Furthermore, the effect of relationship intensity is found to be more pronounced for the elements of scope and depth.

The mediating effects on relationship value are calculated as the difference between the total and the direct effects. In this specification loan pricing is the mediator construct. In cases of reporting conservatism, relationship length, relationship depth and firm size the total effect on the relationship value is smaller than the direct effect, which indicates a suppression effect rather than a mediating effect. Relatively small mediating effects were found for the relationship scope (0.012) and loan size (0.013). The Sobel test statistics are 3.356 for the relationship scope and 3.676 for loan size indicating that these mediating effects are statistically significant. The VAF value for the relationship scope is 0.040, and for the loan size it is 0.108 indicating the low relative size of the mediation effects. To conclude, all the mediation and suppression effects are low with respect to the relative size of their effect.

These results support the hypothesis of H3a that there is a positive relationship between relationship intensity and relationship value. Reporting conservatism seems not to have a significant effect on relationship value so hypothesis H3b is rejected. Overall, the direct effects on relationship value represent the majority of the magnitude of the effects, whereas the mediating effects via loan pricing were weak.

6.3   Test for the Fourth and Fifth Hypotheses

The hypothesis H4 examines the relationship between loan pricing and relationship value. It stated that there is a positive relationship between loan pricing and relationship value. The results in Table 7 showed that the coefficient of loan pricing on relationship value was 0.127, which was statistically significant. This finding supports the hypothesis H4 indicating that there is a positive relationship between loan pricing and relationship value.

To further test the hypothesis H5 involves the moderation effect of a measure of information asymmetry. The main rationale behind such a measure is the amount of useful information for loan contracting. Banks accumulate information on a firm to mitigate the problems of asymmetric information. However, the information is costly and banks should also focus on key firms to increase their relationship value. As stated in Chapter 2, the bank-firm relationships that have less information asymmetries are based on relationship lending technologies and the bank-firm relationships that have more informa-

tion asymmetries are based on financial statement lending technologies. Hypothesis H5 stated that lending technology has a moderation effect on the relationship between loan pricing and relationship value.

First, a priori segmentation is employed by using lending technology as a grouping variable. The sample is split into two classes: the lower information asymmetry represents the first segment of firms based on relationship lending technology. The information asymmetry represents the second segment of firms based on financial statement lending technology. The sample sizes are 221 observations for the first segment (11.4%) and 1724 observations for the second segment (88.6%). In Table 8, the explanatory power (R^2) of the models used for relationship lending technology is seen to be better than that of financial statement lending technology.

Table 8 shows that the relationship between loan pricing and relationship value is negative in the first segment (-0.022) and positive in the second segment (0.148). However, the path coefficient for segment one is not statistically significant. On the other side, the firms that are segmented to financial statement lending technologies have a statistically significant positive relationship between loan pricing and relationship value. This finding suggests that there may be other reasons for continuing a relationship with a bank than loan pricing, for example, the availability of finance.

Table 8   A Priori Segmentation Based on Lending Technology

	Relationship Lending Segment n = 221		Financial Statement Lending Segment n = 1724	
	Loan Pricing	Relationship Value	Loan Pricing	Relationship Value
Loan Pricing		-0.022 (0.057)		0.148 *** (0.022)
Relationship Value				
Reporting Conservatism	-0.078 (0.064)	0.034 (0.032)	-0.053 ** (0.021)	0.002 (0.014)
Relationship Length	-0.013 (0.058)	-0.064 (0.049)	-0.017 (0.023)	0.072 *** (0.019)
Relationship Scope	0.138 * (0.075)	0.390 *** (0.055)	0.090 *** (0.024)	0.283 *** (0.020)
Relationship Depth	-0.245 *** (0.061)	0.201 *** (0.058)	-0.149 *** (0.023)	0.265 *** (0.023)
Loan Size	0.043 (0.067)	0.200 *** (0.053)	0.113 *** (0.023)	0.106 *** (0.023)
Firm Size	-0.573 *** (0.064)	0.411 *** (0.057)	-0.421 *** (0.023)	0.382 *** (0.022)
R^2	0.309	0.506	0.163	0.393

Significance using the bootstrapping procedure. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively. Path coefficients for the relationship value are the total effects. Standard errors in parenthesis result from bootstrapping each group.

Furthermore, in Table 8 is seen that reporting conservatism has a negative effect on loan pricing and a positive effect on relationship value in both segments which is in line with my earlier results. The relationship between reporting conservatism and loan pricing in financial statement lending technology is statistically significant.

The length of a relationship seems not to be highly associated with loan pricing. However, the relationship between relationship length and relationship value has a negative value (-0.064) in segment one, whereas segment two has a statistically significant positive value (0.072). The magnitude of the path coefficients is relatively low, but this suggests that relationship length has a positive effect on relationship value in financial statement lending technolo-

gies. Thus, it can be seen that with the relationship lending technology the length of a relationship has a relatively low negative effect on relationship value. This finding augments the earlier results on relationship length and relationship value. Additionally, this notion highlights the importance of consideration with regard to the ending of relationships, which is in line with notions of Halinen and Tähtinen (2002).

The intensity of bank-firm relationships is found to be more pronounced in the elements of relationship scope and depth. Relationship scope has a statistically significant positive effect (0.090) on loan pricing in financial statement lending technology and a stronger positive effect (0.138) in relationship lending technology. Respectively, relationship depth has a statistically significant negative effect (-0.149) on loan pricing in financial statement lending technology and a stronger negative effect (-0.245) on relationship lending technology.

The constructs of relationship scope and depth on relationship value are statistically significant in both segments. Relationship scope has a positive effect (0.283) on relationship value in financial statement lending technology and a stronger positive effect (0.390) on relationship lending technology. In contrast, relationship depth has a positive effect (0.265) on relationship value in financial statement lending technology and a weaker positive effect (0.201) in relationship lending technology. These findings suggest that lending technology would be a moderation effect.

Second, the moderation effects are statistically analyzed. The detection of moderating effects through segment comparisons is calculated from differences between the path coefficients of the segments. From the results in Table 8 the moderation effect on the relationship between loan pricing and relationship value can be calculated as a subtraction of the path coefficient of relationship lending technology (-0.022) from financial statement lending technology (0.148). The difference between the segments in the relationship between loan pricing and relationship value is then 0.170.

This notion shows that loan pricing does not have a significant effect on relationship value for firms that are segmented into relationship lending technologies. On the other hand, loan pricing has a significant positive effect on relationship value in firms that are segmented in financial statement lending technologies. These findings indicate that loan pricing affects relationship value in firms that are segmented into financial statement lending technologies, and the value in a bank-firm relationship in relationship lending firms is generated from sources other than loan pricing.

The assessment of the statistical significance of differences between segments is challenging and several approaches have been suggested (Hair et al. 2009). In analyses with dichotomous variables, as in the case of lending technology, the analysis is relatively straightforward. There are at least three ap-

proaches for assessing the statistical significance of the differences: parametric, moderation and permutation approaches.

Keil, Tan, Wei, Saarinen, Tuunainen and Wassenaar (2000) suggest a parametric approach for calculating test statistics using path coefficients and related standard errors. Keil et al. (2000) suggest using the standard errors obtained from bootstrapping as the input for a parametric test. This approach includes parametric assumptions about the distribution of the parameter standard errors. This test is used when the two distributions have the same variance. However, Chin and Dibbern (2010) studied a permutation approach with simulation tests and concluded that a parametric approach may overestimate the statistical significance. In line with Chin and Dibbern (2010) I found that all moderation effects in my setting seem to be statistically significant and therefore a parametric approach may not be suitable for assessing the statistical significance of the moderation effects.

Henseler, Ringle and Sinkovics (2009) presented an alternative approach to the PLS-based group comparison. This novel approach does not rely on assumptions about normal distribution and therefore it is more suited for partial least squares. This approach is well described in their article and it aims at the verification of how probable a difference in parameters between the two segments is likely to be. It can be calculated as follows:

$$P\left(b^{(1)} > b^{(2)} \mid \beta^{(1)} \le \beta^{(2)}\right) = 1 - \sum_{\forall j,i} \frac{\Theta(2\bar{b}^{(1)} - b_j^{(1)} - 2\bar{b}^{(2)} + b_i^{(2)})}{J^2} \quad (11)$$

In this equation, J denotes the number of bootstrap samples, $b_j^{(1)}$ and $b_i^{(2)}$ the bootstrap parameters estimates, $\bar{b}^{(1)}$ and $\bar{b}^{(2)}$ the means of the focal parameters over the bootstrap samples, and Θ the unit step function, which has a value of 1 if its argument exceeds 0, otherwise 0. The superscript in parentheses marks the respective segment. The calculation of probabilities is based on the bootstrap output that is generated by SmartPLS (Ringle et al. 2005) and the final calculations were made using an MS Excel spreadsheet. The probability of error in assessing the significance of segment differences is shown as the P-value using specified significance levels.

The main sources of relationship value seem to emerge from other banking services and firm size in relation to the magnitude of path coefficients. The results in Table 9 show that some of the moderation effects of the lending technology on loan pricing and relationship value are statistically significant. Therefore, the certain path coefficients are significantly different between the lending technologies.

Table 9   Moderation Effects of Lending Technology

	Loan Pricing		Relationship Value	
	Moderation	P	Moderation	P
Loan Pricing			0.170	***
Relationship Value	0.170	***		
Reporting Conservatism	-0.025		0.032	
	(0.369)		(0.156)	
Relationship Length	0.004		-0.136	***
	(0.494)		(0.007)	
Relationship Scope	0.048		0.107	**
	(0.267)		(0.020)	
Relationship Depth	-0.096	*	-0.064	
	(0.085)		(0.145)	
Loan Size	-0.070		0.094	*
	(0.153)		(0.065)	
Firm Size	-0.152	***	0.029	
	(0.010)		(0.349)	

Probability of error in parenthesis using Henseler et al. (2009) approach. ***, **
and * denote probability of error (P) at the 1%, 5% and 10% level, respectively. The
coefficients for the relationship value are the total effects.

The difference (0.170) in the relationship between loan pricing and the rela-
tionship value as seen in Table 8 is statistically significant (P-value 0.001). So,
the path coefficient from loan pricing to relationship value is significantly dif-
ferent between relationship and financial statement lending technologies. This
finding supports hypothesis H5 by presenting evidence that the lending tech-
nology has a moderating effect on the relationship between loan pricing and
relationship value.

The effect of relationship length on relationship value is positive in finan-
cial statement lending technologies and negative in relationship lending tech-
nologies, and their difference is statistically significant. This notion suggests
that relationship length positively affects relationship value in the case of
firms that suffer from information asymmetries (financial statement lending
technologies). Therefore, a relationship's intensity is found in the element of
relationship length for firms that are segmented into the financial statement
lending technologies.

The relationship scope affects relationship value positively in both lending
technologies. The statistically significant moderation effect of lending tech-
nology regarding relationship scope indicates that firms that have a lower level
of information asymmetry (relationship lending technologies) generate more
relationship value through other banking services than firms segmented into a
higher level of information asymmetry (financial statement lending technolo-

gies). The pattern is similar between the lending technologies regarding the effects of relationship scope on loan pricing, but not statistically significant.

On the other hand, relationship depth seems to be consistently negative for loan pricing and positive for relationship value. The moderation effect of lending technology on loan pricing is significantly different between the segments. In the case of loan pricing, the relationship lending technology seems to have a stronger negative effect than the financial statement lending technology. The interpretation is that firms that are segmented into relationship lending technologies gain from concentrating their loans with one bank by receiving a decreased cost of loan. In the case of relationship value, the financial statement lending technology seems to have a stronger positive effect than relationship lending technology. This notion suggests that firms segmented into financial statement lending technologies increases the relationship value when they concentrate most of their loans at one bank. However, the moderation result on the relationship between relationship depth and relationship value is not statistically significant.

The effect of loan size is positive for loan pricing and relationship value in both lending technologies. The results of the moderation effects show that in relationship lending technologies the effect is weaker for loan pricing and stronger for relationship value than in financial statement lending technology. The effect of firm size on loan pricing is negative in both lending technologies. However, the negative effect of firm size on loan pricing is significantly bigger in relationship lending technologies, which suggests that these firms find compensation with regard to loan pricing through the use of mitigated information asymmetry.

6.4 Multi-Group Analysis

I analyze alternative explanations that could have inferences for the main results. Prior literature points to the external profitability of firm (Elsas 2005; D'Auria et al. 1999) and the use of collateral (Brick and Palia 2007; Degryse and van Cayseele 2000). However, when including these variables, such as latent constructs and using them like focal constructs, in the main model presented in Figure 7, the path coefficients and R^2's are at a similar level (unreported). Therefore these variables are included only in the multi-group analysis that explores the potential unobserved heterogeneity in the sample.

A firm's profitability and the use of collateral in the ex-ante screening of firms are further analyzed in Table 10. A firm's profitability measures are tested to examine the potential effect on ex-ante screening. Due to a lack of information about collateral or the level of collateralization, I analyzed the

results using tangibility proxy for collateral. Both the profitability and tangibility measures are divided into high and low groups based on the median values.

First, I analyzed the effects of reporting conservatism in detail. Reporting conservatism on loan pricing has a statistically significant coefficient for groups of high return on equity, profit and high tangibility. The effect of reporting conservatism on loan pricing consistently diminishes in groups of low return on equity, loss and low tangibility. This notion is consistent with the findings of Keating and Zimmermann (2000). They showed that poorly performing firms use the discretion allowed in accounting standard adoption to their advantage. The differences between these groups are significant for the moderation effects of profit / loss (P-value 0.064) and tangibility (P-value 0.060). These notions suggest that reporting conservatism negatively affects loan pricing in profitable firms and firms that have a relatively greater ability to pledge collateral. The coefficients of reporting conservatism on relationship value are not statistically significant.

Second, the elements of relationship intensity were analyzed. The coefficients in groups of return on equity and profit / loss show a qualitatively similar pattern. The effect of relationship length on loan pricing seems not to be significant in a multi-group analysis, except for firms with a low return on equity. However, the magnitude of the coefficient is relatively low.

The effect of relationship scope on loan pricing is stronger in groups of low return on equity, profit-making firms and high tangibility. These notions lend support to the argument of a lock-in situation where firms with a broader scope of banking services are locked-in in a bank-firm relationship that allows the bank to charge higher loan margins. In the case of firms with a high return on equity this effect is weaker, which indicates that more profitable firms may have better loan availability and consequently more possibilities to compare their contract terms. Additionally, the positive effect of relationship scope on relationship value is significantly stronger in profit-making firms and firms with high tangibility.

The negative effect of relationship depth on loan pricing is consistently stronger in groups with a low return on equity, loss-making firms and low tangibility. These firms gain from concentrating their bank loans at one bank, although this also indirectly indicates their lower availability to receive bank funding. When return on equity is high, a firm is making profit and has a high tangibility the effect of relationship depth on relationship value is consistently stronger. So, the bank gains from concentrating on these firms. The only statistically significant difference between the groups that is related to relationship depth is found in profit / loss on relationship value.

Third, the effects of loan size and firm size on loan pricing and relationship value are analyzed. The lowest P-values in a multi-group analysis are found with respect to the effects of firm size on loan pricing and loan size on relationship value. In most of the groups the highest path coefficients are found in firm size. A notable difference is found between groups of high and low tangibility on loan pricing, where the effect of loan size on loan pricing is stronger in groups of low tangibility than in groups of high tangibility. This notion suggests that for firms with low tangibility the loan size increases loan pricing. Consistent with the above notion is the fact that the relationship value is significantly smaller in groups of low tangibility, which reflects potential or realized credit losses. The effect of firm size on loan pricing is significantly smaller for groups of low tangibility indicating that smaller firms have an inferior availability of collateral. The effect of a firm's size on the relationship value is placed on the same level between the groups in multi-group analysis.

Finally, the effect of loan pricing on relationship value is analyzed. The effect of loan pricing on relationship value in the main results in Table 7 was 0.127 and statistically significant. The analysis of different lending technologies revealed that this relation is significant only in financial statement lending technology. The multi-group analysis shows that the effect on loan pricing on relationship value is roughly at the same level as it was for the main results and ranges from 0.094 to 0.182. The groups that have a low return on equity and the groups of loss-making firms seem to have the weakest path coefficient, whereas the groups with a high return on equity and profitable firms have the highest coefficients. The difference between firms with high and low returns on equity is statistically significant. The effect of loan pricing on relationship value seems to be higher in more profitable firms.

Table 10   Multi-group Analysis on Loan Pricing and Relationship Value

Panel A: Loan Pricing	Return on Equity			Profit / Loss			Tangibility		
	High, n=972	Low, n=973	P	Profit, n=1518	Loss, n=427	P	High, n=972	Low, n=973	P
Reporting Conservatism	-0.070 ***	-0.045	0.263	-0.078 ***	-0.004	**0.064**	-0.097 ***	-0.032	**0.060**
Relationship Length	0.024	-0.076 ***	**0.006**	-0.009	-0.053	0.225	-0.027	0.045	**0.064**
Relationship Scope	0.061 *	0.132 ***	**0.053**	0.122 ***	0.032	**0.058**	0.161 ***	0.006	**0.001**
Relationship Depth	-0.134 ***	-0.178 ***	0.173	-0.148 ***	-0.213 ***	0.105	-0.176 ***	-0.203 ***	0.275
Loan Size	0.132 ***	0.085 ***	0.132	0.103 ***	0.084 *	0.343	0.044	0.183 ***	**0.001**
Firm Size	-0.470 ***	-0.465 ***	0.550	-0.484 ***	-0.370 ***	**0.036**	-0.418 ***	-0.180 ***	**0.000**
R²	0.209	0.195		0.211	0.147		0.192	0.073	

Panel B: Relationship Value	Return on Equity			Profit / Loss			Tangibility		
	High, n=972	Low, n=973	P	Profit, n=1518	Loss, n=427	P	High, n=972	Low, n=973	P
Reporting Conservatism	-0.002	0.019	0.215	0.000	0.017	0.276	-0.002	0.000	0.475
Relationship Length	0.052 *	0.048 ***	0.454	0.038 **	0.072 *	0.212	0.027	0.077 ***	**0.097**
Relationship Scope	0.313 ***	0.290 ***	0.259	0.312 ***	0.237 ***	**0.042**	0.360 ***	0.253 ***	**0.003**
Relationship Depth	0.280 ***	0.240 ***	0.158	0.271 ***	0.193 ***	**0.090**	0.312 ***	0.258 ***	0.122
Loan Size	0.138 ***	0.105 ***	0.188	0.147 ***	0.037	**0.009**	0.248 ***	0.014	**0.000**
Firm Size	0.398 ***	0.437 ***	0.208	0.410 ***	0.457 ***	0.232	0.266 ***	0.209 ***	0.126
Loan Pricing	0.182 ***	0.098 ***	**0.038**	0.146 ***	0.094 ***	0.113	0.135 ***	0.144 ***	0.412
R²	0.481	0.395		0.443	0.389		0.404	0.239	

Significance gained by the bootstrapping procedure using related sample sizes. ***, ** and * denote significance at the 1%, 5% and 10% level, respectively. Probability of error (P) using the Henseler et al. (2009) approach. Specified α-level of 10 % marked in bold. The coefficients for the relationship value are the total effects.

7 SUMMARY AND CONCLUSIONS

The extant literature on bank-firm relationships and reporting conservatism in accounting provided the theoretical foundations and empirical evidence for strengthening the examination of their effects on loan pricing and relationship value. These two major avenues of prior research provided the guidelines for finding pertinent points of view for combining their relevant aspects. The research gap on the simultaneous examination of the effects of relationship intensity and reporting conservatism on loan pricing and relationship value was examined in this thesis in order to gain an incremental understanding of the information role of them. The theory in this field of research is developing and prior empirical evidence lack an understanding of many aspects of the interdependencies between these constructs.

This thesis is built on the study of information asymmetry between bank and firm and the nature of the information mitigating the problems of information uncertainty in loan contracts. The recent discussion of soft and hard information in bank-firm relationships has evolved mainly in this decade and this thesis contributes to the conceptual framework devised by Berger and Udell (2006). From the bank's perspective there are basically two potential channels of information flows in order to gain useful information about a firm's loan repayment ability. Firstly, hard information from a firm's financial statement will provide the foundation for continuous customer evaluation, and secondly the soft firm-specific information on the intensity of a relationship will provide useful information about the intensity and sustainability of the relationship. Overall, the theoretical work of both Petersen and Berger and Udell on bank-firm relationships formed the basis for the building of this thesis.

Prior academic evidence suggested that banks prefer reporting conservatism for securing their loans and reducing credit risk. From an efficient contracting perspective banks value a firm's reporting conservatism, which is measured as timely loss recognition in this study. Timely loss recognition increases financial statement usefulness particularly in corporate loan contracts, because timely loss recognition provides more accurate ex-ante information for loan pricing. Prior findings suggested that privately-held firms' creditors complement the information deficit in reporting conservatism with bank-firm relationship intensity, and there is higher demand for intense bank-firm relation-

ships for privately-held firms than for public firms in order to mitigate information asymmetry.

There is a differential demand for financial reporting in the business environment of publicly listed and privately-held firms. Several prior studies have examined financial reporting quality in publicly listed firms, but academic literature lacks evidence on financial reporting quality in privately-held firms. However, privately-held firms constitute the major part of business operations in many societies. Prior studies have identified several attributes of financial reporting quality with reporting conservatism being the most topical, which is partly due to the wide-ranging discussion on the use of fair values in financial statements. There is also a demand for conservative reporting in loan contracts. A bank's possibilities to obtain private information on a firm's reporting quality is restricted, and therefore banks favor conservative reporting instead of fair value or fraudulent reporting. Banks have a relatively greater demand for bad news than good news, and if firms fail to provide such information, banks will price protect and impose a higher cost of capital on the firm.

This thesis focused on small and medium-sized privately-held firms, because these firms acquire most of their external funding from banks. With a large and unique sample of privately-held firms from one of the major banks domiciled in Finland, I was able to combine bank-firm relationship and financial statement information and address the research problem by scrutinizing the constructs in a comprehensive manner.

In the current state of disputed results in bank-firm relationship literature, and the evolving development in the measurement of reporting conservatism in a privately-held firm context the introduction of several methods was conducted in this thesis to shed light on the effects of the focal constructs and their interdependence. Exceptionally, both qualitative and quantitative methods were complementarily exploited to find the key factors that capture the essence of the subject. Structural equation modeling by means of partial least squares (PLS) was a useful method for examining the relations and the effect types. Besides the prediction orientation, this method provided insights for searching for unobserved heterogeneity within a sample.

My findings were consistent with the majority of empirical findings on bank-firm relationships and the reporting conservatism literature. The basic rationale behind decreased information asymmetry by a more intensive relationship between a bank and a firm and conservative reporting practice prevailed in the empirical results. However, heterogeneity within the sample suggested that further clarification was needed to understand the very different implications for groups of firms.

The main results can be summarized into three parts: the effects of relationship intensity and reporting conservatism on loan pricing, the effect of loan

pricing on relationship value, and finally, the effects of relationship intensity and reporting conservatism on relationship value.

First, the empirical evidence suggested that the elements of relationship intensity had various effects and reporting conservatism had negative effect on loan pricing. The results of the moderation effect of lending technology indicated that the negative effect of reporting conservatism on loan pricing was statistically significant only with firms using financial statement lending technology. This finding was consistent with prior literature suggesting that a deficit of hard information in a firm' reporting conservatism for corporate loan contracting is compensated for with soft information gained using relationship lending technology. Regarding the effect of relationship depth on loan pricing, the firms that were segmented into relationship lending technology had a significantly stronger negative effect than the firms segmented into financial statement lending technology. The interpretation was that firms that are segmented into relationship lending technology are remunerated by concentrating their loans with one bank and thus receive their loan at a decreased cost.

Second, the findings supported the view that there is a positive relationship between loan pricing and relationship value. The results showed that loan pricing did not have a significant effect on relationship value for the firms that are segmented into relationship lending technologies. On the other hand, loan pricing had a significantly stronger positive effect on relationship value in firms that are segmented into financial statement lending technologies. These findings indicated that loan pricing affects relationship value in firms that are segmented into financial statement lending technologies, and the value in bank-firm relationships in respect to firms that were segmented into relationship lending technologies is generated from sources other than loan pricing.

Third, the examination of the effects on relationship value indicated that relationship intensity had a positive effect on relationship value and reporting conservatism did not have a significant effect on relationship value. By allowing for the moderation effect of lending technology the results indicated that relationship intensity is found in the element of relationship length in firms that are segmented into financial statement lending technologies. The moderation effect of lending technology regarding the relationship scope indicated that firms that have a lower level of information asymmetry generate more relationship value through other banking services than firms that have a higher level of information asymmetry.

In conclusion, the findings in this thesis have implications for the theory development of bank-firm relationships and managerial guidance. In terms of the contribution of this thesis, soft and hard information in form of relationship intensity and reporting conservatism can be positioned into a comprehensive model to convey the information role they have. Moreover, the model

exhibits predictive relevance, making it a valuable tool for managerial guidance. The findings suggest that these constructs should be taken into account in loan contracting, particularly in privately-held small and medium-sized firms that acknowledge information risks and are seeking efficient contracting. In particular, the findings on the lending technologies that reflect differential level of information asymmetry fitted well with the empirical examination of the conceptual framework developed by Berger and Udell (2006). It demonstrated that it is worthwhile to pre-segment the bank-firm relationships. These findings may have implications for further theory development.

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Appendix 1: Pearson Correlations between the Variables

	Loan Price	Rating	Realized Contribution	Length	Scope	Loan Size	Depth	Total Assets	Accruals	Cash Flow
Loan Price	1.000									
Rating	0.199 ***	1.000								
Realized Contribution	-0.079 ***	-0.047 **	1.000							
Length	-0.001	-0.066 ***	0.179 ***	1.000						
Scope	-0.025	-0.019	0.423 ***	0.249 ***	1.000					
Loan Size	-0.028	0.012	0.283 ***	0.081 ***	0.094 ***	1.000				
Depth	-0.061 ***	-0.002	0.161 ***	-0.041 *	-0.081 ***	0.217 ***	1.000			
Total Assets	-0.293 ***	-0.309 ***	0.477 ***	0.140 ***	0.292 ***	0.183 ***	-0.221 ***	1.000		
Accruals	0.071 ***	0.012	-0.158 ***	-0.034	-0.090 ***	-0.074 ***	0.128 ***	-0.223 ***	1.000	
Cash Flow	-0.107 ***	-0.115 ***	0.182 ***	0.015	0.107 ***	0.097 **	-0.133 ***	0.240 ***	-0.809 ***	1.000

Asterisks of ***, ** and * denote 2-tailed statistical significance at the 1%, 5% and 10% level, respectively.

Appendix 2: List of Expert Interviews and Discussions

The expert interviews were semi-structured. The structure of the interview was sent to the interviewee one week before the interview. The discussions were informal due to their role in enhancing the project. The material for the panel discussion included the theoretical background and the main results of the study as they were made available one week before the panel discussion. The running time of the expert interviews and discussions ranged from 85 to 155 minutes. The names of the interviewees are not included due to a non-disclosure agreement.

The expert interviews and discussions occurred in the following chronological order:

Before the data collection (theme of "soft and hard information in bank-firm relationship):
- Corporate finance manager, August 5, 2005,
- Assistant professor, University of Oulu, November 25, 2005.

During the data collection (technical issues and the theme of "measures for obtaining soft information in bank-firm relationships"):
- President of the marketing department, January 31, 2006,
- Data mining analyst, October 5, 2006.

After the data collection (theme of "the process of corporate loan pricing" and the validation of the results):
- Vice president of corporate finance, November 13, 2007,
- Panel discussion, six representatives of the bank, May 27, 2009,
  - Vice president of the marketing department,
  - Vice president of corporate finance,
  - Data mining analyst,
  - Three development managers.

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Essays on optimal control of spectrally negative Lévy diffusions in financial applications

A-2:2009   Murat Akpinar
Understanding primary stakeholders of a firm response to market integration in the European Union – Volkswagen, 1960-2005

A-3:2009   Johanna Österberg-Högstedt
Yrittäjänä ammatissaan sosiaali- ja terveysalalla – yrittäjyyden muotoutuminen kuntatoimijoiden ja yrittäjien näkökulmasta

A-4:2009   Samil Aledin
Teenagers' brand relationships in daily life – a qualitative study of brand meanings and their motivational ground among teenagers in Helsinki and London metropolitan areas.

A-5:2009   Kati Antola
Customer-supplier integration in the forest industry

A-6:2009   Harri Lorentz
Contextual supply chain constraints in emerging markets – Exploring the implications for foreign firms

A-7:2009   Pekka Koskinen
Supply chain challenges and strategies of a global paper manufacturing company

A-8:2009   Tuomo Kuosa
Towards the dynamic paradigm of futures research – How to grasp a complex futures problem with multiple phases and multiple methods

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Activity based perspective on organizational innovation adoption. A contextual approach to five adoption processes within the food industry

A-10:2009   Svein Bergum
Management of teleworkers – Managerial communication at a distance

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