

Volker Bruns

Who receives bank loans?

A study of lending officers' assessments of loans
to growing small and medium-sized enterprises



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Volker Bruns

Abstract

Empirical research suggests that limited access to debt capital is hampering small business growth. Due to information asymmetry and risk aversion, banks are reluctant to lend money to small and medium-sized enterprises (SMEs) planning large investments in pursuit of new growth opportunities. While several factors have been identified in the literature concerning what may affect the likelihood of banks granting credit, these findings amount to a laundry list and lack solid theoretical embedness.

In this dissertation, the factors that influence lending officers' assessments of credit requests from growing SMEs are explored. An extensive review of the literature suggests that eight factors are particularly influential in determining if lending officers will support a credit request. Building on asymmetric information theory these eight factors are grouped into the theoretical categories of risk-assessment, risk-alignment, and risk-shifting. Hypotheses are developed arguing that the risk-taking proclivity of the firm; its competence within the business project; the CEO's experience in the industry; the degree of strategic planning; the past performance of the firm; its financial standing; independence of collateral offered; and the share of the investment all influence lending officers' credit assessments. In addition, it is hypothesized that risk-taking proclivity interacts with other variables. A conjoint experiment involving 114 lending officers is used to test the hypotheses. By and large, the hypotheses are supported by the data.

Lending officers' insight into their own credit assessment process is also investigated by comparing the results from the experiments with lending officers' self-perceived assessments. The large differences between the results obtained by the two methods show that lending officers have limited insight into their own decision-making.

Further, the study examines how individual differences in experience among lending officers affect their decisions. As hypothesized, more experienced lending officers use more sophisticated decision policies involving interactions.

The three theoretical categories identified provide a foundation for future research on bank lending to SMEs. The developed model can facilitate empirical research on bank lending under asymmetric information by providing a structure and categorizing previous research into these three categories.

The results have practical implications. Insight into lending officers' decision-making can assist SMEs in better tailoring loan applications. Banks can use the results of this study to make comparisons with their existing credit guidelines, which could assist them in improving their decision-making because a prerequisite for improving decisions is knowledge about current credit assessment processes.

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1 Introduction

1.1 The importance of lending to growing small and medium-sized enterprises

This thesis regards the debt financing of small and medium-sized enterprises (SMEs) through medium- or long-term bank loans for growth projects connected to substantial investments. This may involve financing investments in new machinery, equipment for the medium- or long-term, and the purchase of inventory (merchandise and/or raw materials) necessary for the new project. Therefore, the financing of fixed asset investments and the capital needed to cover expenses for new projects are particularly interesting. My interest in this subject originated in the research findings of the licentiate thesis (Bruns, 2001), in which I researched growing SMEs and lending officers' perspective on the credit process. One conclusion that emerged from the thesis was that identical credit requests from growing SMEs were evaluated differently by different lending officers and that growing SMEs and lending officers have different perspectives on the credit process.

There are a number of reasons why a growing SME finances its capital requirements with debt. First, in the financial literature it is argued that firms apply a "pecking order" when financing their capital needs, i.e., they first use the cheapest funds and then, as cheaper financing alternatives come to an end, progressively make use of more and more expensive funds (Myers & Majluf, 1984; Myers, 1984). Therefore, many firms, it is argued prefer internally generated and "nearly internal" funds in the form of equity financing from SME sources, such as owners, friends and family, business associates, and other personal contacts. In this way, SMEs can finance capital requirements thanks to the relatively low issuing and information costs (Berger & Udell, 2003).

However, these funds are often not sufficient enough to finance a growth project, and the firm has to turn to external financing alternatives. External financing can be differentiated into two types - equity and debt. External equity financing alternatives are limited for SMEs compared with larger firms, because most SMEs are privately held and cannot issue shares on the public market. Other external equity alternatives for financing a growth project could be sources from venture capitalists or those known as business angels. However, most firms are not expected to rely on venture capital due to constraints on

both demand and supply (Cressy & Olofsson, 1997b). Cressy (1993) found that less than 1% of startups were financed with venture capital.

The situation is similar in Sweden. Although the Swedish risk capital market seems well developed when compared to other European countries, Sweden is still lagging behind the United States. Sweden occupies first place, at 0.87%, in the European Private Equity and Venture Capital Association (EVCA) list of investments in relation to the Gross Domestic Product of each member country for 2001, followed by Great Britain at 0.65% and the Netherlands at 0.44%. Excluding the buyout section, Sweden still comes first at 0.43%, followed by Great Britain at 0.28% and the Netherlands at 0.28%. The corresponding percentage for the US is 0.6% of the Gross Domestic Product (excluding buyouts).

Swedish risk capital and venture capital investments accounted for investments of 19.4 billion SEK for 2000 and 18.9 billion SEK for 2001 (EVCA, 2001, 2002). A comparison of this with the lending of Swedish banks to the Swedish commercial and industrial sector, with lendings of 542 billion SEK in 2000 and 634 billion SEK for 2001 (Bankföreningen, 2003a), indicates that risk and venture capital only finances a fraction of Swedish businesses. It should be noted that these numbers are for the Swedish business sector at large and are not limited to the SME sector.

Typically most SME growth projects are relatively small in scale and do not meet the screening criteria of venture capitalists. Furthermore, the search process for venture capital or other external equity sources, such as business angels' financing, is often connected to considerable costs and other disadvantages. The theory suggests that firms prefer to finance their capital requirements with external debt over external equity if sources of internal and nearly internal funds are exhausted (Barton & Matthew, 1989; Myers, 1984; Winborg & Landström, 1997). Loans from banks represent an important funding source for entrepreneurs in business development. Most SMEs aiming for growth are more concerned with obtaining debt funding from banks because for several reasons this is a more attractive, realistic and obtainable source.

First, external debt is preferred to external equity because it does not affect the ownership structure of the firm, and it implies less defeated managerial and strategic control for the SME owner-manager. Cressy and Olofsson (1997) found that Swedish directors' attitudes towards new owners often exemplify an extreme degree of control aversion and that this aspect is even more important for smaller firms. However, even issues of debt demand a certain amount of control, e.g., monitoring the borrower. Second, the cost for verification is lower for external debt than for external equity. This is because a debt holder only has to verify the cash flow of a firm if the debt repayment is not complete, whereas an external equity holder may have to verify cash flows under a much broader

1. Introduction

set of circumstances (Berger et al., 2003). Because the verification costs are passed on to the SME, equity will be more expensive. Third, external equity investors generally require a much higher rate of return; such investors require a part of the profit. This situation is meant as a safeguard in the case of a default. Equity holders maintain riskier claims, and the risk of losing the entire investment compared with debt holders is much greater because, a) the debt is often secured and b) debt holders have to be satisfied prior to equity holders in case of bankruptcy. SMEs that strongly believe in the growth project and estimate a rate of return that is greater than the cost for borrowing will prefer to repay a loan with interest rather than share the expected profits with an external equity holder.

1.2 The risk of lending to growing SMEs

Previous research shows that bank credit is the most important external source of financing the capital requirements of SMEs (Barton et al., 1989; Myers, 1984; Winborg et al., 1997). There are several reasons why it is important for SMEs to obtain effective financing solutions. First, from point of view of society, small firms, especially when growing, are of great importance to the development of local economies and serve as main providers of new jobs (Baldwin & Picot, 1995; Davidsson & Delmar, 2000; Davidsson, Lindmark, & Olofsson, 1994, 1996, 1998; Kirchhoff & Phillips, 1988; Phillips & Kirchhoff, 1989; Picot & Dupuy, 1998). Thus, growing SMEs are essential for the society at large. Existing SMEs create more new jobs through growth than larger companies or start-ups do (Cressy, Gandemo, & Olofsson, 1996; Storey & Cressy, 1996; Storey, 1994b; Wiklund, 1998) and are especially important during recessionary periods (Davidsson et al., 2000). The efficient and effective provision of capital to growing SMEs is therefore an essential factor in ensuring that these firms can continue to grow and compete. One concern of growing SMEs is to obtain a sufficient amount of financing at a reasonable price in order to conduct and benefit from a growth project.

Growing SMEs often pioneer new business areas, something which is associated with considerable risk. The ability to repay a credit and to pay the coinciding interest rate is clearly connected to the ability of the firm to generate cash flow. Jönsson (2002) argues that the faster a firm grows, the lower the cash flow will be from current operations. A decreased cash flow makes it more difficult for the firm to cover the costs of paying the interest and the loan principal. On the other hand, it can be argued that the risk involved in lending to an SME is actually lower than that of larger firms because many SMEs are innovative companies and are able to react quickly. Therefore, these firms can easily adapt to changing market situations. Furthermore, most SMEs are

managed by the owners themselves, who have a vested interest in the success of the company.

However, previous research has pointed out that SMEs have problems in obtaining debt finance (Binks, Ennew, & Reed, 1992; Holmes & Kent, 1991; Walker, 1989). The financial literature refers to SMEs difficulties in attracting long-term finance from market actors such as banks and venture capital companies as “the financial gap” (Storey, 1994b). It should be noted that most SMEs are privately held and vice versa. Many of the problems facing SMEs in obtaining debt finance can be attributed to the fact that they are privately held rather than their limited size. One reason why SMEs might face problems in attracting capital is that they are better informed about their own prospects and behavior than outsiders such as banks. This is known as asymmetric information, which is generally higher for a growing SME than for larger firms. Growth, in turn, is connected to extensive investment and other expenses which have a considerable effect on the ability of the firm to generate cash flows. Four reasons can be given for why the amount of asymmetric information is higher for growing SMEs than for other firms.

First, publicly held firms are forced to disclose more information than privately held firms, either because of a legally enforced transparency or shareholders’ demands. The legally enforced transparency for the financial reporting of publicly traded firms and the shareholders’ demands facilitate access to detailed information. On the other hand, privately held firms, typically divulge far less information. Keasey and Watson (1991) argue that the diagnostic content of the financial information supplied by privately held firms is generally much poorer compared with larger firms since financial data produced by smaller firms are both less comprehensive and less timely than accounts produced by larger firms.

Therefore, these SMEs have more and better information about their firm than is available for external users. In the agency theory, this phenomenon is known as an information advantage vis-à-vis external financiers. This information advantage can be used opportunistically by the borrower, which may make external financiers less willing to invest in the business. Due to limited and uncertain information, banks may often perceive lending to privately held firms as inherently more risky (Binks et al., 1992).

Second, because the firms are small, they can be managed informally without formal control systems or control documents (Macintosh, 1994), which reduces the ability of the bank to access such information. Due to the informal control system in many growing SMEs, management is better informed about the behavior and incentives of employees (Brytting, 1991). Therefore, there is no need to establish such control systems. Furthermore, management in growing firms probably focuses on various growth projects that take considerable time. The resulting effect is that the firm does not have time

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to establish formal control systems although it might recognize the importance of having such systems in place.

Third, the combined role of ownership and management in many SMEs lead to fewer agency relationships within the firm. In larger firms, the separation of management and ownership often leads to conflicts, because the manager or managers prefer to act in ways that benefit themselves rather than the owners. Therefore, it is necessary to monitor the performance of managers or to establish contractual restrictions. This conflict is of reduced importance in SMEs, because the majority of SMEs are privately held, which means that the manager(s) are usually the major owner(s). This removes the agency problem and agency costs associated with outside equity holders trying to control management (Berger et al., 2003). The combination of management and ownership within the same person(s) does not result in any information inconsistency for the owner about the incentives of management (Storey, 1994b). Consequently, there is no discrepancy in the incentive of management's devotion to a growth project and the owner's interest in the project. Because the role of management and ownership is combined, the owner is completely informed about the incentives, behavior, and interests of management. Compared with larger firms, where the role of management and ownership is most often separated, there exist no contradictions between the owners and managements, eliminating the issue of agency problems. Because there are fewer relationships in question, there is little need for monitoring and, accordingly, probably fewer documents and less formal contracts and documents accessible.

Another reason why the amount of asymmetric information is higher for SMEs than for larger firms is that SMEs are riskier than larger firms in terms of income and capital variability (Cressy & Olofsson, 1997a). Other studies found that the probability to survive is clearly related to the size of the firm, indicating that smaller firms are more failure prone (Dunne, Roberts, & Samuelson, 1989). However, the situation seems to be different if the firm grows. Phillips and Kirchoff (1989) show that chances to survive more than double for firms that grow. The probability of survival is an important indicator for the ability of the firm to repay a loan with interest. For both the bank and the growing SME, it is beneficial to engage in a credit relationship if the project of the firm has the right capacity and the borrower is able and willing to repay the loan with interest. However, it is equally important for both parties to deny credit if the project has a low probability of success. This may prevent the owner, in time, from investing effort and capital in an unprofitable project.

Although lending to SMEs is considered to be more risky (Storey, 1994b), growing SMEs constitute an attractive customer segment for many banks, both in terms of credit financing of growth opportunities and for other bank services connected to SME growth. One reason for this is that innovations in the field

of financing have led to a shrinking market for traditional bank products. Larger companies in particular are making use of alternative non-bank sources of financing, such as private placements and corporate bonds. Since these alternatives are limited or too expensive for SMEs, reliance is primarily on bank financing (Bruce, 2001). Furthermore, if the firm accomplishes its project and continues to grow, the financial needs will grow. Bank loans and other bank products can then be used for small firm acquisition, leveraged buyouts, and management buyouts.

Lending is the primary driver of bank profitability, and the profit margin is often higher for SMEs as a customer segment compared with other returns. One reason for this is the higher estimated risk for SMEs compared with larger firms. Another reason is that the bargaining positions of privately held SMEs are weaker due to their higher dependence on bank credit since they have few other sources of financing. Although banking business activities have diversified over the past several years, their core practice is still to gather deposits and to grant credit, and the majority of bank assets take the form of loans. Bank lending to the public has increased during the past several years and amounted to 1,360 billion SEK at the end of 2002, 47% of these lendings are to the Swedish business sector, 21% to Swedish households, and 27% to foreign borrowers (Bankföreningen, 2003b). However, the amount lent to the business sector also includes larger firms. Swedish banks seldom separate business credits by the business size of the creditors. In banking terms, small business credits most often refers to the size of the loan instead of to the size of the borrower. In the annual statement of one large Swedish bank, the economic significance of SMEs is reflected explicitly. Of 247,000 business customers in the Swedish market, 244,000 fall into the category SMEs, that is, more than 98% of the corporate clients of this bank are SMEs (FöreningsSparbanken, 2003). SMEs account for 85% of the total lending of this bank to the business sector (Telephone interview with Tobias Norby, Investor Relations at FöreningsSparbanken). These arguments indicate the importance of bank loans to growing SMEs from the perspective of both the bank and the firm.

Consequently, it is crucial for a bank to properly evaluate the credit risk of a growing SME that is applying for credit. The expected profitability from credit relationships is a primary criterion for credit assessment because the accuracy of credit assessment has a significant impact on the overall profitability of the bank.

1.3 Dealing with the risk of lending to growing SMEs

It is only reasonable that banks must be careful in granting credit to growing SMEs and methodically collect information necessary to make appropriate assessments. However, recent bank crises indicate that banks have lent substantial amounts of money to defaulting borrowers who may have had opportunistic motives in their original credit applications (Berglöf et al., 1995). This would suggest that the credit assessment of banks is far from perfect.

The expected profitability from credit relationship is a primary criterion for credit assessments because the accuracy of credit assessment has profound effects on credit decision and therewith on the overall profitability of a bank. In other words, a bank has to make sure that it lends money to customers who are able and willing to repay the loan and interest and denies credit to those who are not.

To evaluate an SME is a difficult process which includes the selection of information factors that vary in reliability. Considering the vast amount of bank lending each year to SMEs, a modest improvement in granting credit to customers who will repay the loan and denying it to those who fail to could have a substantial impact on the credit portfolio returns of banks. As a result, it is essential for banks to develop methods that reduce risk and uncertainty in the assessment of loans to SMEs. Because individual lending officers make the initial decisions whether to support a credit request from SMEs, an improved understanding of lending officers' credit assessment can provide a better understanding of the efficacy of the credit processes of banks. Such knowledge, in turn, is valuable for banks as well as for SMEs applying for loans. A better understanding of lending officers' credit assessment is important for a bank because it could lead to increased profitability. It is equally important for the growing SMEs requesting credit, because it might be easier to get funding if they understand what factors are most important to the bank and its lending officer and adapt their behavior and credit application accordingly.

Some studies argue that lending officers rely to some extent on intuition to reach their decisions, thereby acting as expert decision makers (Jankowicz & Hisrich, 1987; Shanteau, 1992a, b, 1996). Furthermore, Feldman and March (1981) contend that most organizations collect far more information than they use for decision-making, and most of the information collected does not relate to the decisions. There is a vast amount of potentially useful information and consequently an associated risk of information overload or failure to notice important signals in the midst of so much "noise". As a result, it may be difficult for lending officers to really understand and to describe their (intuitive) credit assessment because of all the interference caused by information overload

and the effect of previous experiences and intuition. Therefore, it is vital to investigate how lending officers combine different factors in their credit assessment and to examine which factors are most important to a lending officer without being the subject of post hoc rationalization and recall biases. For that reason, it is relevant to look more closely at the factors actually considered during the credit assessment and to investigate whether lending officers have insight into their own assessment process. Furthermore, it is important to investigate if there exist differences in credit assessments between experienced and less experienced lending officers.

Consequently, the interesting questions are: a) what factors are essential for lending officers' assessments of growing SMEs credit requests, b) are lending officers aware of their own assessment processes, and c) do differences exist between lending officers with different levels of general and specific lending experience in their credit assessments?

To examine what factors lending officers actually base their assessment on, this thesis uses an experimental approach in which lending officers are asked to evaluate hypothetical credit requests from growing and privately held SMEs. In this manner, the magnitude of different factors considered in the decision-making can be investigated. The literature on bank lending and decision-making argues that certain factors are essential for the credit assessment. How decisive are such factors in the lending officer's assessment of the credit request of SMEs for a medium- or long-term loan for a growth project that is connected to substantial investment? For example, both the financial standing and the business planning of the firm are argued to have an effect on the credit assessment. However, it is not clear if lending officers really consider these and other factors in their assessment and, if so, which of the factors is more important for the assessment of a credit request. Furthermore, an experimental approach allows for the consideration of interactions between certain factors.

In addition, an experimental approach allows the comparison of the importance of each factor derived from the experiment with the lending officers self-perceived factors, thus, an indication is provided as to the lending officers' insight into their own assessment policies. Moreover, using an experimental approach it can be investigated if lending officers with more banking experience base their assessment on similar information factors or if their use of information factors differs from their colleagues with less banking experience.

1.4 Research framework and expected contribution

This study is Part Two of a project aimed at investigating the credit assessments of lending banks concerning growing and privately held firms. Part One of this

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research project was conducted and reported in the form of a licentiate thesis and published in April 2001 (Bruns, 2001). The thesis provided insight into the credit process between banks and a growing privately held SME and helped to identify the factors that appeared to be important through a qualitative research approach. Above all, Part One confirmed that banks and growing privately held firms have different perspectives on the credit process and that an identical credit request was evaluated differently by different lending officers.

The goal of Part Two is to further develop the results and conclusions in the earlier study. Moving from investigating the assessment processes of three different banks as it related to the credit applications, Part Two analyzes lending officers' assessments of credit requests from a statistically significant variety of hypothetical SMEs on a more general level. In so doing, the thesis moves from a qualitative case study to a quantitative approach and analysis, which enables more general conclusions to be drawn concerning the credit process between banks and growing privately held firms.

Both studies contribute to empirical understanding by providing knowledge about the lending officers' assessment of growing SMEs under asymmetric information. The results of these studies might be beneficial for banks as well as for growing privately held firms.

This study specifically examines the credit requests for growing SMEs during business expansion. The expansion is measured as equal to the amount of the equity of the firm. This should be considered as a relatively large investment, for example, for machinery, production facilities. The firm presented is a manufacturer. An argument against choosing a service company is that service companies often have limited equity and assets that can serve as security. Furthermore, these companies are often more difficult to evaluate. However, the literature reviewed and the attributes developed in the empirical part of this study could be applied equally to service companies.

Empirical research suggests that limited access to debt capital is a major factor that hampers small business growth. Due to information asymmetry and risk aversion, banks are reluctant to lend money to small firms that plan large investments in the pursuit of new growth opportunities. While several factors that may affect the likelihood of banks granting credit have been identified in the literature, little is known about lending officers' credit assessments.

The lending officers' assessments of growing SMEs are selected as an object of study for several reasons. First, the lending assessment is important. Hundreds of lending assessments are made every year by banks, involving significant amounts of money with consequences for the growing SMEs applying for credit, for the banks themselves, and for the economy at large. Second, the lending assessment concerning growing SMEs is interesting because it is often a very difficult and complex assessment with a serious adverse selection risk. Information asymmetries allow SMEs to engage in opportunistic

behavior. The possibility that an SME might act opportunistically in a way that is to the disadvantage of a bank after credit is granted makes it all the more important that the initial credit assessment is correct.

This dissertation is expected to contribute to three areas of knowledge: the advancement of current theory, methodology, and empirical insights. Each is discussed in more detail in the following sections.

1.4.1 Expected theoretical contribution

Previous research has identified a broad array of factors that influence lending officers' credit assessments. Some studies argue that the characteristics of the borrower are the most important factors for the assessment (Sargent & Young, 1991; Scherr, Sugrue, & Ward, 1993; Sinkey, 1992); other studies maintain that the borrower's financial conditions as a projection of future ability to service a credit are more important (Altman, 1983; Beaulieu, 1994, 1996; Sinkey, 1992). Other research indicates that as long as a borrower offers sufficient collateral or security, lending should not be difficult because the bank has a secondary means of repayment if the customer defaults on the credit (Anderson, 1999; Bergström & Lennander, 1997). Other research indicates that credit assessment consists of both specific, quantifiable information and subjective, qualitative judgments (Jankowicz et al., 1987). One example of such a combination can be found in the American financial literature, which refers to the "five C's of lending". These are Character, Capacity, Capital, Collateral, and Conditions. It is argued that the bank clerk uses "the five C's of lending" to classify loan information and consider relationships among categories of information in order to make credit assessments. Another group of studies point out the relationship theory and networking as very relevant for the lending assessment. A more detailed description of the five C's of lending and the relationship theory approach can be found in Part One of this study (Bruns, 2001).

However, previous research is contradictory concerning the importance that lending officers place on different factors to make their credit assessment.

The expected theoretical contribution of this dissertation is to categorize the broad array of factors previously identified in the literature on bank lending into meaningful theoretical categories and link these categories to an overarching theoretical framework. This thesis will create order in the laundry lists of factors identified in previous literature concerning the following concepts:

- Risk assessment
- Alignment of risk-bearing
- Shifting of risk-bearing

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These three categories are connected to the overall theoretical framework on bank lending under asymmetric information.

Another theoretical contribution is expected to arise from contrasting lending officers' actual assessment factors with their self-perceived assessment factors. In the social judgment theory, it is suggested that espoused decision processes have limitations reflective of the actual decision processes (Priem, 1992; Priem & Harrison, 1994; Zacharakis, 1995). It was found that espoused processes typically employ a larger number of criteria than is actually used in the decision process. Furthermore, it was found that decision makers do not correctly recall their decision-making. Studies in the field of strategic management (Stahl & Zimmerer, 1984), consumer behavior (Ettenson, 1993), and venture capital (Riquelme & Rickards, 1992; Shepherd, 1997; Zacharakis, 1995; Zacharakis & Meyer, 1998) found that decision makers overstate less important criteria and understate more important criteria compared with statistical models. This translates to the lending officers' assessments of credit request from growing SMEs. It seems important to investigate both the actual factors used by lending officers' in the credit assessment and their self-perceived assessment factors. An experimental research design captures the information factors that lending officers actually use in their credit assessment and contrasts these with the information factors they believe they use. The design thereby contributes to the existing theory on lending officers' decision-making.

In addition, the potential findings when comparing decision-making of different groups of lending officers may also broaden the theory on lending officers' credit assessments. Little research exists that explicitly addresses the effects of lending officers' experience on the outcome of the credit assessment. Here, I expect to contribute to the existing theory by investigating whether more experienced lending officers base their credit assessment on different factors than their less experienced colleagues.

1.4.2 Expected methodological contribution

Questionnaire-based research has dominated the field of inquiry. While some authors have exposed the potential weakness of such an approach, these potential weaknesses have not been explicitly or empirically assessed. In this dissertation, I rely on conjoint experiment, which provides a more accurate estimation of the factors influencing lending officers' credit assessments than questionnaires do. However, I also include a more traditional questionnaire approach, where lending officers are asked to report on the importance of factors used when assessing the hypothetical credit requests from growing SMEs. Thereby I can compare the results from the experiment with the self-perceived factors of the individual lending officers achieved through the questionnaire. This makes it possible to assess the validity of using

questionnaires for collecting these types of data. Furthermore, I include a questionnaire on lending officers' demographic information and lending officers' general experience and specific experience in lending, which enables the results of the experiment to be combined with information on the level of lending officers' experience.

Another methodological contribution is expected by analyzing the effects of certain interaction within lending officers' credit assessments.

If credits to growing SMEs are considered to be riskier than credits to larger firms, it is expected that the borrower's risk-taking proclivity is particularly important when lending to growing SMEs. Therefore, the level of growing SMEs risk-taking proclivity might interact with factors that limit the risks that the bank takes. Thus, lending officers are predicted to use more than a simple linear combination of factors to support a loan request from growing SMEs. Conjoint experimentation makes it possible to consider both direct and interaction effects that influence lending officers' credit assessments. Furthermore, it is expected that lending officers' decision-making structure varies depending on the lending officers' tenure in banking.

1.4.3 Expected empirical contribution

The practical contribution of this thesis consists of providing knowledge about lending officers' assessment policies. Investigating lending officers' credit assessments concerning growing SMEs can facilitate the lending process both for the bank and the growing SME. Using a conjoint analysis design addresses many of the inherent errors and biases involved in past research. First, the use of conjoint experiments allows a focus on concurrent rather than retrospective reporting, which limits problems of recall and social desirability biases common in survey research on decision-making (Shepherd & Zacharakis, 1997). Second, it allows teasing out the range and complexity of factors influencing lending officers' assessments. Furthermore, the actual decision factors can be compared with existing credit guidelines. Third, the use of this experimental research design allows an investigation of the information that lending officers actually use in their credit assessment and contrasts the factors that were actually used with the self-perceived factors. Fourth, identifying possible differences in the use of information factors between different groups of lending officers could be useful for the individual lending officer and the organization and could be used to establish more objective guidelines. Consequently, this dissertation could lead to valuable insights for banks and provide the basis for altering guidelines for credit assessment.

Correct credit decision-making is important for the SME requesting credit, for the bank, and, as argued before, for the society at large. The failure of evaluating an SME credit request correctly can have grave financial

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repercussions for all concerned, as the recent bank crisis in the beginning of the 1990s illustrated. In essence, the thesis could assist banks in improving their credit assessments because the prerequisite for better assessments is knowledge and understanding of the current assessment policy.

1.5 Point of departure

In Part One of this study (Bruns, 2001), the purpose was to gain an understanding of the credit process from the perspective of both a small and medium-sized company and from the banking perspective. Using the interview technique, the study approached the dual perspective of the credit processes empirically. One main contribution was to build a frame of reference for the credit assessment process concerning SMEs. Part 1 had a clear qualitative approach aimed at capturing the credit process in depth. Using such a research approach enabled the generation of deeper knowledge about a specific credit case from the perspective of both banks and SMEs and to identify factors pertinent to the credit assessment. Although qualitative studies provide some in-depth knowledge about a particular case or situation, they can be criticized for providing data that is difficult to generalize. Compared to a qualitative design, which focuses on capturing “the special”, a quantitative design should help to capture the general (Hollensen, 1995), which is the aim of this second study. The overall choice of methodology was to start with an exploratory qualitative analysis and continue with a statistical analysis based on the elaborated variables identified in the theoretical and empirical part of the first study. The empirical part of this Part Two consists of three phases. Phase I comprises of a conjoint experiment in which lending officers assess hypothetical credit requests from growing SMEs. Phase II assesses lending officers’ self-perceived assessment which investigates the factors lending officers believe most important in conducting their assessments. Phase III consists of a post-experiment questionnaire that collects demographic information on the lending officers’ general experience and specific lending experience. This was considered as a useful methodological approach to categorize generated results in a general context. Overall, the combination of a qualitative and a quantitative research approach has the advantage of generating knowledge on the phenomenon of the credit assessment from different research perspectives.

1.6 Purpose and research questions

The purpose of this study is to examine lending officers’ credit assessment of growing SMEs. Furthermore, this study is intends to contribute to the literature

by providing: 1) a solid theoretical embedment for empirical results derived from previous research; 2) simultaneously assessing the relative importance of a wide range of characteristics of the lending firm; 3) by considering how individual differences between lending officers affect their decisions; and, finally, 4) by presenting a more sophisticated research design that taps the actual decision policies of lending officers rather than their espoused opinions.

More precisely, the study addresses the following research questions:

1. What information factors do lending officers actually use in their assessment to support a credit request from a growing privately held SME?
2. Do the actual factors used by lending officers in the credit assessment of growing SMEs differ from their self-perceived assessment factors?
3. Do lending officers with less experience base their credit assessment on different factors than more experienced lending officers?

1.7 Research approach

Although it can be argued that the study is only concerned with the perspective of banks, the outcome could be beneficial for both banks and the privately held SMEs because it enables the participants to improve this process. An increased understanding of lending officers' credit assessments is beneficial for growing firms seeking bank finance because it enables the firm to adjust and focus on those factors that are essential to the credit outcome.

In order to investigate these questions, lending officers are asked to make an assessment of growing SMEs and to indicate if they would support hypothetical credit requests based on a broad array of factors previously identified in the literature.

After careful consideration of the nature of the research problem and of the purpose of this study, a conjoint experiment was chosen as the appropriate statistical technique to answer the research questions. Conjoint analysis has been successfully employed in a variety of disciplines since the early 1960s (Gustafsson, Herrmann, & Huber, 2001).

Conjoint analysis focuses on concurrent rather than retrospective reporting for collecting and analyzing decision policies. The benefit of using a conjoint analysis for this study is the ability to decompose each lending officer's credit assessment in its underlying structure. A conjoint experiment makes it possible to assess and to illuminate the range and complexity of both direct effects and interaction effects of factors influencing lending officers' credit assessments.

In order to investigate lending officers' insight into their own credit assessment, they are asked to rate the importance of the same factors used in the

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experiment for their assessment. The results of the lending officers' self-perceived importance can then be compared with the results of the experiment.

To explore whether differences exist between different levels of experience and lending officers' credit assessment, lending officers are asked to answer a questionnaire containing questions on their general and specific experience.

This approach may lead to new directions for future research and may identify ways to facilitate and improve the credit process between banks and growing privately held SMEs.

1.8 Definition of key concepts

A **lending officer** is a bank employee who is involved in granting loans to SMEs. Although the individual lending officer often does not make the final decision as to whether or not to grant credit, it is his or her assessment of the SME that influences the final credit decision. The individual lending officer's knowledge and experience, his or her interaction with the customer, and sharing of information between the parties have been of vital importance to successful lending (Svensson Kling, 1999). It is the individual lending officer's assessment concerning the credit requests of a growing SME that is the focal point of this dissertation.

Different studies use different definitions of **small and medium-sized firm**. This makes comparisons of results across studies difficult. A specific business may be judged as small according to one definition, while the same business may be regarded as medium-sized by another. A small business in one industry might be defined as a large business in another industry. The offered European Union definition of an SME is a business with a maximum number of 249 employees and a maximum turnover of € 40 million and/or a maximum value of total assets of € 27 million. This definition excludes firms with up to 9 employees, so-called micro firms and differentiates between small and medium-sized enterprises (European-Commission, 1996). This is the definition applied to the present study. My empirical study is based on a hypothetical growing firm with 20 employees, and a turnover and value of total assets which fit within the European Commissions classifications for a small firm.

Many SMEs have high growth potential and good qualifications for growth. A focus on **growing privately held firms** is chosen because growing firms and especially small firms with fast growth are considered to be more prone to failure. Furthermore, they encounter the biggest problems when accomplishing growth (Wiklund, 1999). Growth is connected to extensive investment and other expenses, which have a considerable effect on the ability of the firm to generate cash flows and, in turn, limit their ability to repay a loan and pay

interest. Consequently, growing firms encounter greater hurdles when applying for credit (Churchill & Lewis, 1986; Storey, 1994a).

Risk is the possibility that events may turn out differently than expected. **Credit risk** is the risk that the borrower may not be able or willing to repay credit and/or interest (Ammann, 2001).

Growth refers to an increase in the size or magnitude from one period compared with a previous one. In the empirical part, growth is defined as an increase of the balance sheet total of the firm as it relates to an increase in assets that are as high as the equity of the firm.

1.9 The structure of the thesis

In Chapter 2 a review of financial theory is presented. Special characteristics of privately held firms and their effect on bank finance are described. Literature regarding asymmetric information and risk-taking is discussed and a number of hypotheses are developed concerning factors that influence lending officers' credit assessment. Limitations of previous research in the form of recall biases are addressed. Furthermore, expert decision literature is regarded and hypotheses on the effect of experience on the credit assessment are developed.

Chapter 3 contains a description of the research design. An overview of conjoint experiments is presented. Attributes and their levels used in the conjoint analysis are explained. The dependent and independent variables are operationalized and characteristics of the sample population are described. The fractional factorial design is explained. In addition, the collection of lending officer self-perceived assessment and the post-experimental questionnaire is presented.

Chapter 4 consists of the validation of the study. First, the thesis investigates whether or not the selected factors and two-way interactions are actually used in lending officers' credit assessment to support the hypothetical credit requests from growing SMEs. Second, the reliability of lending officers' responses to the hypothetical credit applications is considered. Third, it is investigated if lending officers use of the selected factors is different from the directional hypotheses.

Chapter 5 deals with the analysis and results from the empirical data. Statistical evidence is provided using analysis of variance and regression. The lending officers' actual assessment factors are tested and it is indicated if hypotheses are supported or not. Furthermore, lending officers' self-perceived assessment factors are analyzed and compared with the lending officers' actual assessment factors. The effect of lending officers' experience on the use of certain factors is analyzed and the hypotheses concerning the result of experience on credit assessments is investigated.

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In Chapter 6 outlines several important insights of lending officers' assessment for supporting credit to growing SMEs. The chapter starts with a discussion and interpretation of lending officers use of the main factors and the selected two-way interactions for the assessment of a credit request from growing SMEs. The chapter continues with a debate on lending officers' self-perceived use of the importance of factor for credit assessment and a comparison with the importance of factors derived from the experiment. A discussion of the importance of lending officers' experience on the outcome of the credit assessment is also provided. The chapter continues with an overall conclusion and theoretical, methodological, and practical implications derived from the results as well as suggestions for future research and exploration. The empirical observations can be grouped into three categories: a) risk assessment, b) alignment of risk-bearing factors, and c) shifting of risk for the importance of assessing the credit request of growing SMEs (theoretical implications). The usefulness and implication of using an experimental approach for investigating lending officers' credit assessments will be discussed (methodological contribution). The implication of the study results of the lending officers' assessment of growing SMEs credit applications is discussed. The chapter concludes by giving suggestions on how the results of this dissertation can be used for future research.

2 Theory

2.1 Introduction

Several theoretical perspectives may be relevant for understanding loan making to SMEs. In Part One of the study, theoretical aspects of the financial decision of the firm, the decision-making of banks, agency theory, and relationship theory were outlined (Bruns, 2001). Other literature, such as psychological or (institutional) corporate governance theory, could be used to shed some light on the credit process. However, Part Two of the study is mainly concerned with information factors lending officers use in their credit assessment of growing SMEs. The key issue addressed is the relative importance of factors that influence lending officers' credit assessment. Insights from the previous study encouraged a focus on adverse selection and asymmetric information. Several lending officers stated that a key characteristic of credit-granting is that the small business owner-manager has an information advantage vis-à-vis the bank, i.e., the owner-manager knows more about the firm and about the project for which the loan is sought. For example, both lending officers from the different banks and the chief financial controller of the case company in the licentiate thesis described how the bank attempted to overcome the potential asymmetric information. Although the problem of asymmetric information considering the case company was regarded as lower compared to the average firm the lending officer was dealing with, all information delivered by the case company was critically examined. In addition, the firm was contacted if the banks needed or simply wanted to confirm further details. Another attempt to overcome the problem of asymmetric information was experienced by the chief financial controller of the case company when one of the banks tried to take him on as a private customer. Binding him as a key person to the bank, the chief financial controller assumed that the bank hoped to get more detailed or more relevant information about the case company, which, in turn, would have decreased the amount of asymmetric information.

An information advantage can potentially be used opportunistically by the borrower, making it all the more important that the credit assessment and the lending officer's initial decision to support a credit request is correct. Therefore, the bank has to safeguard against such behavior. Asymmetric information is a theory that specifically deals with these types of situations. Therefore, asymmetric information is used as the overarching theoretical framework for this dissertation, and the key concepts of this theory are described below.

2. Theory

The chapter proceeds in the following way. First, the thesis presents the background information on the lending of the banks and their legal and regulatory principles. Second, it describes the foundation of asymmetric information as well as effects on adverse selection and opportunistic behavior. Furthermore, the responses of the banks to these problems are illustrated by describing risk assessment, risk-alignment, risk-shifting, and interactions between a borrower's risk-taking proclivity and the risk-alignment factor as well as the interaction between a borrower's risk-taking proclivity and the risk shifting factors. Hypotheses related to each of these categories are developed. Furthermore, lending officers' insight into their own assessment process and the effect of experience on the lending assessment are outlined and hypotheses how different types of experience effect the credit assessment are developed.

2.2 Legal and regulatory framework of bank lending

The Swedish banking system is regulated in very specific and detailed ways. Banks have two sources of capital available for lending. Either banks can lend their private and institutional customers' deposits or they can lend their shareholders' equity. Specific banking laws regulate the credit granting of banks with the purpose of protecting deposits made by the public. These banking laws regulate the gearing of the leverage ratio that measures to what extent the funding of a bank is provided by deposits and the bank's equity. Swedish banks, and others within the European Union, are only allowed to lend up to 12.5 times their equity, ensuring that a certain amount of credit is covered by the equity of the banks.

Before credit is granted, the bank is required by law to be informed of the borrower's financial situation. To comply with this law, banks request annual financial statements, which provide an indication of the sufficiency of future cash flows to cover (additional) debt. More specifically, the Banking Business Act (SFS 1987:617) states that:

“Loans may only be granted provided there is due cause to believe the borrower will fulfill the loan obligation. In addition, satisfactory security is required in real property or personal property or in the form of guarantee. The bank may waive such security, however, where such is deemed unnecessary or where there are specific reasons to waive the requirement for such security.”

The Banking Business Act (SFS 1987:617, 2:13)

However, the bank is not allowed to hold security that is significantly in excess of the outstanding loans to the borrower. Most importantly, the law does not regulate the content and depth of a credit assessment. It is the responsibility of the bank to estimate the risk of the borrower not fulfilling the credit obligation. A proper documentation of all credit transactions is required. The individual lending officer who is in contact with the borrower is responsible for this documentation within the bank. This officer is at the same time the contact person of the firm in other banking matters and is the most important policy instrument of the bank, because most banks assume that their corporate clients appreciate close, personal attention.

The bank officer is responsible for establishing and keeping contact with the customer. He or she periodically meets with the customer and discusses different bank products that might be of service. The underlying idea is the intention of the bank to really understand the business of the SME, its industry environment, and its needs. The bank contact will analyze the threats to and opportunities for the SME client and propose the right banking solution for the SME, considering financial needs and other services.

In most cases, the lending officer (contact person) will be authorized to approve loan applications up to a certain amount. The individual lending officer's credit limit depends on the bank organization, the branch size, and the individual officer's present tenure position. Up to a certain amount, the credit approval can be signed by two authorized bank officers. Credit applications exceeding this amount have to be signed at a higher organizational level, either by a supervisor, the credit manager, or even by a superior branch (regional bank office) or at the head office of the bank. However, the individual lending officer (contact person) will be responsible for thoroughly documenting the credit request and an assessment of the SME requesting credit before proposing the credit application to a higher level in the banking organization. When considering the credit assessment, the lending officer has to comply with the loan policies of the bank. Although the loan policies do not explicitly state how the lending officer has to act in a specified situation, they provide the parameters of action. The loan policies are more concerned with general limitations and describe for the lending officer what is allowed, and, more importantly, what is not allowed. The loan policies of the bank are a guide for loan officers on how to achieve the loan objectives (Cohen, 1990), and these serve as an overall guide for boundaries within which the lending officer can operate (Reed & Gill, 1989). To the extent that there are bank policies on lending, these are reflected in the lending officers' assessment process.

If the lending officer's assessment of the credit request is not in favor of supporting the credit, chances are small that a higher authority will support the credit. In many cases the lending officer might not even submit the credit application to a higher level in the banking organization because it is assumed

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that the chances for an approval are more or less nonexistent. However, although the lending officer might give his or her best recommendations, the second bank officer, who has to sign the approval, might still deny the credit request because the credit would increase the risk profile for the loan portfolio of the bank. Although the formal decision to approve a loan might be made on a higher organizational level, the individual lending officer's assessment and documentation of the credit request has great influence on the decision. It is the individual lending officer's assessment of the credit request of SMEs that is of interest in this dissertation and not the final decision to approve or not to approve a credit request.

2.3 Asymmetric information

Information asymmetry occurs in the credit relation when an insider has information on the financial circumstances and prospects (expected return and risk) of a situation that is not known to an outsider. Asymmetries in information between the bank and the borrower exist if either the borrower or the bank has better information about the financial circumstances and prospects of a project or firm than their counterpart.

The owner-manager of an SME who intends to invest in a growth project has probably more and better information about the expected return of the business project, its risks, and its opportunities than the bank. The SME owner-manager is probably well-aware of the ability of the firm to conduct the project for which financing is sought.

However, there might be instances when the bank has an information advantage *vis-à-vis* an SME applying for credit. The lending officer might have a much better idea whether a newly-established business would be successful or not compared with the entrepreneur who does not have any experience within the business field (Jovanovic, 1981). The same argument can be made for an existing firm that seeks credit to invest in a new venture in a totally different line of business, unrelated to the competence, knowledge, and experience of the firm. The lending officer, on the other hand, might have dealt with similar credit proposals and might even have knowledge about the outcome of those projects. In such a case, the lending officer is better informed about the prospects of the venture than the firm that is applying for credit.

In general we can assume that the owner-manager of an existing SME is well-informed about the new project and the capability of the firm to conduct said project even before the firm applies for credit. This leaves the SME owner-manager with the information advantage *vis-à-vis* external financiers and puts lenders at a severe disadvantage. Within the credit assessment, the lending officer depends to a large extent on the information provided by the borrower.

The risk involved in the credit relationship between a bank and a borrowing SME can be characterized by a certain degree of uncertainty that the SME owner-manager will use this information advantage and pursue self-interests rather than to act in the best interest of the bank. The phenomenon of asymmetric information is also described in agency theory. The theory of agency relationship is defined as:

“...a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent.”

Jensen and Meckling, 1976, p. 308

and can be applied to describe the relationship between the borrower and the lender (Jensen & Meckling, 1976). Although agency and asymmetric information problems are prevalent in all credit relations, it is especially apparent in the relationship between banks and privately held SMEs. Several reasons are given for this.

Frequently, the management of a privately owned firm is dominated by one individual, who is also the main investor. This fact can influence the behavior of the owner-manager and, ultimately, the nature and direction of the firm. Due to the combined role of management and ownership, the owner-manager plays a central role in the firm. It is the owner-manager's ability to lead a firm, his or her personality, and his or her actions as the main owner of the company that are important for the performance of the privately held firm (Demsetz, 1983; Johannisson & Lindmark, 1996).

The fact that ownership and management in privately held firms are typically performed by the same person(s), implies that the privately held firm is much more independent when making decisions. On the other hand, a business manager of a large company has to fulfill, at least to some extent, the goals articulated by the shareholders. The manager of a privately held firm is often the key person in the business, and his or her visions and competence are important factors for the development of the business (Johannisson et al., 1996).

It has been argued that one of the advantages of a privately held firm is its ability to maintain independent decision and flexible operations. This means that privately held firms could change the direction of their operations more rapidly in response to changes in technology or market conditions (Storey et al., 1996). The flexibility of any privately held firm is actually dependent on various factors. It depends on the specifics of the production activity and the entrepreneurial talent, as well as the willingness of the owner-manager to alter the operation of the firm. This, in turn, depends on that individual's personal preferences and personal portfolio position (Pettit & Singer, 1985).

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The greater flexibility of a privately held firm has two implications for the overall risk of the firm. One implication is a change in risk of the operation of the firm through the rapid employment of new assets or the elimination of old ones. Another implication is that flexibility allows the manager to control and mitigate risk more easily by reallocating resources from one production process to another in order to accommodate changes in technology or economic conditions (*ibid.*). However, the operational risk of the firm also depends on the owner-manager's tolerance for risk. For example, Pettit and Singer (1985) contend that through the combination of ownership and management, the owner-manager of a privately held firm may be less risk-averse than managers of publicly traded firms and may select more risky projects. As a consequence, risk-taking managers would tend to be concentrated in privately held businesses, with the result that those businesses would be more risky (*ibid.*). Nevertheless, this characterization would only hold true if the structure of the privately held firms permits a degree of risk-taking which is not possible in publicly traded firms. On the other hand, it can be argued that the combination of ownership and management makes an owner-manager more risk-averse in business because he or she typically has personal funds involved. This contrasts with publicly traded firms, where the role of management and ownership is most often separated.

The above-mentioned situation leads to three principal factors why information asymmetry is likely to arise between an SME and a bank. All three reasons relate to the fact that the SME probably produces little formal information and documents:

- 1) One reason for this is the legally enforced transparency of financial reporting for publicly traded firms, which facilitates access to detailed information usually not available for privately held firms. Because most SMEs are privately held, they typically lack this transparency. Without legal requirement, privately held firms typically divulge far less information of this kind.
- 2) Because the firms are small, it is possible to control them without formal control systems or control documents (Brytting, 1991; Macintosh, 1994). Therefore, there is presumably little documentation information available from a small firm, which reduces the chances of the ability of a bank to access such information.
- 3) Furthermore, in owner-managed firms, ownership and management are actively taken care of by the same person and therefore fewer agency relationships exist within the firm. The combination of management and ownership within the same person(s) results in information consistency from the owner about management's

incentives (Storey, 1994b). Because there are fewer discrepancies in the relationship between owner and management, there is little need for monitoring and, thus, there are likely fewer and less formal contracts and documents.

Instead of being formally reported, information is held informally by the owner-manager. Due to limited access to this information and less transparency, information asymmetry could be substantial in the bank-SME relation. For two principal reasons, lending to privately held firms is often seen as relatively riskier than lending to otherwise comparable larger firms (ibid.). First, the owner-manager may only reveal part of the relevant information or present information that is incorrect. In other words, this information advantage can be used opportunistically by the borrower at the expense of the investor (Fiet, 1995), which can restrain the willingness of external financiers to invest in the business. The lending officer does not know ex-ante how likely an SME is to repay a loan and interest. Asymmetric information can lead to the well-known adverse selection problem (Stiglitz & Weiss, 1981), which, in turn, could manifest itself in opportunistic behavior and moral hazard. Second, although the owner-manager reveals all the formal information that he or she has access to, this information may be incomplete or erroneous. If the bank had access to more information, it might reach different conclusions, but it is difficult for the bank to know if additional information would change the lending officers' credit assessment and the outcome of the credit decision. This greater uncertainty makes the bank more wary of lending to SMEs (Storey, 1994b).

2.3.1 Adverse selection / opportunistic behavior

The fundamental challenge in the relationship between the bank and the privately held firm occurs due to the potential conflict of interest between the parties. Investments in new projects have two possible outcomes: if a project is successful, it generates a profit; if it is unsuccessful, then the investment is lost. A project completely funded by a loan limits the borrower's potential loss, but not the potential profit. If the project is successful, the borrower yields the profit (less interest) after repaying the loan.

If the project is unsuccessful, the borrower does not lose anything. For the lender, the situation is the opposite. The lender yields a limited gain (interest and charges) if the borrower's project is successful but does not participate in an additional upside gain.

When a project is unsuccessful, the lender bears most of the costs (Jensen et al., 1976), i.e., the lender suffers the loss of interest rate and of principal if no collateral or guarantees are provided. Even if the bank has access to collateral, it might not be able to offset the loss of the full amount lent.

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Jensen and Meckling (1976) argue that the conflict between debt-holders and equity-holders arises because equity-holders have an incentive to invest suboptimally. Borrowers and lenders have different risk preferences. This leads to the well-known adverse selection problem (Stiglitz et al., 1981). Investors have strong incentive to use their equity for the projects where returns are certain and to attempt to borrow money for riskier projects. Profits from undertaking a high-risk project are realized by the owner of the firm as an equity holder, whereas the bank only receives the agreed upon interest for the loan and does not benefit from additional profits. In contrast, losses in a high-risk project can lead to bankruptcy, which would lead to losses for the debt holders as well (Lind, 1994). Swedish banks are usually not involved in ownership or part-ownership of businesses and have traditionally focused upon loan capital rather than equity financing, which is typically provided by venture capitalists and business angels. Consequently, banks are risk-averse and want to ensure that the borrower repays the credit and interest. Therefore, banks prefer lending to low-risk projects. Firms, however, have a natural incentive to invest the borrowed funds in riskier projects.

Hence, adverse selection may lead SMEs to only ask for external funding for their riskiest projects. However, it is difficult for lenders to determine the risk associated with a potential borrower either because of the absence of comprehensive information or the borrower's incentive to understate the risk involved in the business project for which funding is sought.

The lending officer cannot observe ex-ante certain information that is relevant to the decision to support a credit request. This information is typically associated with certain characteristics of the borrower and the riskiness of the project. There are two types of misinformation given to banks about the real risk in projects for which funding is sought. The firm can either actively withhold information from the bank or consciously misinform the bank.

Information that might be regarded as necessary in the credit assessment process but might be withheld by the SME can include project technical details and the competence of the firm to handle this new technique and information regarding new markets. Not having access to this information can lead to a different credit assessment, which might affect the outcome of the decision. In addition, the SME also has an incentive to overstate the performance of the firm or a certain project and might underplay the importance of certain detrimental information to the bank. The firm might, for example, describe a project as more profitable to the bank than it is in reality by overestimating potential sales volume.

When there is adverse selection, borrowers who recognize they have a higher risk of defaulting on the credit contract than the average group of borrowers will tend to borrow, whereas those who have a below-average risk may decide it is too expensive to borrow if the cost for credit reflects the average risk (Stiglitz

et al., 1981). In this case, interest rates set according to the average risk will not be sufficient to cover the losses that may eventually arise because more of the actual borrowings at this interest rate will have above-average rather than below-average risk.

Compared with the problem of adverse selection, which reflects the borrower's incentive to understate risk prior to the granting of funds, moral hazard arises after the funding decision and reflects the incentive to shift to higher risk.

2.3.2 Moral hazard

A problem that only occurs when the project is financed with external debt instead of external equity is that of moral hazard, because the SME can shift risk to an external debt holder but not to an external equity holder. The problem of moral hazard arises in the credit relationship after a credit contract has been executed, and involves the risk that the small business will not perform in a manner consistent with the credit contract.

Moral hazard can be described as a situation where the SME deliberately takes advantage of information asymmetry to redistribute wealth to itself in a covert manner, which is ultimately detrimental to the bank (Binks et al., 1992). The problem of moral hazard is particularly relevant when relatively large amounts of external debt are needed in relation to internally generated funds or additional funds from the owner. The investment in high-growth projects can have a significant impact on the strategy of SMEs, which might imply shifting risk to the debt holder (Berger et al., 2003) after the credit contract is executed. An external equity holder, on the other hand, has much better control through ownership over the managerial and strategic actions of the firm and can directly influence the strategy of the firm. Consequently, the problem of moral hazard is of limited concern if the project is financed with external equity instead of external debt. This might explain why many high-growth firms and high-risk ventures often obtain external equity from venture capitalist or business angels before they obtain external debt (ibid.).

There are several ways borrowers can benefit at the expense of the lender. One alternative for the SME is to follow the preferences of the owner-managers, i.e., the risk-taking level of the bank increases. The owner-manager may be more interested in protecting his or her own equity than repaying a loan, thus, may withhold information that could alter this outcome. This behavior can also manifest itself in a firm that uses the amount lent for other purposes than agreed upon. An SME owner-manager may use the credit for other projects or for private consumption instead of financing the agreed upon investment or project.

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Furthermore, the entrepreneurs also have an incentive to be opportunistic in their use of resources (financial bootstrapping). This puts demands on the bank to ensure that its borrowers do not engage in moral hazard.

2.4 Possible bank responses to asymmetric information and its consequences

Having discussed the possibly substantial information asymmetry between a borrowing SME and a bank, which may lead to problems of adverse selection and moral hazard, the thesis will now address the specific counteractions a bank can take.

Banks have to find ways to manage the potential problems associated with information asymmetries and to estimate the credit risk of a potential borrower correctly. The credit risk of the bank refers to the possibility that events may turn out differently from those that are expected. Banks have to deal with the challenge of making the right credit decision; this includes two possible outcomes of misjudging a customer. The first outcome is to misjudge a bad borrower as a good one and grant credit. This means that the bank would not only forfeit a gain but also potentially lose a part or the whole loan amount. The second outcome is to assess a potentially good borrower as a bad borrower and refuse a loan. The bank would then lose a good business opportunity and would present a potential loss in revenues. This might even include a loss of future business with the customer, or that the customer takes his business to another bank. Nevertheless, it is hard to estimate the economic consequences of this kind of mistake because it requires knowledge about what would have happened if credit had been granted. However, it should be noted that it is in the interest of the banks to lend as much as possible to customers with a high estimated ability to repay the loan and interest. The bank has every incentive to give loans that maximize their total surplus (Toivanen & Cressy, 2000).

There is an inherent contradiction in the management of bank credit; on the one hand, banks have to accept credit risks if they want to stay in business, but on the other hand, they might find themselves in danger by taking these risks. Therefore, banks have to manage their credit risk and prevent adverse selection and other behavior detrimental to the bank, such as incentives that can conflict with the interests of the bank.

Literature on asymmetric information and principal agent theory suggests different alternatives for managing these risks. One alternative is to adjust the price for a product or service as a means of compensation. One rational lender's response to the inherent risk of opportunistic behavior and moral hazard is to increase interest rates in order to compensate for this risk (McMahon, 1993). If the bank regards privately held firms as relatively risky, these firms will probably

face higher interest rate and security demands than publicly traded firms (Hughes, 1996). Higher security demands might increase administrative, processing, and monitoring costs. Higher transaction costs typically translate into a higher credit cost for the SME (Storey, 1994b).

Stiglitz and Weiss (1981) reason that the terms of credit, such as an increase in interest rate or collateral requirements, could increase the riskiness of the loan portfolio of the bank, and, therefore, could decrease the its profits. The authors argue that higher credit costs lead to more adverse selection, where riskier borrowers are willing to bear the additional cost and lower risk customers would seek other funding alternatives. Furthermore, they argue that an increased credit cost leads to higher potential for moral hazard, because it, in fact, pressures the borrowers to choose riskier projects in the hope of greater returns to satisfy the higher credit cost. These riskier projects have a lower probability of being successful, which increases the overall risk of the firm and the probability of default on the credit.

Therefore, based on the argument of Stiglitz and Weiss (1981), increasing the interest rate does not appear to solve the problem of adverse selection and moral hazard because the higher rate loan will become unattractive to borrowers with low risk. Higher interest rates also discourage safer borrowers (the adverse selection effect) and induce them to invest in riskier projects (the moral hazard effect). As a consequence, lending to low-risk borrowers decreases, leaving the bank with even more high-risk borrowers. Due to these reasons, banks are reluctant to use higher interest rates to cover their additional risk (Storey et al., 1996). If SMEs were considered riskier than other borrowers, this would most likely lead to complete loan refusals for these firms (credit-rationing). Therefore, it is important for the bank to find other ways than the interest rate to safeguard against the adverse selection problem.

Another alternative to manage the risk of asymmetric information is through equity participation. If the bank could invest equity in the firm either in combination with a debt investment or instead of debt, the bank may have access to other controlling and monitoring alternatives, through formal control systems, budget restrictions, and the establishment of incentive compensation to the owner-manager. Furthermore, an equity investment would make it possible to make claims on the future profits of the SME. However, the owner-manager's fraction of the equity falls, which reduces the fractional claim on the outcome of the project. As a consequence, the owner-managers might have incentive to limit their efforts in the project instead. If the fractional claim of the owner-manager for the outcome falls, he or she might devote less effort to the project (Jensen et al., 1976). However, Swedish banks are not allowed to acquire shares or equity in the firms they lend to or reserve the right to a share of the profits in other matters.

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The Banking Business Act (SFS 1987:617) states that:

“... a bank may not in loan agreements or its business generally reserve the right to a share of the profits of transactions which the bank is not entitled to conclude.”

The Banking Business Act (SFS 1987:617, 2:15)

As a result, equity participation is not a legal alternative to control the behavior of the owner-manager. The bank cannot make their claims to the future profits of the SME explicit, because this regulation prohibits banks from holding equity. Consequently, the bank cannot participate in the potential higher gain of a riskier project.

A further alternative discussed in the financial literature is the inclusion of various covenants and contractual restrictions or agreements. Such restrictions could include decisions regarding the amount of dividends, future debt issues, and maintenance of working capital (Jensen et al., 1976). Restrictions might also entail promises to meet certain financial ratios, or to engage in a certain line of business, or to refrain from acquisitions or other certain types of behavior (Berger et al., 2003). Priority assignment might also be involved. In the event that the borrower does not fulfill the loan covenants, the bank can take actions such as renegotiating the interest rate or demanding immediate repayment. However, such covenants must be based on something that is mutually observable and verifiable and make it necessary to monitor the borrower more intensively after the credit is granted. Furthermore, covenants such as financial ratios are based on the financial statements of the firm, which especially for SMEs is often completed with a time lag of more than one year after the accounting period to which it refers (Keasey & Watson, 1988; Keasey & Watson, 1991b). The additional costs for monitoring and the time-lag of SME accounting information makes it necessary for the bank to search for other alternatives to address the problem of asymmetric information and its consequences.

Furthermore, other creditors, persons, or institutions with accounts receivable can view such restrictions as unfair, e.g., liability for taxes, employees, and suppliers. Beginning in January 2004, the Swedish parliament has changed the preferential creditor law concerning the dominant position of banks through floating charges in case of bankruptcy. The intent of this new regulation is to limit the priority claims of banks and to enforce the reconstruction of firms instead of bankruptcy.

Setting any kind of limits to the borrowing firm makes it necessary for the bank to collect information through monitoring or bonding the borrower's activities. Monitoring is any collection of information by the bank to obtain a better picture of the borrower's performance and for detection of whether the firm is acting in a manner contrary to the interests of the bank. Monitoring

activities include scheduling meetings between the borrower and the lender and a minimum of requiring the borrower's annual statement. Bonding involves devising the means by which congruence between the goals of lender and borrower may be promoted. One approach is to use contracts which formally bind the parties to agreed types of behavior and provide for sanctions should actual behavior deviate from that specified in the contract (McMahon, 1993). The loan agreement is a typical example of a bonding response. The bank will formulate the terms of the loan contract in a manner designed to induce the borrower to take actions that are in the best interest of the bank. The terms of contract include the interest rate, the amount of the loan, the amount of collateral, and other contractual agreements ensuring that the firm will present a certain level of key ratios in their annual reports, e.g., debt-equity ratio. The bank reserves the right to demand immediate repayment if the borrower does not fulfill the agreements stated in the contract. The relative cost for monitoring and bonding activities for privately held SMEs are higher compared with publicly traded firms due to the fixed cost element of the operation of any monitoring system (Pettit et al., 1985). For example, privately held SMEs are unlikely to be monitored by rating agencies or the financial press, and the charges for accounting and audit systems are not directly proportional to the size of the firm.

Monitoring and bonding activities increase the cost of credit, which again might attract riskier borrowers (the adverse selection effect) or influence borrowers to choose riskier projects (the moral hazard effect). These responses are used to control and observe borrowers' behavior and are most relevant after the credit is granted.

However, the bank should cope with such risk before the credit contract is signed and has the choice to decide if a contract should be drafted at all. In order to do this, the bank can collect and analyze different kinds of information estimating the level of risk connected with lending to a particular firm. Furthermore, the bank can collect and analyze information indicating whether the bank would retrieve the lend amount from the firm regardless of what the outcome is for the individual project. This thesis is more concerned with the risk analysis and the risk management before the credit contract is agreed upon. It does not focus on the credit management process which could be labeled as risk control through actions and responses from the bank after the decision to grant credit is made. In the next section, the ability of banks to assess and limit credit risk is discussed.

2.4.1 Credit risk assessment

Stiglitz and Weiss argue that the expected return of banks depends on the probability of repayment. The ambition of banks is to attract low-risk

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borrowers, which are more likely to pay the interest rate and principal. Therefore, banks have developed screening devices (Stiglitz et al., 1981) to assess the risk of the borrowers defaulting on the credit. The bank has to estimate the real risk that the borrower is unable or unwilling to meet the credit obligation in the form of repayment and payment of interest. Therefore, the banks gather information about the borrower to estimate this risk. Banks try to limit their credit risk and try to avoid taking risks originating from the business activities of a borrowing SME. The aim is to manage the credit risk as tightly as possible.

In order to assess the risk related to a potential borrower default, banks and other lenders have developed measures to safeguard against losses. Therefore, information is gathered about the probability that the borrower will fail to pay loan principal and interest. Such information is typically associated with the characteristics of the borrower (Sargent et al., 1991; Scherr et al., 1993; Sinkey, 1992). The lending officer will evaluate these characteristics to estimate the probability of the SME acting in the best interest of the bank and to estimate the ability of the borrowing firm to succeed with the business project.

The lending officer uses available informational factors to categorize credit requests of an SME into two different groups: SMEs that are expected to succeed in repaying the loan with interest and those that are not. In order to determine the probability of loan repayment, i.e., determine the credit risk, banks consider both specific, quantifiable information and subjective, qualitative characteristics of the borrower. Such activities involve the screening of information that predicts the behavior of the SME.

However, the risk assessment of the potential borrower does not eliminate the risk of a possible default. The bank is still exposed to a certain level or risk in their credit business because the bank cannot be sure of granting credit only to those customers who will not default. Yet, it is expected that the probability of default might be decreased through the process of risk assessment. The objective of the bank is to protect against these risk exposures. To do this, the bank does not wait for signs of difficulties after the fact, where the borrower is unable to pay interest or installments. Instead, the bank undertakes action to limit this risk exposure ahead of time.

2.4.2 Alignment of risk-bearing

Stiglitz and Weiss argue that risk exposure can be limited through decreasing the borrower's probability of default at a given level of risk. They point to the fact that credit risk can be limited by aligning the interest of the borrower and the bank. This alternative limits the lender's downside loss and serves as a signal that the borrower is committed to the project and believes in the success of the project.

Stiglitz and Weiss (1981) specifically contend that the share of investment (the required portion of equity finance) made by the borrower may serve as instruments in limiting the risk exposure of the bank by the alignment of the risk-bearing function between the borrower and the lender.

In order to avoid adverse selection and other behavior detrimental to the bank, the bank tries to devise means by which congruence between the goals of lender and borrower may be promoted. The attempt to achieve alignment between the goals of the borrowing SME and the bank induce the borrower to act in a manner that is also in the best interest of the bank.

Consequently, the bank looks for signals that the SME is taking actions consistent with the best interest of the bank because a project failure would also expose the borrower to a disadvantage when goals between the borrower and lender are aligned. Furthermore, the alignment of risk-bearing provides a measure of comfort by ensuring that the borrower is committed to the project for which credit is sought. The borrower is also felt to be more motivated to resolve serious problems because both the borrower and bank are exposed to risks in the event of project failure.

2.4.3 Shifting of risk-bearing

A third possible mitigating response to avoid adverse selection, and other behavior detrimental to the bank and its negative consequences, is the shifting of (parts) of the credit risk to the borrower. In this approach, the bank ensures the repayment of a loan with means other than investment returns. Here, Stiglitz and Weiss argue that the risk exposure of the bank can be limited through shifting part of the risk to the borrower. They specifically argue that the financial standing of the borrower (the debt-equity ratio as an indication of the wealth of the borrower) and/or collateral provided by the borrower may serve as instruments limiting the risk exposure of banks. These alternatives limit the lender's downside loss because it shifts part of the risk to the borrower.

In addition, shifting part of the risk does serve as a signal that the borrower is convinced of the success of the project, because he or she guarantees repayment of the bank loan from sources not dependent on the project outcome. Shifting part of the risk to the borrower exposes the borrower to a higher risk with the investment and limits the risk of the banks. In case of project default, the borrower might lose the assets used to collateralize the loan.

Developing this theme, the risk assessment, risk-alignment, and risk shifting will now be elaborated upon and related to existing research in the field.

2.5 Relating firm characteristics to the theoretical categories of risk assessment, risk-alignment, and risk shifting

An extensive literature review of how certain characteristics of the firm affect the probability of success suggests that these characteristics can be distilled into eight distinct overall categories. These are: the general risk-taking proclivity of the firm; the competence within the business project; the Chief Executive Officer's (CEO) personal experience; the extent of strategic planning; the past performance of the firm; the share of investment for the firm; financial standing; and the level of collateral. For a review of previous research that discusses the use of these factors, the reader is referred to Table 18 in Appendix 1. The review covers 108 studies that examine how the characteristics of the borrowing firm affect the chance to receive a bank loan. The review of the literature made two important contributions to the choice of research model. First, it showed that none of the 108 studies investigated the effect of all eight firm characteristics on the ability of the firm to receive funding. Only considering a portion of the factors that might be decisive for a borrower to receive credit leads to some theoretical limitations. The relative importance of these factors increase at the expense of equally or more significant factors. Therefore, these factors might be described as essential for the outcome of a credit assessment, whereas they might in fact be of minor importance. Although lending officers undoubtedly use some of the information described in previous studies, the relative importance of that information needs to be reevaluated, particularly since different studies are inconclusive as to the most important factors of the credit decision process.

Second, the review shows that the eight factors, which are frequently discussed in the literature, are exhaustive in describing lending officers' assessment of growing SMEs. Further, when collecting the empirical data, lending officers were asked if they would use other or additional factors for their credit assessment, apart from those described in the study. Only 2 of 114 lending officers suggested that they would consider any other factor for their credit assessment of growing SMEs. This further supports that these eight factors are, in fact, exhaustive.

The eight characteristics of the firm that influence the borrowers' risk of default are linked to the three categories of risk assessment, risk-alignment, and risk shifting, as identified in the article by Stiglitz and Weiss. The three categories for the bank to deal with the risks of lending money to SME will now be discussed in detail.

2.5.1 Characteristics of the firm related to the credit risk assessment

Bank lending literature describes different methods for analyzing information about firms that can be linked to the category of assessing borrowers' risk of default. These methods comprise of the characteristics of the borrower and are both of financial and non-financial nature. Within the applied theory of finance, authors devise different methods for analyzing information about the firm, using various tools (Altman, 1985; Brealey & Myers, 1991; Broomé, Elmér, & Nylén, 1998; Koch, 1998). Techniques to analyze financial information are generally gathered from the balance sheets and income statements of the firm. Other authors discuss the focus on non-financial information, targeting on qualitative factors such as the characteristics of the borrower and starting the credit analysis from the situation of the firm (Burtis, 1991; Cranfill, 1989/1990; George, 1991; Glassman, 1987; Thurmond, 1990). The literature review (Appendix 1, Table 18) suggests that information pertaining to the characteristics of the borrower typically deals with the general risk-taking proclivity of the SME, the competence within the business project, the CEO's personal experience, the extent of strategic planning, and the past performance of the firm. In the following sections, the thesis will develop hypotheses concerning how these information factors affect lending officers' assessment of a credit request from a growing SME. All of these factors correspond to the risk assessment category identified by Stiglitz and Weiss (1981).

2.5.2 Characteristics of the firm related to the risk-alignment category

In order to align the risk-bearing function of lender and borrower, the bank can demand that the borrower make part of the investment (Myers et al., 1984; Shapiro, 1990; Stiglitz et al., 1981). This will signal that the SME is acting in a manner consistent with the best interest of the bank because project failure would also expose the borrower to personal losses. Furthermore, alignment of risk-bearing provides a measure of comfort by ensuring that the borrower is committed to the project for which credit is sought. As a result, the borrower is also more motivated to resolve serious problems if the project is not as profitable as estimated and leads to difficulty in servicing the credit. It can be hypothesized that the alignment of risk-bearing function affects lending officers' assessment of credit requests. More specifically, a hypothesis can be put forward about how the SME share of investment affects the assessment of the willingness to support a credit. This factor corresponds to the risk-alignment category that Stiglitz and Weiss (1981) identify.

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2.5.3 *Characteristics of the firm related to the risk shifting category*

In order to shift the risk from the bank to the borrower, the bank can ask for collateral (Anderson, 1999; Bergström et al., 1997; Stiglitz et al., 1981; Storey et al., 1996) or ensure that the financial standing of the borrower is solid enough to repay the loan should the individual project for which credit is sought fail (Altman, 1983; Beaulieu, 1994, 1996; Sinkey, 1992; Stiglitz et al., 1981). The financial standing of a borrower and collateral indicate the ability of the SME to repay the loan regardless of the performance of the project. How factors of risk-bearing affect lending officers' assessment of the credit can be hypothesized here. More specifically, one can propose hypotheses as to how financial standing and collateral of the borrowing SMEs affect the lending officers' willingness to support credit. All these factors correspond to the risk-shifting category identified by Stiglitz and Weiss (1981).

2.5.4 *Interaction effects*

Although it is assumed that the risk-taking proclivity of an SME is a very important factor for the lending officer's assessment, a certain amount of risk is unavoidable for an SME investing in a growth project. Therefore, it is essential to consider selected factors in combination with an SME risk-taking proclivity. Consequently, it is essential to consider and analyze the inter-relationship between various factors in combination with the SME risk-taking proclivity.

Banks wish to make investments in projects where the chance of the borrower defaulting is low, i.e., they prefer to invest in low risk projects. However, if the bank can be sure of retrieving its loan regardless of the outcome of the project, risk-taking becomes less of a concern. Therefore, an interaction effect between the risk-taking proclivity of the borrowing SME and factors pertaining to the chances of the bank retrieving its loan regardless of the outcome of the project is expected.

Stiglitz and Weiss (1981) point to the fact that the share of investment made by the borrower, the borrower's financial standing, and collateral can have both positive and negative effects on adverse selection as well as the incentives of the borrower to repay the loan. In other words, the share of investment made by the borrower, the financial standing of the borrower, and collateral provided by the borrower are likely to influence the relationship between screening criteria and the likelihood that a borrower will receive a bank loan.

This means that the lending officer might accept a higher SME risk-taking proclivity in combination with other positive signals when making the credit assessment, especially if these signals reduce the credit risk for the bank. The firm might back-up a credit for a riskier project with collateral. Alternatively,

the firm is able to mitigate the risk through their financial standing; the bank may find it less likely that an SME with above average liquidity and solvency will not repay a credit. Therefore the situation of a possible project default may not be considered serious. The firm might also demonstrate a strong belief in the project by investing an extensive amount itself, which might be viewed as a positive sign for the credit.

2.6 Specification of the research model

The conceptual model links the three theoretical categories of risk assessment, risk-alignment, and risk shifting to the eight characteristics identified in previous research that affect the probability of success for a firm and thereby the probability of receiving a bank loan. The eight firm characteristics are presented in Table 18 in Appendix 1. The risk-taking proclivity of the firm, competence within the business project, CEO tenure, strategic planning, and past performance are linked to the risk assessment category. The share of investment by the SMEs is related to the risk-alignment category and the financial standing and collateral of SMEs to the risk-shifting category. The eight characteristics of the borrowing SME are assumed to affect lending officers' credit assessment. Furthermore, characteristics of the borrowing SMEs representing the risk-alignment category and risk-shifting category are assumed to interact with the risk-taking proclivity of the SMEs when lending officers make their credit assessment.

The conceptual model of this part of the thesis is graphically presented in Figure 1. This model is used to investigate the first and second research questions of determining the information factors that lending officers actually use in their assessments of credit requests from a growing privately held SME and what factors they believe they use in their credit assessment.

two-way interactions in the credit assessment. Graphically, this relation is presented in Figure 2.

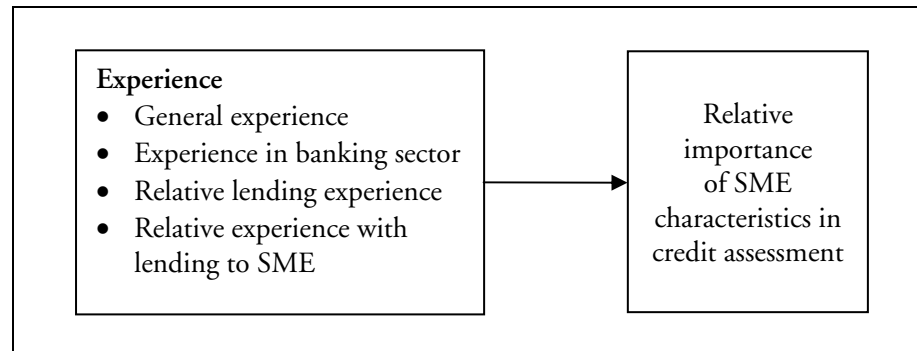


Figure 2: How lending officers' experiences affect the emphasis on certain characteristics of the borrowing SME for the credit assessment.

In the next section, hypotheses are established on how different firm characteristics affect lending officers' credit assessment.

2.7 Hypotheses on the relationship between risk assessment and willingness to support credit

As mentioned above, information pertaining to the characteristics of the borrower typically deals with the general risk-taking proclivity of the SME; the competence within the business project; the CEO's personal experience; the extent of strategic planning; and the past performance of the firm. In the following section, specific hypotheses are formulated on how each of these information factors affects the willingness of lending officers to support a credit request from an SME.

2.7.1 *The risk-taking proclivity of the SME*

The risk-taking proclivity dimension of a growing SME is an extremely important factor during the credit assessment. Some SMEs are extreme risk-takers, whereas others are extremely conservative and risk-averse (Miller, 1990; Wiklund, 1998). Growing firms are often entrepreneurial and may take considerable business risks. They often focus on innovation, which typically involves a considerable amount of risk. Due to the increased risk, these projects

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have a lower probability of being successful, which consequently increases the probability of default on a credit. As a result, the overall risk of the lender increases. For instance, the bank may regard a firm that prefers high-risk projects as riskier. Although taking risks has its rewards, such as the opportunity for very high returns, a bank will generally be restrictive in its lending. This is because the bank will not participate in the higher returns if the firm succeeds with a riskier project. The firm will only pay the credit and interest without any additional surplus for the bank when the project is successfully completed. On the other hand, the bank may not be paid if the project fails and in the worst case leads to bankruptcy.

For a bank, it is crucial to evaluate the credit risk of a borrower correctly as the risk level of the firm has a significant impact on the probability of loan repayment. The lending officer must be confident that the SME will not increase its risk-taking proclivity during the lifetime of the credit. Ultimately, the survival of the firm depends on its risk level.

Lending officers attempt to predict the behavior and operational risk of SMEs. This means that both the risk of an investment and its impact on the overall risk of the firm are evaluated. Risk estimation is difficult, especially if the company is privately held because the element of information asymmetry is present (see Section 2.3). Despite the potential problems of obtaining the relevant information of the risk-taking proclivity of the borrowing SME, research suggests that it is one of the most important factors influencing the willingness of banks to supply credits (Cranfill, 1989/1990; Evans & Jovanovic, 1989; Glassman, 1987; Keasey et al., 1991b; Pettit et al., 1985; Storey et al., 1996; Thurmond, 1990).

Therefore, it is assumed that the risk-taking proclivity of a firm has a critical effect on the lending officer's assessment of a credit request. This leads to the following hypothesis:

Hypothesis 1: Lending officers' probability of supporting credit decreases with an increased risk-taking proclivity of the borrowing SME.

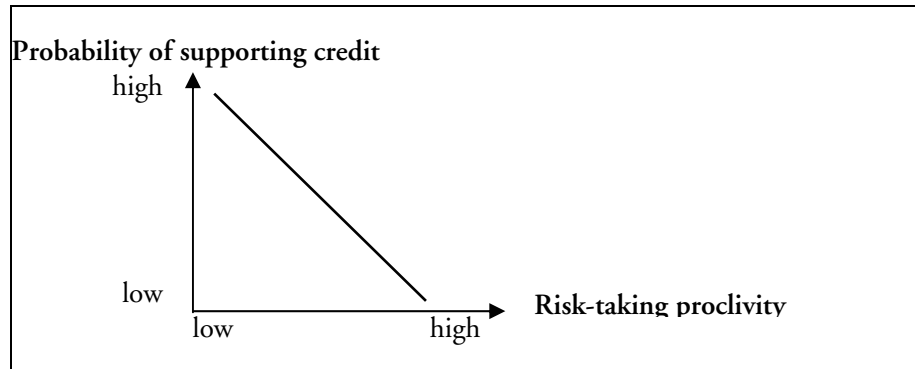


Figure 3: Risk-taking proclivity and lending officers' assessment of supporting a credit request.

2.7.2 Competence within the business project

The factor of competence within the business project relates to the ability of the SME to operate the new project successfully. Some researchers argue that the capacity of a firm to conduct a business project is mainly evaluated through financial reports or management's experiences (Beaulieu, 1994, 1996). However, the focus of this section will be on the competence of a firm within the business area. Management experience and financial factors are dealt with in later sections. Even if a distinction is made here, it should be clear that these factors are conceptually related to each other. Without certain capital backup, such as a certain financial standing or management depth and ability, a firm could possibly be viewed as lacking competence and therefore not having the capacity to conduct the business project.

The employees' competence is probably more relevant in growing firms. One explanation for this is the fast changing environment of growing companies. Therefore, it is important for these firms to employ people with the right temperament and attitude for this changing environment. The quality of the human capital working in SMEs is a critical factor influencing the likelihood that the business is able to expand successfully (Dess & Picke, 1999). However, the quality of human capital cannot be easily observed or measured by external parties, such as banks (Keasey & McGuinness, 1990; Pettit et al., 1985; Scherr et al., 1993). Key ratios and statistics such as employee turnover, employee training and education per year, as well as the average time of employment might shed some insight on the employees' knowledge and competence. However, these ratios and statistics are irrelevant when the lending officer does not or cannot analyze them. It is important to examine which type of employee leaves the firm when considering turnover. The lending officer may very likely arrive at different conclusions if only young well-educated employees

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leave the firm versus those employees who are ready for retirement. Days allocated for employee training and continuing education do not demonstrate much if the quality of the training is not taken into account. It is also valuable to consider if the continuing education has led to any changes in the employees' work.

In small companies, compared with larger companies each individual employee is relatively more pivotal. Therefore, the quality of human capital working in the SME is a critical determinant for the success of many growing privately held firms (ibid.). One way to assess the quality of human capital is to examine the success of SMEs with projects that require similar competence, knowledge, and skills (Brüderl & Schüssler, 1990). An SME that has successfully completed a similar project or a project that requires comparable competence, know-how, and skills, is more likely to manage a new project well. A good track record with similar projects, positively influences a credit assessment (Sargent et al., 1991; Scherr et al., 1993). The probability of a firm to succeed with a business project is assumed to be higher if it has extensive competence within the business project. A firm with limited competence within a business project that requires financing is seen as having a lower probability for success with the project and, accordingly, a lower probability of receiving credit. For the lending officer, it is, therefore, advantageous to learn whether a similar project has been completed successfully in the past. Thus, the following hypothesis is formulated:

Hypothesis 2: Lending officers' probability of supporting credit increases with an increased level of competence within the business project of the borrowing SME.

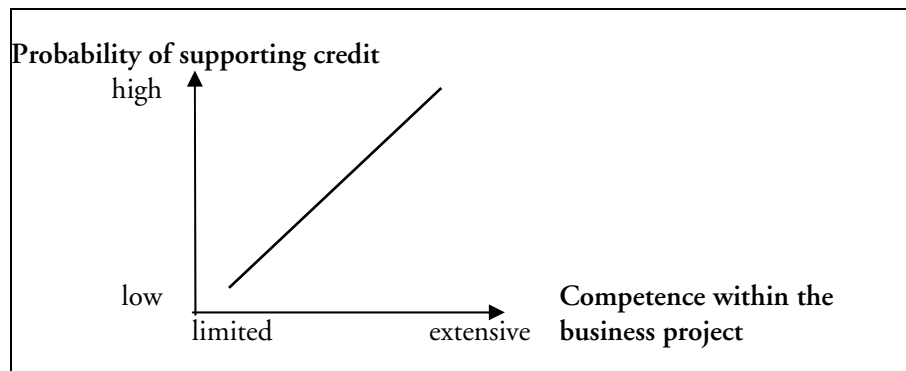


Figure 4: Competence within the business project of SMEs and lending officers' assessment of supporting a credit request.

2.7.3 CEO tenure

In the business literature it is suggested that certain general characteristics seem to be positively correlated to the probability of business failure and, therefore, indicate a potential default on a bank loan. Those characteristics include the quality and the abilities of its management (Glassman, 1987). Poor management has been cited as the number one reason for business failure (Vaughn, 1997). Consequently, an assessment of the management entrusted with the responsibility of operating the business is one of the key judgments to be made by a lending officer.

The human capital of the SME is directly tied to the qualities of the CEO. Human capital theory posits that individuals with more, human capital achieve higher performance in executing relevant tasks (Becker, 1975) and suggests that business owners with less human capital have businesses that are more prone to failure (Storey et al., 1996). Human capital provides the small business managers with knowledge that assists them in identifying opportunities and knowledge of ways to more effectively and efficiently pursue growth. A frequently investigated aspect of human capital is previous experience. This experience may lead to expertise in running an independent business (Wright, Robbie, & Ennew, 1997) and provide benchmarks for judging the relevance of information (Cooper, Folta, & Woo, 1995), which can enhance performance (Davidson & Honig, 2003).

Therefore, the development and performance of SMEs tend to be correlated to the small business manager's individual human capital (Brüderl et al., 1990). The experience and track record of the CEOs are, therefore, regarded as strong indicators of the future performance of the company (George, 1991) and its ability to succeed with a new business project.

The development and performance of a privately held firm tends to be correlated to the managers' individual focus and ambitions. The managements' previous experiences, in the form of education and socialization, play a major role in structuring current perceptions, values, and beliefs (Sargent et al., 1991). The management's past record shapes the identity of the firm and also communicates that identity to others. The lending officer will investigate the owner-manager's experiences as the basis for judging the future of the firm. While in some studies it is argued that experience is significant for success, in others it was found not to be significant (Cooper, Woo, & Dunkelberg, 1989; Sargent et al., 1991). In these studies, it is assumed that continuous growth is more the result of the management's capability than environmental characteristics (Penrose, 1959). An entrepreneur is most often regarded as an innovative and creative person suitable to manage a firm that focuses on innovation (Wiklund, 1998). Innovations are in turn often connected with considerable risk.

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One of the most common background variables that can demonstrate experience is the length of time a manager has been in his or her present position. Managers who are relatively new in their positions are often associated with innovation, risk-taking, and greater differentiation strategies. Longer tenure as a small business manager demonstrates more experience and, therefore, more human capital. Further, managers with longer experience tend to be older and, might due to their shorter investment time horizon be more risk averse (Scherr et al., 1993). One might expect lending officers to be more willing to lend to firms with a manager who has a longer track record in the firm. They would then be more certain about the owner's competence. Empirical evidence supports that CEO tenure is associated with lower risk-taking (Wiklund, 1998). Taken together this suggests that longer tenure is associated with higher chances of succeeding in new business projects. This should lead lending officers to be more likely to provide credit to SMEs that have CEOs with longer tenure.

This leads to the following hypothesis:

Hypothesis 3: Lending officers' probability of supporting credit increases with an increased tenure of the CEO of the borrowing SME.

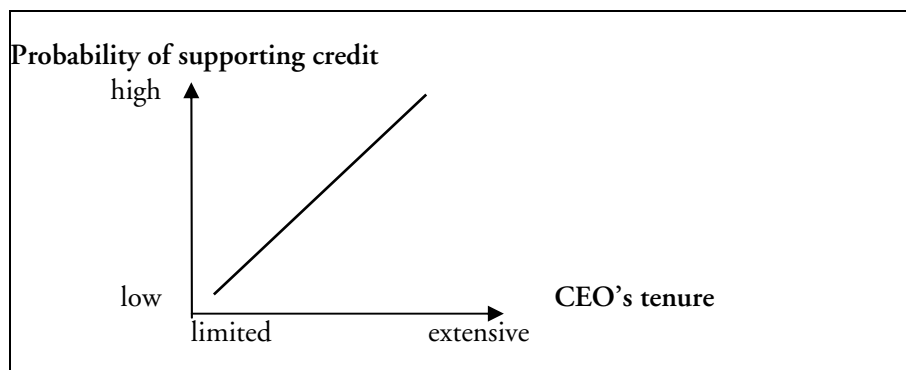


Figure 5: CEO's tenure and lending officers' assessment of supporting a credit request.

2.7.4 Strategic planning

The borrower's sensitivity to his or her external environment is another aspect affecting the performance of the firm. Factors that influence the external environment of a firm include economic and market conditions like recession, the business cycles, and competitors of the firm, and its products (Beaulieu, 1994, 1996; Sinkey, 1992).

Companies that operate in an unstable environment may have problems obtaining a loan. Most lending officers do not have the necessary knowledge and practical know-how to analyze such projects. The lending officer has to evaluate the ability of the firm to recognize and respond to changing conditions (Berger, 1997/1998).

In order to give the lending officer insight into the firm, the firm has to analyze its company and its competitive situation and articulate its intentions and responses in the form of a plan. This offers the lending officer insight into the growing SME requesting credit. In more detailed planning, the company may use budgets, schedules, and other tools to pre-empt directions that might impede the realization of potential business opportunities (Mintzberg & Waters, 1985).

It can be assumed that managers in growth-oriented firms are also future-oriented, i.e., they evaluate and exploit future opportunities based on information that concerns future conditions. Businesses with a defensive business strategy focus instead on current processes, current products and services, and current markets. Consequently, managers in the second type of business gather information on current activities and less on future potential activities. The future is regarded as uncertain and ambiguous and is therefore not reflected upon (Winborg, 1997). Accordingly, it should not be surprising to find that growth-oriented firms are more engaged in formal financial planning (Ray & Hutchinson, 1985), which is considered to be a part of the strategic plan of the firm. One argument for this is that firms that plan to grow often need external capital, and external financiers often request financial planning information (Winborg, 1997). On the contrary, uncontrolled growth might limit the future orientation of a firm because management has to focus on daily matters in order to secure the survival of the firm. For example, it is argued that managers in firms that experience rapid growth have less time for formal operational planning such as financial planning (Matthews & Scott, 1995). It can be assumed that fast growing firms change their business strategies more often because the changes of strategies are often based on shifting worldviews. An SME may develop strategies that fit into new mental frameworks (Hedberg & Jönsson, 1977).

However, the strategic plan of an SME can give an indication of its future performance. Hedelin (1999), found in an empirical study that the most important variables in the loan officer's assessment were the likelihood that the firm would still be in business after five years and the pragmatism of the business plan.

Evaluating the creditworthiness of a customer, the lending officer has to consider the ability of the firm to respond to changing conditions and to develop and implement effective strategies (Berger, 1997/1998). For this purpose, the customer's business plan, which is a subset of the strategic plan,

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can be used in two ways. The representative of the growing firm, applying for credit, influences the credit investigation by contributing fundamental information for the credit assessment. The manager can define the business strategy and ascertain how promising the strategy will be in the future and use this as a basis for his or her argument why the firm should be granted credit. Thereby, the business plan is used as an indicator of the ability of management to communicate the strategy of the firm to external parties. This strategy should be clear and consistent in order to persuade external parties about the future success of the firm, such as banks who make commitments (Sargent et al., 1991). Articulating its intentions in a formal plan, an SME will minimize confusion and enable the lending officer to better understand the business.

Second, a comprehensive strategic plan signals strategic competence. The extent and cohesiveness of the information and an understanding of the factors that affect financial performance and product quality are indirect indicators of the quality of management (Sinkey, 1992) and, accordingly, indicators of the ability of the firm to perform well. Taken together, this suggests that SMEs that are better able to produce comprehensive business plans are in a better position to succeed with a new business project and to receive a bank loan. This leads to the following hypothesis:

Hypothesis 4: Lending officers' probability of supporting credit increases with increased comprehensiveness of the business plan of the borrowing SME.

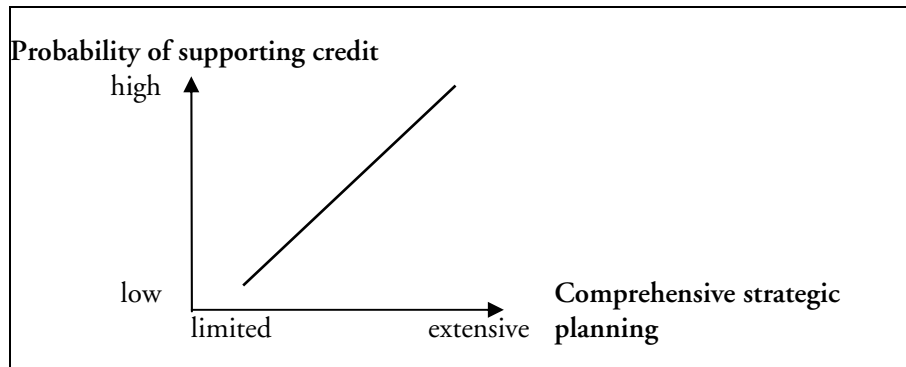


Figure 6: Strategic plan of SMEs and lending officers' assessment of supporting a credit request.

2.7.5 Past performance

The past financial performance of a firm can be used as a predictor for future success (Keasey et al., 1991b). It also indicates the ability of the firm to repay a loan (Gibson, 1983). The level of past financial performance shows if the firm has successfully operated in the past. Thus, it provides tangible representation of the competence of the SME. From this track record, the lending officer can estimate the probability of success for a new project. Consequently, the past financial performance of a firm is integral for the repayment of the credit amount and interest.

Indicators for the past performance of a company are found in quantitative measures based on accounting information. The generated profit or loss of a firm is one factor provided through external accounting information. The main purpose of external accounting information is to provide useful data to potential investors, creditors, and other users to make rational financial decisions (Kam, 1990). This information is easily accessible for Swedish firms, because independent of the legal form all firms have to submit this information to the tax authorities to complete the tax return.

The financial performance of a firm is a measure based on its financial statements, i.e., balance sheets, income statements, and schedules of cash flow. Financial ratios have been reported as reliable predictors of corporate failure by some researchers (Altman, 1983), which indicate their importance in the ability to predict the future success of a firm and the possibility of default on credit. Therefore, information on past financial performance allows banks to assess the creditworthiness of a particular firm. While it is possible that new projects are unrelated to previous projects, or that the human capital of the SME has changed, the lending officer could still, with some accuracy, estimate the probability of success of a new project on the basis of such historical statements.

Past performance can be measured by the profits of the firm and can indicate future performance. Through the ability to generate profit, the firm is able to repay a loan and interest. Furthermore, because financial statements for Swedish firms are required to be audited by authorized public accountants, again regardless of the legal form of the firm, the figures presented are likely to be accurate and reliable. However, profits accounted for in the financial statements are historical in nature and may not be a good predictor of future profits. Furthermore, it is argued that compared with larger firms, the accounting information of a small firm is less useful to predict future performance (Keasey et al., 1991b).

If the financial performance of the borrowing SME has been poor in the past, this would indicate shortcomings in management or other areas, and the incentives for developing new projects might be dubious. If, on the other hand,

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the firm has been successful in the past, this would indicate that it has the competence to develop new projects.

A stronger past performance is assumed to increase the lending officers' probability of supporting a credit request. It is assumed that the lending officer regards profitability as a positive sign because the firm shows previous success and is probably able to repay a loan with the cash flows generated through existing projects. A weaker past performance is assumed to be a negative sign because the firm does not show a successful track record with its existing projects. Furthermore, low or negative overall profitability might endanger the ability to repay the loan, especially if anticipated cash flows generated from the new project are delayed. This leads to the following hypothesis.

Hypothesis 5: Lending officers' probability of supporting credit increases with stronger past financial performance of the borrowing SME.

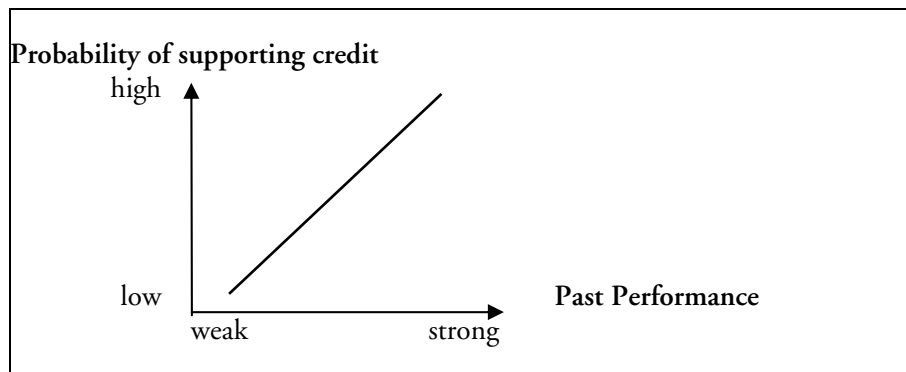


Figure 7: Profitability of SMEs and lending officers' assessment of supporting a credit request.

2.8 Hypotheses on the relationship between aligning of risk-bearing and willingness to support credit

In this section the thesis will describe the factors that affect the risk-alignment of the growing SME and the bank, which, in turn, affect the probability of receiving credit. More specifically, it details how the share of investment by the SME affects lending officers' willingness to support an SME credit.

2.8.1 Share of investment by SMEs

Another factor assumed to influence lending officers' credit assessments is the owner's share or that of the SME for financing the business project. Due to the combined role of management and ownership, the owner-manager has both financial and human capital at risk in the firm. When financing a new project, the owner-manager is often required to provide substantial cash investment, ensuring actions in the investor's best interest. Pettit and Singer (1985) maintain that this factor influences the selection of assets to be employed because it will depend on the managers' need for diversification and risk-return preferences.

It can be argued that the willingness of the SME to finance a larger part of the project could be seen as a positive signal by the lending officer. Two explanations can be given: first, a larger share of investments financed by the owner or through internally generated funds can be interpreted as a sign that the owner-manager strongly believes in the success of the project and is willing to risk either personal funds or internally generated funds for executing the project. Facing risk similar to that of the bank, the SME has no incentive to engage in a very risky project with a low probability of success (Jensen et al., 1976). Second, financing a larger share through internally generated funds, or by additional owner investment, decreases the amount of external funding required, which decreases the credit risk due to a lower amount of external financing. Thus, the owner's share of investments or that of the SME serves to align the risk-bearing function of the lender and the borrower, decreasing chances of opportunistic behavior (Jensen et al., 1976; Myers et al., 1984; Shapiro, 1990).

Furthermore, a sound equity base enables the SME to survive a delay in cash flows from the project or a period of poor financial performance. Consequently, it is assumed that the lending officers' assessment of supporting a credit request is influenced by the share of investment from the SME. Leading to the following hypothesis:

Hypothesis 6: Lending officers' probability of supporting credit increases when a higher share of the investment is contributed by the borrowing SME.

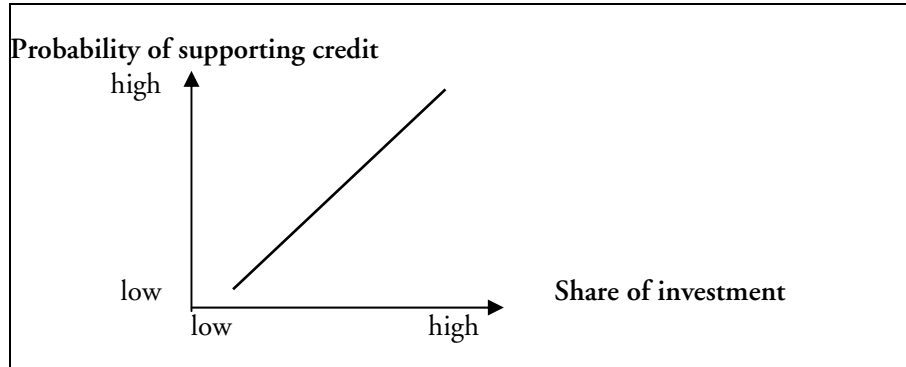


Figure 8: Share of investment by SMEs and lending officers' assessment of supporting a credit request.

2.9 Hypotheses on the relationship between shifting of risk-bearing and willingness to support credit

In this section the thesis describes factors that affect the risk-bearing of the borrowing SME and the bank, which, in turn, affect the probability of receiving credit. More specifically, it details how the current financial standing of the SME and the collateral of the SME affect lending officers' willingness to support an SME credit.

2.9.1 *Financial standing*

The financial standing of a company indicates that the firm has the necessary funds to operate the company (Beaulieu, 1996) and refers to the strength of the balance sheet of the firm. The current financial standing of a firm depends, in part, on its past performance, because profits and losses in the past increase or decrease the financial strength of the firm. However, the financial standing of a borrower influences the credit assessment somewhat differently and indicates the ability of the SME to repay the loan regardless of the performance of the project.

The analyses of the financial standing of a firm may reveal its operating and financial difficulties. Indicators for a company's performance are found in quantitative measures based on accounting information. These measures are financial ratios based on the financial statements of the firm, i.e., balance sheets, income statements, and schedule of cash flow. Financial ratios have been reported as reliable predictors of corporate failure by some researchers (Altman,

1983), which indicates the importance of these ratios in the prediction of default on credit.

Key financial ratios, such as those measuring profitability, liquidity, and solvency, prevail as the most significant indicators of a firm's survival probability. Financial studies have shown a significant difference in the key ratios between failed and successful firms (Firth, 1979; Houghton, 1983; Libby, 1979; Miller, Reed, & Strawser, 1993; Still, 1984). Studies investigate the accuracy of using key financial ratios as a predictor of bankruptcy or default on repaying bank loans and they contend that financial ratios allow banks to accurately assess the creditworthiness of particular firms.

However, financial ratios are based on the firms' accounting information, and many researchers hold that accounting has lost its relevance as a prediction of future success for a firm. Keasey and Watson (1991b), stress the incompleteness and unreliability of financial information available for small businesses. To them the diagnostic value of such information provided by small firms is generally much inferior to that of large, publicly traded firms. Some of the business partners of privately held companies, such as banks and auditors, have often characterized the financial reports of small companies as deficient (Andersson & Helander, 1993). The financial statements are typically filed more than a year after the accounting period to which they refer, with the average submission lag being even greater for failing companies (Keasey et al., 1988; Keasey et al., 1991b). Furthermore, the balance sheet and income statements of SMEs only represent a view of the financial situation for the period or day they relate to and may not be representative of the financial situation at other times.

One fundamental difference between a privately held firm and a publicly traded firm is that many owners of privately held firms, especially if they are also on the management team, can access relevant information to evaluate their investments through channels other than financial reports (Brytting, 1991). Financial reports are often viewed as less sophisticated for smaller companies. A positive correlation was found between the size of the firm and the use of a calculation system (Ask & Ax, 1997). In the same study, a correlation was found between the size of the firm employing 50 to 500 employees and the use of differentiation in cost accounting. This indicates that organizational size is also an important factor affecting control arrangements, for example accounting practices and financial information (Aston, Hopper, & Scapens, 1995). Similar arguments can be made for growing firms. Flamholtz (1983), for instance, argues for the recognition of informal factors in management control.

However, managers might misrepresent the financial condition of their firm in an attempt to hide poor financial results from investors and creditors (Beaulieu, 1994). They may even provide noncredible accounting information to obtain credit (*ibid.*). For all these reasons, financial information is likely to be

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less reliable and accurate as a prediction of default, leading to a situation that highlights the importance of other indicators.

However, financial lending institutions and other potential investors frequently require financial ratios as part of their credit assessments. The use of typical business ratios from a group of similar firms or those computed from an industry-composite balance sheet or income statement are helpful in forecasting possible future (pro forma) financial statements for a business firm (Vaughn, 1997). The ratios give an indication of the ability of the firm to generate positive cash flows, which is essential in assessing its ability to repay a loan. In turn, positive cash flows can be seen as a signal of success and the ability of the firm to service the debt (Sinkey, 1992).

It is important to emphasize that the financial standing of the borrower influences the lending officers' assessment differently than past performance does. The financial standing of the firm is mainly an indicator of whether or not the borrower is solid enough to repay the loan should the individual project that money is sought for fail. Furthermore, the firm would have additional financial resources available if the project turns out to cost more than was calculated. Therefore, it is assumed that a strong financial standing indicates that the borrower is able to repay the loan irrespective of the outcome of the individual project.

This leads to the following hypothesis:

Hypothesis 7: Lending officers' probability of supporting credit increases with stronger financial standing of the borrowing SME.

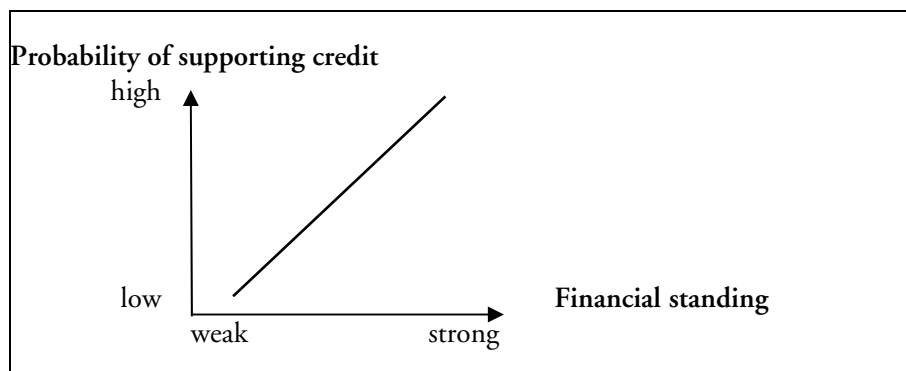


Figure 9: SMEs financial standing and lending officers' assessment of supporting a credit request.

2.9.2 Collateral

Collateral represents an alternative source of repayment for the bank and may be liquidated in case the borrower defaults. Due to asymmetric information, the bank tries to protect itself against defaulting customers. One of the best ways for the bank to protect itself against a credit default is to limit the freedom of action of the owner-manager (Hand, Lloyd, & Rogow, 1982), which reduces the probability of uncooperative behavior. This can be achieved by requesting collateral. Collateral can safeguard a bank against the risk that the loan cannot ultimately be repaid. In theory, the collateral should be valuable enough to recover both principal and interest due. However, the market value of the collateral is subject to change and may fall dramatically. Besides collateral from the firm, the lender often requires non-corporate personal assets or collateral from the owner-manager as security. Personal guarantees or personal collateral is actually equivalent to the owner-manager investing their own equity in the firm because they are putting their personal funds at risk (Thorne, 1989), exposing the borrower to personal losses in the case of failure. If the borrower fails to repay the loan on the due date, the bank has the right to sell the collateral to make up for the loan loss. The lending officer will regularly evaluate the taken collateral to ensure that the credit exposure is covered at all times. The collateral will be valued at its realizable market value in times of default, which might be different from its current market value. Thus, the bank as a secondary alternative of repayment uses collateral if the primary sources for generating the cash to repay the loan are insufficient to cover the loan. Furthermore, collateral is used to signal a willingness of the firm to fulfill the credit obligation. Personal guarantees and collateral are used as a sign that the owner-manager is willing to guarantee repayment with assets that are not dependent on the success of the firm. Thus, the risk for opportunistic behavior is limited (Toivanen et al., 2000).

Berger (1997/1998) maintains that collateral and personal guarantee are more compelling when lending to SMEs because alternative sources of repayment are generally limited in times of trouble. Looking at collateral is one form of controlling the risk of default on credit payment.

The bank has a two-fold reason in asking for collateral. One is the use of collateral as an alternative means of payment in case the borrower defaults. The other is to increase the owner-manager's incentive to repay the credit. A personal guarantee provides a measure of comfort by ensuring that the guarantor is committed to the business project and is motivated to work with the bank to resolve serious problems (Berger, 1997/1998) because he or she has personal assets at risk. Private collateral or personal guarantees from the SME owner expose his or her wealth to the losses of the firm. If the SME is not able to repay the loan, the bank has the right to seek payment from the SME owner

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or other guarantor. Shifting the risk of default from the bank to the private assets of the borrower or other guarantor, serves to align the interest of the SME and the bank. This alignment increases with the relative portion of the wealth of the SME owner being exposed. Most SMEs are privately held and very often the owner plays an active role in the business. In this case the business can be seen as an extension of the individual owner(s). Boundaries between the business and the owner-manager as an individual are blurred. Consequently, personal guarantees are even more important.

Satisfying collateral is collateral independent of the success of the projects or the firm and is sufficient enough to compensate for the amount lent in case the borrower defaults on repayment (Binks et al., 1992). Thus, collateral that is independent of the success of the project or the firm, such as bonds or shares in other firms, guarantee commitments, or private property, is of particular value to the bank. The value of other types of collateral, such as floating charge or receivables, may change depending on the success of the project or the performance of the firm. Due to the uncertainty of its value, such collateral represents greater risk for the bank, and is typically discounted (Leeth & Scott, 1989). This may lead banks to be less restrictive in lending money to SMEs that provide collateral that is independent of future success. This leads to the following hypothesis:

Hypothesis 8: Lending officers' probability of supporting credit increases when the strength of the collateral supplied by the borrowing SME increases.

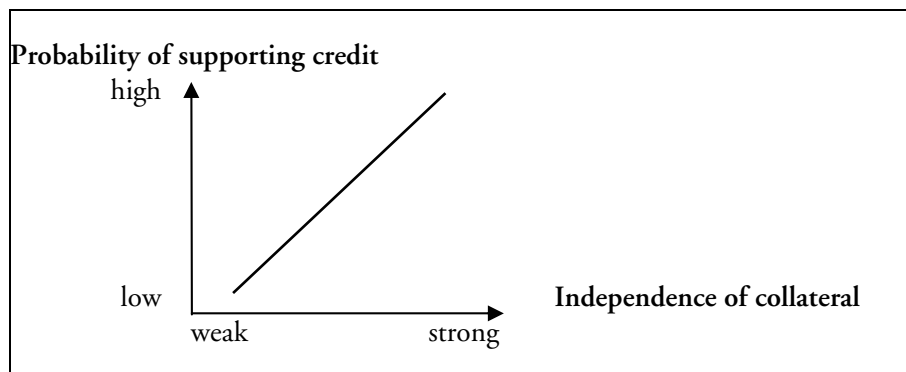


Figure 10: Provided collateral and lending officers' assessment of supporting a credit request.

2.10 Hypotheses on the SMEs risk-taking proclivity interactions

In this section, the thesis elaborates on selected factors representing either an alignment of the risk-bearing function between the borrowing SME and the bank or the shifting of a portion of the risk-bearing to the borrower in interaction with the SMEs risk-taking proclivity. More specifically, it is explored how the share of investment by the SME, financial standing of the SME, and independence of collateral together with their general risk-taking proclivity affect lending officers' willingness to support an SME credit request.

2.10.1 Aligning of risk-bearing factor for SMEs in interaction with their risk-taking proclivity

It may be important to consider the share of financing by the SME toward the investment and risk-taking proclivity concurrently. An SME that is able to borrow without any or only very little equity might have the incentive to engage in a very risky project with very high returns, even if the probability of success is very low (Jensen et al., 1976). As the share of investment for SMEs increases, the incentive to invest in very risky projects decreases because the borrower will face risks similar to the lender if the project fails. Consequently, SMEs will not invest in projects with a very low probability of success.

An SME financing a greater amount of the investment, either with internally generated funds or through additional owner investment in combination with a high-risk project, will probably experience less difficulty in obtaining credit than an SME that finances a smaller amount with internally generated funds or by additional owner equity. A larger share supplied by the owner or through internally generated funds actually decreases the risk involved for external party funding. On the contrary, this increases the risk for the SME or the owner, which, in turn, is a signal that the SME would make additional efforts to succeed with the project because it has own funds at risk. Therefore, the amount of risk top managers are 'comfortable' with is likely to have a large bearing on the debt position of the firm (Levin & Travis, 1987). If we consider the risk for the bank as the product between the risk of the project and the amount lent, the bank is in a better position when either factor or both factors decrease. Therefore, the optimal combination for the lending officer to support a credit request is the combination of low risk and a high SME/owner share of the project funding.

The credit request of an SME that does not finance a high-risk project with some internally generated funds or additional owner capital will probably be denied, whereas the share of financing by an SME for a low-risk project is much

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less important. It can be assumed that a higher degree of financing from the SMEs for the capital requirement can compensate, in part, for a higher risk-taking proclivity. Thus the following hypothesis is stated:

Hypothesis 9: Lending officers' probability of supporting credit decreases with high risk-taking proclivity, but at a faster rate for firms supplying a small share of the financing.

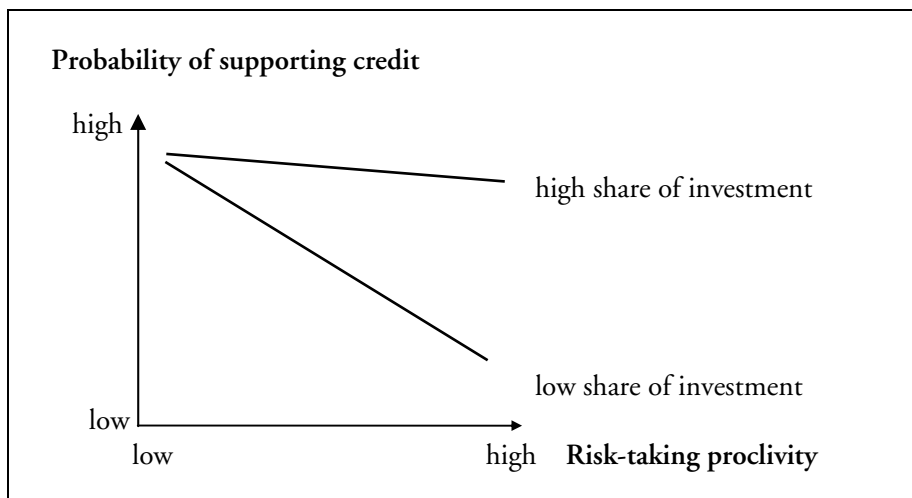


Figure 11: Share of financing, risk-taking proclivity and lending officers' assessment of supporting a credit request.

It has been argued above that the borrower's share of investment would significantly affect lending officers' probability of supporting credit regardless of the level of risk-taking proclivity. Figure 11 should be interpreted with this argument in mind. Low risk-taking proclivity is intended to indicate enough probability that the firm will succeed with the project and that the probability of default is low, even when the SME is only investing a low share. Moving to the right from the extreme left of the figure, the SMEs risk-taking proclivity indicates a higher probability of default with the project and thereby a higher probability of default for repaying the credit (with interest). At some point, the share of the investment by the SME begins to affect lending officers' assessment significantly.

2.10.2 Shifting of risk-bearing factors in interaction with SMEs risk-taking proclivity

It can be argued that the financial standing of the SME is evaluated in combination with the risk-taking proclivity of the SME. A strong financial standing can compensate, in part, for a higher risk-taking proclivity, because the bank is likely to receive repayment of the loan regardless of the outcome of the individual project for which credit is sought. A strong financial backup can compensate for a higher risk-taking proclivity, because the firm is able to invest additional money if the risky project becomes more capital intensive than planned. Furthermore, a strong financial standing is an indication that the firm is able to repay the loan although a risky project turns out to be unsuccessful. Consequently, lending officers' assessment of credit to a growing SME with a strong financial standing in combination with a low-risk project is assumed to be high. On the other hand, for an SME with a weak financial standing, chances of receiving a loan should decrease rapidly with increases in risk-taking proclivity, because the SME presumably will not be able to repay the loan should the project fail, nor be able to make any additional investment that might be necessary. This leads to the following hypothesis:

Hypothesis 10: Lending officers' probability of supporting credit decreases with high risk-taking proclivity, but at a faster rate for firms with a weak financial standing.

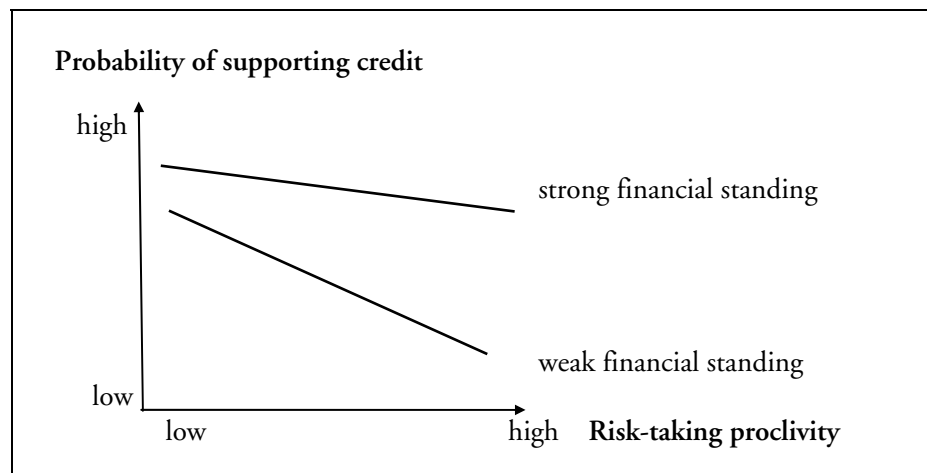


Figure 12: Financial standing, risk-taking proclivity, and lending officers' assessment of supporting a credit request.

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Figure 12 shows that when the risk-taking proclivity of the SME is low, lending officers perceive a high probability of success with the project and thereby a high likelihood that the firm will repay the credit (with interest). The probability of supporting credit is assumed to be lower for SMEs with a weak financial standing at a low level of risk-taking. Moving to the right, SME risk-taking proclivity indicates a higher probability of default with the project and for repaying the credit. The probability of supporting credit is assumed to be lower for a weak financial standing at all levels of risk-taking proclivity. Lending officers' probability of supporting credit is low with high risk-taking proclivity and strong financial standing, but even lower with high risk and weak financial standing. The probability of receiving credit decreases faster for SMEs with weak financial standing when risk-taking proclivity increases at a faster rate than for SMEs with strong financial standing.

The probability of the bank requesting collateral increases with the estimated risk of the project because the probability of project default, and thus credit default, increases. This implies that firms investing in risky projects would face a higher collateral demand. However, the bank would probably reject a loan if the risk is regarded as too high, because banks avoid placing themselves in a position where they are likely to have to use the collateral to repay the loan (Coulter, 1992). Collateral or securities do not increase the borrower's ability to repay the credit and interest. Instead, collateral is the last resort of repayment to the bank when the borrower is not able or willing to fulfill the credit obligations. Consequently, collateral can be seen as a form of insurance for the bank to ensure that the amount lent can be recovered in case of default. With this taken into account, it is still expected that collateral would be used to offset the risk-taking of the bank and as an incentive of higher probability of project success.

This results in the following hypotheses:

Hypothesis 11: Lending officers' probability of supporting credit decreases with high risk-taking proclivity, but at a faster rate for firms supplying weak collateral.

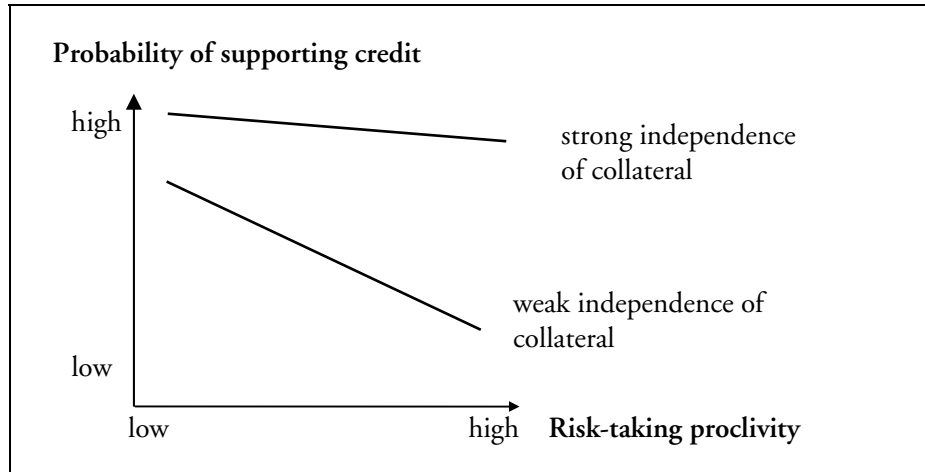


Figure 13: Collateral, risk-taking proclivity, and lending officers' assessment of supporting a credit request.

Figure 13 shows that the level of collateral does not produce a significant difference in lending officers' probability of supporting a credit request when the SME risk-taking proclivity is low, but does affect lending officers' probability of supporting a credit if risk-taking proclivity is high. The figure illustrates a slight decrease in the lending officers' probability to support a credit request with the combination high risk-taking proclivity and strong collateral, but a relatively low probability of supporting credit when the SME risk-taking proclivity is high and the firm only offers weak collateral.

2.11 Decision-making theory and the credit assessment

So far it has been argued that certain factors might influence the lending officers' assessment of credit request. Undoubtedly, these factors impact the lending officer positively or negatively in the credit assessment. The different factors are weighed and combined by the lending officer in reaching the final credit decision.

To assess the importance of different factors that the lending officers' use in the credit assessment, we might ask them to weigh these factors. However, there might be a difference between the lending officers' stated (self-perceived) assessment and their actual assessment. It may be difficult for a lending officer to really understand and recall the assessment process, which is a necessary condition for being able to describe the importance of different factors. Human beings are not perfect statisticians and make systematic errors in recording the

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events of history as well as in making inferences from these events. Decision makers might overestimate the probability of events that actually occur and of events that are available to attention because of their recency or saliency (Levitt & March, 1988). Researchers have found that people generally have difficulties in describing their own cognitive processes (Fischhoff, Gointein, & Zhapira, 1983) and the weight that people believe to place on different information for forming a decision and the actual weight differ significantly (Slovic, Fischhoff, & Lichtenstein, 1977).

Furthermore, lending officers, as well as other decision makers, do not always make perfectly rational decisions, but have bounded rationality (Cyert & March, 1963; Newell & Simon, 1972). One reason why lending officers may have difficulties recalling how they actually weighed different factors in their credit assessments might be due to information overload, i.e., the effect of previous experiences, intuition, and interactions with different lending requesting firms. Lending officers are biased in their decision-making, which not only inhibits decision-making but might also have consequences on the lending officer's ability to accurately report on his or her decision process (Shanteau, 1992b, 1996). Decision makers recall information particular to those situations that are successful (Fiske & Taylor, 1991). Dawes, Faust and Meehl (1989) argue that decision makers are likely to focus on one or two past successes instead of recalling the actual information that was used for a decision. In essence this means that a lending officer might not be able to recall the importance placed on different information that was used in a particular credit assessment or a typical credit assessment.

This leads to the next hypothesis:

Hypothesis 12: The lending officers stated assessment policy and his or her actual assessment policy differs.

2.12 The effect of experience within the credit assessment

In order to decide to support a credit request or not from a growing SME, the lending officer has to evaluate available information. The individual lending officer evaluates a credit application of a company differently although the bank might apply a standardized credit policy. The fact that lending officers manage information differently influences the credit assessment (Kling, Driver, & Larsson, 2003). In order to make accurate credit judgments, it is essential for banks to have competent, experienced, and skilled lending officers that are able to discriminate borrowers who are willing and able to repay their loans from

those who are not. The competence of the lending officer is integral when judging the borrower. However, defining the quality or competence of a lending officer's decision to support a credit request or not is a difficult task. This would be easy if standards existed for separating good judgments from poor ones (Shanteau, 1992a). Unfortunately, it can only be seen afterwards if the credit assessment and the decision to support a borrower were right or wrong. If a borrower is lent a certain amount and does not repay the credit and/or interest, it would, of course, appear to be a case of a wrong assessment. If, alternatively, the credit were not granted, it would be harder to estimate afterwards if the credit assessment and the decision not to lend were justifiable. If the borrower is able to finance his or her project with other financial sources or through a bank loan from another bank and succeed with the project, it might be that the lending officer's assessment was incorrect in the first place. However, it is probably seldom the case that a bank investigates such scenarios.

Nevertheless, it is generally assumed that experience leads to competence and that judgments made by experienced professionals differ from the judgments of less experienced professionals or novices (Abdolomohammadi & Shanteau, 1992; Bonner & Lewis, 1990; Ettenson, Shanteau, & Krogstad, 1987; Shanteau, 1992a, b; Slovic, 1969). Previous research suggests that the level of expertise of lending officers influences how they perform at the lending task (Andersson, 2001; Andersson, 2003; Schwarze & Rosenhagen, 1993; Shanteau, 1996). A basic assumption is that experienced decision makers weigh information rationally and make correct, and among themselves similar decisions (Shanteau, 1996). When a person is newly introduced to a task, it takes a while to become accustomed to various aspects of the situation, how to interpret it, and to develop a routine to synthesize this information (Yates, 1990).

More experienced lending officers have developed a certain routine for distinguishing what is significant when assessing a credit request. Nevertheless, even expert decisions include many extraneous elements that are only indirectly tied to the objective situation. Instead, such elements are drawn from long-term memory or are effectively created and rationalized by the expert.

If experience plays a main factor in the quality of a credit assessment, this means that one and the same credit request might be assessed differently and receives a different outcome depending on the experience of the responsible lending officer. Credit might be granted and different credit terms might be offered from the same bank depending on the lending officers' experience. Feldman & March (1981) argue that experience leads to expertise and that expertise is characterized by a greater reliance on intuition. This is supported by other studies stating that more experienced decision makers rely more on intuition than other factors, and that this fact would differentiate the expert from the novice (Jankowicz et al., 1987; Shanteau, 1992a, b, 1996).

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Furthermore, if more experienced lending officers' credit assessments ordinarily turn out better than those of the less experienced lending officers, it is likely that they emphasize different factors or place different emphasis on certain factors than their less experienced colleagues. This implies that experienced lending officers are likely to have different assessment policies. Theory on lending suggests that the eight factors hypothesized above be used in lending officers' credit assessments. Furthermore, it is argued that experienced lending officers rely more on intuition, whereas less experienced lending officers are unwilling to base their decisions on factors that may be considered vague or difficult to measure. This leads to the assumption that less experienced lending officers rely more on factors that are easier to quantify and to measure accurately. Out of the eight main factors discussed above, strategic planning, past performance, share of investment, financial standing, and collateral can be described as quantitative information and are less difficult to measure. In what follows, it is hypothesized that these factors are more highly valued by less experienced lending officers.

Hypothesis 13: Comprehensiveness of strategic planning is valued more by less experienced lending officers than by more experienced lending officers.

Hypothesis 14: Past performance is valued more by less experienced lending officers than by more experienced lending officers.

Hypothesis 15: Share of investment by the SME is valued more by less experienced lending officers than by more experienced lending officers.

Hypothesis 16: Current financial standing is valued more by less experienced lending officers than by more experienced lending officers.

Hypothesis 17: Independence of collateral is valued more by less experienced lending officers than by more experienced lending officers.

Levitt and March (1988) argue that certain properties of the interpretation of experience stem from features of individual inference and judgment. The intensity and depth of the search and assessment of values differ. For example, as a result of earlier experiences, the assessment of values might be influenced by the lending officer's experience of a particular previous credit situation and its perceived importance (Svenson, 1990). Andersson (2003) argues that an

experienced lending officer is expected to identify relevant information and thereby be able to make effective and rational credit decisions.

Lending officers who have been involved in credit decision-making for a longer period of time have a better knowledge base at their disposal; they have learned more and different things than lending officers with less experience. Less experienced or newly employed lending officers cannot refer to previous knowledge and experience and, therefore, might not be able to make distinctions in their credit assessments that more experienced lending officers consider when making the same credit assessment. A lending officer with little experience will need some time to become familiar with the interpretation of various aspects of the situation and to develop a routine to evaluate and combine these information aspects.

Little research exists that explicitly addresses how experience influences the degree to which various decision factors are used, and the empirical findings that have been presented are inconclusive (Camerer & Johnson, 1991). The most conclusive finding to date has been that experts have greater ability to use configural decision rules, i.e., more experienced decision makers combine different decision factors to a greater extent (Shepherd, 1999; Shepherd & Shanley, 1998; Zacharakis, 1995; Zacharakis & Shepherd, 2004, forthcoming).

Although lenders are predicted to use the selected interaction for the assessment whether to support a credit request from a growing SME, the interactions should become stronger when lending officers gain experience. It is likely that less experienced lending officers' assessment structure is less complex than those of more experienced lending officers and that their emphasis on the combination of information aspects is lower. This suggests that less experienced lending officers put less emphasis on the risk-taking proclivity of the borrowing SME in combination with factors that increase the alignment of risk between the bank and the borrowing firm or shift risk from the bank to the borrower.

Therefore, it is hypothesized:

Hypothesis 18: Risk-taking proclivity in interaction with the share of investment by SMEs is valued less by less experienced lending officers.

Hypothesis 19: Risk-taking proclivity in interaction with financial standing is valued less by less experienced lending officers.

Hypothesis 20: Risk-taking proclivity in interaction with independence of collateral is valued less by less experienced lending officers.

2.13 Summary

To estimate a borrower's probability of default, lenders focus on an assessment of different factors. The main question in the lending officer's credit assessment is whether or not it is sufficiently probable that the borrower will repay the loan and interest. In order to estimate the credit risk, the lending officer searches for, acquires, and then uses relevant information. These methods consist of the characteristics of the borrower and are of both a financial and non-financial nature. Five factors were identified to assess the credit risk of a borrower. These factors are: the risk-taking proclivity of the SME, the competence of the SME within the business project, the CEO's tenure, the strategic plan of the SME, and past financial performance of the SME.

One method a bank uses to limit the credit risk is by alignment of risk-bearing with the borrower. The main factor is to what extent the SME finances a project with internally generated funds or by additional investment from the owner. This ensures that the bank and the SME share the same goals and both parties are subject to loss in case of a project failure.

Another alternative to limit credit risk consists of shifting the risk from the bank to the borrower by ensuring that the firm will repay the loan regardless of the project outcome. Factors guaranteeing that the credit will be paid were found to be a good current financial standing and strong independent collateral.

Hypotheses were developed arguing that eight factors influence lending officers' assessments of a credit request in similar ways. Furthermore, it is hypothesized that the factors limiting the risk of banks, by either risk-alignment with the borrower or risk-shifting from the bank to the borrower would interact with the borrower's risk-taking proclivity. Therefore, it was hypothesized that the share of investment by the SME, its current financial standing, and its collateral interact with the risk-taking proclivity of the SME when lending officers assess a credit request from a growing SME.

In addition, it is hypothesized that the lending officers lack understanding of their own assessment policy. Moreover, hypotheses are developed that less experienced lending officers focus more on measurable factors in their credit assessments and less on the combination of the borrower's risk-taking proclivity, with factors that increase the alignment of risk between the borrower and the bank and factors that shift credit risk from the bank to the borrower.

3 Method

3.1 Introduction

In order to draw a more general conclusion on lending officers' assessments concerning credit requests of growing SMEs, this study consists of a quantitative approach. In my previous study (Bruns, 2001), the credit process was examined using a qualitative research method. Interviews were conducted with lending officers from different banks, who had reviewed a credit request from a real SME that successfully dealt with growth projects. This method captured in-depth qualitative data about different lending officers' assessments of a specific credit case. The aim of Part Two of the study is to develop the insights gained from the results of the earlier study by moving from a specific level of investigating the assessment process of three different banks as related to the credit application of one specific SME and on to a more general level of investigating lending officers' assessments of credit requests from a myriad of hypothetical SMEs. The overall choice of methodology was to start with an exploratory qualitative analysis and continue with a quantitative research approach using statistical analysis based on the variables identified in the theoretical and empirical part of the initial study.

The empirical part of this dissertation consists of three phases. Phase I comprises a conjoint experiment in which lending officers assess the credit requests of a variety of hypothetical growing SMEs. A conjoint experiment was chosen as an appropriate approach because it allows for the observation of the contextual action of lending officers' credit assessments while eliminating recall biases. The conjoint experiment captures the magnitude of factors that lending officers actually use when assessing credit requests from growing SMEs.

Phase II consists of lending officers' self-perceived assessment policy and concerns their understanding of their own assessment process by asking which factors they believe they use when assessing credit requests from growing SMEs. A questionnaire is used to approach lending officers' self-perceived assessment process because it captures what lending officers believe to be the important factors when assessing credit requests from growing SMEs.

Phase III consists of a post-experimental questionnaire collecting data on the demographic information of the individual lending officers' general and specific lending experiences.

Each of the phases is explained in detail in this chapter. The chapter starts with a presentation of the sampling plan, research method, and features of the

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sample. Second, it gives an overview of the conjoint analysis. Third, the chapter moves on to describe the research instrument. Fourth, the experimental design is discussed. Fifth, it discusses validity issues and possible limitations.

3.2 Sampling plan, research method and sample

3.2.1 Research design

A total sample of 114 lending officers who assess credit requests from SMEs was selected between July and October 2002. These lending officers represent four of the five largest commercial banks in Sweden and are dispersed among 56 different bank branches. The four bank organizations represent 61.7% of all Swedish bank offices and 69.7% of all Swedish bank employees. By the end of 2002, these four banks held 65.9% of deposits and a 56.7% share of lending to the public in the Swedish banking market (Bankföreningen, 2003a). One hundred and eight of the participating lending officers were recruited from among 55 bank branches within a 150-kilometer radius from Jönköping, a region known for its small and medium-sized businesses and entrepreneurial spirit. A pilot study with 6 lending officers was conducted. These lending officers represented the same bank branch, located about 1,000 km from Jönköping.

The unit of analysis for this study is the individual lending officer's assessment of whether to support a credit request from a growing SME. In order to select appropriate lending officers who assess the credit proposals of growing SMEs, contact was established with banks at a regional or local level. Initially, I approached a district manager, division manager, or branch manager by telephone to explain my research and its importance from an academic point of view and for the bank.

In turn, the managers of four of the five biggest commercial banks in Sweden provided me with contact information of individual lending officers having at least some experience with lending to SMEs. The fifth bank showed a positive attitude and interest in the study at the regional level, but interviews could not be conducted in a timely manner due to organizational changes. The regional and local organizational level was chosen as a pool for lending officers to ensure that a meaningful sample of lending officers with experience in assessing lending requests from growing SMEs could be obtained. In the process of arriving at statistically significant information on the assessment of credit requests by SMEs, this study focused on lending officers with relevant experience rather than a random sample.

After having established contact with the banks, the top management of two of the four banks (Bank Alfa and Bank Gamma) showed a positive attitude towards this research. Both banks requested information about the exercise design and the estimated time that would be required for each lending officer to conduct the exercise. Both banks wanted to limit the number of participating lending officers. After some discussion, both organizations agreed on the participation of about 20 lending officers. After considering the research design, one of these two banks (Bank Gamma) refused to answer some demographic questions regarding the specific bank branch. Having this feedback before conducting the pilot study allowed for the removal of branch-specific questions from the questionnaire. Although the questionnaire was changed with consideration to the feedback from Bank Gamma and the pilot study, most lending officers of this bank failed to answer a number of the questions. However, after the initial contact with and subsequent support of the management of these two banks, it was much easier to make contact with the local management to present the study. At the local level, management was very helpful in supplying contact information about lending officers who would be available for the experiment.

A third bank (Bank Beta) supported the study very strongly at the regional level and made it possible to have access to other district managers and division managers to present the study. All of the district or division managers who were contacted supplied the contact information of individual lending officers responsible for the credit assessments of growing SMEs. This bank organization let 52 individual lending officers participate in the study, which was the highest number of respondents. This number also includes the six lending officers from the pilot study.

The fourth bank (Bank Delta) supported the study at a higher regional level, allowing managers for smaller regions to be contacted for this study as well. All of these district managers were very positive to the study and supplied information about bank branches and lending officers to contact for the study. Twenty-one lending officers from this bank participated in the study.

Data can be collected *vis-à-vis* a face-to-face meeting, mail contact, or over the phone. However, due to the complexity of the material, it is not always possible for the respondent to review the material and evaluate it at the same time. Therefore, the respondents were visited and the experiment was performed under my direct supervision. This allowed better opportunities to explain the more difficult task associated with conjoint analysis and to guide the respondent through the process.

Data collection was conducted at the participants' workplaces, and schedules were pre-arranged with the participants. The lending officer was contacted by phone and a date and time for the appointment was arranged. Once a lending officer had been contacted, most managed to complete the exercise, but a

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couple of meetings had to be rescheduled. The exercise was conducted in the course of the meetings with the lending officers. At each meeting with a lending officer, the importance of the research was emphasized from both an academic and bank perspective. The respondent was made aware of management's support and interest in this research, assuring that the lending officer would not be acting against any bank policy by participating in the study. Furthermore, the management informed the lending officer by letter, e-mail, or verbally that they would not be held in violation of bank policy. The respondents completed the entire task within 15 to 75 minutes, with an average of about 35-40 minutes.

Table 1: Number of participating lending officers per bank organization.

	Number of participating lending officer
Bank Alfa	21
Bank Beta	52
Bank Gamma	20
Bank Delta	21
Total	114

3.2.2 Sample

In total 114 lending officers representing 56 bank branches conducted the experiment and answered the questionnaire. By conventional research standards, the size of the samples may seem limited. However, smaller samples are suitable for conjoint experiments as there are no hard rules on how many respondents are necessary for using a conjoint experiment. Although a greater sample size would increase the power of the statistical test, a sample size of 114 is larger than most conjoint or policy capturing studies. Researchers who studied venture capitalist decision-making used sample sizes of 53 (Zacharakis, 1995), 73 (Muzyka, Birley, & Leleux, 1996), and 66 respondents (Shepherd, 1997). Shepherd and Zacharakis (1997) suggest that a sample size greater than 50 would be sufficient to generate valid results from a conjoint experiment.

While not representing the Swedish banking industry or one of the banks as a whole, each group is likely to provide valid indications as to the likely credit assessment process of lending officers. Moreover, the region represented in the sample is well known for its above average number of SMEs and entrepreneurial spirit. Therefore choosing lending officers from this region was appropriate since they were more likely to have previously participated in lending to growing SMEs.

The sample represents a wide range of lending officers. Some differences in demographics are noted across the samples. 86% of the respondent were male,

14% were female. Regarding the respondents' educational background 7.9% had completed the nine year compulsory education (age 7-15), 41.2% had completed senior high school education (age 16-19), 28.9% had some college education (non-college graduates), 14% held Bachelor's degrees, and 7.9% held Master's degrees. The major area of study for the participants was predominantly business administration and/or economics, which accounted for 92.1% of the respondents. Of the respondents, 4.5% combined a major in business or economics with studies in other fields, e.g., politics, law, engineering and humanities, and 3.4% had majors in other fields.

Table 2: Responding lending officers' gender and education level.

		Percent
Gender	Male	86.0
	Female	14.0
Education level	Nine-year compulsory education	7.9
	Senior high school	41.2
	Some university education	28.9
	Bachelor's degree	14.0
	Master's degree	7.9

Respondents' ages ranged from 25 to 61, with an average of 45.5 and a standard deviation of 8.44. Bank employment ranged between 1 and 42 years, with an average of 22.9 years and a standard deviation of 9.7 years. Length of experience as a lending officer ranged between 1 month and 36 years, the average being 13 years, and a standard deviation of 7.4 years. Average total capital lent by all responding lending officer within fiscal year 2001 was 322 MSEK. The average total capital lent during that year by the respondents ranged from 26 MSEK for micro companies to 102 MSEK for small companies, and 196 MSEK to medium-sized companies. For fast growing companies, the average amount of credit equaled 1.5 MSEK.

The bank branches where the responding lending officers were employed ranged in number of employees from 3 to 100. Employees in the credit department ranged from 1 to 20. The branch served a customer area varying from 3000 to 800,000 inhabitants. The response rate to each question ranged from 89 to 114 answers. This response rate resulted from the lack of comfort in answering certain questions, especially on the part of bank Gamma's lending officers, who assumed that they were not supposed to answer some of the questions. The descriptives are summarized in Appendix 2, Table 19.

3.3 Conjoint analysis

A conjoint experiment was chosen as the appropriate statistical technique for measuring lending officers' assessments of credit requests from growing SMEs and in order to test the hypotheses developed in Chapter 2.

Conjoint analysis provides a powerful tool for representing an individual's decision-making structure (Green, 2001). It has been used in a variety of disciplines on judgment and decision-making within the past thirty years ranging from consumer behavior and other marketing areas to psychology, medical studies, management and expert judgment (for a review of the research, the reader is referred to Gustafsson, et. al., 2001; Melles 2001; Wittink et al., 1994; Wittink and Cattin, 1989).

However, within the field of finance and banking, this research method is rarely used. More recently, a small group of researchers has successfully applied conjoint method to the venture capital industry, (Shepherd, 1997, 1999; Shepherd, Ettenson, & Crouch, 2000; Shepherd et al., 1997; Zacharakis, 1995; Zacharakis & Meyer, 1998) through empirical testing to assess venture capitalists' decision-making.

These studies made important contributions to both new venture strategy and venture capitalist's decision-making literature by investigating venture capitalists' decision-making in real time rather than relying solely on venture capitalists' 'espoused' decision policies. It was shown that venture capitalists consider more than main effects when evaluating the performance of ventures.

Conjoint analysis is particularly appropriate for this study because this technique allows for obtaining real time data about the lending officer's credit judgments on a concurrent rather than a retrospective basis, which limits problems of recall and social desirability biases common in survey research on decision-making (Shepherd et al., 1997). More importantly, this method enables the determination of the importance of key factors and selected two-way interaction of the individual lending officer's assessments of credit requests from growing SMEs.

Each responding lending officer assesses credit requests from a number of hypothetical growing SMEs. From these profile judgments, the underlying structure of the credit assessment is investigated. The objective is to determine the nature of the contributions of key factors and selected two-way interactions and their respective weight to determine lending officers' individual preferences when deciding on the credit requests of growing SMEs.

3.4 Dependent and independent variables

3.4.1 Operationalization of dependent variable

The dependent variable used in this study is the lending officer's assessment of supporting the credit request of a growing SME. This means that the lending officer estimates that the growing privately held SME is willing and able to repay the credit with interest.

In Phase I, the conjoint experiment, the target variable was tapped by the question: "*How likely are you to support the credit request of this growing SME?*" Responses were measured on a nine-point scale from "*very low probability of supporting a credit request*" (score 1) to "*very high probability of supporting a credit request*" (score 9).

It is essential for both the bank and the SME requesting credit to know what factors determine the estimation of a growing SME fulfilling its credit obligations. Several important criteria can be found within the special characteristics of growing SMEs and within the bank's risk analysis that influence the likelihood of supporting a credit. However, not all of these criteria are essential for a lending officer's assessment to support a credit request.

The basic assumption for a conjoint experiment is that judgment attributes are known a priori. That is, it is possible for the researcher to select an exhaustive list of factors that determine the judgment before the experiment is carried out. Support for this assumption is given in this study because the attributes were derived from the literature and previous empirical findings reviewed in Chapter 2. The literature review of the 108 studies supplied an exhaustive list of factors for how characteristics of the borrowing firm affect the chance of receiving a bank loan. The general risk-taking proclivity of the firm, the competence within the business project, the CEO's personal experience, the extent of strategic planning, the past performance of the firm, the share of investment by the firm, the financial standing of the firm, and the level of collateral of the firm are the eight characteristics identified in the literature review. The lending officer probably bases his or her credit assessment on a few factors that are considered important to predict the probability of a firm fulfilling a credit agreement. A conjoint experiment of the credit assessment process should only include a limited number of factors that seem to be more practical in the firm's execution and assessment.

In Chapter 2 hypotheses were developed on how eight factors (attributes) influence lending officers' credit assessments. These eight factors, that are used within the hypothetical credit applications, are independent variables; they are (1) risk-taking proclivity of the SMEs, (2) competence within the business project of the SMEs, (3) the CEO's tenure, (4) strategic planning of the SMEs,

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(5) past performance of the SMEs, (6) share of investment by the SMEs, (7) financial standing of the SMEs, and (8) independence of collateral for the SMEs.

3.4.2 *Attributes and attribute levels*

One of the first steps in designing a conjoint study is to develop a set of attributes and levels that sufficiently characterize the situation under investigation. In this case, it meant a) identifying the factors that affect the assessment to support credit to a growing SME and b) determining how many different levels were needed on the scale to measure each factor, e.g., strong, average, and weak past performance.

In Chapter 2 hypotheses were developed on how eight factors influence lending officers' credit assessment. These factors are used in the conjoint experiment as attributes. The hypothetical loan applications that are evaluated by lending officers are constructed by describing a growing SME based on these eight selected factors (attributes). After the general types of attributes are determined from previous research, more specific factors and levels suitable for the use of the conjoint analysis are created. Each factor was then presented on two levels. The attribute levels present the range of values for each attribute, i.e., extensive, high, and strong compared with limited, low, and weak. The attributes and their levels are described in detail in Table 3 below. Other factors that might influence lending officers' assessment, such as the size of the growing SME, the ownership structure, market share, age of the firm, and the relationship with the lending officer, are held constant.

3.5 Experimental design

An important reason for limiting the experiment to two levels and eight factors was to keep the number of cases manageable while still creating valid results. If we are interested in assessing the impact of eight factors with two levels for each variable, 256 (2^8) hypothetical firms could be constructed. It would be an overwhelming task for each respondent to evaluate 256 experiments and still give consistent, meaningful answers (Green & Srinivasan, 1978). To avoid the risk of overburdening the respondents, it is important to keep the number of cases to be evaluated to as few as appropriate and possible (Gustafsson et al., 2001), but still have enough cases to generate significant and valid results. Therefore, an orthogonal fractional factorial design is used to reduce the number of cases from 256 to 16 (Hahn & Shapiro, 1966). This method reduces

the design systematically in a way that orthogonally is retained, i.e., the independence of factors (attributes) is maintained. A symmetrical fractionated factorial design is used, which refers to an equal number of levels for all attributes.¹

Table 3: Attributes and attribute levels of the conjoint experiment.

Attribute	high/strong/extensive	low/weak/limited
Risk-taking proclivity	The firm prefers high-risk projects with chances of very high returns.	The firm prefers low-risk projects that have high probability of gaining a small profit.
Competence within the business project	The new project is estimated to be profitable, it is in line with previous projects conducted by the firm, and the firm has documented knowledge within the field of activity.	The new project is estimated to be profitable, but is considerably different from previous activities, and the firm has limited knowledge within the new field of activity.
CEO's tenure	The CEO started his or her position eight years ago, has a business education, and is regarded as honest, honorable, and reliable. The CEO lacks previous work experience in the industry and in management.	The CEO started his or her position two years ago, has a business education, and is regarded as honest, honorable, and reliable. The CEO lacks previous work experience in the industry and in management.
Strategic planning	The company has a comprehensive business plan that is documented and followed.	The company follows a distinct strategic line, but its plans for doing so are not documented.
Past performance	The profitability of the SME is well above the industry average.	The profitability of the SME is lower than the industry average.
Share of investment by the SME	The firm finances at least 35% of its capital requirements either from internally generated funds or by additional capital from the owner(s).	The firm finances no more than 5% of its capital requirements either by internally generated funds or by additional capital from the owner(s).
Financial standing	The liquidity and solvency of the firm (<i>share of equity in relation to total capital</i>) is well above the industry average.	The liquidity and solvency of the firm (<i>share of equity in relation to total capital</i>) is lower than the industry average.
Independence of collateral	The firm offers collateral that is independent of the firm's success or failure, e.g., bond and shares in other companies, guarantee commitment, private property, etc.	The firm offers collateral that is dependent on the firm's success or failure, e.g., floating charge, receivables, etc.

The orthogonal plan used for the study is presented in the following table.

¹ For a discussion of symmetrical and asymmetrical design see Kuhfeld (1997).

Table 4: 16 profiles for the eight attributes at two levels.

	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral
Test	high	limited	extensive	extensive	strong	high	strong	strong
1	low	extensive	extensive	extensive	strong	high	strong	strong
2	low	extensive	extensive	limited	weak	high	weak	weak
3	low	extensive	limited	extensive	weak	low	strong	weak
4	low	extensive	limited	limited	strong	low	weak	strong
5	low	limited	extensive	extensive	strong	low	weak	weak
6	low	limited	extensive	limited	weak	low	strong	strong
7	low	limited	limited	extensive	weak	high	weak	strong
8	low	limited	limited	limited	strong	high	strong	weak
9	high	extensive	extensive	extensive	weak	low	weak	strong
10	high	extensive	extensive	limited	strong	low	strong	weak
11	high	extensive	limited	extensive	strong	high	weak	weak
12	high	extensive	limited	limited	weak	high	strong	strong
13	high	limited	extensive	extensive	weak	high	strong	weak
14	high	limited	extensive	limited	strong	high	weak	strong
15	high	limited	limited	extensive	strong	low	strong	strong
16	high	limited	limited	limited	weak	low	weak	weak

This design allows an analysis of each main effect and the selected two-way interactions with the borrower's risk-taking proclivity factor. In this study, the risk-taking proclivity of a firm is regarded as important to test in combination with factors that reduce banks' risk-bearing, i.e., share of investment by the SME, its financial standing, and its collateral. This is based on the Stiglitz and Weiss (1981) article in which they argue that the share of investment made by the borrower, the borrower's financial standing, and collateral can have both positive and negative effects on adverse selection as well as the borrower's incentive to repay the loan. For example, a lending officer may regard a firm's risk level as very important, but only in combination with a certain level of one of the other factors. In this case, the risk level might have a low value except when combined with another specific factor level (high share of the SME investment or high level of collateral). Therefore, the interaction effects of risk-taking proclivity with the selected other factors is regarded to be essential to test and analyze within the experiment.

Considering either more factors or more levels would increase the number of cases to be evaluated by each lending officer, which was considered counterproductive in the investigation of lending officers' credit assessments. Empirical evidence suggests that conjoint analysis of about 35 tasks is sufficient to evaluate respondents' decision-making (Stewart, 1988), whereas Green (1978) suggests that the conjoint analysis should not exceed 30 tasks per respondent in order to preserve both response rate and the quality of data collected. The literature review of the 108 studies (cf. Chapter 2) suggests that the eight factors identified are exhaustive in describing the chances of receiving a bank loan. Further, only 2 of the 114 lending officers who conducted the experiment suggested any other factor in order to assess to support a credit request from a growing SME, which is further support of the exhaustive nature of the eight factors.

For the statistical analysis of the variables, the following levels of the main factors (dependent variables 1 – 8) were coded +0.5. These variables are low risk-taking proclivity, extensive SME competence within the business project, extensive CEO tenure, extensive comprehensiveness of strategic plan, strong past performance, high share of investment by the SME, strong financial standing and high independence of collateral. All other main factor levels were coded –0.5 (McClelland, 1987). The selected interaction variables (9 – 11) were calculated to be either –0.25 or +0.25, depending on the coded value of the main factors considered in each of the interaction variables. The value of the interaction consists of the product between the value for risk-taking proclivity and the value of the other selected main factor, e.g., if the risk-taking proclivity factor had a value of +0.5 and the financial standing factor the value –0.5, the multiplication for the interaction value was –0.25. These values are used as a unit of measurement in the conjoint experiment.

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Regression analysis and analysis of variance (ANOVA) are the two statistical techniques used to analyze the data derived from the conjoint experiment. The statistical analysis is conducted to discover which attributes affect lending officers' credit assessments and their magnitude related to credit requests of growing SMEs. In order to test if the hypotheses on lending officers use of the certain factors and selected two-way interactions for supporting a credit request are supported, the t-statistics on the regression coefficient were aggregated from a Z-value. A Z-value greater than 1.645 indicates that the hypothesis is supported at a 5 percent significance level.

3.6 Research instrument

The research instrument consisted of six parts: (1) cover letter with a presentation and task instructions; (2) a description of the growing SME; (3) a description of the attributes and their levels; (4) the conjoint profiles; (5) a post-experiment questionnaire that asked the lending officer to state how important the eight factors used in the conjoint experiment were considered in his or her credit assessment; and (6) a questionnaire collecting demographic information of each individual lending officer and his or her respective bank branch. The complete research instrument can be reviewed in Appendix 3.

In the cover letter with the task instructions, participants were instructed to assume that they were evaluating established SMEs with the intention to support lending related to a growth project.

The lending officers were informed that while eight aspects of the borrowing SME varied, there were also characteristics that were held constant across all cases. These characteristics related to size of the SME in terms of employees, sales, location, products, and markets. The hypothetical company in question is a growing company with 20 employees and a turnover of 20 million SEK. The company sells five different products. Competition is normal, neither intensive nor weak. The company is located in a medium-sized Swedish town with 120,000 inhabitants. The firm has a market share of 5% of their relevant market. The five biggest customers contribute to 40% of the company sales.

The company was established 20 years ago as a limited company. The owner-manager owns 80% of the company shares, and the owner-manager's children own the remaining part. Management is regarded as honest and reliable.

The company applies for a loan to expand its business. The expansion equals an amount as large as the firm's equity. This should be regarded as a relatively large investment, e.g. for machinery, production facilities. The estimated project return of investment (ROI) is regard as normal.

The firm is presented as not having any credit history with the bank and no previous relationship with the responding lending officer. Other than the description above, the lending officer is asked to regard the firm as a typical firm that would request bank credit.

The lending officer was then asked to consider a firm with this background but with varying levels of the eight factors when evaluating the hypothetical credit applications.

The overall description of the SME and relevant term definitions were included on a detachable sheet that could be referred to while completing the survey. After indicating that the instructions were clear and well understood, participants evaluated the conjoint profiles. Each hypothetical firm is described separately on a sheet and presented to the lending officer.

Each hypothetical loan application consists of a combination of all the eight attributes, where each attribute is described by its level, i.e., the assigned value for an attribute, for example whether it is high or low. It is essential to represent the different levels of the factors in each hypothetical loan application because the aim of the experiment is to present the lending officers' credit assessments accurately. Therefore, the design must address these differences. The lending officer evaluated one hypothetical firm at a time and indicated his or her level of support for the credit request on a nine-point scale, where "very low probability for supporting the credit request" had a score of one and "very high probability for supporting the credit request" had a score of nine. A sample profile is shown in Figure 14.

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<u>SME JFP</u>	
Risk-taking proclivity of the SME	low
Competence within the business project of the SME	limited
CEO's tenure	extensive
Comprehensiveness of the SME strategic planning	limited
Past performance of the SME	weak
Share of investment by SME	high
Financial standing of the SME	strong
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support this growing SMEs credit request?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Figure 14: Example of hypothetical credit profile.

3.7 Phase II: Lending officers' self-perceived assessment

Phase II of the empirical part of this thesis consists of the lending officers' self-perceived assessment process. After conducting the conjoint experiment, respondents were asked to state how important they considered each of the eight factors to be when deciding to support a credit request from a growing SME.

More specifically, lending officers answered questions on their perceived importance of the eight factors: (1) the risk-taking proclivity of the SME, (2) competence of the SME within the business project, (3) the CEO's tenure, (4) comprehensiveness of the SME's strategic planning, (5) past performance of the SME, (6) share of investment by the SME, (7) financial standing of the SME, and (8) independence of collateral for the SME. The factors were presented in the same order as in the conjoint experiment.

In Phase II, covering the lending officers' self-perceived assessment policy, the target variable was tapped by the question: *"How important do you regard each of the following factors when you make the assessment to support a credit request from a growing SME, as described in the experiment?"* Each of the eight main factors was evaluated on a nine-point scale with 1 being *"very unimportant"* and 9 being *"very important"*.

Specifically, the lending officer was asked to answer the following questions presented in Figure 15:

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How important do you regard each of the factors mentioned below for your assessment to support a credit request from a growing SME similar to the company described in the experiment.

(Please mark the number that best represents your answer.)

<u>Risk-taking proclivity of the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>Competence within the business project of the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>CEO's tenure</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>Comprehensiveness of strategic plan for the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>Past performance of the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>Share of investment by the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>Financial standing of the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
<u>Independence of provided collateral by the SME</u>										
Very unimportant	1	2	3	4	5	6	7	8	9	Very important

Figure 15: Questionnaire for ranking of assessment factors.

With this information, the lending officers' stated importance of the selected factors when conducting a credit assessment can be investigated. Furthermore,

by using this research approach, the relationship between the actual assessment factors and the self-perceived factors can be examined as to how a lending officer actually weighs different factors in credit assessment compared with believed assessment factors. This can indicate the lending officers' introspection related to their assessment policies. In order to test the hypothesis that lending officers' actual and stated assessment policy differ, a paired sample t-test compared the relative importance weight derived from the conjoint experiment with the relative importance weight from lending officers' self-reports.

3.8 Phase III – Post-experiment questionnaire

The empirical study was concluded with a questionnaire on the demographic information of the individual lending officer's general and specific experience and basic information about the respective bank branch. Collecting this data made it possible to separate lending officers into two categories: more and less experienced. The questionnaire is presented in Appendix 3.6.

In combination with the conjoint experiment, it was then possible to investigate whether there are considerable differences in the use of the selected factors and two-way interactions that determine these two groups of lending officers' credit assessments. More specifically, Hypotheses 13 to 17 can be tested.

The operationalization of the experience variables is as follows:

General experience: Respondents were asked to state what year they were born. The difference between the year 2002 and the stated year was calculated. Furthermore, lending officers were asked to indicate their highest level of education using the following categories: nine-year compulsory education; senior high school; some university study; Bachelor's degree; Master's degree.

Experience in banking sector: Respondents answered how many years they have worked in the banking sector (at any level), how many years they have been employed by the present bank organization (at any level), how many years they have been employed as a lending officer (at any bank), and how many years they have been employed as a lending officer at the present bank organization.

Relative lending experience: Respondents were asked to state the average number of loans and the average amount of loans made per week during the last fiscal year of the bank, and to indicate the highest amount of loan principal to which he or she is actively involved in during the final decision process.

Relative experience with lending to SMEs: Lending officers were asked to state the number and percentage of the total loans that he or she had made during the last fiscal year of the bank that were to: (a) micro businesses, (b) small businesses, (c) medium-sized businesses, and (d) fast growing SMEs.

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In order to test the hypotheses about the importance of experience for the lending assessment, the regression analysis is performed with the eight main effects and the three interactions discussed in Chapter 2 as independent variables and the selected personal characteristics that reflect lending officers' experience, indicated above, as dependent variables. The standardized regression coefficient Beta and its statistical significance are calculated. A Beta with a 10 percent significance level is used to indicate that a certain type of experience influences the lending officers' use of a certain factor or a certain two-way interaction.

3.9 Pilot study

The conjoint experiment and the interview questions were first pre-tested on a group of faculty and doctoral students. The pilot study assessed the understandability of the instruments and estimated the time necessary to conduct the experiment. Although the pre-test with faculty and Ph.D. students only included ten credit cases out of the planned 33, it was possible to estimate the time for the respondents to conduct the main study. After some modifications, the complete research experiment was tested with six lending officers. Afterwards minor adjustments were made in the interview questions, but neither the hypothetical credit cases nor in the self-assessment survey was altered. The six lending officers were timed while they performed the exercise. The respondents needed more time for the first cases and less time for the remaining cases. The increased speed is likely attributed to the learning curve effect. The sessions with the first six lending officers took between 45 and 70 minutes. However, conducting the exercise took only between 25 and 45 minutes. The remaining time was used to discuss the research design and lending officers elaborated on some of the cases and mentioned credit decisions in which they had been involved similar to the hypothetical credit applications. This in turn is an argument for the face validity of the study. The initial test results of the pilot study with the six lending officers were included in the final study because the adjustments only concerned the post-experimental questionnaire and not the experimental design.

3.10 Validity, reliability, and research limitation

The advantage of using an experimental approach that combines a conjoint experiment and a more traditional questionnaire approach is twofold. One advantage is to eliminate the danger of recall and rationalization biases by using hypothetical credit requests in the experiment (Barr, Stimpert, & Huff, 1992;

Sandberg, Schweiger, & Hofer, 1988), which probably provides a more accurate estimation than questionnaires do of the factors that influence lending officers' credit assessments. However, including even the more traditional questionnaire approach, both for investigating lending officers' self-perceived assessment policy and different levels of experience, makes it possible to compare the results from the experiment and the self-perceived questionnaire and to categorize the findings from the experiment on different levels of general and specific experience. Most importantly, using an experimental and a questionnaire approach allows for the investigation of the lending officers' insight into their own decision-making, since the experiment indicated their actual use of certain factors when making the credit assessment, whereas the questionnaire indicated lending officers' self-perceived assessment structure.

Although a conjoint approach has its limitations, it also has its advantages, such as the focus on concurrent rather than retrospective reporting for collecting and analyzing credit assessments. In order to make it possible for the reader to evaluate the quality of this dissertation and its empirical approach issues of validity, reliability, and research limitations will now be discussed.

3.10.1 Validity

The validity of this research depends largely on the response rate and whether concepts are clear and operationalized properly. Once a conjoint experiment is conducted, the value of the study is determined. Little can be done later to eliminate problems that arise within the experiment. If a particular variable were not included in the research design, it would not be available for analysis. In order to limit this potential risk, a researcher may be tempted to include additional variables that might be relevant. However, each new variable would increase the number of cases that would need to be evaluated by each respondent. Statistically, the validity of the analysis would increase with the number of cases that each participant completes. However, asking a respondent to evaluate many cases might overburden the respondent, thereby reducing the validity of the experiment. Therefore, the number of cases to be evaluated by each respondent has to be reasonable. The researcher cannot just include additional variables to compensate for a lack of a clear conceptualization of the problem (Hair, Anderson, Tatham, & Black, 1995, 1998). This means that the lending officer would only react to what is provided in terms of attribute combinations. The critical question is if these are the actual attributes used in deciding whether to support a credit request for a growing SME or are other attributes just as important or even more so. Consequently, the number of cases has to be balanced to ensure optimization of capturing the respondent's assessment policy (validity) without overtaxing the respondent. Empirical evidence suggests that about 30 cases per respondent are optimal when using

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conjoint analysis in order to preserve both response rate and the quality of data collected (Green et al., 1978).

The fractional factorial design generated 16 cases. These cases were fully replicated in order to test lending officers' reliability in assessing the hypothetical credit requests from growing SMEs. A sample case was included to introduce the lending officer to the task. In total, the experiment generated 33 cases to be evaluated by the lending officer.

In order to validate the results of the study, different actions were taken. First, it is investigated if (and to which extent) the eight factors and the selected two-way interactions have an effect on each individual lending officer's credit assessment. Second, the reliability of each lending officer's response is analyzed by comparing the responses on the replicated cases with the original cases. Third, it is investigated if the selected factors have a positive or negative effect on lending officers' credit assessment and if this contradicts the directional hypotheses. These three ways to validate the results of the study are described in detail in Chapter 4.

3.10.1.1 Number of Factors and Levels

Within each of the hypothetical credit cases, the eight attributes are combined on two different levels. Research has indicated that decision makers typically use only three to seven factors for their decisions (Stewart, 1988). However, Louviere (1988) finds that consumers can almost always evaluate eight attributes and still make reliable judgments. Furthermore, when asked about the factors that are considered in lending decisions, experienced lending officers typically mention a large number of factors, although only a few of these are actually used in their decision-making (Macintosh, 1988; Shanteau, 1992a, 1996). Therefore, eight attributes varied on two levels were assumed to be the optimal number of attributes and levels because this creates a manageable number of hypothetical loan applications and avoids the risk of overburdening the respondents.

The variation of factors on only two levels was chosen because it is assumed to be enough to represent the range likely to be encountered. Both positive and negative signals for each factor could be presented for what makes the credit application attractive or unattractive.

Too many factors and/or levels would be difficult to handle by the respondents due to the potential for information overload. As more attributes and/or levels are used, more hypothetical credit applications would have to be evaluated by each lending officer. However, there may be risks associated with including too few factors, because different respondents might base their assessment on considerably different factors. To consider too few variables in the experiment could lead to a respondent not identifying the factors important for his or her assessment to support a credit request from a growing SME.

Consequently, an appropriate number of factors should be included in the conjoint experiment. The factors should not be too similar to avoid the risk that a respondent would not be able to discern the difference between them.

In the theory section, it was argued that eight attributes tend to appear in the literature with great consistency. Therefore, in the experiment these eight factors used, in combination with other factors held constant within each hypothetical credit application, because these factors are assumed to be sufficient to cover lending officers' assessment structure.

3.10.1.2 Face-validity

Interviews with the bankers involved in the credit evaluations of growing SMEs, as well as information from people familiar with the credit decision process and the pilot testing of the experiment were used to validate the attributes and their levels (compare Section 3.9).

During the experiment, many lending officers described real credit decisions that were similar to the hypothetical cases presented or they described a credit decision that was similar to the presented scenario except for one factor.

In addition, after conducting the experiment and questionnaire lending officers were asked whether they considered the factors and attributes used in the study realistic. All of the lending officers stated that all factors were important in the assessment of whether to support a credit request to a growing SME. Furthermore, they were asked if they would include factors or attributes not considered in the study or exclude factors considered in the hypothetical cases. Although some lending officers suggested that it might be possible to consider factors that were held constant in the study on different levels, such as age of a firm, its number of employees, its track record, etc., they did not have difficulties with these factors being constant. Two lending officers mentioned that they would consider another factor, namely environmental aspects in their credit assessments. All in all, the face validity of the study is supported by the lending officers' statements as to the strong similarities of the cases to real-life situations and their agreement that all factors were important when deciding on credit requests for growing SMEs.

Moreover, the analysis of lending officers' self-perceived assessment policy showed that all eight factors' importance were valued higher, on average than six on the nine-point scale, with one indicating very unimportant and 9 very important. This indicates that each factor on average was considered to be more important than unimportant for the lending officers' assessments whether to support credit requests from growing SMEs.

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3.10.2 Consistency in credit assessment-reliability

Conjoint analysis is rarely used as a research design within the field of finance and banking. Therefore, it was essential to estimate the consistency of the respondents' credit assessment. Each of the profiles generated through the fractional factorial design was entered twice under different names, giving a total of 32 hypothetical loan applications from growing SMEs. The order in which factors are listed in each case may have an impact on the assessment (Hair et al., 1998). To minimize order effects, the profiles and the order of attributes are randomly assigned within a profile for four versions of the experiment across respondents' assessment.

The responses to the two identical cases were compared to determine response consistency. As each individual filled out 16 matched pairs of profiles, it was possible to compute the correlation for each individual response. Discussions with the respondents revealed that they were unaware that the 16 profiles were repeated.

3.10.3 Research limitations

Conjoint analysis, like any other research approach, has its limitations and can be criticized for a number of reasons:

- the use of hypothetical credit requests from fictional firms lacks external validity;
- the experimental format removes the information search from the respondent within the credit assessment. The respondent might, in fact, look for other factors or other information than is supplied through the experimental design; and
- two-way interaction, three-way interaction, or interaction of a higher order not considered in the study might confound the results.

The first and second criticism could be avoided by studying a real credit situation. However, it would have been unrealistic and too time-consuming to study enough real credit requests in order to draw more general conclusions. In addition, a variety of studies in different areas suggest that simple models are extraordinarily powerful predictors of human decision-making (Hammond, Hursch, & Todd, 1964; Hammond & Summers, 1965; Hursch, Hammond, & Hursch, 1964; Wiggins & Hoffman, 1968) and that under even the most contrived cases, the decisions reflect actual decisions (Brown, 1972). Fischhoff, Goitein, and Shapira (1983) argue that once reliable factors for the decision are identified, one can emulate a respondent's decision-making to a large degree and even create good predictions when mis-specifying weights and/or

combination rules. Recent studies using a conjoint approach have generated valid results (Ettenson, 1993; Shepherd, 1997; Shepherd et al., 1998; Shepherd et al., 1997; van de Pol & Ryan, 1995; Zacharakis, 1995; Zacharakis & Meyer, 1998).

An extensive consultation was made with bankers on a district and division management level from three different bank organizations and academic colleagues to ensure that: (1) the attributes and the factors likely to affect the assessment behavior when evaluating the SME are described in a comprehensive manner and that (2) the attribute levels represent the range of values likely to occur. Pilot testing confirmed that the attributes and levels were appropriate for lending officers, and their combinations would, in general, represent realistic situations.

Another alternative would be to study the lending officers' credit assessment by using questionnaires, but this would introduce the problem associated with recall and rationalization biases. Conjoint analysis, on the other hand, eliminates the danger of recall and rationalization biases by using hypothetical firms (Barr et al., 1992; Sandberg et al., 1988). Using both an experimental approach as well as asking lending officers to self-report the importance of different factors makes it possible to assess the validity of using questionnaires for collecting these types of data.

The third reason has its limitations. A consideration of the selected two-way interactions is assumed to increase the validity of the study. However, not all possible two-way interactions or higher interactions are considered, it was argued that the risk-proclivity in interaction with factors that reduce the risk-taking of the bank are the most interesting for this study. Again, considering higher-level interactions would increase the number of profiles necessary for evaluation. A larger number of factors, levels, or interactions are thought to make the experiment an unmanageable task for the lending officer and counterproductive by decreasing the validity of the study. Previous studies using a variety of judgments have shown that even simple linear models, only considering main factors, have generated sufficient results in constructing some prediction models. In addition, it was found that these models can do as well, or very nearly so, as more complex approaches (Hammond et al., 1964; Hammond et al., 1965; Hursch et al., 1964; Wiggins et al., 1968). Linear models frequently discussed and implemented in credit management are generally different kinds of discriminate models (Altman, 1968; Baetge, Beuter, & Feidicker, 1992) or expert systems (Gill, 1993; Glasen, 1994; Krakl & Nolte-Hellwig, 1990; Lutter, 1992; Schwarze et al., 1993; Weisensee, 1990).

Although these shortcomings are inherent in the methodology chosen, the strengths of conjoint experiments clearly outweigh the weaknesses.

3.11 Conclusion

This chapter elaborated on the research method used in this thesis. It provided an overview of the sampling plan, the research method, and the sample. Further, it provided an overview of the conjoint experiment was provided, including a description of the attributes and their levels used to construct the profiles of hypothetical credit applications from growing SMEs. Devices used to analyze the lending officers' credit assessment to support credit requests from growing SMEs were addressed. These included the conjoint experiment, the lending officers' self-perceived assessment policy, and the post-experiment questionnaire. Finally, limitations and the validity of the research methods were outlined.

4 Result Validity

4.1 Introduction

This chapter aims to validate the empirical results of this study. In order to do so, three ways of validation are described. First, an analysis is presented to show if the eight main factors discussed in Chapter 2, and the selected two-way interactions are actually used by lending officers when assessing hypothetical credit requests from growing SMEs. Second, it is determined if the individual respondent is consistent in his or her credit assessment. It is important to confirm if the respondent understood the task and took the study seriously. Third, the direction of lending officers' use of certain factors in credit assessments is analyzed to consider if this contradicts the directional hypotheses.

4.2 Lending officers' credit assessment

In order to determine if the eight attributes and their selected two-way interactions have an effect on lending officers' credit assessments, a linear regression is used to derive each individual respondent's assessment of the hypothetical credit requests.

The statistical program SPSS was used for the analysis. The independent variables comprised eight main factors: (1) risk-taking proclivity of the SME; (2) competence of the SME within the business project; (3) the CEO's tenure; (4) the comprehensiveness of the strategic plan for the SME; (5) past performance of the SME; (6) share of investment by the SME; (7) financial standing of the SME; (8) independence of collateral and the selected two-way interactions of the risk-taking proclivity of the SME with the factors reducing bank risk, which are (9) risk-taking proclivity of the SME times its share of investment; (10) risk-taking proclivity of the SME times its financial standing; and (11) risk-taking proclivity of the SME times collateral and the dependent variable, which are the lending officers' judgments to support a credit request. Each factor was assigned two response levels; high or low, extensive or limited, and strong or weak. As mentioned in the methods chapter (see Section 3.5) high attribute levels were coded +0.5 and low attribute levels were coded -0.5, with the exception of the risk-taking proclivity of the SME which was assigned a -0.5 for a high attribute level and +0.5 for a low attribute level. The selected two-way interactions were coded either +0.25 or -0.25.

4. Validation of the studies result

A regression analysis for each responding lending officer with the main factors and the selected two-way interactions produced standardized and unstandardized Beta coefficients for each respondent. The calculated Beta coefficients for each independent variable maximize the explained variance (Hair et al., 1998), or regression decomposes the lending officer's judgment into its underlying structure as represented by the independent variables and their corresponding Beta coefficients.

The standardized coefficient, Beta, for each main factor and the selected two-way interactions for each individual lending officer's assessment to support a credit request is shown in Appendix 4, Table 20. Asterisks (*) indicate those factors and/or two-way interactions that are statistically significant ($p < .05$) for each respondent's credit assessment. In Column 1 the responding lending officers are listed. Columns 2 through 9 show the Betas and the significance level for each respondent for each of the eight main factors. Columns 10 through 12 report the Betas and their significance level for each of the selected two-way interactions.

Only considering the Beta coefficients that were statistically significant at a level of at least 5 percent level ($p < .05$) makes it possible to tabulate the number of respondents significantly using each of the eight factors and the three selected two-way interactions. The results of this calculation are shown in Table 5. The table shows the frequency of factors used by the responding lending officers in the assessment of the hypothetical credit requests of growing SMEs. Statistical significance is used as an indicator of the importance of a certain factor. Financial standing of the SME, its past performance, its competence within the business project, independence of collateral, and share of investment by the SME were the factors used by most lending officers. The financial standing factor was used by 108 of the 114 responding lending officers (95%), past performance was used by 104 out of 114 (91%), competence within the business project was used by 91 of 114 (80%), independence of collateral was used by 80 of 114 respondents (70%), and share of investment by the SME was used by 79 of 114 (69%). The CEO's tenure followed, named by 39 out of 114 respondents (34%), and 18 of 114 respondents (16%) used risk-taking proclivity while 13 out of 114 (11%) cited comprehensiveness of strategic planning.

Only a few respondents used the selected two-way interactions. Risk-taking proclivity with collateral was used by 17 of 114 (15%), risk-taking proclivity with financial standing by 13 (11%), and risk-taking proclivity with share of investment by the SME was named by 11 (10%) of the respondents.

All factors and selected two-way interactions were significant at least in some instances. These results suggest that all eight factors included in the study and the selected two-way interactions are actually used by the respondents when deciding to support hypothetical credit requests from growing SMEs.

Table 5: Number of respondents significantly using certain factors.

	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
Number of respondents using factor	18	91	39	13	104	79	108	80	11	13	17
RANK	7	3	6	9	2	5	1	4	10	9	8
Minimum	-0.22	0.14	-0.14	-0.25	0.16	0.12	-0.20	0.13	-0.35	-0.27	-0.18
Maximum	0.46	0.67	0.45	0.44	0.80	0.73	0.75	0.72	0.25	0.17	0.28
Mean	0.16	0.37	0.25	0.03	0.45	0.36	0.43	0.37	0.00	-0.15	0.17
Std. Error	0.04	0.01	0.02	0.06	0.01	0.01	0.01	0.02	0.07	0.04	0.03
Std. Deviation	0.18	0.13	0.10	0.23	0.12	0.12	0.14	0.13	0.23	0.14	0.13

4. Validation of the studies result

Furthermore, the outcome of the regression analysis showed a good model fit for all respondents ($p < .05$), which means that all lending officers' assessments to support credit to growing SMEs can be explained by the eight factors and the selected two-way interactions at a 5 percent level. Column 13 and 14 in Appendix 4, Table 20 represent the explained variance for each respondent (R^2) and the significance level of each respondent. This is an indicator for the fit of the regression model for each individual lending officer. All of the individual models of lending officers' credit assessments (100%) explained a statistically significant proportion of variance ($p < .05$) with a mean R^2 of 0.85.

However, model fit is poor for 2 respondents, which measured at a 1 percent level ($p < .01$) level and for 11 individuals, which measured at a 0.1 percent level ($p < .001$). In other words, at a 0.1 percent level, model fit is poor for 11 respondents (9.6%). This suggests that their assessment of supporting credits to growing SMEs is only related to a limited extent to the eight factors identified and the selected interactions. In order to determine if these respondents were systematically different from the rest of the sample, careful analysis was performed for each of them. No differences were found in their descriptives compared with the rest of the sample. Out of the 11 respondents, 3 were female. The ages of the respondents varied from 27 to 57 years, and their education level ranged from senior high school to a Master's degree. Experience within the banking sector ranged from 1 to 30 years, and experience as lending officers ranged from 0.5 to 20 years. The respondents were employed in branches that ranged in size from 4 to 100 employees, located in a community that ranged from 4000 to 200,000 inhabitants. The respondent who showed the least significant model was telephoned and asked to explain how he had experienced the experiment and if he really understood the task or if he had difficulties concentrating on the task. However, it was not possible to receive an indication of why he had such a low model fit. Nevertheless, there appeared to be no systematic differences between the individuals not showing a poor model fit and the rest of the sample. I can only speculate that the individuals may have considered other factors in addition to those included in the study or that these respondents did not take the task seriously enough. However, when questioned after the experiment, none of the respondents suggested other factors than those presented in the study as important in their assessment regarding credit for a growing SME.

In order to gain a more accurate picture, the data included in Table 5 was recalculated, excluding respondents that did not show a statistically significant model at a 0.1 percent level ($p < .001$). However, the recalculation only reduced the number of respondents using some factors to a significant extent. For example, competence within the business project was now used significantly by 84 respondents instead of 91, past performance by 95 instead of 104, and financial standing by 100 instead of 108. Moreover, excluding respondents that

did not show a significant model did not change the order of factors used by lending officers and only very marginally altered the mean, minimum, maximum, standard error, or standard deviation. The recalculated values are presented in Table 6.

Table 7 presents the differences between all the responding lending officers and those that did not show a significant model at a 0.1 percent level for the significantly used a certain factor or two-way interaction.

When it was found that 11 lending officers did not show a statistically significant model on a 0.1 percent level, further statistical analyses was conducted to determine if the hypotheses stated in Chapter 2 could be supported, first with all respondents that participated in the study, then excluding those that did not show a statistically significant model at a 0.1 percent level. No substantial differences were found.

Furthermore, how much the selected two-way interaction contributes to the explained variance of the model was also investigated. Appendix 4, Table 21 shows the contribution of selected interaction for each respondent. Column 1 indicates a number for each individual lending officer. Column 2 shows the added explained variance of the eight main factors. Column 3 shows the contribution of the interaction between the risk-taking proclivity and investment shares of SMEs. In total, this interaction contributes to an increase in the explained variance of 1.1%. The interaction between the risk-taking proclivity of SMEs and their financial standing is shown in Column 4. This interaction contributes to the explained variance with 1.1% as well. The interaction of the risk-taking proclivity of SMEs and independence of collateral, which is presented in Column 5, contributes with 1.3%. In Column 6, the explained variance for all three two-way interactions is added and presented for each lending officer participating in the study. Column 7 shows the added explanation for all eight main factors and the three selected two-way interactions. The effect of the three selected two-way interactions in the conjoint experiment contributes to an increase of explained variance totaling 3.5% with an R^2 of 0.83

Table 6: Number of respondents significantly using certain factors without those who did not show a statistically significant F-value ($p < .001$).

	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
Number of respondents using factor	18	84	38	13	95	71	100	76	11	13	17
RANK	7	3	6	9	2	5	1	4	10	9	8
Minimum	-0.22	0.14	-0.14	-0.25	0.16	0.12	-0.20	0.13	-0.35	-0.27	-0.18
Maximum	0.46	0.67	0.45	0.44	0.80	0.73	0.75	0.72	0.25	0.17	0.28
Mean	0.16	0.36	0.25	0.03	0.46	0.35	0.43	0.37	0.00	-0.15	0.17
Std. Error	0.04	0.01	0.02	0.06	0.01	0.01	0.01	0.02	0.07	0.04	0.03
Std. Deviation	0.18	0.13	0.10	0.23	0.12	0.12	0.14	0.14	0.23	0.14	0.13

Table 7: Differences between all respondents and excluding respondents who did not show a statistically significant F-value ($p < .001$).

	Risk Proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
Number of respondents using factor	0	-7	-1	0	-9	-8	-8	-4	0	0	0
RANK	0	0	0	0	0	0	0	0	0	0	0
Minimum	0,00	0,00	0,00	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Maximum	-0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Mean	0,00	-0,01	0,00	0,00	0,01	-0,01	0,00	0,00	0,00	0,00	0,00
Std. Error	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Std. Deviation	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00

4.3 Assessment policy - Reliability of responses

Another reason that would justify the rejection of some respondents from the analysis is a low reliability of their responses. A respondent showing poor judgmental reliability would indicate that the respondent did not sufficiently understand the experiment or that the task was not taken seriously. As mentioned earlier, conjoint analysis is rarely used as a research design within the field of finance and banking. Therefore, it was important to estimate the consistency of the respondents' credit assessments.

To evaluate each lending officer's judgmental reliability, Person R correlations (test-retest reliability coefficient) were computed between each of the lending officer's responses on the 16 original and the 16 replicated profiles. The Person R indicates how well lending officers responded to the relatively unfamiliar research design using a conjoint analysis with hypothetical credit applications from growing SMEs for the credit assessments.

To compare the means between the first 16 profiles and the repeated 16 profiles of the same participants, a paired sample t-test was used, determining each respondent consistency in the credit assessment. The significance level and correlation factor for each respondent's correlation between the two sets of scores is indicated in Appendix 4, Table 22, Column 2.

Table 8 shows that 110 out of the 114 lending officers (96.5%) were reliable in their responses ($p < .05$) for the assessment of hypothetical credit requests to growing SMEs. The four lending officers who were not significantly reliable were the only respondents showing a correlation factor below 0.50 (respondent 61; 60; 47 and 103). Consistent with previous research (Hair et al., 1998), a correlation of 0.5 was used as a cutoff to determine when the reliability of the responses was considered sufficient. Therefore, four lending officers showing a correlation factor of less than 0.50 were excluded from further analysis. The number of lending officers using a certain factor or selected two-way interaction was recalculated excluding these four lending officers. The results of the recalculation are shown in Table 8 and the differences between the sample including all the lending officers and the sample excluding those lending officers showing poor reliability in their responses (correlation factor < 0.50) are reported in Table 9.

Table 8: Number of respondents using certain factors without those who did not show a correlation factor above 0.50.

	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
Number of respondents using factor	18	91	39	13	104	79	108	80	11	13	17
RANK	7	3	6	9	2	5	1	4	10	9	8
Minimum	-0.22	0.14	-0.14	-0.25	0.16	0.12	-0.20	0.13	-0.35	-0.27	-0.18
Maximum	0.46	0.67	0.45	0.44	0.80	0.73	0.75	0.72	0.25	0.17	0.28
Mean	0.16	0.36	0.25	0.03	0.45	0.36	0.43	0.37	0.00	-0.15	0.17
Std. Error	0.04	0.01	0.02	0.06	0.01	0.01	0.01	0.02	0.07	0.04	0.03
Std. Deviation	0.18	0.13	0.10	0.23	0.12	0.12	0.14	0.13	0.23	0.14	0.13

The model for the whole sample was estimated both with and without those respondents having test-retest reliability below 0.50. No substantial differences were found; therefore, all respondents were kept in the analysis.

Differences were only found in the number of individuals significantly using a certain factor for their assessment to support a credit request. This was shown by calculating the differences between all responding lending officers' results and those from the tabulation that excluded lending officers without a correlation factor above 0.50, indicating unreliable responses. For example, past performance was used by three of the lending officers showing a poor consistency in their credit assessment. However, the order of factors used did not change and the minimum, maximum, mean, standard error, and standard deviation only changed marginally.

The test-retest for the sample, including all lending officers, ranged from 0.35 to 0.96 with a mean of 0.77 (which is higher than Shepherd's test-retest reliability of 0.69 (Shepherd, 1999)). The results indicate lending officers are consistent in their assessment to support credit to growing SMEs ($p < .05$). This high degree of judgmental reliability is typical for conjoint studies and provides assurance that the task was meaningful and that the lending officers took their participation seriously (Ettenson, 1993). Excluding the four lending officers with poor reliability lead to a range from 0.51 to 0.96, with a mean of 0.78. The mean only increased by 1% by excluding the lending officers who were not very consistent and therefore not very reliable in their credit assessments. Although four of the respondents did show a poor reliability conducting the experiment, it was decided not to exclude any respondents from further analysis. The reason for this decision was that there was no change in the ranking of importance and only marginal changes in the minimum, maximum, mean, standard error, and standard deviation of the aggregated Beta. Moreover, there was only a small increase in the aggregated correlation factor. However, all further statistical analysis is conducted excluding and including those four lending officers who did not have a test-retest reliability above 0.50.

4.4 Positive and negative effects of attributes on the lending assessment

So far the magnitude of a lending officer using a certain factor for the assessment of a credit request from a growing SME has been determined. Although it has been established that lending officers use certain factors for their credit assessment, this does not explain in what way the respondent uses these factors. The hypotheses developed in Chapter 2 (Section 2.10) are directional, meaning that a positive or negative effect is expected between a factor and the assessment to support the hypothetical credit request. Therefore, the sign of the unstandardized coefficient B is important because it indicates direction, i.e., some lending officers might associate a high level of a certain factor with a higher level in supporting a credit request, which is indicated by a positive B coefficient, whereas others might associate a high level of a certain factor with a lower level of supporting a credit, indicated by a negative B coefficient.

The positive and negative factor levels for each lending officer's assessment on supporting credits are presented by the unstandardized coefficient B in Appendix 4, Table 23 with the sign of B indicating the assessment direction associated with the factor.

Column 3 shows that 15 of 18 lending officers with significance for risk-taking proclivity associated low risk-taking proclivity with a higher level of support for a hypothetical credit request. All lending officers with a statistically significant effect for competence within the business project, 91 of 91, associated high competence within the business project with a higher level for supporting a credit request as shown in Column 4. Column 5 shows that 38 of 39 respondents with a statistically significant effect for CEO tenure associated an extensive CEO tenure with a higher level for supporting a credit request. Column 6 illustrates that support for strategic planning indicated a slight preference towards extensive strategic planning, with 7 of 13 lending officers associating extensive strategic planning with a higher level of supporting the credit request. Of the lending officers with a statistically significant effect for past performance, 104 of 104 associated stronger past performance with a higher level for supporting a credit request as demonstrated in Column 7. Column 8 shows that 79 of 79 lending officers with a statistically significant effect for share of investment by SMEs associated high SME investment share with a higher level of supporting the credit request. In Column 9, it is illustrated that 107 of 108 lending officers with a statistically significant effect for financial standing associated good financial standing with a higher level for supporting the credit request. All lending officers with a statistically significant effect for collateral, 80 of 80, associated independence of collateral with a higher level for supporting a credit request as demonstrated in Column 10.

In total 10 lending officers used a main factor in a different direction as hypothesized. This could be an indication that these lending officers did not really understand the effect of the factor on the lending assessment, i.e., it does not make sense from the bank's perspective that the level of support for a credit request from a growing SME is higher for an SME that tends to invest in risky projects compared with an SME that tends to invest in low-risk projects with a high probability for gain. Alternatively, if many lending officers would have used the one factor in a different direction in their credit assessment as hypothesized, it might be that a certain factor is influencing the lending officer differently than has been hypothesized. Therefore, the sample was recalculated excluding these lending officers' responses (respondent 3, 21, 28, 29 (2 factors), 31, 34, 35, 44, 83, 93), using a different directional use of a certain factor than hypothesized. The recalculated values are presented in Table 10 and the differences between all respondents and those showing a different directional use of a certain factor are presented in Table 11. The differences here are more conspicuous; the ranking of three factor changes and differences are more substantial. Therefore, all statistical analysis necessary to investigate if the hypotheses stated in Chapter 2 are supported or not are calculated with and without these ten lending officers, using a factor in a different direction as hypothesized.

Table 10: Number of respondents using certain factors without those with different directional use of factor.

	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
Number of respondents using factor	15	82	37	7	95	70	98	71	11	13	16
RANK	8	3	6	11	2	5	1	4	10	9	7
Minimum	0.16	0.14	0.14	0.13	0.16	0.17	0.22	0.13	-0.35	-0.27	-0.18
Maximum	0.46	0.67	0.45	0.44	0.80	0.73	0.75	0.72	0.25	0.17	0.28
Mean	0.23	0.36	0.26	0.23	0.45	0.36	0.44	0.37	0.00	-0.15	0.17
Std. Error	0.02	0.01	0.01	0.04	0.01	0.01	0.01	0.02	0.07	0.04	0.03
Std. Deviation	0.08	0.12	0.07	0.10	0.12	0.12	0.12	0.14	0.23	0.14	0.14

Table 11: Differences between all respondents and excluding those with different directional use of factor.

	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
Number of respondents using factor	-3	-9	-2	-6	-9	-9	-10	-9	0	0	-1
RANK	1	0	0	2	0	0	0	0	0	0	-1
Minimum	0.38	0.00	0.28	0.38	0.00	0.05	0.42	0.00	0.00	0.00	0.00
Maximum	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mean	0.07	-0.01	0.01	0.20	0.00	0.00	0.01	0.00	0.00	0.00	-0.01
Std. Error	-0.02	0.00	-0.01	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Std. Deviation	-0.10	-0.01	-0.03	-0.13	0.00	0.00	-0.02	0.01	0.00	0.00	0.01

4.5 Conclusion

The fundamental aim of this chapter was to validate the empirical results of the study. Considerable validation efforts were made by first investigating if the eight factors and the selected two-way interactions discussed in Chapter 2 were actually used by lending officers within the credit assessment. The analysis shows that all selected factors and two-way interactions appear to be valid. Second, it was investigated whether or not lending officers were consistent in their assessment of the hypothetical credit request. In response to this question, it was shown that some individuals were not consistent in their credit assessment. However, calculations including and excluding their responses gave qualitatively the same results. Third, it was investigated whether lending officers' directional use of the eight main factors was in line with the directional hypotheses. Here it was shown, as well, that some lending officers' direction use of a certain factor did not correspond with the directional hypotheses. Consequently, calculations including and excluding these lending officers were conducted but did not show qualitatively different results. Taken together, this suggests that the experiment is valid, and thus, the thesis proceeds to an analysis of the empirical evidence

5 Analysis and aggregate level results

5.1 Introduction

This chapter presents an analysis of what factors lending officers used when deciding whether to support the hypothetical credit requests from growing SMEs. What follows is a description of how the chapter is organized.

First, the lending officers' actual assessments of whether or not to support the hypothetical credit requests are presented. Regression analysis and analysis of variance (ANOVA) are the two statistical techniques used to analyze the data derived from the conjoint experiment. Hypotheses are tested as to how the eight main factors and the selected two-way interaction affect lending officers' credit assessments.

Second, the lending officers' self-perceived importance of factors in considering the credit assessments is analyzed. Differences between the importance of lending officers' actual assessment factors and their self-perceived assessment factors are discussed, and the hypothesis concerning their differences is tested.

Third, differences between more experienced and less experienced lending officers are analyzed by using regression analysis. Finally, the chapter will test the level of support for the stated hypotheses concerning the effect of the lending officers' experience on the use of certain factors for the assessment of supporting credit requests.

5.2 Testing hypotheses on the relation between risk assessment, aligning of risk-bearing, and shifting of risk-bearing and willingness to support credit

To identify statistically significant factors of lending officers' credit assessments on an aggregate level, the t-statistics on the regression coefficient for each main factor and the selected two-way interaction were aggregated from the Z-value

5. Analysis and Results

(Dechow, Huson, & Sloan, 1994). The following formula was used for the Z-value calculation:

$$Z = \frac{1}{\sqrt{N}} \sum_{j=1}^N \frac{t_j}{\sqrt{k_j/(k_j - 2)}} / \sqrt{1 + (N - 1)\bar{r}}$$

t_j = t-statistic for individual j

k_j = degrees of freedom in regression for individual j;

N = number of respondents in sample

\bar{r} = the mean correlation between the respondents

The Z-statistic is distributed asymptotically as a standard normal variate (Andersen, 1971) and computed under the assumption of independence among individuals, that is, $\bar{r} = 0$ (Andersen, 1971; Dechow et al., 1994).

The Z scores for each factor and the selected two-way interactions, derived from the individual t-statistics, are reported in Table 12. The t-statistics for each individual lending officer's main factor and selected two-way interactions were calculated by using a linear regression analysis. The results of this calculation and the aggregated Z-values for each factor and the selected two-way interactions are reported in Appendix 5, Table 24. The calculations of the aggregated Z-values show which main factors and selected two-way interactions are greater than 1.645, which indicates their statistical significance at a 5 percent level in a lending officers' assessment to support a hypothetical credit request. If the Z-value for a particular factor or a particular two-way interaction shows a value above 1.645, this indicates that the particular factor significantly affects lending officers' assessments of supporting the hypothetical credit requests from growing SMEs. The sign of the calculated Z-value indicates the direction of use of a certain factor. Hypotheses on the main factors are supported if the calculated Z-value is greater than 1.645 and the direction is as hypothesized. The size of the Z-values indicates the importance of the factor, i.e., the higher the Z-value, the more important the factor (Andersen, 1971).

Table 12: Z-values, their ranks and unstandardized B for main factors and selected two-way interactions.

Variable	Z-value	Rank	B
Risk-taking proclivity	3.96*	7	0.14
Competence within the business project	36.45*	3	1.26
CEO's tenure	13.55*	6	0.50
Strategic planning	1.09	10	0.03
Past profitability	51.58*	1	1.76
Share of investment by SME	32.39*	5	1.13
Financial standing	48.79*	2	1.68
Collateral	34.02*	4	1.19
Risk × SME share	0.40	11	0.05
Risk × Financial Standing	-3.25*	8	-0.25
Risk × Collateral	3.14*	9	0.23

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

The calculations of the aggregated Z-values show that with the exception of strategic planning the main factors, are greater than 1.645, which indicates their significance at a 5 percent level in lending officers' assessments to support hypothetical credit requests of the growing SME. Risk-taking proclivity interaction with both financial standing and collateral are also statistically significant ($p < .05$). However, risk-taking proclivity in combination with the share of investment by the SME did not show a statistically significant affect.

The size of the Z-values indicates the level of significance of the factor, with past performance being most important, followed in order by financial standing, competence within the business project, independence of collateral, share of investment by the SME, the CEO's tenure, and risk-taking proclivity. The least important are the interaction risk-taking proclivity in combination with financial standing and risk-taking proclivity in combination with collateral.

5.2.1 Testing hypotheses on the relationship between risk assessment and willingness to support credit

The sign of the calculated Z-value indicates that low risk-taking proclivity, high competence within the business project, extensive CEO tenure, and high past performance are all associated with higher probability of supporting the credit request.

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Consequently, the level of support for the following hypotheses can be given:

Hypothesis 1: Lending officers' probability of supporting credit decreases with an increased risk-taking proclivity of the borrowing SME.

This hypothesis is **supported** at the aggregated level of analysis; the Z value for the risk-taking proclivity factor shows that the level of risk-taking proclivity significantly affects lending officers' assessments of supporting credit. The Z-value of 3.96 (see Table 12) is greater than 1.645. The aggregated unstandardized B of 0.14 (see Table 12) is significantly greater than zero; therefore, lending officers associate a lower risk-taking proclivity (low risk coded +0.5; high risk – 0.5) with a higher level of supporting credit.

Hypothesis 2: Lending officers' probability of supporting credit increases with an increased level of competence within the business project of the borrowing SME.

This hypothesis is also **supported**. At the aggregated level of analysis, the level of competence within the business project significantly affects lending officers' assessments of supporting credit. The Z-value equals 36.45 (see Table 12), which is significantly greater than 1.645. The aggregated unstandardized B of 1.26 (see Table 12) is significantly greater than zero; therefore, lending officers associate a higher level of competence within the business project with a higher level of supporting credit.

Hypothesis 3: Lending officers' probability of supporting credit increases with an increased tenure of the CEO of the borrowing SME.

This hypothesis is **supported**. At the aggregated level of analysis, the level of CEO's experience significantly affects lending officers' assessment of supporting credit. The Z-value of 13.55 (see Table 12) is significantly greater than 1.645. The aggregated unstandardized B of 0.50 (see Table 12) is significantly greater than zero; therefore, lending officers associate those SME CEOs who have longer tenure with a higher level of supporting credit.

Hypothesis 4: Lending officers' probability of supporting credit increases with increased comprehensiveness of the business plan of the borrowing SME.

This hypothesis is **not supported** at a statistically significant level. At the aggregated level of analysis, the level of strategic planning does not significantly affect lending officers' assessment of supporting credit. The Z-value equals 1.09, (see Table 12), which is less than 1.645. Consequently, the hypothesis cannot support that lending officers associate the existence of a more comprehensive strategic plan with a higher level of supporting credit.

However, this hypothesis is **supported** when lending officers with a different directional use of a certain factor than hypothesized are excluded from the calculation (see Section 4.4). Including all lending officers, regardless of their directional use of a certain factor in the analysis, does show a statistical significant effect concerning the comprehensiveness of the strategic planning factor for thirteen lending officers. Seven of the thirteen lending officers associated a more comprehensive strategic plan with a higher level of supporting the hypothetical credit requests from growing SMEs, whereas the remaining six associated a less comprehensive strategic plan with a higher level of support for the hypothetical credit request. Excluding these six lending officers (46%), for whom the strategic planning factor is statistically significant, and only considering lending officers with a positive directional use of this factor makes the factor statistically significant with a Z-value of 3.17 (see Appendix 5, Table 24). However, due to the limited number of lending officers actually using the strategic planning factor, and an even more limited number of lending officers using this factor when those lending officers who use a different factor direction are excluded, the exclusion of lending officers with different directional use of any factor is not justified because it would cause a biased outcome.

Hypothesis 5: Lending officers' probability of supporting credit increases with higher past performance of the borrowing SME.

This hypothesis is **supported**. At the aggregated level of analysis, the level of past performance shows this is a significant factor in the lending officers' assessment of supporting credit. The Z-value of 51.58 (see Table 12) is significantly greater than 1.645. The aggregated unstandardized B of 1.76 (see Table 12) is significantly greater than zero; therefore, lending officers associate a stronger past performance with a higher level of supporting credit.

5.2.2 Testing the hypothesis on the relationship between aligning of risk and willingness to support credit

In order to test the hypothesis that relates the level of the share of investment by the borrowing SME and its impact on lending officers' assessments to support a credit request, the sign of the calculated Z-value indicates that a higher share of

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investment by the SME is associated with a higher probability of supporting the credit request.

Accordingly, support for the following hypothesis has been demonstrated:

Hypothesis 6: Lending officers' probability of supporting credit increases when a higher share of the investment is contributed by the borrowing SME.

This hypothesis is also **supported**. At the aggregated level of analysis, the level of the share of investment by the SME significantly affects the lending officers' assessment of supporting credit. The Z-value of 32.39 (see Table 12) is significantly greater than 1.645. The aggregated unstandardized B of 1.13 (see Table 12) is significantly greater than zero; therefore, lending officers will more likely lend to an SME when it has a larger stake in the project.

5.2.3 *Testing hypotheses on the relationship between shifting of risk-bearing and willingness to support credit*

The sign of the calculated Z-value for the financial standing factor of the SME and the independence of collateral factor indicate that lending officers have a greater probability of supporting the credit request when high financial standing and extensive collateral are demonstrated.

Therefore, support for the following hypotheses has been attained:

Hypothesis 7: Lending officers' probability of supporting credit increases with stronger financial standing of the borrowing SME.

This hypothesis is **supported** as well. At the aggregated level of analysis, the level of financial standing significantly affects the lending officers' assessment of supporting credit. The Z-value, which equals 48.79 (see Table 12), is significantly greater than 1.645. The aggregated unstandardized B of 1.68 (see Table 12) is significantly greater than zero; therefore, lending officers associate a stronger financial standing with a higher level of supporting credit.

Hypothesis 8: Lending officers' probability of supporting credit increases when the strength of the collateral supplied by the borrowing SME increases.

This hypothesis is **supported**. At the aggregated level of analysis, the level of collateral significantly affects the lending officers' assessment of supporting

credit. The Z-value of 34.02 (see Table 12) is significantly greater than 1.645. The aggregated unstandardized B of 1.19 (see Table 12) is significantly greater than zero; therefore, lending officers associate strong independence of collateral with a higher level of supporting credit.

5.3 Testing hypotheses on the risk-taking proclivity interactions of the SMEs

The size and sign of the Z-values are considered in order to investigate if the selected two-way interactions affect lending officers' assessments of credit. One such interaction is that of the risk-taking proclivity of the SME in interaction with the share of investment by the SME, which represents the risk-alignment category between the SME and the bank. Another interaction is between the risk-taking proclivity of the SME in interaction with the financial standing factor of the SME and the independence of collateral factor, representing the shifting of the risk-bearing category. The level of support for the selected two-way interactions is outlined below.

5.3.1 Testing the hypothesis on the relationship risk-taking proclivity of SME in interaction with aligning of the risk-bearing factor

Considering the selected interaction effects between the risk-taking proclivity of the SME and the alignment of risk measured by the share of investment by the SME, a Z-value smaller than 1.645 was shown. Therefore, the hypothesis is as follows:

Hypothesis 9: Lending officers' probability of supporting credit decreases with high risk-taking proclivity, but at a faster rate for firms supplying a small share of the financing.

This hypothesis is **not supported**. At the aggregated level of analysis, the share of investment by SMEs times risk-taking proclivity does not significantly affect lending officers' assessments of supporting credit. The Z-value of 0.40 (see Table 12) is less than 1.645.

5.3.2 *Testing hypotheses on the relationship of SMEs risk-taking proclivity in interaction with shifting of risk-bearing factors*

Concerning the risk-taking proclivity of the SMEs, in combination with factors that increase the shifting of risk it can be seen that both the interaction between risk-taking proclivity and financial standing, as well as risk-taking proclivity in combination with collateral show a Z-value greater than 1.645, which indicates that these interactions have a statistically significant effect ($p < .05$) on the lending officers' assessments to support credit to growing SMEs. However, the factors do not reveal the characteristics of the interaction.

In order to establish the characteristics of the statistically significant interactions, the effect of risk-taking on the probability of supporting credit are plotted for values of share of investment and collateral set at one standard deviation above and below the mean, as suggested by Cohen and Cohen (1983). Such plots show the effect of the selected variable given different combinations of values for another variable. Figure 16 illustrates the interaction of risk-taking proclivity and financial standing. Figure 17 illustrates the interaction of risk-taking proclivity in combination with collateral.

Figure 16 reports the risk-taking proclivity factor in combination with financial standing and indicates that lending officers' assessments of supporting credit decreases with an increase of risk-taking proclivity at a greater rate for weak financial performance than for strong financial performance. For weak financial performance, the probability of supporting credit is lower at all levels of risk. However, the results show that the level of supporting credit only changes marginally for strong financial standing, which indicates that risk-taking proclivity only marginally affects lending officers if the SME has a strong financial standing. In other words, risk-taking proclivity becomes an issue only when the financial standing of the SME is weak. The risk-taking proclivity of the SME is not a significant concern when the financial standing of the SME is strong since it is unlikely that the SME would behave opportunistically.

Consequently, the following hypothesis can be posed.

Hypothesis 10: Lending officers' probability of supporting credit decreases with high risk-taking proclivity, but at a faster rate for firms with a weak financial standing.

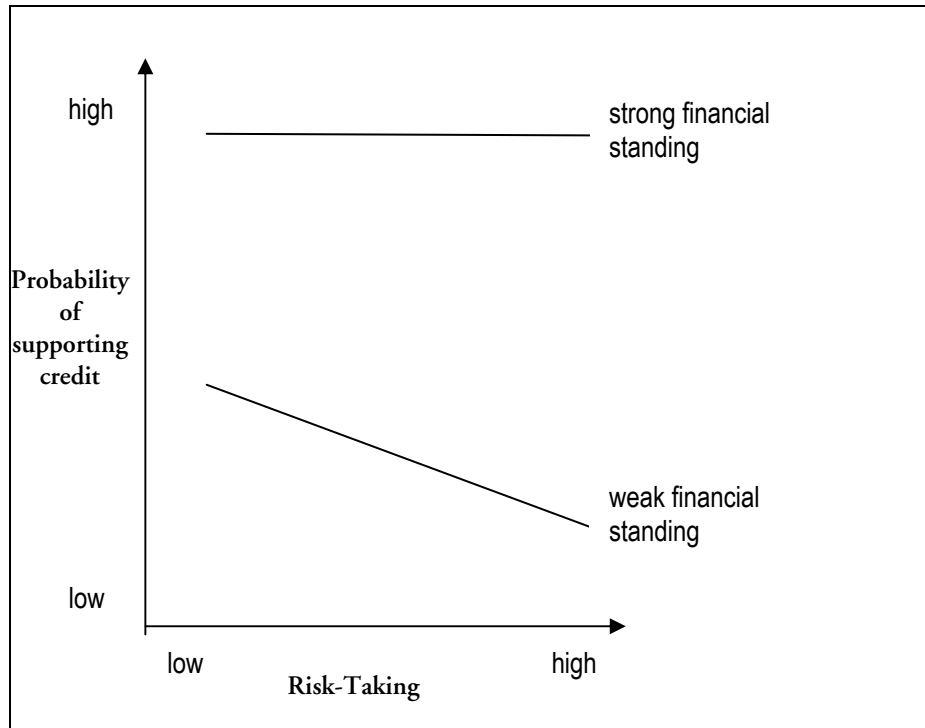


Figure 16: Interaction of risk-taking proclivity and financial standing.

This hypothesis is **supported**. At the aggregated level of analysis, the financial standing times risk-taking proclivity significantly affects lending officers' assessments of supporting credit. The Z-value of (minus) -3.25 is less than (minus) -1.645. The plotted interaction shows that for weak financial performance, the probability of supporting credit is lower at all levels of risk and decreases at a faster rate than for strong financial performance with an increase of risk level.

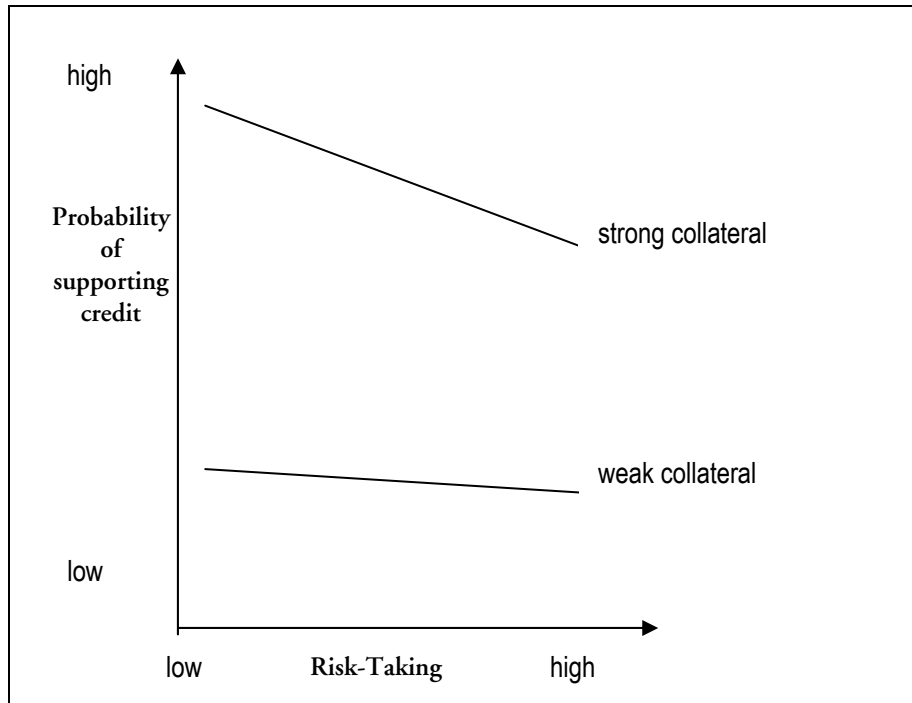


Figure 17: Interaction of risk-taking proclivity and collateral.

Figure 17 illustrates the risk-taking proclivity factor in combination with the independence of collateral factor. The aggregate level indicates that lending officers' assessments of granting credit decreases with an increased risk-taking proclivity at a faster rate if the credit requesting firm offers strong rather than weak independent collateral. Weak independent collateral affects the probability of supporting credit only marginally with increasing risk-taking proclivity. However, the probability of supporting a hypothetical credit request is lower for all levels of risk-taking proclivity for weak rather than strong independent collateral. The plot shows that the risk-taking proclivity of the SME becomes an issue only when independence of collateral is strong. The figure shows a slight decrease in the probability of supporting credit when independence of collateral is weak. Lending officers' judgments are minimally affected by risk-taking proclivity when the borrower offers weak independent collateral. The risk-taking proclivity of the SME is not a significant concern when independence of collateral is weak since it may be unlikely that the SME would receive credit due to weak independence of collateral at any level of risk-taking proclivity.

Therefore, the hypothesis is as follows:

Hypothesis 11: Lending officers' probability of supporting credit decreases with high risk-taking proclivity, but at a faster rate for firms supplying weak collateral.

This hypothesis is **not supported**; although at the aggregated level of analysis, independence of collateral multiplied with risk-taking proclivity of SMEs significantly affects lending officers' assessments of supporting credit. The Z-value equals 3.14 (see Table 12) and is significantly greater than 1.645, but the effect on lending officers' credit assessments is different than hypothesized.

The plotted interaction (Figure 17) shows that lending officers' level of supporting credit decreases with an increase of risk-taking proclivity at a greater rate for weak rather than strong independent collateral. The figure actually shows a reversed relationship, i.e., that the probability of supporting credit decreases with an increase of risk-taking proclivity at a greater rate for strong rather than for weak independent collateral. For weak independent collateral, the probability of supporting credit changes only marginally with an increase of the risk-taking proclivity of the SME. However, lending officers' level of supporting a credit request is lower at all levels of weak collateral in combination with any level risk-taking proclivity compared with strong collateral in combination with any level of risk-taking proclivity.

5.4 Testing hypotheses on lending officers' self-perceived and actual assessment policy

In Phase II of the empirical study, lending officers' self-perceived importance of factors used in considering the credit assessments is analyzed. The differences between lending officers' self-perceived assessment policies and the factor weights derived from the conjoint experiment are compared. Because the respondents stated their use of certain factors directly after having completed the conjoint experiment, their ability to recall how they used the eight factors should be considerably more accurate than had they been asked when a longer time between the actual assessment and the self-statement had passed.

5.4.1 *Relative importance*

Respondents were asked to indicate the importance of each of the eight factors used in the hypothetical credit applications for their assessment of supporting credit requests. Each of the eight factors was evaluated on a scale ranging from

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1, *very unimportant*, to 9, *very important*. The results of the lending officers' perceived importance of the factors are averaged for lending officers and illustrated in Table 13.

Table 13: Self-perceived weights: Assessment of supporting a credit request.

	Mean	Std. Dev	Ranking
Risk-taking proclivity	6.20	1.38	8
Competence within the business project	7.53	1.22	1
CEO tenure	7.20	1.39	4
Comprehensiveness of strategic plan	6.40	1.47	6
Past performance	7.48	1.23	2
Share in investment by the SME	6.70	1.36	5
Financial standing	7.43	1.15	3
Independence of collateral	6.22	1.52	7

The mean of the self-perceived weights ranged from 6.2 for risk-taking proclivity to 7.53 for competence within the business project. This indicates that lending officers perceive the competence of the SME within the business project factor as most important, followed by past performance and financial standing. CEO tenure is perceived to be the fourth most important factor, followed by SME share of investment and comprehensiveness of strategic planning. The final tier of the perceived importance consisted of the independence of collateral factor and the borrower's risk-taking proclivity. Each factor having a mean well above 5.0 indicates that all factors are considered as important in the lending officers' assessments to support a credit request. This was further confirmed when each respondent was asked if they would exclude any of the factors in their credit assessment.

It was hypothesized that lending officers' self-perceived and actual assessment policy differs. Therefore, lending officers' self-perceived results have to be compared with the results from the conjoint experiment. In order to do this, the self-perceived importance weights must be made comparable to the importance weights from lending officers' actual assessment policies, which is derived from the conjoint experiment. Although it was found in the previous section that certain factors influence lending officers' actual credit assessments (cf., Appendix 4, Table 20 showing the Beta-values for each lending officer), the relative importance of these factors has to be investigated. The frequency of the statistical significance of each factor at the individual respondent's level has to be qualified by the relative magnitude of its effect. Therefore, the significance at both the individual and the aggregate level of analysis is supplemented with a measure of relative importance – Hay's omega squared (ω^2) (Ettenson, 1993). Hay's omega squared is a measure of explained variance and is used to assess the

relative importance of the eight main factors and the selected two-way interactions. The measure relates directly to the adjusted R Square in regression and supplies an estimate that is roughly similar to β in multiple regression; both indicating the importance of a factor relative to the other factors in a judgment (Brown, 1972). Hay's omega squared is also a function of the squared magnitudes of effect and provides an estimate of the proportion of the total variance in the lending officers' credit assessment that could be attributed to a particular main effect or interaction (cf., Hays, 1973).

The Hay's Omega square values (ω^2) are calculated as follows:

$$\omega^2 = \frac{SS \text{ for effect} - df(\text{effect}) \times MSE}{\text{corrected total SS} + MSE}$$

SS = sum of squares between groups

df = degree of freedom between groups

MSE = Standard Error of Mean (for factor total), i.e., within groups

corrected total SS = total sum of squares (between groups + within groups)

The necessary information to calculate Hay's Omega squared (ω^2) value for each individual's main effects was generated using SPSS. The relative importance (ω^2) of each factor for each individual lending officer's assessment for supporting a hypothetical credit request is presented in Appendix 5, Table 25. Table 14 presents the aggregated ω^2 for each factor and the ranking of the factors derived from the conjoint experiment, representing lending officer actual assessment structure.

Table 14: Factor weights derived from the conjoint experiment.

	ω^2	Ranking
Risk-taking proclivity	0.01	7
Competence within the business project	0.12	3
CEO tenure	0.03	6
Comprehensiveness of strategic plan	0.01	8
Past performance	0.20	1
Share in investment by the SME	0.10	5
Financial standing	0.19	2
Independence of collateral	0.11	4

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The table shows that the most important factor for the lending officers' actual assessment to support the credit request of a growing SME is its past performance, which accounted for 20% of the explained variance. Financial standing is the second most important factor accounting for 19% of the explained variance. Competence within the business project is the third important factor with 12% explained variance. Independence of collateral is the fourth important factor and accounted for 11% of the explained variance. The share of investment by the SME is ranked as the fifth important factor accounting for 10%. CEO's tenure is ranked as the sixth important factor accounting for 3% of the explained variance. The final tier of importance consists of risk-taking proclivity with a rank of seven and comprehensiveness of strategic planning as the least important, each factor accounting for 1% of the explained variance.

In order to investigate if there is a difference between the lending officers' self-perceived and actual assessment policy, each respondent's self-perceived importance for the eight factors is compared with their actual importance within their credit assessment strategy. For this purpose the self-perceived weights for each respondent were compared with the ω^2 values derived from the conjoint experience.

In order to compare the results from the conjoint experiment with the self-perceived results, a joint measurement scale has to be used. Therefore, both scales were converted so that the total score across all eight dimensions equaled 100. The relative importance of a certain dimension was then calculated as the percentage influenced by dividing the score for that dimension by the total score across all dimensions for each factor.

The two different weights for each factor were then compared using a paired-sample T-test. The comparison between the lending officers' actual assessment weights derived from the conjoint experiment and the mean of their self-perceived factors is illustrated in Table 15. Column 1 shows the eight main factors discussed in Chapter 2. Column 2 shows the relative weight of importance for each factor derived from the conjoint experiment, and Column 3 shows the same factor weights converted into percent. Column 4 details the relative importance of lending officers' self-perceived importance for each factor and Column 5 shows the same factor weights converted into percent. In Column 6, the differences between the factor weights derived from the conjoint experiment and the self-perceived factor weights and their significance level are indicated.

Table 15: Comparison of importance of factors influencing the assessment to support credit to growing SMEs: Conjoint experiment versus self-perceived importance.

Dimension	Conjoint experiment		Self-perceived		Difference	
	Mean	%	ω^2	%	%	Sig.
Risk-taking proclivity	6.20	1.81	0.01	11.24	-9.43***	
Competence within the business project	7.53	15.44	0.12	13.65	1.79	
CEO tenure	7.20	3.90	0.03	13.05	-9.15***	
Comprehensiveness of strategic plan	6.40	1.53	0.01	11.60	-10.08***	
Past performance	7.48	25.75	0.20	13.57	12.18***	
Share in investment by the SME	6.70	13.00	0.10	12.15	0.85	
Financial standing	7.43	24.26	0.19	13.46	10.79***	
Independence of collateral	6.22	14.32	0.11	11.29	3.04*	
SUM	55.16	100.00	0.77	100.00	0.00	

Note: * $p < .05$; ** $p < .01$; *** $p < .001$.

The table reveals some interesting findings when lending officers' self-reported weighted results are compared with those derived from the conjoint experiment. The comparison between the lending officers' self-perceived importance mean for each factor and their actual assessment computed from the conjoint experiment shows that the differences between the two sets of scores is statistically significant for all factors ($p < .05$) except for competence within the business project and the share of investment factors. In other words, the mean weights for risk-taking proclivity of SMEs, CEO tenure, strategic planning, past performance, financial standing, and collateral do significantly differ statistically between the self-perceived and the conjoint experiment.

Furthermore, the table reveals that the order of the ranked importance differs. The three most important factors derived from the conjoint experiment are past performance, financial standing, and competence of SMEs within the business project. These are also the three most important self-perceived factors indicated by the lending officers. However, the order is different. Lending officers perceive that the competence within the business project factor is most important, followed by past performance and financial standing. The fourth, fifth, and sixth important factors in the lending officers' actual assessments are the independence of collateral factor, share of investment factor for the SME, and the CEO tenure factor, respectively. The lending officers, however, report and perceive that CEO tenure, share of investment by the SME, and the comprehensiveness of the strategic plan are the fourth, fifth, and sixth most important factors respectively. In the actual assessment of the hypothetical credit requests, the risk-taking proclivity and strategic planning factors are the least important, whereas lending officers perceive that the least important

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factors for their assessment are the independence of collateral and risk-taking proclivity. The greatest difference in ranks is found for collateral, which was calculated to be the fourth most important indicator to support a credit request in the actual lending assessment. Yet, lending officers perceive the factor as next to least important of the eight. The relationship between the lending officers' actual and self-perceived credit assessment policy on an aggregate level is illustrated in the Figure 18.

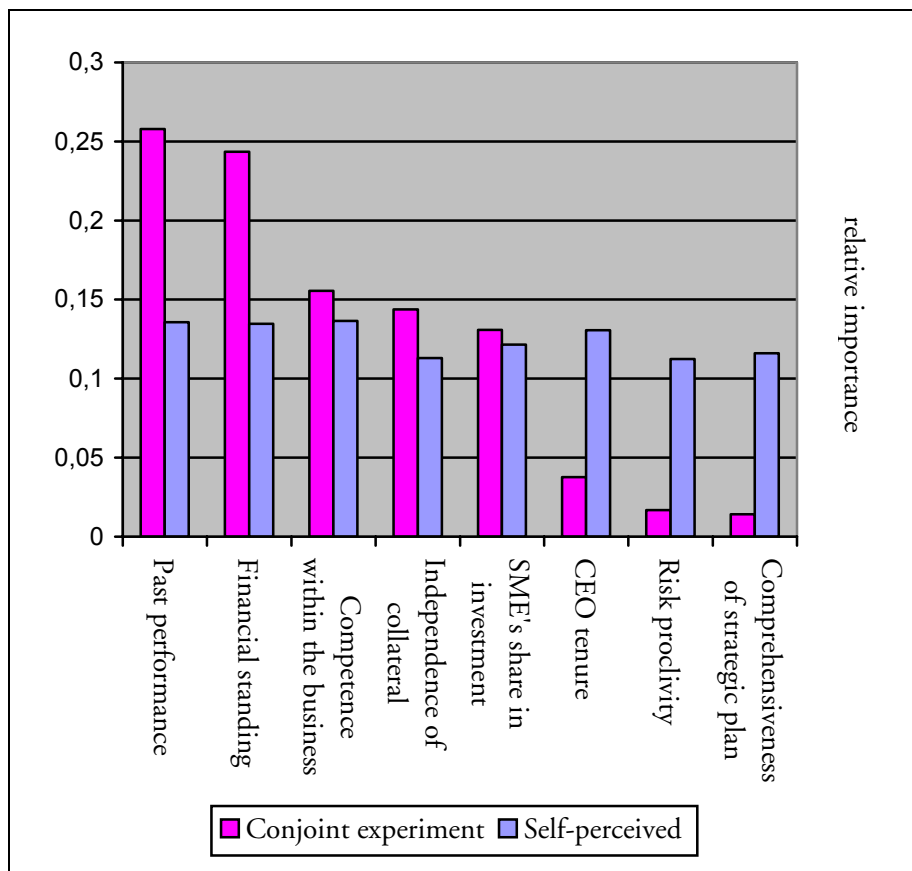


Figure 18: Relative aggregate importance of conjoint-derived and self-perceived factor weights for the assessment of supporting credit.

Figure 18 illustrates not only that the order of the ranked importance differs. It also shows that lending officers understate the importance of the four topmost factors and overstate the importance of the four bottommost factors. Both observations are an indication that lending officers are not fully aware of their own credit assessment process. There is a statistically significant difference in six out of eight factors between the lending officer actual assessments of the

hypothetical credit requests and their self-perceived factor weights. Therefore, the hypothesis is as follows:

Hypothesis 12: The lending officers stated assessment policy and his or her actual assessment policy differs.

This hypothesis is **supported**. The paired-sample t-test, comparing the relative means of the lending officers' self-perceived importance of each main factor with the relative importance of the actual assessment weights derived from the conjoint experiment, shows a statistically significant difference in six out of the eight compared means. This indicates that the means for the risk-taking proclivity, CEO tenure, comprehensiveness of strategic planning, past performance, financial standing, and independence of collateral factors are statistically significantly different at a 5 percent level. Only the two factors, competence within the business project and share of investment by SMEs, did not show a statistically significant difference of means at ($p < .05$). This strongly indicates that lending officers' self-perceived assessment policy is significantly different than their actual assessment policy.

5.5 Testing hypotheses on the effect of different types of experience on lending officers' assessment policy

Finally in Phase III of the empirical study, there is an investigation of different types of lending officers' experience effects on the use of certain main factors and selected two-way interactions for the assessment to support a hypothetical credit request from a growing SME.

More specifically, there is an analysis of whether or not less experienced lending officers put greater emphasis on more tangible factors such as comprehensiveness of strategic planning of the SME, past performance of the SME, share of investment by SME, financial standing of the SME, and independence of collateral. Moreover, it will be investigated if less experienced lending officers put less emphasis on the selected two-way interactions, i.e. risk-taking proclivity of SMEs in combination with the factor that lead to an alignment of the risk-bearing function and risk-taking proclivity of SMEs in combination with those factors that shift risk from the bank to the borrower.

In order to conduct the analysis, a linear regression with the main effects and the three selected two-way interactions were selected as independent variables, and selected demographics that reflect both general experience and specific

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lending experience were chosen as dependent variables. The lending officer's age and education were chosen as factors reflecting general experience. Specific experience was divided into three categories: experience in the banking sector, relative lending experience, and relative experience with lending to SMEs.

Variables chosen to reflect lending officers' experience in the banking sector were employment in the banking sector (at any level at any bank), employment at the current banking organization (at any level), experience as a lending officer (at any bank), and experience as a lending officer at the present bank. Variables chosen to represent relative lending experience are the average number of credits per week, average credit amount per week, and the highest possible credit amount the respondents are involved in when deciding on credit granting. Relative experience in lending to SMEs is reflected through the following variables: number and average amount of credits to micro firms, number and average amount of credits to small firms, number and average amount of credits to medium-sized firms, and number and average amount to fast growing firms. Table 16 shows which of the variables reflecting lending officers' experience have a statistically significant impact on the use of the eight main factors and the selected two-way interactions.

The table shows that older lending officers put greater emphasis on the financial standing of the borrowing SMEs ($p < .1$). Higher level of education, on the other hand, has a negative effect on the use of the financial standing factor ($p < .1$) but a positive effect on the use of the interaction SME risk-taking proclivity in combination with financial standing of the SMEs ($p < .05$). Consequently, general experience has some effect on lending officers' credit assessment.

All variables indicating experience within the banking sector, i.e., years employed at the present bank organization (at any level), years employed as a lending officer (at any bank), years employed in present bank (at any level), and years employed as a lending officer in the present banking organization, have a statistically significant positive effect on lending officers' stress on the financial standing factor for SMEs. Years employed as a lending officer in any bank has a statistically significant positive effect on lending officers' use of the competence of the SME within the business project factor ($p < .1$).

Table 16: Lending officers' experience effect on credit assessment.

	General Experience			Experience in banking sector					Relative lending experience			
	age	education	years in banking sector total	years in present bank organization	years as lending officer total	years as lending officer in present bank	average number of credits per week	average credit amount per week	Credit limitation			
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta
Risk	-0.05	0.11	-0.01	-0.12	0.07	-0.07	0.13	0.20	0.18			
Competence	0.16	-0.11	0.25	0.24	0.29 [†]	0.22	0.27	0.23	0.13			
CEO's tenure	-0.02	-0.06	0.03	-0.01	-0.03	-0.06	0.04	0.08	0.02			
Strategic planning	-0.08	0.10	0.04	0.04	0.01	-0.09	0.07	0.05	-0.12			
Past performance	-0.11	0.20	-0.07	-0.05	-0.02	-0.12	0.03	0.31 [*]	-0.17			
Share of investment	0.09	-0.09	0.14	0.16	0.09	0.07	0.03	-0.05	-0.16			
Financial standing	0.21 [†]	-0.21 [†]	0.35 ^{**}	0.32 [*]	0.24 [*]	0.24 [†]	0.19	-0.03	0.04			
Collateral	-0.06	0.20	0.02	0.05	-0.02	-0.12	0.05	0.19	-0.13			
Risk x SME share	0.07	-0.14	0.12	0.01	0.10	0.00	0.02	-0.09	0.01			
Risk x Financial standing	0.01	0.22 [*]	-0.06	-0.02	0.12	0.15	0.22 [*]	0.12	0.12			
Risk x Collateral	-0.02	0.00	-0.05	-0.05	0.03	-0.02	-0.17	0.08	-0.01			

Note: [†] p < .1; * p < .05; ** p < .01; *** p < .001.

Table 16: Continued.

	Relative experience with lending to SMEs									
	number of micro company loans last year	average amount micro loans	number of small company loans last year	average amount small company loans	number of medium company loans last year	average amount of medium company loans	number of growing company loans last year	average amount of fast growing company loans	Beta	Beta
Risk	0.06	0.11	-0.01	0.05	0.11	0.06	-0.09	0.16		
Competence	0.14	0.13	0.12	0.18	0.21	-0.18	0.22	0.06		
CEO's tenure	0.10	0.10	-0.03	0.07	-0.02	-0.07	0.02	0.10		
Strategic planning	0.12	0.02	-0.12	0.08	-0.07	-0.14	0.11	0.18		
Past performance	0.17	0.16	0.05	0.16	0.20	-0.07	-0.06	0.14		
Share of investment	-0.05	-0.09	-0.10	0.03	-0.08	-0.14	-0.13	0.12		
Financial standing	-0.04	-0.06	-0.20	0.06	-0.14	-0.19	-0.02	-0.07		
Collateral	0.15	0.23	0.00	0.36*	0.10	-0.17	-0.06	0.17		
Risk x SME share	0.02	-0.10	0.03	-0.09	-0.10	0.12	-0.04	0.05		
Risk x Financial standing	0.11	-0.07	0.11	-0.12	0.24*	0.21†	-0.02	-0.19		
Risk x Collateral	0.05	0.05	0.16	0.20†	0.21*	0.06	-0.02	-0.02		

Note: † p < .1; * p < .05; ** p < .01; *** p < .001.

Relative lending experience, indicated by the number of credits that lending officers manage per week, has a positive effect on the use of the interaction of risk-taking proclivity of the SMEs in combination with the financial standing factor for SMEs. The average credit amount per week had a statistically significant positive effect on lending officers' use of the past performance factor for SMEs. The higher the lending officer's average credit amount, the more important the borrower's past performance became. The lending officer's credit limit, on the other hand, did not show any statistically significant effect for the use of any main factors or the selected two-way interactions.

Relative experience with lending to SMEs presented by the factors average amount lent to small firms, number of medium company loans, and average amount lent to medium size firms, showed statistically significant positive effects for the use of certain factors in lending officers' credit assessments. The average amount of small company loans affects the lending officer in the use of the independence of collateral factor and the interaction risk-taking proclivity factor in combination with the independence of collateral factor. Lending officers with a higher average amount of small company credits place greater emphasis on this interaction. The higher the number of credits to medium-sized companies, the more important the interactions became between the risk-taking proclivity of SMEs and their financial standing as well as the risk-taking proclivity of SMEs in combination with the independence of collateral. The average amount of medium-size credit affects the lending officer in using the risk-taking proclivity factor of SMEs in combination with the financial standing factor. The number of credits to fast growing firms and the average amount lent to these firms, however, did not show any statistically significant effect for using of any of the selected main factors or two-way interactions.

Turning to the hypotheses, it can be summarized that:

Hypothesis 13: Comprehensiveness of strategic planning is valued more by less experienced lending officers than by more experienced lending officers.

This hypothesis is **not supported**. No factor representing general or specific experience had a statistically significant effect on the use of the comprehensiveness of strategic planning factor.

Hypothesis 14: Past performance is valued more by less experienced lending officers than by more experienced lending officers.

This hypothesis is **not supported**. The only factor representing lending officers' experience that had a statistically significant effect on the use of the past

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performance factor of the SME was the average amount lent per week. This variable was used to indicate the lending officers' relative lending experience. The relationship is the reverse of what is hypothesized. Lending officers with a higher average amount of lending per week put greater emphasis on past performance of the SME. Assuming that more experienced lending officers handle larger credit amounts and/or a higher number of credits, the analysis indicates that past performance is valued more highly by more experienced lending officers.

Hypothesis 15: Share of investment by the SME is valued more by less experienced lending officers than by more experienced lending officers.

This hypothesis is **not supported**. No factor representing general experience, experience in the banking sector, or relative lending experience had a statistically significant effect on the use of the share of investment factor.

Hypothesis 16: Current financial standing is valued more by less experienced lending officers than by more experienced lending officers.

This hypothesis is **not supported**. Several of the factors representing general and specific experience in the banking sector had a statistically significant effect on the lending officers' use of the financial standing factor of SMEs. Both age and education, representing general experience, had a significant effect on lending officers' use of the financial standing factor of SMEs. Older lending officers and lending officers with a lower level of education tend to regard the financial standing of an SME as more important. Factors with a statistically significant effect, representing specific experience, were found in the lending officers' tenure. Years employed in the banking sector (at any level/at any bank), years employed at the present bank (at any level), years employed as a lending officer (at any bank), and years employed as a lending officer at the present bank all had a statistically significant effect on the use of the financial standing factor for SMEs. Consequently, lending officers with more experience in the banking sector put greater emphasis on financial standing. This is opposite to what was hypothesized.

Hypothesis 17: Independence of collateral is valued more by less experienced lending officers than by more experienced lending officers.

This hypothesis is **not supported**. The only factor representing lending officers' experience that had a statistically significant effect on the use of the independence of collateral factor was the average amount lent to SMEs,

indicating relative experience in lending to SMEs. Yet, the relationship is the reverse of the hypothesis. Lending officers with a higher average amount of lending to small firms put greater emphasis on the independence of collateral factor. Assuming that more experienced lending officers handle larger credit amounts to small firms, this actually means that independence of collateral is valued more by more experienced lending officers and not as hypothesized by those with less experience.

Hypothesis 18: Risk-taking proclivity in interaction with the share of investment by SMEs is valued less by less experienced lending officers.

This hypothesis is **not supported**. No factor representing general experience in the banking sector, relative lending experience, or relative experience with lending to SMEs had a statistically significant effect on the use of the share of investment factor.

Hypothesis 19: Risk-taking proclivity in interaction with financial standing is valued less by less experienced lending officers.

This hypothesis is **supported**. The lending officers' education level, as an indication of general experience, had a statistically significant effect on the use of the interaction of risk-taking proclivity of SMEs in combination with the financial standing of SMEs. The positive sign of Beta indicates that lending officers with a higher education level put greater emphasis on this interaction factor. Furthermore, a number of factors representing the lending officers' specific experience have a statistically significant impact on using the interaction between the risk-taking proclivity of the SMEs in combination with the financial standing of the SMEs. The average number of credits per week, indicating relative lending experience as well as the number of medium company credits per year, and the average amount lend to medium firms, both indicating relative experience in lending to SMEs, all had statistically significant effects on using the interaction of risk-taking proclivity of SMEs in combination with the financial standing of the SMEs. The positive signs of the Betas (Table 16) indicated that more experienced lending officers put greater emphasis on this interaction, meaning that less experienced lending officers put less emphasis on this interaction.

Hypothesis 20: Risk-taking proclivity in interaction with independency of collateral is valued less by less experienced lending officers.

This hypothesis is **supported**. Factors reflecting relative experience in lending to SMEs, such as average number of small firm loans and the number of medium company loans, had a statistically significant effect on using the interaction between the risk-taking proclivity of SMEs and independence of collateral. The positive signs of the Betas (Table 16) indicating that this interaction is valued more by lending officers with more relative experience in lending to SMEs than by those with less experience.

5.6 Conclusion

In this chapter, the lending officers' assessments to support hypothetical credit requests from growing SMEs are outlined. The hypotheses that the main factors discussed in Chapter 2 influence the lending officers' credit assessments were all supported, with the exception of the hypothesis concerning comprehensiveness of strategic planning. The analysis shows, furthermore, that lending officers put a greater emphasis on the past performance of SMEs and their financial standing, followed by competence within the business project, independence of collateral, and share of investment, CEO tenure, and risk-taking proclivity.

The analysis also showed the importance of considering the selected two-way interactions, because it was demonstrated that the selected two-way interactions are responsible for an increase of explained variance by 3.5%.

Two of the three selected two-way interactions had a statistically significant effect on the lending officers' credit assessments. The risk-taking proclivity of the SME, in combination with its financial standing, had the hypothesized effect. Although the interaction between risk-taking proclivity of SMEs and independence of collateral showed a statistically significant effect, this was not as hypothesized.

Moreover, the analysis reports that less experienced lending officers do not significantly put greater emphasis on tangible factors. Therefore, Hypotheses 13 to 17 are not supported. However, it was shown that less experienced lending officers put less emphasis on two of the three selected two-way interactions. The table below summarizes the hypotheses and whether or not they were supported.

Table 17: Support for hypotheses.

Hypothesis		Whether or Not Supported
1	Main effect risk-taking proclivity	Supported
2	Main effect competence	Supported
3	Main effect CEO tenure	Supported
4	Main effect strategic planning	Not supported
5	Main effect past performance	Supported
6	Main effect share of investment	Supported
7	Main effect financial standing	Supported
8	Main effect collateral	Supported
9	Interaction effect risk-taking proclivity × share of investment	Not supported
10	Interaction effect risk-taking proclivity × financial standing	Supported
11	Interaction effect risk-taking proclivity × collateral	Not supported
12	Lending officer insight in assessment policy	Supported
13	Less experienced – strategic planning valued higher	Not supported
14	Less experienced – past performance valued higher	Not supported
14	Less experienced – share of investment valued higher	Not supported
16	Less experienced – financial standing valued higher	Not supported
17	Less experienced – independence of collateral valued higher	Not supported
18	Less experienced – risk-taking proclivity × share of investment valued lower	Not supported
19	Less experienced - risk-taking proclivity × financial standing valued lower	Supported
20	Less experienced - risk-taking proclivity × collateral valued lower	Supported

The findings of the study will now be discussed further in Chapter 6.

6 Conclusions and implications

6.1 Introduction

This thesis investigated the assessment policies of lending officers toward credit applications of growing SMEs and explored the differences in lending officers' assessment policies. In the introductory chapter, three research questions were identified. The first research question concerned what information factors lending officers actually use in their assessments to support a credit request from growing SMEs. The second research question focused on if there was a difference in the factors that lending officers actually used in their credit assessments from their self-perceived factors. The third research question dealt with the effect of lending officers' experience on the assessment to support the credit requests of growing SMEs. More specifically, the question was posed whether lending officers with less experience bases credit assessment on different factors than more experienced lending officers. This thesis investigated and responded to these questions.

To answer the questions, a controlled sample of 114 lending officers was studied. Lending officers were first asked to evaluate 33 cases of hypothetical credit requests from growing SMEs, and then they were asked to indicate the importance of different factors in their credit assessments. In addition, the lending officers' demographic information was collected.

A summary of the most important empirical and theoretical findings is provided in this chapter. Furthermore, theoretical contributions, methodological contributions, and implications for banks and growing SMEs applying for credit are addressed.

6.2 Lending officers actual assessment policy

6.2.1 *Main factors*

The findings of this thesis provide insight into lending officers' credit assessments. In order of magnitude, the findings suggest that past performance of the SME, its financial standing, competence within the business project, independence of collateral, share of the investment by the SME, CEO tenure, and risk-taking proclivity of the SME all affect lending officers' assessments of credit requests by hypothetical and growing SMEs.

Out of the five factors that have the strongest effect on the probability of supporting credit, two belong to the risk assessment category (past performance of SMEs and competence of SMEs within the business project), two belong to the risk-shifting category (financial standing of SMEs and independence of collateral), and one belonged to the category of risk alignment (share of investment by SMEs). There are a combination of factors that limit the risk of the bank by either aligning the interest of the borrowing SME and the bank or by shifting part of the risk to the borrowing SME with the two factors belonging to the risk assessment category. This suggests that all elements of the theoretical model are important in order to explain the decision policy of lending officers. Factors that reduce and shift risk from the bank to the borrowing SME are essential in the assessment to support a credit request since they reduce the borrower's potential for opportunistic behavior by increasing the borrower's risk for a loss in the event of project failure.

Historical performance and financial standing are the two most important factors in the lending officers' credit assessments, suggesting that banks place strong emphasis indeed on the tangible accounting figures that SMEs present. In the financial literature, the incompleteness of financial information, especially concerning SMEs, is pronounced. For example, Andersen (1983), Kresge (2000), and Keasey and Watson (1988) and (1991) argue that financial data are notoriously unreliable and are frequently not available at all for small businesses.

The results of the present study suggest that lending officers do not act as if this were the case. It was found that lending officers perform the credit assessment as if SMEs actually have complete and reliable financial information. This is indicated by the extensive use of the two factors: past performance and financial standing of SMEs. The importance placed on these two factors implies that lending officers use them as an indication that the firm has the necessary funds to operate the company. This information is easily accessible and, because an external auditor audits it, is regarded as likely to be highly valid and reliable. A likely explanation for this high regard is that in Sweden annual reports must be audited and signed by an authorized public accountant who is independent from the firm in its legal form. Authors who claim that SMEs lack financial data usually refer to situations in other countries, primarily the UK and the US, where the requirements for audited reports depend on the legal form of the firm. In the accounting community, it is a common belief that users of financial information perceive audited reports as providing more reliable and relevant information compared to reports that have not been subjected to the rigors of audits (Keating & Frumkin, 2003; McMahon, 1998). However, it is argued by some authors that these audit reports may be out of date since they are often filed between 8 and 12 months after the reported accounting period (Keasey et al., 1988; Keasey et al., 1991b).

6. Conclusions and Implications

My results show that lending officers rely heavily on information that can be gathered from the annual financial statements of the SME requesting credit. This is an indication that lending officers' assessments to support credit requests are based on sound financial analysis. From the lending officer's viewpoint, the focus on historical performance and financial standing factors is a likely and rational strategy.

However, these factors alone are often not sufficient in assessing the creditworthiness of SMEs. Other factors have to be taken into consideration, such as the competence with the business project, collateral, share of investment, among others. It appears that several other factors identified in the literature and included in this study are more difficult to measure accurately. Therefore, lending officers might be unwilling to base their credit assessments on these factors. As stated in the literature (see Section 2.3), lending officers have difficulties evaluating a borrower's behavior, intentions, and incentives (Jensen et al., 1976). This is especially the case in privately held firms, where less firm information is made available (Storey, 1994b).

The importance of management is also emphasized in the literature. Some studies argue that management failure has proven to be the key reason for SME bankruptcies (Vaughn, 1997). Consequently, the importance of the CEO's management experience as a factor influencing the credit assessment should increase. Although the experience of the CEO is likely to influence his or her ability to manage the company, using the years of experience as a measurement may be inaccurate since the quality of the experience is unknown. Furthermore, CEO tenure in a present position gives an indication of the CEO's years of experience but not necessarily the CEO's actual expertise. These constructs may actually differ. Yates (1990) clarifies the differences with the example that not every golfer who has played for 20 years is an expert golfer.

Alternatively, it might be the case that these factors are, in fact, of less importance to the outcome of the project and the likelihood of the borrowing SME fulfilling its credit obligations. For example, the human capital of the CEO could have relatively little impact on the success of an individual project because other factors, such as customer demand, come into play. Consequently, the competence of the firm within the business project is more important than the CEO's individual experience. The success of the project does not necessarily depend on the CEO's abilities (Scherr et al., 1993). This could explain why lending officers put greater emphasis on the competence within the business project when assessing hypothetical credit requests.

Another interesting observation derived from the experiment is that the three most important factors are all related to the past success of the company (i.e., past performance, financial standing, and competence within the business project). It would, therefore, appear that banks assume that the past is a relatively good predictor of the future. While this may be a relevant conjecture,

it also signals conservatism. As a consequence, it might be difficult for firms that lack a track record to receive funding and in particular to receive funding for genuinely new projects.

The fact that the comprehensiveness of the business plan was the only statistically insignificant direct effect variable is particularly interesting. The writing of business plans is widely endorsed by normative literature, by governmental support agencies, and universities (Hindle, 1997; Kahrs, 1995; Maitland, 1998; Rich & Gumpert, 1985). If prevalence were an indicator, “common wisdom” would suggest that business plans are of crucial importance to the success of small firms (Rich et al., 1985) in general and in particular for SMEs in obtaining funding. For example, some financial resource providers (Barclays, 1991) and government support agencies (ALMI, 1998) produce business-planning handbooks. There is, of course, a cost associated with writing a comprehensive business plan. Based on the findings in this study, there appears to be little use for SMEs to write comprehensive plans when applying for loans. For an SME with limited resources, business-planning inevitability diverts resources away from other activities that may be more essential when building a growing organization.

Lending officers might even realize that growing firms need to be more accommodating and fluent in their business strategies because they often adapt to shifting worldviews in order to develop strategies that fit into the new mental frameworks when growing (Hedberg et al., 1977).

For the growing SME to be successful with the project, it is not only the comprehensiveness of the business plan but the implementation, realization, and modification of the plan that is essential. However, the execution of the strategic plan can only take place after the credit decision is made. Therefore, the lending officer is unable to evaluate the influence of the comprehensiveness of the strategic planning on the project success. One of the advantages of an SME is its ability to maintain independent decision-making and flexible operations that enable the firm to respond more rapidly to changes (Pettit et al., 1985). This is, in fact, one of the competitive advantages of SMEs compared with larger firms. The lending officers’ difficulty to predict the SME owners’ behaviors and willingness to operationally respond to changes in external conditions might explain the fact that strategic planning is not a statistically significant factor in predicting credit support.

Furthermore, the special characteristics of SMEs might even explain why the risk-taking proclivity factor was found to be the least important factor used by lending officers. The lending officer is aware that an SME is deliberately using its flexibility to react to changing conditions impacting the overall risk of the firm. Therefore, it is very difficult to evaluate the risk-taking proclivity of an SME over a longer period of time, which might explain why lending officers are less inclined to use the risk-taking proclivity factor in their credit assessments.

6.2.2 *Interaction effects*

This study shows that relying on the eight main factors provides an incomplete understanding of lending officers' credit assessment. A greater understanding can be gained by considering selected two-way interactions. The risk alignment category, specified as share of investment by SMEs, and the risk-shifting factors, specified as financial standing of SMEs and independence of collateral in combination with the risk-taking proclivity of the SMEs, both increased on an aggregated level the explained variance with 3.5%. Two of the three selected two-way interactions influenced lending officers' assessments to support the hypothetical credit requests.

As hypothesized, the probability of supporting credit decreases with high risk-taking proclivity, but this occurs at a faster rate for firms with weak financial standing. The probability of supporting credit only marginally changes for firms with a strong financial standing, which indicates that the borrower's risk-taking proclivity only marginally affects lending officers if the SME has a strong financial standing. This suggests that a strong financial standing can compensate, at least in part, for a high risk-taking proclivity. SMEs with strong financial standing can use their extensive financial resources to repay the loan and interest regardless of the outcome of the individual project.

The interaction between risk-taking proclivity and the strength of collateral also influenced lending officers' credit assessments. However, the form of the interaction was different than hypothesized. The finding does not support the hypothesis that lending officers' assessments of supporting credit decreases with an increase of risk-taking proclivity at a greater rate for weak collateral than for strong collateral. Instead, the relationship shows that borrowers with weak collateral were unlikely to receive a loan regardless of their risk-taking proclivity, whereas borrowers with strong collateral were significantly more likely to receive a loan if their risk-taking was low. For strong collateral, the lending officers' assessment of supporting credit does decrease with an increasing level of risk-taking proclivity, but at a faster rate compared to weak collateral. This finding suggests that strong collateral does only in part offset the negative aspects of high risk-taking proclivity. As suggested in some of the literature (e.g., Coult, 1992), banks avoid placing themselves in situations where they are likely to have to call on the security to repay the loan. Instead, collateral is treated as a last resort of repayment. Within the credit assessment, the lending officer has to consider the possibility that the borrower may default in repaying the credit and in paying interest. Therefore, the lending officer has to consider the strength of the collateral, such as bonds and shares, as more important than weak collateral, such as floating charge or receivables.

This implies that firms investing in risky projects would face a higher collateral demand. However, the bank will probably reject a loan if the risk is

regarded as too high because banks avoid placing themselves in a position where they are likely to have to call on the security to repay the loan.

6.3 Lending officers' self-perceived assessment policy

Investigating lending officers' self-perceived factor weights lead to some interesting findings. The ranking of importance is not identical with the lending officers' ranking as derived from the conjoint experiment. Lending officers assume in the self-perceived study that the factor with the greatest importance is the competence of the SME within the business project. The factor weight derived from the conjoint experiment shows that lending officers value this factor as third in importance, after the past profitability and financial standing of the firm.

Lending officers tend to give all factors similar weight in their self-assessment. A comparison of the relative means for the importance of the self-perceived factors with those from the actual experiment showed that six out of the eight factors were statistically significantly different. This finding, combined with the discovery that lending officers overstate the least important factors in their credit assessments and understate the most important factors, indicates that lending officers' insight into their own credit assessments is limited.

Since lending officers believe that they base their assessments on particular factors, they will change these self-perceived factors or the weight of these factors if they have to modify their lending assessment instead of modifying the actual factors or factor weights used, e.g. when the bank organization establishes a new credit policy. If the bank organization emphasizes that the lending officer should consider the borrower's risk-taking proclivity to a certain extent, then lending officers might not consider placing additional emphasis on this aspect since they might believe that they already placed enough emphasis on it. The comparison between the actual and the self-perceived factor weights for the risk-taking proclivity shows that the believed importance was heavily overstated. Similar arguments are valid for the borrower's competence within the business project and the importance of CEO tenure. On the other hand, the borrower's past performance, financial standing, and independence of collateral were understated in lending officers' self-reporting compared with the actual weight put on these factors during the assessments of the hypothetical credit requests. Being told that these factors should represent only a certain weight in the lending assessment, could lead to the outcome that lending officers place additional emphasis on these factors because they believe that they put less emphasis on these factors than they actually do.

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This result shows that lending officers' insight into their own assessment policy is limited. There are also four further implications for their ability to explain how they perform their credit assessments. First, newly employed lending officers may often be trained by more experienced colleagues and be advised as to what factors they should emphasize. However, the study shows that the actual credit assessments are based on factors other than what the lending officers perceive as being essential. Therefore, the process and method of introducing newly employed lending officers to credit assessments should be carefully considered and questioned. This suggests that other, more efficient, training methods could be used.

Second, if the lending officer has to justify his or her decision not to support a particular credit request from a growing SME, either to a supervisor or to the customer, he or she might argue for a limited level of factors that are overstated in the lending officers' self-perception but are actually not as important in the credit assessment. The lending officer might argue that the limited comprehensiveness of the strategic plan or the high risk-taking proclivity are the factors for not supporting a credit application rather than arguing for the significance of the most important factors that are actually more important, such as past performance and financial standing.

Third, the desire of banking organizations to build models and guidelines for how credit assessments should be conducted is difficult to accomplish even when asking the most experienced lending officers to report how they typically make lending assessments.

Fourth, the lending officers' perception that they place emphasis on certain factors may send signals to potential customers that are not in line with their actual assessment policy. The lending office might claim the importance of an SME showing a track record of not investing in high-risk projects (low risk-taking proclivity), when in fact the importance of the borrower's risk-taking proclivity is compared to other factors almost irrelevant to the actual outcome. Lending officers might recommend their SME customers to write a comprehensive business plan when applying for bank loans because this is perceived as being the third most important factor; however, this was not statistically significant when lending officers assessed the hypothetical credit requests. Consequently, lending officers might mislead their customers.

Since past performance and financial standing are the most important factors for the actual lending assessments, it is difficult for firms that lack a track record and similar project experience to receive credit approval, indicating lending officer conservatism. The fact that lending officers understate these two factors in their self-report indicates that they are more conservative and less risk prone than they think they are.

No statistically significant differences were found in the actual and the self-perceived use of the share of the investment by SMEs and the borrower's

competence within the business project. It was argued that the share of investment by SMEs was an indication of risk alignment between the borrower and the bank, and it seems lending officers have a concept of how they actually use this factor. However, competence within the business project was only one out of five factors used in the lending officers' assessment of risk, demonstrating that lending officers are not well aware of the overall risk assessment. The two factors belonging to the risk-shifting category are not well understood by the lending officers, because statistically significant differences were found between the actual and the self-perceived use of these factors.

6.4 Experience

This study also provided an investigation of lending officers' use of some selected direct and indirect factors in credit assessments of hypothetical and growing SMEs. Experience was defined as general experience, tenure in the banking sector, relative lending experience, and relative experience in lending to SMEs.

The regression of general and specific types of experiences and the main factors as well as the three selected two-way interactions did not support any of the hypotheses that suggested that less experienced lending officers would place greater emphasis on more tangible factors, e.g. strategic planning of SMEs, past performance, share of investment by SMEs, financial standing, or independence of collateral. Nonetheless, it was found that several factors measuring general and specific experiences statistically show significant effects on the use of the financial standing factor. General experience measured by age and education statistically showed significant effects; older lending officers and lending officers with a lower educational level tend to put more emphasis on the financial standing factor. The results show, furthermore, that all indicators of experience within the banking sector were associated with a greater reliance on the financial standing of the SMEs, thus affecting the assessments to support the hypothetical credit requests.

One possible explanation as to why lending officers with a lower education level put greater emphasis on the financial standing factor might be related to more extensive on the job training compared with lending officers with a higher education level. A lower education level suggests that these lending officers potentially receive more extensive training on the job. On the job training is often conducted by colleagues who have tenure in the banking sector and who are often older. Both age and all variables indicating tenure in the banking sector had a statistically significant effect on the use of the financial standing factor. Following their older colleagues, who had more general experience and who put greater emphasis on the financial standing factor, these trainees have

6. Conclusions and Implications

learned to do the same. On the other hand, lending officers with a higher education level might have learned the importance of other factors through the education system and probably receive less extensive training on the job.

An alternative explanation is that older lending officers and lending officers with longer tenure in the banking sector, in general, have a lower education level. This has two possible explanations. First, the general tendency towards higher education has increased over the last few decades. On average, people are attaining a higher level of education. Second, banks traditionally did not stress education as an employment factor for lending officers. During recent years, banks have emphasized the importance of education more when employing lending officers. I tested the correlation between the education level factor and age and found the correlation to be -0.43 ($p < 0.01$). This supports that older lending officers indeed generally have a lower education level.

The result that lending officers with more experience within the banking sector rely more on the financial standing factor when deciding to lend money to growing SMEs is contradictory to the hypothesis that less experienced lending officers would put greater emphasis on this factor. The findings suggest that tenure in banking (at any level and at any bank, as well as within the present bank organization) and tenure as a lending officer (both at any level and within the present banking organization) directly correlate to the emphasis that the lending officer places on the financial standing of the SME.

In Chapter 2, it was argued that the financial standing factor shifts the risk from the bank to the borrower, because with a strong financial standing the borrower's probability of defaulting on the credit is lower. A strong financial standing enables the borrower to repay the credit and to pay interest irrespective of the individual project outcome. Therefore, the finding that the financial standing factor has a significant positive effect on variables that indicate lending officers' experience within the banking sector indicates that more experienced lending officers are more risk averse and more inclined to shift the risk from the bank to the borrower by putting more emphasis on this factor. Furthermore, the collateral factor, which was also argued as shifting risk from the lender to the borrower, also showed a positive effect for lending officers with a higher level of relative experience in lending to SMEs. Independence of collateral, indicating a risk-shifting from the bank to the SME, was statistically significant when lending officers' average loan amounts to small firms increased. This accentuates that risk-shifting becomes more of a concern when the lending officer has more relative experience in lending to SMEs since the average loan amounts of more experienced lending officers are usually higher than those of less experienced lending officers.

If it is assumed that more experience within the banking sector and more lending experience leads to a higher level of expertise within the lending assessment, the suggestion can be made that more experienced lending officers

rely more on the risk-shifting category compared to their less experienced colleagues.

Another interesting finding that emerged from this analysis was the relationship between the lending officers' experience and the use of the risk-shifting factors, namely financial standing of SMEs and independence of collateral in combination with the risk-taking proclivity of SMEs. The results show that general experience, in the form of lending officers' education level, has a positive effect on the use of the interaction between risk-taking proclivity of SMEs and financial standing. Conversely, the main effect of financial standing shows a negative relation to the lending officers' education level. This means that lending officers with a higher education level put less emphasis on the direct effect of financial standing of SMEs, but a higher emphasis on the interaction of the financial standing of SMEs in combination with the risk-taking proclivity of SMEs. It seems that the higher the education level, the more the focus shifts within the credit assessment to a more complex level, at least considering the financial standing factor. One interpretation is that a higher education level makes it more likely that the lending officers use a more complex method for assessing credit requests of a growing SME. Financial standing is argued to be one of the factors that reduce the credit risk-bearing of the bank by shifting parts of the risk from the bank to the SME. However, lending officers with a higher education seem to consider this risk-shifting alternative only in combination with the risk-taking proclivity of SMEs. That means that the risk-shifting approach only becomes a concern at a certain level of combined financial standing and risk-taking proclivity of the SMEs. In addition, the level of relative lending experience and the relative experience lending to SMEs also show statistically significant effects for the use of the interaction between the financial standing and risk-taking proclivity of SMEs. The analysis illustrates that number of credits per week as an indicator for relative lending experience, the number of medium company loans during the last fiscal year, and the average amount of medium company loans as an indicator for relative experience with lending to SMEs all show positive levels for the use of this interaction factor. Assuming that these factors reflect relative lending experience in general and in lending to SMEs in particular, it is evident that experienced lending officers put greater emphasis on the interaction of the financial standing SMEs in combination with the risk-taking proclivity of the SMEs. This indicates that risk-shifting becomes more of a concern for lending officers with a higher level of relative lending experience.

Since both education level and the variables indicating specific lending experience are statistically significant for the lending officers' use of the SME financial standing interaction with risk-taking proclivity of the SMEs, relative lending experience might be compensated by education. Both groups are more likely to use more complex assessment models.

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Another notable finding was that more experienced lending officers tend to use the interaction of risk-taking proclivity of the SMEs and independence of collateral to a larger extent than less experienced lending officers. Variables indicating relative experience with lending to SMEs, in the form of average amount lent to small firms and number of medium company loans during the last year, had a statistically significant influence on the use of this interaction. This interaction indicates that experienced lending officers put greater emphasis on the independence of collateral factor, which shifts the risk from the bank to the borrower, but only in combination with the risk-taking proclivity of the SMEs. The direct collateral factor was not used to a statistically significant extent by experienced lending officers.

The greater reliance by experienced lending officers on the interactions between risk-shifting factors of banks and the risk-taking proclivity of SMEs indicates that lending officers are learning through experience to use more complex constructs in their assessment processes.

Less experienced lending officers need to observe correlations among interaction of the risk-shifting factors and the risk-taking proclivity of SMEs and the loan outcome before they can combine these types of factors. Experienced lending officers have dealt with more credit applications from growing SMEs and have observed correlations among the risk-shifting factors, financial standing of SMEs, and independence of collateral as well as the risk-taking proclivity of SMEs and the probability of repaying the loan. Furthermore, experienced lending officers seem to be more concerned with ensuring that the bank retrieves the credit that depends on the risk-taking proclivity of the borrowing SME.

This illustrates that the assessments are different by experienced and less experienced lending officers towards credit requests from growing SMEs. With experience, the assessment process changes. Recognition of the differences in the credit assessment structure between experienced and less experienced lending officers might be useful for the lending officers and their organizations and can be used to get beyond the individual lending officers' preferences when evaluating a growing SME and establishing more objective guidelines. Banks might want to provide their less experienced lending officers with the insights of their more experienced colleagues. However, there is no evidence in this thesis that experienced lending officers do in fact make better lending assessments. This is, in turn, poses a challenging question because there are several levels to be considered concerning the quality of credit assessments.

Alternatively, the bank organization might be satisfied with the outcome of its lending officers' assessments both with the experienced and less experienced officers, because the number of credit defaults are limited and the marginal cost for improving lending officers' credit assessments might be higher than the marginal benefit. This would mean that the weight that the lending officers put

on the selected factors are very good predictors for successful lending. Accepting this, it would not be difficult to standardize the credit assessment or to build a decision-system to manage credit assessments, which might create a competitive advantage in the intensifying SME credit market (especially with regard to the European market). Consequently, a bank might increase their SME customer credit efficiently and profitably by automating the credit assessment process.

6.5 Theoretical findings and implications

This research made a number of contributions. First, it was shown that while it might be difficult for SMEs that are planning large investments in pursuit of new growth opportunities to have access to credit finance, these difficulties are smaller for some than others. Second, using a decision-making perspective to theorize and rigorously investigate the content, weights, and complexity of loan officers' credit assessment policies complements research work on debt financing of SMEs. An assumption that lending officers use a main-effect-only assessment policy might represent a simplifying assumption that could lead to some erroneous conclusions. Understanding the factors that influence lending officers' assessment policies can help better explain why some businesses obtain debt funding and others do not. The research work on SMEs' access to bank financing is further complemented by investigating lending officers' insight into their own decision-making. Third, research on the lending officers' credit evaluations is extended by exploring differences between lending officers' credit assessments based on their general experience, experience in the banking sector, relative lending experience, and relative experience with lending to SMEs.

In developing my research model, I link three constructs derived from the literature. These are the risk-assessment category, the risk alignment category, and risk-shifting category. The three categories are connected to the overarching theoretical framework of bank lending under asymmetric information. The fundamental challenge in the relationship between the bank and the growing SME occurs due to information asymmetry and risk aversion (Binks et al., 1992; Stiglitz et al., 1981; Svensson & Ulvenblad, 1995). The foundation of a sound theoretical approach to credit assessment lies with this three categories of risk-assessment, risk-shifting, and risk-alignment.

I then conduct an extensive review of literature of how certain firm characteristics affect a firm's probability of success and the probability of receiving bank loan. The literature review suggests that these firm characteristics can be collapsed into eight distinct overarching categories. These are as follow: the general risk-taking proclivity of the firm; the competence within the business project; the Chief Executive Officer's (CEO) personal experience; the extent of

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strategic planning; the past performance of the firm; the share of investment by the firm; the financial standing; and the level of collateral.

The review on the literature showed that these eight factors are exhaustive to describe lending officers' assessment of growing SMEs. The responding lending officers further confirm this, because only 2 out of the 114 lending officers suggested that they would consider any other factor than the eight factors described above.

These eight characteristics can be fruitfully categorized into the three theoretical constructs of risk-assessment, risk-alignment, and risk-shifting. Factors that were identified in the category risk assessment consisted of the risk-taking proclivity of the firm, the competence of the firm within the business project, CEO tenure, comprehensiveness of strategic planning, and past performance. The share of investment by the firm was categorized into alignment of risk category. For the risk-shifting category financial standing of SMEs and independence of collateral were identified as factors.

By linking the eight factors that influence the chances of a growing SME to receive bank loans to the three meaningful theoretical categories of risk assessment, risk-alignment, and risk-shifting, empirical observations are linked to a solid theoretical framework. First, the empirical results of this study show that all three categories are used by the bank to limit the problem of asymmetric information between the growing SME applying for credit and the bank.

The identified categories seem to be an appropriate foundation for future research on bank lending to SMEs under asymmetric information. Thereby, the model developed in the study can be used to facilitate empirical research on bank lending under asymmetric information by providing a structure and categorize previous research into the three categories of risk assessment, risk-alignment, and risk-shifting. Only considering a portion of the categories or a portion of the factors identified within each theoretical category that are suggested to be important for a growing SME to receive credit leads to some theoretical limitations. The relative importance of the used categories and/or factors increases as perhaps a category or factors within a category are ignored. The results of the reviewed literature are distorted. Therefore, the used category or the factors within the category might be described as essential for the outcome of a credit assessment whereas in fact they might be of minor importance compared to the category or factors not considered. Although lending officers undoubtedly use some of the information described in previous studies, the relative importance of that information needs to be reevaluated. The reviewed literature is inconclusive in this respect. Different studies are inconclusive as to the most important factors of the credit decision process because the lack of considering all categories and factors within each category. Therefore, the validity of findings from previous studies can be questioned.

Table 18 in Appendix 1 demonstrates that many studies have focused on some factors belonging to the risk assessment category in order to predict the borrower's ability to receive bank loan. However, not considering the category of risk-alignment and risk-shifting has some limitations because the bank can shift part of the risk or align the risk-bearing function, which might make the actual risk assessment category less of a concern. Moreover, a growing SME which receives low risk assessment might still receive credit because the bank can assure to limit its risk by either aligning the risk with the borrower or by shifting (part) of the risk from the bank to the borrower. Some other studies focus on accounting information, such as past performance and financial standing, belonging to the category risk assessment and risk shifting respectively, but do not consider other categories and factors that might influence lending officers' assessment of growing SMEs. This study, on the other hand, addresses the deficiency in previous research through research on factors that represent all three categories simultaneously.

The findings from the conjoint experiment attest to lending officers placing the greatest emphasis on the borrowing SMEs' accounting figures and on factors that reduce banks' credit exposure. Out of the five factors that have the strongest effect on the probability of supporting credit, three relate to tangible features that reduce the risk of the bank and shift the risk-taking to the borrowing SME (financial standing of the SME, independence of collateral, and share of investment by the SME). The importance of these factors indicates opportunistic behavior is a non-issue, because the bank will receive its money back irrespective of the outcome of the project. Also, the share of investment by the SME makes opportunistic behavior a non-issue, because the firm also would lose its part of the investment if the project was not successful. In addition, of these five factors, two relate to the risk assessment of the borrower (historical performance and competence within the business project). This indicates that although the credit engagement might show high levels of risk shifting and risk-alignment, these factors alone might not justify a support for the credit request.

Further, the general risk-taking proclivity of the SME interacts with factors that shift part of the risk from the bank to the borrowing SME. It was shown that two of the three selected interactions affected lending officers' credit assessments. Both interactions that lending officers used to a statistically significant extent indicated that factors that shift the risk from the bank to the borrower in interaction with the risk-taking proclivity of the SME influenced lending officers' credit assessments.

The findings from the empirical study substantiate that each of the selected factors used to investigate lending officers' assessments to support credit requests from growing SMEs is perceived as being relevant by the responding lending officers. The averaged results indicated that the responding lending officers consider all factors important. However, the empirical results show that

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lending officers' insight in their credit assessments is limited. Six out of the eight factors were statistically significantly different when comparing the factor weights from the conjoint experiment with the lending officers' self-perceived factor weights. Furthermore, it was found that lending officers overstate the importance of the least important factors and understate the importance of the most important factors.

The additional collection of demographic data about the responding lending officers made it possible to investigate whether there are differences between lending officers credit assessment, the nature of these differences, and, in particular, whether lending officers with less general and specific experience rely more on assessment factors that are less difficult to measure. Although it was found that less experienced lending officers do not rely more on factors that are easier to measure, differences in lending officers' credit assessments were found, which could be explained, in part, by differences in experience. Lending officers with longer tenure in the banking sector rely more on the importance of the financial standing factor when making the credit assessment. This is in line with Andersson's (2001) research that more experienced lending officers' search for more accounting information compared with less experienced lending officers.

It was found that the use of the financial standing factor is significantly correlated to the lending officers' experience, which is an indication that experienced lending officers use a different assessment structure.

Furthermore, the thesis contributes to the theory by illustrating that lending officers with more experience were more likely to use more complex assessment policies than those lending officers with less experience. Although lending officers with a higher education level put less emphasis on the financial standing factor, they were found to put greater emphasis on the risk-taking proclivity factor in interaction with the financial standing factor. Furthermore, relative lending experience and relative experience with lending to SMEs had a similar effect. This is an indication that a higher level of education can compensate lending experience in part. Furthermore, lending officers with more relative experience with lending to SMEs make significantly more use of the interaction independence of collateral in combination with the risk-taking proclivity of the borrowing SME. This is in line with Shepherd (1999), Shepherd et al. (1998), Zacharakis (1995), and Zacharakis et al. (2004, forthcoming) who found that more experienced decision makers use interaction of different decision factors to a greater extent. Both findings are an indication that lending officers with greater experience in fact use more complex decision-making models.

6.6 Methodological findings and implications

Using a conjoint experiment as a methodological approach made it possible to examine how lending officers evaluate hypothetical credit requests from growing SMEs in real time, which appears to have the potential for describing and furthering the understanding of lending officers' credit assessments. The main advantage of using an experimental approach is to avoid the issues of post-hoc recall biases and address the factors that lending officers actually use for their credit assessments instead of only investigating self-reporting and retrospective data. However, a more traditional questionnaire was also included that asked lending officers to report the importance of factors used for the assessments of hypothetical credit requests from growing SMEs. The differences between the factor weights derived from the conjoint experiment and the self-perceived weights showed that six out of the eight factors were statistically significantly different. Assuming that the experiential approach generates better results, the implication is that there are limitations to research approaches using questionnaires when accessing lending officers' credit assessment factors.

Another methodological contribution is made by investigating the use of interaction effects between selected factors in lending officers' assessments to support credit to growing SMEs. Previous studies of bank lending rarely investigated interaction effects between different factors for the lending decision. This shows an incomplete understanding of the lending assessment. In this study, the interaction of risk-alignment between the bank and the SME, measured by the share of investment factor and the category of risk shifting, specified through the financial standing of the SMEs and independence of collateral, contributed 3.5% to the explained variance of the model. The data from this study demonstrates that there is more potential in practical applications of conjoint analysis in credit decisions.

It was found that the individual lending officer evaluates a credit application of a company differently even when given exactly the same information, i.e., lending officers place different weight on information cues, which, in turn, influences the credit assessment. This is in line with Kling, Driver and Larsson (2003), who argue that lending officers manage information differently. However, the study shows that differences in lending officers' assessments can be attributed to their level of general experience, the level of experience in the banking sector, the level of relative lending experience, and the level of relative experience with lending to SMEs.

6.7 Implications for growing SMEs and banks

Although the assessments of credit requests to growing SMEs are in reality more complex, and banks and lending officers are not expected to act exactly as described in this thesis, the study provides information to growing SMEs applying for bank loans and lending officers and their banking organizations in assessing such credit requests.

The results of this study may lead growing SMEs that wish to obtain bank credit to provide better information to banks. Knowing what information the bank needs and how the lending officer weighs different information factors could facilitate the preparation of the credit application by SMEs.

Lending officers' assessments of hypothetical credit requests from growing SMEs indicate that SMEs that perform well and are financially strong will more likely receive a positive assessment, at least in the case when the credit application amount does not exceed the firm's current equity. SMEs that can demonstrate recent successes (strong past performance and strong financial standing), have competence related to the project being funded, and those that can mitigate project risk through evidence of good financial standing and collateral irrespective of project success are more likely to obtain bank credit. Even for those businesses that could obtain venture capital, recognition of the conditions under which a loan is more likely might persuade some entrepreneurs to choose a loan over equity funding.

For SMEs that have a weak track record, the credit situation is more problematic. It appears that developing a strong business plan is not the way to resolve this problem. Rather, in the absence of a strong performance record and strong financials, these firms would benefit from showing that they have the competence to perform the activities/projects for which funding is being sought. In addition, they probably need to provide strong collateral, which is independent of the future success of the firm, such as private property. Thus, for the owner-managers of these firms, receiving a bank loan could mean taking a substantial personal risk. Financial standing is the most important factor that lending officers use to assess the level of support for hypothetical credit applications. Accordingly, SMEs where the main value of the firm lies in an idea or technology that has not yet generated accounting profits may face greater difficulties in financing their growth.

The results actually suggest that growing SMEs applying for bank financing might receive a different assessment depending on the lending officer's experience. Consequently, a growing SME having difficulties securing bank financing should try to get a second assessment from another lending officer who might even be employed by the same bank organization. If the firm intends to invest in a relative risky project with a lower financial standing, it could be an advantage to have a less experienced lending officer with a lower

level of education assess the credit, because the emphasis on the interaction between the risk-taking proclivity of the SME and financial standing will tend to be less.

It may be difficult for lending officers to really understand their own assessment process. The comparison between lending officers' self-perceived factor weights and those derived from the conjoint experiment showed statistically significant differences in six out of the eight factors, indicating that lending officers have limited insight into their own assessment policies. Furthermore, it was demonstrated that lending officers understated the importance of the most important factors and overstated the importance of the least important factors of their actual credit assessment.

This lack of systematic understanding impedes learning. Banks cannot improve their credit assessment process if the lending officer does not truly understand it. Bank organizations cannot allow their lending officers to rely on trial and error in an attempt to improve credit assessment policy. Therefore, one suggestion for bank organizations is to increase their lending officers' understanding of their own credit assessment policy and to increase the lending officers' understanding of how credit assessment should be made. The analysis of lending officers' actual credit assessments can provide lending officers with new insights into their own assessments and for future training and evaluation of lending officers' credit assessments.

On a more practical level, bank managers can use the results of this study to make comparisons with their existing credit guidelines. Is the correspondence high? If not, should the guidelines change, or should the bank try to influence and correct the behavior of lending officers? In essence, this research could assist banks in improving their decision-making because a prerequisite for making better decisions is to have knowledge about the current credit assessment process. This could be the basis for more objective credit assessments and limit subjectivity, which may lead lending officers, even within the same organization, to assess the same credit application differently.

It might be interesting for the bank to evaluate whether or not experienced lending officers actually make better credit assessments compared with less experienced lending officers. If this were the case, it would indicate that more complex assessment constructs would be more beneficial for the bank. Consequently, less experienced lending officers could learn by being trained based on the assessment model of their experienced colleagues. This would also enable the bank organization to provide the basis for altering guidelines for credit assessments. Through an understanding (and the ability to predict) the way more experienced lending officers use cues within the credit assessment, less experienced lending officers can learn and adapt to the assessment process more easily. This could be beneficial for the overall performance of the bank. However, these guidelines and training should not be based on experienced

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lending officers' self-perceived credit assessments, because this thesis has shown the inconsistency of lending officers' perception of their actual assessment.

The identification of the weights that lending officers put on different factors has clear implications for the development of standardized systems and sophisticated analytical techniques, such as expert systems or neural networks. However, this does not suggest that the bank minimize or even replace the individual lending officer's credit assessment with sophisticated analytical systems that could execute and perform what the bank assigns as perfect weights for each of the factors for the lending assessment. The danger here is that the assessment of factors important to the lending decision might change over time. Factors that are important today might be less important in the future and other factors might become redundant, whereas others might have to be included in the future. Consequently, the lending officer is essential as a human component for the credit assessment and its outcome.

6.8 Limitations

The sample in this study consists of 114 lending officers with relevant experience rather than a random sample, because one of the objectives for this study was to make this exercise as realistic as possible. However, the sample may be criticized for not being representative because it includes 56 different bank branches of only four of the five major commercial banks in Sweden. These banks hold 65.9% of deposits and 56.7% of total lending to the public in the Swedish banking market (Bankföreningen, 2003a). 108 of the participating lending officers were recruited from a range of 55 bank branches within a circumference of 150 km from Jönköping, Sweden. Although the entire region is well known for its small and medium-sized businesses and entrepreneurial spirit, the sample is limited to this geographical area. A larger sample or a sample representing a larger area or the whole country would lend greater generalizability to the results.

Confining this research to Swedish growing SMEs limits the extent to which the results of this study may be applied to other countries and borrowers. One major difference in the lending decisions of Swedish banks as compared with other countries is that all financial reports are audited by certified public accountants. Audited financial reports are likely to be more accurate and reliable than financial reports that are not.

Using a conjoint experiment to evaluate lending officers actual credit assessment has some limitations. One limitation is the use of hypothetical credit applications from fictional firms. Although the experiment had face validity, the lending officers are exposed to a credit assessment that does not perfectly reflect the real situation. Therefore, their assessment to support a credit request might

be different from the ones evaluated in this study. Differences between the hypothetical credit scenarios and the real ones may cause concern as to the validity of the experiment. The lending officers are presented with the factors from which to choose. Thereby, the need is removed for the lending officers to search for information and avoid the introduction of other factors or information. Although other pieces of information might normally be considered, such information is controlled for in the experiment or is applied equally across all the loan officer's assessments. Furthermore, lending officers might attach importance to a factor merely because it is presented in the experiment. However, this is probably not a substantial problem, because the information on the decision criteria presented was justified by theory and had face validity. In addition, it seems unlikely that lending officers in the selected sample would attach importance to an assessment factor just because it is presented.

The description of the factors might be too abstract for the lending officer to recognize their importance for the credit assessment. However, professional judgment itself often involves some abstract coding of the cues, similar to that provided by the conjoint experiment (Brehmer & Brehmer, 1988). Moreover, since the lending officers' credit assessments have a large "paper" component in the real world, correlation between the experimental task and the "real world" decision should be high.

Whether or not these factors actually reflect aspects that are relevant to the likelihood of a borrower repaying a loan is an open question. Therefore, banks would benefit from comparing these results with their data on credit defaults. This comparison could lead to valuable insights and provide the basis for altering guidelines for credit assessments.

6.9 Prospects for future research

Some of the results of this research project suggest interesting prospects for future research. The finding that past firm performance and financial standing are the most important factors for lending officers credit assessment leads to some possible future research. First, because the lending officers have access to this information through audited reports, it would be interesting to investigate how lending officers use these reports. More importantly, to investigate if there are ways to use audited reports more efficiently than they are today. Furthermore, it would be interesting to investigate if the typical lending officer really has insight into sophisticated audited reports or if he or she only uses some calculated key ratios.

Second, verifying these factors by an auditor could give an incentive to investigate the importance of other information factors that are verified by a

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third party, and it could be determined whether or not this additional information has a statistically significant effect on the lending assessment. Management audit reports are one example of such information.

It was suggested that one explanation why strategic planning did not have a statistically significant effect, and factors such as risk-taking proclivity and CEO tenure were only used to a minimal extent, might be that these are, in fact, less decisive for the outcome of the project and the likelihood of the borrowing SME fulfilling its credit obligations. Future research could investigate the relationship between the assessment of the outcome of the project and the lending assessment. One alternative would be to ask lending officers to assess the level of success where the business project is independent of the assessment as well as to ask them to assess whether to support a credit request for the same project. This is interesting because a successful project will generate a positive cash flow, which, in turn, enables the firm to fulfill its credit obligations. However, there are more factors than just the success level of the firm that influence the lending officers' credit assessments. There might be circumstances where a lending officer supports a credit request although he or she regards the likelihood of project success very low, e.g. if the firm can back up the credit or guarantee the repayment of the loan and interest by means other than the new project, like collateral. There might be other circumstances where a lending officer does not support a credit request yet regards the project success as high. One reason might be that the firm does not back up the credit with collateral or cash flow generated through other projects. Thus, an investigation as to whether lending officers put different emphasis on the same factors when evaluating the level of project success and the level of supporting the credit request could strengthen the argument that lending officers seem more likely to support a credit request when they can shift the risk from the bank to the borrower. Within the project, assessment matters of risk-shifting and risk-alignment might be less of a concern.

Another interesting area of research would be to combine the experimental approach of interviewing the individual lending officer concerning the rationale behind his or her assessment(s) for each or some of the profiles. The lending officers' reasoning when evaluating hypothetical credit requests could further understanding of credit assessment.

As described above, some experience variables influenced the weight that lending officers put on particular factors or interaction when making credit assessments. In this study, a statistically significant difference in the use of the financial standing of SMEs, the interaction of financial standing of SMEs and risk-taking proclivity, as well as the interaction of independence of collateral factor combined with risk-taking proclivity was found when comparing more experienced and less experienced lending officers. These findings provide the basis for greater theorizing and more empirical work on the effect that different

experience variables could have on the use of different assessment factors and the effect on the assessment structure.

As for the differences between experienced and less experienced lending officers, it might be interesting to split experience into different subgroups, such as very experienced, experienced, less experienced, and novices. Furthermore, it was argued that education level could subsidize experience in part. Therefore, it would be interesting to include respondents with a high educational level, employed outside the banking sector. Conducting the experiment with novices and naive subjects and comparing the results with less experienced lending officers could be interesting for investigation if less experienced lending officers make better credit assessments than novices or naive subjects. If we understand what causes differences in assessments made by these different subgroups, we can discover an avenue to improve the credit assessment process.

Most of the previous empirical research on lending officers' credit decisions has typically based the empirical results on the assumption that lending officers only use a main-effect when making the credit assessment or credit decision. This assumption could lead to some erroneous conclusions. The finding of this study that lending officers (especially those with a higher level of experience) do not use a main-effect-only policy when assessing credit requests will hopefully provide scholars with an incentive to research the impact of interaction effect further, when regarding the lending officers' credit assessments or the banks' credit decisions.

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Appendices

Appendix 1: Characteristics of the firm affecting the probability of receiving funding

Table 18: Characteristics of the firm affecting the likelihood of its success and the likelihood to receive funding.

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
A								
Altman, 1984							X	
Altman, 1983					X		X	
Anderson, 1999								X
Andersson & Helander, 1993							X	
Ang, 1991, 1992	X			X				
B								
Barton & Matthew, 1989	X		X	X				
Beaulieu, 1994			X				X	X
Beaulieu, 1996			X		X		X	X
Becker, 1975			X					
Berger, 1997/1998		X	X	X				X
Berger & Udell, 1995		X						X
Berger & Udell, 2003					X		X	X
Berggren, Lindström, & Olofsson, 2001		X					X	X
Besanko & Thankor, 1987		X						X
Bester, 1985, 1987		X						X
Bhide, 1992				X				
Binks, Ennew, & Reed, 1992	X	X			X			X
Boot, Thakor and Udell 1991		X						X
Brealey & Myers, 1991					X		X	
Broomé, Elmér, & Nylén, 1998					X			
Bruce, 2001			X					
Brüderl & Schüssler, 1990	X	X	X	X				
Büschgen, 1993					X		X	X
Burtis, 1991							X	

Appendix 1

Table 18: Continued.

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
C								
Brüderl & Schüssler, 1990								X
Büschgen, 1993			X					
Burtis, 1991			X					
Brüderl & Schüssler, 1990		X					X	
Büschgen, 1993								X
Burtis, 1991		X		X	X		X	
Brüderl & Schüssler, 1990							X	X
D								
Davidson & Honig, 2003			X					
Deakins & Hussain, 1994					X		X	
Dixon, 1991		X						
E								
Evans & Jovanovic, 1989	X		X			X		x
F								
Firth, 1979					X		X	
Fischer, Reuber, & Dyke, 1993		X	X					
Fulmer, Moon, Gavin, & Erwin, 1984					X	X	X	
Freeman, 1996	X		X					
G								
George, 1991		X	X	X			X	
Gibson, 1983		X			X		X	X
Glassman, 1987			X		X		X	X
Gorman & Sahlman, 1986		X						
Gopinath, 1995				X			X	X
Green, 1998				X	X			
H								
Hamm, 1996			X		X			X
Harhoff and Körting 1998		X						
Hedelin, 1999			X	X				
Hedelin & Sjöberg, 1993; Hedelin & Sjöberg, 1995		X	X					
Hisrich & Brush, 1984		X	X				X	
Hisrich & Jankowitz, 1990			X					
Houghton, 1983					X		X	

Table 18: Continued.

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
I								
Innes & Lyon, 1994			X		X		X	
J								
Jankowicz & Hisrich, 1987	X		X	X	X			X
Jensen & Meckling, 1976	X					X		
K								
Keasey & McGuinness, 1990		X	X				X	
Keasey & Watson, 1991			X		X		X	
Knight, 1982	X		X				X	X
Koch, 1998					X		X	X
L								
Leeth & Scott, 1989								X
Levin & Travis, 1987	X				X			X
Libby, 1976							X	
Libby, 1979	X		X		X		X	
M								
MacMillan, Seigel, & Subba Narasimha, 1985			X					
Meyer, 1993					X		X	X
Miller, Reed, & Strawser, 1993					X		X	
Modigliani & Miller, 1958	X				X			
Montagno, Kuratko, & Scarcella, 1986	X		X					
Myers & Majluf, 1984						X		
N								
O								
P								
Petersen & Rajan, 1994		X	X				X	
Pettit & Singer, 1985	X	X	X			X		X
Q								

Appendix 1

Table 18: Continued.

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
R								
Reed & Gill, 1989				X	X		X	X
Robinson, 1987			X					
Rodgers, 1991	X					X	X	
Ruth, 1987		X			X		X	X
S								
Sargent & Young, 1991		X	X	X				
Scherr, Sugrue, & Ward, 1993	X	X	X					
Shapiro, 1990						X		
Shepherd & Shanley, 1998		X	X					
Shepherd, 1997; Shepherd & Douglas, 1999		X	X					
Silver, 2001			X					
Sinkey, 1992			X	X			X	
Smith, 1991								
Sortino & van de Meer, 1991	X							
Stiglitz & Weiss, 1981	X					X	X	X
Still, 1984			X		X		X	X
Storey, 1994b	X			X				X
Storey, 1994a			X			X		
Storey & Cressy, 1996	X		X	X				X
Strischek, 1990			X					
Svensson, 2003					X		X	
Svensson Kling, 1999			X	X	X		X	
T								
Thome, 1989								X
Tiermey & Truglio, 1997					X		X	
Timmofts, 1987 #530}			X					
Toivanen & Cressy, 2000								X
Tyebjee & Bruno, 1984			X				X	
U								
Uzzi, 1999					X		X	X
V								
Vaughn, 1997			X		X		X	

Table 18: Continued.

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
W								
Walker, 1989						X	X	
Wright, Robbie, & Ennew, 1997			X					
X								
Z								
Zacharakis & Meyer, 1998		X	X					
Zacharakis & Shepherd, 2004, forthcoming			X					

Appendix 2

Appendix 2: Descriptive on responding lending officers

Table 19: Descriptives on responding lending officers.

	N	Mean	Std. Deviation
Age	114	45.52	8.44
Years in bank	114	22.86	9.74
Years at present bank	114	18.82	11.52
Years as lending officer firms	114	12.97	7.39
Years as lending officer firms at present bank	114	11.06	7.70
Credit per week	96	5.70	15.86
Credit amount average per credit in million SEK	90	1.86	3.68
Number of Credits to micro firms last year	105	77.96	134.61
Average amount lent to micro firm in million SEK	95	0.41	0.61
Number of credit to small company	106	40.45	50.85
average amount lent to small companies last year in million SEK	97	1.94	3.18
Number of credits to medium-sized firms	106	11.41	24.64
Average amount lent to medium-sized companies last year in million SEK	98	9.18	24.36
% of number of all credits to micro companies	106	54	0.29
% of number of all credits to small companies	106	35	0.23
% of number of all credits to medium-sized companies	106	10	0.15
% amount micro sized firms credit	93	13	0.17
% amount small sized firms credit	93	34	0.28
% amount medium-sized firms credit	95	51	0.37
Number of credits to fast growing SMEs	96	8.34	11.10
Average amount lent to fast growing SMEs in million SEK	91	1.50	2.85
Total amount lent to micro companies in million SEK	95	25.77	39.64
Total amount lent to small companies in million SEK	95	102.58	396.80
Total amount lent to medium-sized companies in million SEK	97	196.69	1,026.22
Total amount to all SME	97	322.39	1,418.97
Total amount to fast growing companies in million SEK	91	9.71	14.08
% of number of credit to fast growing firms	94	8	8
% of total amount to fast growing SME	89	11	15
% to start-ups	94	11	15
% to growing	93	17	13
% to expansion	97	40	24
Credit limit for lending officer in million SEK	91	12.39	22.11

Appendix 3: Research Survey

Appendix 3.1: Instructions for respondents

Since you are in contact with small and medium-sized firms you are ideally qualified to assess credit requests from small and medium-sized firms applying for credit to finance a growth project. In this study you will be asked to assess a number of hypothetical credit applications. When making these assessments, assume the firm is typical for a firm which you would normally receive credit applications from and that you are operating in the present Swedish economic environment.

For each credit application you are asked to consider, a number of factors, in addition to the above description, will be described on the following pages.

Please use your expertise to assess if you would support a credit request from each of these companies on a scale ranging from 1 *very low probability of supporting the credit request* to 9 *very high probability of supporting the credit request*.

Please evaluate each hypothetical credit application as a separate situation, independent of all others, and please do not refer back to the hypothetical credit application already completed.

I would like to emphasize that there are no right or wrong answers for the hypothetical credit applications. I am only interested in your assessment of these firms.

Although the experiment might look time consuming, it probably will not take you more than 30 minutes to complete the task.

Finally, I would like to emphasize that your individual responses will remain anonymous and confidential. The results of the study will only be presented in a way in which it will be impossible to identify an individual respondent.

Appendix 3.2: Description of the firm applying for loans

Please consider that each of the 33 hypothetical companies applying for credit is a growing company with 20 employees and 20 million SEK in turnover. The company produces and sells five different products.

Competition is normal, neither intensive nor weak. The company is located in a medium-sized Swedish town with 120,000 inhabitants. The firm has a market share of 5% of their relevant market. The five biggest customers contribute to 40% of the company's sales.

The company was established 20 years ago as a limited company. The owner-manager owns 80% of the company shares and the owner-manager's children own the remaining part.

The company applies for a loan to expand its business. The expansion equals an amount as high as the equity of the firm. This should be regarded as a relatively large investment (i.e., for machinery, production facilities). The estimated ROI (return of investment) for this investment project is regarded as normal.

Although the firm is a customer at your bank, it has never applied for a loan. The firm has no previous relationship with the lending officer and no credit history with your bank.

For each credit application you are asked to consider, a number of attributes, in addition to the above description, that will be described on the following pages. These attributes will vary on two levels, e.g., strong and weak; high and low, etc. The level of these factors described in each credit application represents your analysis and assessment of certain criteria.

Appendix 3.3: Attributes and Attribute levels

Attribute	high/strong/extensive	low/weak/limited
Risk-taking proclivity	The firm prefers high-risk projects with chances of very high returns.	The firm prefers low-risk projects that have high probability of gaining a small profit.
Competence within the business project	The new project is estimated to be profitable, it is in line with previous projects conducted by the firm, and the firm has documented knowledge within the field of activity.	The new project is estimated to be profitable, but is considerably different from previous activities, and the firm has limited knowledge within the new field of activity.
CEO's tenure	The CEO started his or her position eight years ago, has a business education, and is regarded as honest, honorable, and reliable. The CEO lacks previous work experience in the industry and in management.	The CEO started his or her position two years ago, has a business education, and is regarded as honest, honorable, and reliable. The CEO lacks previous work experience in the industry and in management.
Strategic planning	The company has a comprehensive business plan that is documented and followed.	The company follows a distinct strategic line, but its plans for doing so are not documented.
Past performance	The profitability of the SME is well above the industry average.	The profitability of the SME is lower than the industry average.
Share of investment by the SME	The firm finances at least 35% of its capital requirements either from internally generated funds or by additional capital from the owner(s).	The firm finances no more than 5% of its capital requirements either by internally generated funds or by additional capital from the owner(s).
Financial standing	The liquidity and solvency of the firm (<i>share of equity in relation to total capital</i>) is well above the industry average.	The liquidity and solvency of the firm (<i>share of equity in relation to total capital</i>) is lower than the industry average.
Independence of collateral	The firm offers collateral that is independent of the firm's success or failure, e.g., bond and shares in other companies, guarantee commitment, private property, etc.	The firm offers collateral that is dependent on the firm's success or failure, e.g., floating charge, receivables, etc.

Appendix 3

Appendix 3.4: Profiles Answered by the Respondent

Case 1: SME RTY

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 2: SME GEW

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 3: SME AMN

SMEs comprehensiveness of strategic planning	extensive
CEO's tenure	extensive
SMEs risk-taking proclivity	high
SMEs financial standing	strong
SMEs competence within the business project	limited
SMEs past performance	weak
SMEs share of investment	high
SMEs independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 4: SME SPL

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 5: SME TKB

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 6: SME QNE

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 7: SME PIO

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 8: SME WBC

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 9: SME LLS

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 10: SME EHM

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 11: SME ADR

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 12: SME BGQ

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Appendix 3

Case 13: SME TOR

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 14: SME DCK

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Appendix 3

Case 15: SME GAN

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 16: SME LJG

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Appendix 3

Case 17: SME JFP

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 18: SME HGP

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 19: SME LBS

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
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Case 20: SME PKQ

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 21: SME AAB

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment of the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 22: SME PDE

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 23: SME NCV

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 24: SME WPM

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 25: SME UJI

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 26: SME ANE

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 27: SME VEZ

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	weak
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 28: SME WFS

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	extensive
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 29: SME CIX

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	weak
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 30: SME SMR

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	extensive
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 31: SME QLA

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	extensive
Past performance of the SME	weak
Share of investment by the SME	high
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Case 32: SME POR

Comprehensiveness of strategic plan for the SME	extensive
CEO's tenure	limited
Risk-taking proclivity of the SME	high
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	low
Independence of provided collateral by the SME	strong

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3

Case 33: SME XHZ

Comprehensiveness of strategic plan for the SME	limited
CEO's tenure	limited
Risk-taking proclivity of the SME	low
Financial standing of the SME	strong
Competence within the business project of the SME	limited
Past performance of the SME	strong
Share of investment by the SME	high
Independence of provided collateral by the SME	weak

Assessment of the credit request

Based on the factors mentioned above, how likely are you to support the credit request of this growing SME?

(Please mark the number that best represents your answer.)

Very low probability of supporting the credit request	1	2	3	4	5	6	7	8	9	Very high probability of supporting the credit request
--	---	---	---	---	---	---	---	---	---	---

Appendix 3.5: Self-perceived assessment factors.

How important do you regard each of the factors mentioned below for your assessment to support a credit application from a growing SME similar to the company described in the experiment.

(Please mark the number that best represents your answer.)

	<u>Comprehensiveness of strategic plan for the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>CEO's tenure</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>Risk-taking proclivity of the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>Financial standing of the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>Competence within the business project of the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>Past performance of the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>Share of investment by the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important
	<u>Independence of provided collateral by the SME</u>									
Very unimportant	1	2	3	4	5	6	7	8	9	Very important

Appendix 3.6: Questionnaire on lending officers' experience and background

Individual loan officer

Please indicate what year you were born

19

Please indicate your highest level of completed education

Nine-year compulsory education	<input type="checkbox"/>	Bachelor's Degree	<input type="checkbox"/>
Some high school	<input type="checkbox"/>	Master's Degree	<input type="checkbox"/>
High school	<input type="checkbox"/>	Ph.D. Degree.	<input type="checkbox"/>
Some university/college education	<input type="checkbox"/>	Other, please specify	

Education major for highest education

Business Administration	<input type="checkbox"/>	Engineering	<input type="checkbox"/>
Economics	<input type="checkbox"/>	Science	<input type="checkbox"/>
Other, please specify.....			

How many years have you been in the banking industry?

.....years

How many years have you been with your current bank?

.....years

How many years have you worked as a loan officer?

.....years

How many years have you worked as a loan officer in your current bank?

.....years

Bank branch and loan department

How many people are employed in your bank branch?

.....employees

How many loan officers are employed in your bank branch?

.....loan officer

What size (in number of inhabitants) is the region which you serve from the credit department of the branch of your bank?

.....inhabitants

What is the share of the loan market for the branch of your bank within this region?

.....%

How many bank branches are compete within this region?

.....bank branches

How many company loans did you grant last year and what was the total SEK amount?

.....company credits SEK

Appendix 3

How many loans did you grant and what was the total SEK amount of SME credits last year?

	Number	Amount	
Micro-enterprises	<input type="text"/>	<input type="text"/>	(i.e., 1-9 employees)
Small enterprises	<input type="text"/>	<input type="text"/>	(i.e., 10-49 employees)
Medium enterprises	<input type="text"/>	<input type="text"/>	(i.e., less than 250 employees)

How many loans did you grant to firms that you regard as fast growing SMEs and what was the total SEK amount of growing SMEs credit last year?

..... credits SEK

What is the level of credit to SMEs by your bank branch in term of percentage?

<input type="text"/>	Start-ups
<input type="text"/>	Early growth
<input type="text"/>	Expansion

What was the total of company credit default for credits where you have been involved in the decision to support a credit request in SEK and number the last year?

SEK

Number

What was the total of SME credit default where you have been involved in the decision to support a credit request in SEK and number the last year?

	Number	Amount	
Micro-enterprises	<input type="text"/>	<input type="text"/>	(i.e., 1-9 employees)
Small enterprises	<input type="text"/>	<input type="text"/>	(i.e., 10-49 employees)
Medium enterprises	<input type="text"/>	<input type="text"/>	(i.e., less than 250 employees)

What was the total credit default for firms that you regard as fast growing where you have been involved in the decision to support a credit request in SEK and number the last year?

SEK

Number

What is the typical size of company credit for your bank branch?

.....SEK

Own observations:

Loan officer's gender

Male

Female

Address and location of bank branch

Appendix 4: Statistical analysis

Table 20: Beta and R2, computed from the individual-subject linear regression: assessment of supporting credit.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral	Model Summary
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	R ² Sig. F
1	0.27 ***	0.27 ***	0.27 ***	0.17 *	0.47 ***	0.37 ***	0.37 ***	0.17 *	0.22 **	0.12	0.03	0.84 ***
2	-0.09	0.00	0.37 ***	0.22 **	0.19 *	0.59 ***	0.31 ***	0.40 ***	0.00	0.09	0.19 *	0.88 ***
3	-0.09	0.26 **	-0.03	0.14	0.14	0.55 ***	-0.20 *	0.61 ***	0.14	-0.09	-0.09	0.86 ***
4	0.06	0.18 *	0.00	0.09	0.76 ***	0.18 *	0.34 ***	0.34 ***	-0.06	0.03	-0.03	0.89 ***
5	-0.04	0.32 ***	0.04	-0.10	0.48 ***	0.07	0.32 ***	0.67 ***	0.04	-0.04	0.04	0.91 ***
6	0.10	0.27 **	-0.04	-0.13	0.47 ***	0.13	0.50 ***	0.53 ***	0.01	-0.01	-0.10	0.87 ***
7	-0.11	0.14	0.24 *	-0.02	0.45 ***	0.17	0.49 ***	0.52 ***	-0.14	0.05	-0.05	0.85 ***
8	0.06	0.32 ***	0.19 **	0.00	0.44 ***	0.32 ***	0.57 ***	0.13 *	0.25 ***	0.13 *	0.13 *	0.87 ***
9	-0.07	0.46 ***	0.13	0.02	0.46 ***	0.25 **	0.49 ***	0.16	-0.04	-0.10	0.22 *	0.82 ***
10	0.08	0.32 *	0.18	0.12	0.42 ***	0.22	0.55 ***	0.25 *	-0.18	-0.05	-0.15	0.79 ***
11	0.21	0.27 *	0.31 *	0.07	0.51 ***	0.38 **	0.41 **	0.03	0.00	0.03	0.00	0.74 ***
12	-0.03	-0.03	0.36 *	-0.16	0.27 *	0.19	0.44 **	0.49 **	0.08	0.00	0.16	0.86 ***
13	-0.04	0.07	-0.01	-0.07	0.59 ***	0.30 **	0.46 ***	0.38 ***	0.20 *	0.04	-0.14	0.80 ***
14	0.34 **	0.40 **	0.02	0.05	0.63 ***	0.21	0.11	0.18	0.08	-0.15	-0.08	0.83 ***
15	0.14	0.26 *	0.01	0.06	0.59 ***	-0.11	0.54 ***	0.11	0.11	0.06	0.24 *	0.86 ***
16	-0.05	0.08	0.05	0.14	0.29 **	0.35 **	0.44 ***	0.65 ***	-0.05	0.05	0.02	0.86 ***
17	-0.07	0.36 ***	0.16 *	0.26 **	0.56 ***	0.20 *	0.30 **	0.33 ***	0.20 *	-0.03	0.20 *	0.86 ***

Table 20: Continued.

Respondent	Risk-taking proclivity		CEO Tenure		Strategic Planning		Past Performance		Share of Investment		Financial Standing		Collateral		Risk-taking proclivity x Share of Investment		Risk-taking proclivity x Financial Standing		Risk-taking proclivity x Collateral		Model Summary	
	Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		R ²	Sig. F
18	0.10		-0.07		-0.14		0.31**		0.07		0.39***		0.22*		0.12		-0.24**		0.07		0.87***	
19	0.06		0.06		0.02		0.49***		0.10		0.22*		0.61***		0.10		0.14		0.06		0.82***	
20	0.12		0.15		0.15		0.45**		0.38**		0.38**		0.28*		0.02		0.08		0.18		0.71**	
21	-0.07		-0.07		-0.21**		0.66***		0.16**		0.21**		0.25***		-0.07		0.02		0.21**		0.94***	
22	0.46***		0.06		0.06		0.46***		0.30**		0.49***		0.03		-0.15		-0.27**		-0.06		0.86***	
23	0.18		0.27		-0.15		0.32*		0.52**		0.32*		0.07		-0.10		-0.01		-0.04		0.69**	
24	0.11		0.14		-0.20		0.45**		0.28*		0.20		0.28*		0.18		-0.11		-0.19		0.73**	
25	-0.05		0.48***		0.18		0.35**		0.25*		0.32**		0.15		-0.05		-0.12		0.12		0.70**	
26	0.02		0.23		0.05		0.44**		0.41**		0.34**		0.37**		-0.02		-0.02		-0.05		0.74***	
27	-0.14		0.17*		-0.07		0.47***		0.44**		0.51***		0.30**		-0.10		0.10		-0.03		0.88***	
28	-0.22**		0.46***		-0.14		0.35***		0.38**		0.27**		0.51***		-0.01		-0.07		0.07		0.89***	
29	0.01		0.33***		-0.14**		0.59***		0.12*		0.59***		0.33***		-0.07		-0.07		-0.01		0.97***	
30	-0.02		0.33*		-0.17		0.48**		0.30*		0.42**		0.27*		0.05		-0.08		0.02		0.72**	
31	-0.01		0.52***		-0.21*		0.43***		0.38***		0.27**		0.35***		0.13		-0.04		-0.13		0.88***	
32	-0.03		0.50***		-0.17		0.57***		0.23*		0.30*		0.23*		0.00		0.00		0.00		0.80***	
33	0.06		0.31***		0.03		0.47***		0.06		0.53***		0.34***		0.06		0.16		0.22*		0.83***	
34	-0.18**		0.60***		-0.10		0.35***		0.32***		0.24***		0.46***		0.04		0.01		0.01		0.90***	
35	0.07		0.29***		-0.18*		0.51***		0.21*		0.60***		0.29***		-0.04		-0.10		0.15		0.90***	
36	0.12		0.40***		-0.02		0.40***		0.05		0.54***		0.40***		-0.19*		0.02		0.09		0.87***	
37	0.00		0.27**		0.00		0.34***		0.54**		0.41***		0.34***		-0.14		0.14		0.14		0.89***	
38	0.03		0.38***		0.17*		0.28**		0.28**		0.59***		0.28**		0.10		0.14		0.24**		0.87***	

Table 20: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral	Model Summary
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	R ² Sig. F
39	-0.14	0.43***	0.11	0.05	0.49***	0.18	0.43***	0.37***	-0.11	-0.08	0.11	0.85***
40	0.05	0.27	0.05	0.05	0.43**	0.33*	0.46**	0.27	-0.17	0.08	0.14	0.70**
41	0.04	0.22*	0.10	0.07	0.65***	-0.07	0.48***	0.36**	-0.01	0.07	0.07	0.86***
42	0.11	0.27**	0.14	-0.05	0.30**	0.30**	0.62***	0.33***	-0.05	-0.24**	0.18*	0.88***
43	-0.13	0.13	0.32**	-0.04	0.46***	0.13	0.54***	0.38**	0.07	-0.01	0.04	0.81***
44	0.10	0.59***	0.04	-0.25**	0.27***	0.53***	0.30***	0.13	0.07	-0.10	0.01	0.90***
45	0.08	0.08	0.12	0.13	0.34***	0.73***	0.30***	0.23**	-0.20*	-0.13	0.10	0.90***
46	0.34**	0.41***	0.30**	0.15	0.19	0.30**	0.45***	0.26*	0.08	0.00	0.04	0.79***
47	0.19	0.44**	0.03	0.10	0.38*	0.41**	0.28*	0.19	-0.06	0.06	0.03	0.68**
48	0.18*	0.11	0.22*	0.11	0.36***	0.36***	0.40***	0.58***	0.04	-0.14	0.04	0.88***
49	-0.07	0.54***	-0.07	-0.07	0.51***	0.25*	0.25*	0.25*	0.07	-0.07	0.22*	0.82**
50	-0.03	0.33**	0.16	0.13	0.52***	0.46***	0.23*	0.29*	0.16	-0.07	-0.07	0.81***
51	0.01	0.04	0.42**	-0.06	0.19	0.14	0.16	0.72***	0.11	-0.01	-0.06	0.80***
52	0.03	0.34*	0.25	0.06	0.28*	0.37**	0.31*	0.34*	0.06	-0.25	0.28*	0.74***
53	0.00	0.27*	0.20	0.16	0.20	0.55***	0.27*	0.39**	-0.08	-0.04	0.08	0.72**
54	0.20*	0.39***	0.14	-0.02	0.36***	0.20*	0.61***	0.11	0.08	0.11	-0.08	0.80***
55	0.17	0.23*	0.11	-0.02	0.29*	0.23*	0.48***	0.48***	-0.05	-0.23*	-0.11	0.75***
56	0.09	0.23*	0.16	0.09	0.16	0.30**	0.51***	0.58***	-0.09	-0.02	-0.02	0.80***
57	-0.02	0.23*	-0.05	-0.02	0.44***	0.50***	0.41***	0.32**	0.02	-0.02	0.14	0.78***
58	0.02	0.44***	0.18	0.02	0.44***	0.48***	0.31**	0.21	-0.02	-0.05	0.05	0.80***
59	0.19	0.34**	0.02	-0.02	0.16	0.04	0.37**	0.67***	0.10	0.13	-0.16	0.82***

Table 20: Continued.

Respondent	Risk-taking proclivity		Competence within the Business Project		CEO Tenure		Strategic Planning		Past Performance		Share of Investment		Financial Standing		Collateral		Risk-taking proclivity x Share of Investment		Risk-taking proclivity x Financial Standing		Risk-taking proclivity x Collateral		Model Summary	
	Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		R ²	Sig. F
60	0.12		0.46**		0.29		0.04		0.26		0.18		0.21		0.21		-0.18		-0.26		0.12		0.61*	
61	-0.19		-0.14		0.30		0.17		0.40*		-0.01		0.43**		0.19		-0.14		0.09		-0.09		0.59*	
62	0.05		0.24*		0.03		-0.11		0.35**		0.21*		0.61***		0.32**		0.03		-0.21*		0.03		0.76***	
63	-0.10		0.07		0.13		0.13		0.43***		0.25**		0.61***		0.37***		0.07		-0.16		0.19*		0.87***	
64	-0.11		0.25**		0.25**		0.14		0.35***		0.39***		0.43***		0.43***		-0.11		0.00		-0.07		0.81***	
65	0.04		0.43***		0.25*		0.00		0.50***		0.28**		0.39***		0.25*		0.11		-0.07		0.21*		0.85***	
66	-0.10		-0.05		-0.03		0.13		0.52***		0.44**		0.59***		0.15		0.00		0.05		0.08		0.87***	
67	-0.06		0.42***		0.22*		0.00		0.35***		0.38***		0.35***		0.38***		-0.03		-0.26**		-0.03		0.83***	
68	0.16*		0.29***		0.16*		0.00		0.57***		0.35***		0.45***		0.06		-0.35***		-0.13*		-0.06		0.93***	
69	0.13		0.41**		0.28*		0.44**		0.22		0.06		0.47***		0.00		-0.09		0.00		-0.09		0.74***	
70	-0.11		0.11		0.23*		0.11		0.50***		0.32**		0.56***		0.23*		0.11		-0.02		-0.11		0.83***	
71	0.03		0.57***		0.26*		0.08		0.63***		0.13		0.05		-0.08		0.08		-0.10		0.08		0.84***	
72	0.03		0.23***		0.14*		-0.06		0.80***		0.34***		0.26***		0.09		0.00		-0.14*		-0.09		0.94***	
73	0.00		0.67***		0.08		0.03		0.39***		0.25**		0.25**		0.11		0.00		-0.17		0.25**		0.84***	
74	0.17*		0.27**		-0.10		0.00		0.66***		0.00		0.56***		0.17*		0.10		0.00		0.00		0.90***	
75	-0.08		0.36***		0.00		-0.03		0.55***		0.06		0.36***		0.55***		-0.14		0.06		0.03		0.89***	
76	-0.02		0.31**		0.28*		0.05		0.34**		0.21		0.38**		0.54***		-0.08		0.02		0.05		0.79***	
77	-0.03		0.18**		0.06		0.09		0.54***		0.21***		0.66***		0.21***		-0.27***		0.00		-0.09		0.94***	
78	-0.09		0.41***		0.09		0.06		0.41***		0.59***		0.33**		0.09		0.03		0.00		-0.18*		0.86***	
79	0.12		0.30**		0.02		0.02		0.54***		0.19*		0.61***		0.30**		0.09		0.02		-0.02		0.90***	
80	0.09		0.40***		-0.06		0.09		0.57***		0.26*		0.46***		0.03		0.06		-0.03		0.11		0.79***	

Table 20: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral	Model Summary
	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	Beta	R ² Sig. F
81	0.09	0.37***	0.03	0.00	0.69***	0.14	0.46***	0.06	-0.09	0.12	0.00	0.88***
82	0.16	0.53***	0.06	-0.06	0.34***	0.33***	0.38***	-0.03	-0.03	-0.03	0.00	0.83***
83	0.04	0.23***	-0.01	-0.17***	0.73***	0.07	0.49***	0.33***	0.01	0.07	0.01	0.97***
84	-0.10	0.25**	0.04	-0.02	0.54***	0.57***	0.34***	0.25**	0.07	-0.10	0.04	0.89***
85	0.21*	0.17*	0.07	0.10	0.38***	0.38***	0.56***	0.35***	0.00	0.17*	-0.04	0.84***
86	0.21*	0.21*	0.26*	0.00	0.30**	0.34**	0.60***	0.30**	-0.13	0.04	-0.17	0.86***
87	0.01	0.01	0.09	0.01	0.46**	0.25	0.64***	0.20	0.09	0.07	-0.07	0.74***
88	-0.15	0.32**	0.04	0.04	0.40***	0.57***	0.35**	0.21	-0.01	-0.01	-0.15	0.79***
89	0.09	0.49***	0.00	0.09	0.45***	0.49***	0.31**	0.22*	0.00	-0.18*	0.00	0.88***
90	0.02	0.20**	0.02	-0.02	0.50***	0.47***	0.50***	0.29***	-0.02	0.02	0.05	0.85***
91	-0.04	0.44***	-0.09	0.09	0.36***	0.17**	0.74***	0.04	0.12*	0.04	-0.07	0.94***
92	0.02	0.47***	0.24***	0.13*	0.36***	0.47***	0.28***	0.43***	0.02	-0.17**	-0.02	0.93***
93	-0.18*	0.10	0.38***	-0.04	0.58***	0.33***	0.41***	0.24**	0.10	0.07	0.01	0.88***
94	0.10	0.44***	0.10	0.00	0.55***	0.03	0.27***	0.55***	-0.14*	-0.03	0.10	0.92**
95	0.03	0.65***	0.45***	0.07	0.16*	0.42***	0.23**	0.07	-0.13	-0.07	0.03	0.91***
96	0.05	0.27***	0.08	0.02	0.69***	0.31***	0.44***	0.21**	0.11	0.11	-0.05	0.92***
97	0.05	0.36**	0.15	0.15	0.53***	0.12	0.46***	0.36**	-0.05	0.15	0.12	0.84***
98	0.08	0.66***	0.20	0.04	0.16	0.16	0.31*	0.27*	0.20	-0.04	-0.16	0.77***
99	-0.04	0.34***	-0.02	-0.02	0.48***	0.25***	0.66***	0.22***	0.13*	-0.04	0.10	0.92***
100	0.12	0.37**	0.09	-0.14	0.35**	0.17	0.46***	0.43***	0.03	-0.03	0.23*	0.78***
101	-0.02	0.20*	0.20*	0.17	0.38***	0.11	0.75***	0.17	0.05	-0.05	-0.02	0.86***
102	0.21**	0.21**	-0.11	-0.14	0.54***	0.14	0.26***	0.49***	0.06	-0.11	0.01	0.75***

Table 20: Continued.

Respondent	Risk-taking proclivity		Competence within the Business Project		CEO Tenure		Strategic Planning		Past Performance		Share of Investment		Financial Standing		Collateral		Risk-taking proclivity x Share of Investment		Risk-taking proclivity x Financial Standing		Risk-taking proclivity x Collateral		Model Summary		
	Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		Beta		R ²	Sig. F	
103	0.21		0.43**		0.10		-0.15		0.52**		0.21		0.24		0.24		0.24		-0.01		0.01		0.01		0.69**
104	-0.15		0.35**		0.35**		0.03		0.35**		0.44***		0.41**		0.09		0.03		0.03		0.00		-0.09		0.76***
105	0.16*		0.30***		0.05		0.12		0.44***		0.26**		0.68***		0.23**		0.09		0.09		0.02		0.05		0.91***
106	0.02		0.21		0.05		-0.02		0.41**		0.44***		0.37**		0.47***		-0.05		-0.05		-0.11		0.05		0.78***
107	-0.04		0.66***		0.14		-0.07		0.38**		0.12		0.38**		0.09		0.09		0.09		-0.12		0.17		0.83***
108	-0.12		0.35**		0.12		-0.09		0.50***		0.29**		0.44***		0.38***		0.06		0.06		-0.09		0.09		0.84***
109	-0.03		0.13		0.17*		0.20*		0.40***		0.40***		0.43***		0.43***		-0.13		-0.13		-0.17*		-0.17*		0.84***
110	-0.13		0.07		0.23*		-0.07		0.49***		0.29**		0.46***		0.49***		0.00		0.00		-0.10		0.00		0.86***
111	0.23*		0.41***		0.29*		-0.11		0.38**		0.17		0.56***		0.02		0.14		0.14		0.11		0.05		0.83***
112	0.21*		0.30**		0.18*		-0.09		0.06		0.32***		0.65***		0.27**		-0.06		-0.06		-0.09		0.12		0.79***
113	0.10		0.14*		0.26***		0.10		0.35***		0.39***		0.39***		0.55***		-0.02		-0.02		-0.10		-0.02		0.84***
114	0.17*		0.53***		-0.03		-0.10		0.50***		0.33***		0.40***		0.07		-0.13		-0.13		-0.13		-0.07		0.89***
																									Sum
																									94.76
																									Averaged R²
																									0.83
																									Sum
																									87.24
																									Averaged R ²
																									0.85
																									Sum
																									92.20
																									Averaged R ²
																									0.84
																									Sum
																									85.68
																									Averaged R ²
																									0.82

Excluding those lending officers that do not show a significant F-value (11 of 114)

Excluding lending officers that show low reliability on their responses (4 of 114)

Excluding lending officers with different directional use of factors (10 of 114)

Note: * p < .05; ** p < .01; *** p < .001.

Appendix 4

Table 21: Assessment policy – R² changed for interaction.

	Main effects	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral	Selected Interaction total	Total
Individual	R ²	R ²	R ²	R ²	R ²	R ²
1	0.77	0.05	0.02	0.00	0.07	0.84
2	0.84	0.00	0.01	0.04	0.04	0.88
3	0.83	0.02	0.01	0.01	0.04	0.86
4	0.89	0.00	0.00	0.00	0.01	0.89
5	0.91	0.00	0.00	0.00	0.01	0.91
6	0.86	0.00	0.00	0.01	0.01	0.87
7	0.82	0.02	0.00	0.00	0.02	0.85
8	0.77	0.06	0.02	0.02	0.10	0.87
9	0.76	0.00	0.01	0.05	0.06	0.82
10	0.74	0.03	0.00	0.02	0.06	0.79
11	0.79	0.00	0.00	0.00	0.00	0.79
12	0.70	0.01	0.00	0.03	0.03	0.74
13	0.80	0.04	0.00	0.02	0.06	0.86
14	0.76	0.01	0.02	0.01	0.03	0.80
15	0.76	0.01	0.00	0.06	0.07	0.83
16	0.85	0.00	0.00	0.00	0.00	0.86
17	0.78	0.04	0.00	0.04	0.08	0.86
18	0.79	0.01	0.06	0.01	0.08	0.87
19	0.79	0.01	0.02	0.00	0.03	0.82
20	0.67	0.00	0.01	0.03	0.04	0.71
21	0.89	0.01	0.00	0.04	0.05	0.94
22	0.76	0.02	0.07	0.00	0.10	0.86
23	0.68	0.01	0.00	0.00	0.01	0.69
24	0.65	0.03	0.01	0.04	0.08	0.73
25	0.67	0.00	0.01	0.01	0.03	0.70
26	0.73	0.00	0.00	0.00	0.00	0.74
27	0.86	0.01	0.01	0.00	0.02	0.88
28	0.88	0.00	0.00	0.00	0.01	0.89
29	0.96	0.00	0.00	0.00	0.01	0.97
30	0.71	0.00	0.01	0.00	0.01	0.72
31	0.84	0.02	0.00	0.02	0.03	0.88
32	0.80	0.00	0.00	0.00	0.00	0.80
33	0.75	0.00	0.02	0.05	0.08	0.83
34	0.89	0.00	0.00	0.00	0.00	0.90
35	0.87	0.00	0.01	0.02	0.03	0.90
36	0.82	0.04	0.00	0.01	0.04	0.87
37	0.83	0.02	0.02	0.02	0.06	0.89
38	0.79	0.01	0.02	0.06	0.09	0.87
39	0.82	0.01	0.01	0.01	0.03	0.85
40	0.65	0.03	0.01	0.02	0.06	0.70
41	0.84	0.00	0.01	0.01	0.01	0.86
42	0.79	0.00	0.06	0.03	0.09	0.88
43	0.80	0.01	0.00	0.00	0.01	0.81

Table 21: Continued.

	Main effects	Risk-taking proclivity × Share of Investment	Risk-taking proclivity × Financial Standing	Risk-taking proclivity × Collateral	Selected Interaction total	Total
Individual	R ²	R ²	R ²	R ²	R ²	R ²
44	0.89	0.01	0.01	0.00	0.02	0.90
45	0.83	0.04	0.02	0.01	0.07	0.90
46	0.78	0.01	0.00	0.00	0.01	0.79
47	0.67	0.00	0.00	0.00	0.01	0.68
48	0.85	0.00	0.02	0.00	0.02	0.88
49	0.76	0.01	0.01	0.05	0.06	0.82
50	0.77	0.03	0.00	0.00	0.04	0.81
51	0.78	0.01	0.00	0.00	0.02	0.80
52	0.60	0.00	0.06	0.08	0.14	0.74
53	0.70	0.01	0.00	0.01	0.01	0.72
54	0.77	0.01	0.01	0.01	0.02	0.80
55	0.68	0.00	0.05	0.01	0.07	0.75
56	0.79	0.01	0.00	0.00	0.01	0.80
57	0.76	0.00	0.00	0.02	0.02	0.78
58	0.80	0.00	0.00	0.00	0.01	0.80
59	0.76	0.01	0.02	0.03	0.06	0.82
60	0.49	0.03	0.07	0.02	0.12	0.61
61	0.56	0.02	0.01	0.01	0.04	0.59
62	0.71	0.00	0.05	0.00	0.05	0.76
63	0.80	0.01	0.03	0.04	0.07	0.87
64	0.79	0.01	0.00	0.01	0.02	0.81
65	0.78	0.01	0.01	0.05	0.06	0.85
66	0.86	0.00	0.00	0.01	0.01	0.87
67	0.77	0.00	0.07	0.00	0.07	0.83
68	0.78	0.12	0.02	0.00	0.14	0.93
69	0.72	0.01	0.00	0.01	0.02	0.74
70	0.81	0.01	0.00	0.01	0.02	0.83
71	0.82	0.01	0.01	0.01	0.02	0.84
72	0.91	0.00	0.02	0.01	0.03	0.94
73	0.75	0.00	0.03	0.06	0.09	0.84
74	0.89	0.01	0.00	0.00	0.01	0.90
75	0.87	0.02	0.00	0.00	0.02	0.89
76	0.78	0.01	0.00	0.00	0.01	0.79
77	0.86	0.07	0.00	0.01	0.08	0.94
78	0.82	0.00	0.00	0.03	0.03	0.86
79	0.89	0.01	0.00	0.00	0.01	0.90
80	0.78	0.00	0.00	0.01	0.02	0.79
81	0.86	0.01	0.01	0.00	0.02	0.88
82	0.83	0.00	0.00	0.00	0.00	0.83
83	0.96	0.00	0.00	0.00	0.01	0.97
84	0.87	0.01	0.01	0.00	0.02	0.89
85	0.81	0.00	0.03	0.00	0.03	0.84
86	0.82	0.02	0.00	0.03	0.05	0.86
87	0.72	0.01	0.00	0.00	0.02	0.74

Appendix 4

Table 21: Continued.

	Main effects	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral	Selected Interaction total	Total
Individual	R ²	R ²	R ²	R ²	R ²	R ²
88	0.77	0.00	0.00	0.02	0.02	0.79
89	0.84	0.00	0.03	0.00	0.03	0.88
90	0.84	0.00	0.00	0.00	0.00	0.85
91	0.92	0.02	0.00	0.00	0.02	0.94
92	0.90	0.00	0.03	0.00	0.03	0.93
93	0.86	0.01	0.01	0.00	0.02	0.88
94	0.89	0.02	0.00	0.01	0.03	0.92
95	0.89	0.02	0.00	0.00	0.02	0.91
96	0.89	0.01	0.01	0.00	0.03	0.92
97	0.80	0.00	0.02	0.01	0.04	0.84
98	0.71	0.04	0.00	0.02	0.06	0.77
99	0.89	0.02	0.00	0.01	0.03	0.92
100	0.73	0.00	0.00	0.05	0.06	0.78
101	0.85	0.00	0.00	0.00	0.00	0.86
102	0.74	0.00	0.01	0.00	0.02	0.75
103	0.69	0.00	0.00	0.00	0.00	0.69
104	0.75	0.00	0.00	0.01	0.01	0.76
105	0.90	0.01	0.00	0.00	0.01	0.91
106	0.76	0.00	0.01	0.00	0.02	0.78
107	0.78	0.01	0.01	0.03	0.05	0.83
108	0.82	0.00	0.01	0.01	0.02	0.84
109	0.77	0.02	0.03	0.03	0.07	0.84
110	0.85	0.00	0.01	0.00	0.01	0.86
111	0.80	0.02	0.01	0.00	0.03	0.83
112	0.77	0.00	0.01	0.01	0.03	0.79
113	0.83	0.00	0.01	0.00	0.01	0.84
114	0.85	0.02	0.02	0.00	0.04	0.89
Sum	90.74	1.30	1.28	1.46	4.03	94.76
Sum/114	0.80	0.01	0.01	0.01	0.04	0.83
Excluding those lending officers that do not show a significant F-value (11 of 114)						
Sum	82.88	1.16	1.15	1.32	3.62	86.50
Sum /103	0.80	0.01	0.01	0.01	0.04	0.84
Excluding lending officers that show low reliability on their responses (4 of 114)						
Sum	88.33	1.24	1.20	1.43	3.87	92.20
Sum/110	0.80	0.01	0.01	0.01	0.04	0.84
Excluding lending officers with different directional use of factors (10 of 114)						
Sum	81.86	1.23	1.23	1.36	3.82	85.68
Sum/104	0.79	0.01	0.01	0.01	0.04	0.82

Table 22: Paired sample correlation: assessment of supporting credit.

Respondent	Person R Correlation	Respondent	Person R Correlation	Respondent	Person R Correlation
1	0.87***	46	0.73**	91	0.92***
2	0.87***	47	0.45	92	0.92***
3	0.85***	48	0.82***	93	0.81***
4	0.88***	49	0.74**	94	0.88***
5	0.89***	50	0.64**	95	0.86***
6	0.84***	51	0.65**	96	0.91***
7	0.78***	52	0.57*	97	0.83***
8	0.93***	53	0.68**	98	0.61*
9	0.87***	54	0.81***	99	0.91***
10	0.68**	55	0.72**	100	0.71**
11	0.64**	56	0.80***	101	0.80***
12	0.55*	57	0.76**	102	0.88***
13	0.82***	58	0.69**	103	0.49
14	0.65**	59	0.67**	104	0.71**
15	0.70**	60	0.42	105	0.89***
16	0.76**	61	0.35	106	0.70**
17	0.83***	62	0.75**	107	0.73**
18	0.81***	63	0.78***	108	0.75**
19	0.81***	64	0.79***	109	0.83***
20	0.78***	65	0.79***	110	0.78***
21	0.91***	66	0.81***	111	0.72**
22	0.78***	67	0.81***	112	0.81***
23	0.51*	68	0.89***	113	0.91***
24	0.59*	69	0.61*	114	0.88***
25	0.70**	70	0.75**		
26	0.64**	71	0.75**	SUM	87.89
27	0.82***	72	0.91***	MEAN	0.77
28	0.90***	73	0.81***		
29	0.95***	74	0.88***		
30	0.60*	75	0.86***	Excluding lending officers that do not show a significant F-value (11 of 114)	
31	0.83***	76	0.69**	Sum	81.81
32	0.67**	77	0.93***	Mean	0.79
33	0.82***	78	0.79***		
34	0.91***	79	0.84***	Excluding lending officers that show low reliability on their responses (4 of 114)	
35	0.83***	80	0.74**	Sum	86.18
36	0.81***	81	0.86***	Mean	0.78
37	0.79***	82	0.77**		
38	0.83***	83	0.96***	Excluding lending officer with different directional use of factors (10 of 114)	
39	0.81***	84	0.82***	Sum	79.03
40	0.52*	85	0.80***	Mean	0.76
41	0.79***	86	0.75**		
42	0.84***	87	0.51*		
43	0.70**	88	0.71**		
44	0.90***	89	0.79***		
45	0.91***	90	0.87***		

Note: * p < .05; ** p < .01; *** p < .001.

Table 23: Assessment policy for credit support.

	Constant		Risk Proclivity	Competence within the business project	CEO Tenure	Strategic Planning	Past Performance	Collateral		Share of Investment	Financial Standing		Risk proclivity x Share of Investment	Risk proclivity x Financial Standing	Risk proclivity x Collateral	R ² Model Summary	Sig. F
	B	B						B	B		B	B					
Resp.																	
1	2.78 ***	0.69 ***	0.69 ***	0.69 ***	0.69 ***	0.44 *	1.19 ***	0.94 ***	0.94 ***	1.13 **	0.44 *	0.63	1.13 **	0.63	0.13	0.84 ***	
2	4.25 ***	-0.38	0.00	1.50 ***	0.88 **	0.75 *	2.38 ***	2.38 ***	1.25 ***	1.63 ***	1.63 ***	0.00	0.75	1.50 *	1.50 *	0.88 ***	
3	5.44 ***	-0.38	1.13 **	-0.13	0.63	0.63	2.38 ***	2.38 ***	-0.88 *	2.63 ***	2.63 ***	1.25	-0.75	-0.75	-0.75	0.86 ***	
4	5.00 ***	0.25	0.75 *	0.00	0.38	0.38	0.75 *	1.38 ***	1.38 ***	1.38 ***	1.38 ***	-0.50	0.25	-0.25	-0.25	0.89 ***	
5	4.97 ***	-0.19	1.44 ***	0.19	-0.44	-0.44	0.31	1.44 ***	1.44 ***	3.06 ***	3.06 ***	0.38	-0.38	0.38	0.38	0.91 ***	
6	4.34 ***	0.44	1.19 **	-0.19	-0.56	-0.56	0.56	2.19 ***	2.19 ***	2.31 ***	2.31 ***	0.13	-0.13	-0.13	-0.88	0.87 ***	
7	5.41 ***	-0.44	0.56	0.94 *	-0.06	-0.06	0.69	1.94 ***	1.94 ***	2.06 ***	2.06 ***	-1.13	0.38	-0.38	-0.38	0.85 ***	
8	3.13 ***	0.25	1.25 ***	0.75 **	0.00	0.00	1.25 ***	1.25 ***	2.25 ***	2.25 ***	0.50 *	2.00 ***	1.00 *	1.00 *	1.00 *	0.87 ***	
9	3.97 ***	-0.31	1.94 ***	0.56	0.06	0.06	1.06 **	2.06 ***	2.06 ***	0.69	0.69	-0.38	-0.88	1.88 *	1.88 *	0.82 ***	
10	5.66 ***	0.31	1.19 *	0.69	0.44	0.44	0.81	2.06 ***	2.06 ***	0.94 *	0.94 *	-1.38	-0.38	-1.13	-1.13	0.79 ***	
11	4.81 ***	0.75	1.00 *	1.13 *	0.25	0.25	1.38 **	1.50 **	1.50 **	0.13	0.13	0.00	0.25	0.00	0.00	0.79 ***	
12	4.81 ***	-0.13	-0.13	1.63 *	-0.75	-0.75	0.88	2.00 **	2.00 **	2.25 **	2.25 **	0.75	0.00	1.50	1.50	0.74 ***	
13	3.78 ***	-0.19	0.31	-0.06	-0.31	-0.31	1.44 **	2.19 ***	2.19 ***	1.81 ***	1.81 ***	1.88 *	0.38	-1.38	-1.38	0.86 ***	
14	5.28 ***	1.31 **	1.56 **	0.06	0.19	0.19	0.81	0.44	0.44	0.69	0.69	0.63	-1.13	-0.63	-0.63	0.80 ***	
15	3.53 ***	0.69	1.31 *	0.06	0.31	0.31	-0.56	2.69 ***	2.69 ***	0.56	0.56	1.13	0.63	2.38 *	2.38 *	0.83 ***	
16	5.22 ***	-0.19	0.31	0.19	0.56	0.56	1.44 **	1.81 ***	1.81 ***	2.69 ***	2.69 ***	-0.38	0.38	0.13	0.13	0.86 ***	
17	4.75 ***	-0.25	1.38 ***	0.63 *	1.00 **	1.00 **	0.75 *	1.13 **	1.13 **	1.25 **	1.25 **	1.50 *	-0.25	1.50 *	1.50 *	0.86 ***	
18	4.25 ***	0.50	3.50 ***	-0.38	-0.75	-0.75	0.38	2.00 ***	2.00 ***	1.13 *	1.13 *	1.25	-2.50 **	-2.50 **	0.75	0.87 ***	

Table 23: Continued.

Resp.	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Collateral		Share of Investment		Financial Standing		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral		R ² Model Summary		Sig. F		
	B		B		B		B		B		B		B		B		B		B		B		B		B		B		B
38	3.63***	0.13	1.38***	0.75*	0.63*	1.00**	1.00**	1.00**	0.63*	1.00**	1.00**	1.00**	2.13***	1.00**	0.75	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.75**	0.87***			
39	4.97***	-0.56	1.69***	0.44	0.19	1.94***	0.69	1.69***	0.19	1.94***	0.69	1.69***	1.69***	1.44***	0.88	-0.63	0.88	1.44***	0.88	-0.63	0.88	1.44***	0.88	0.88	0.85***				
40	5.84***	0.19	1.06	0.19	0.19	1.69**	1.31*	1.69**	0.19	1.69**	1.31*	1.69**	1.81**	1.06	-1.38	0.63	1.06	1.06	-1.38	0.63	1.06	1.06	0.63	1.13	0.70**				
41	5.09***	0.19	0.94*	0.44	0.31	2.81***	-0.31	2.06***	0.31	2.81***	-0.31	2.06***	2.06***	1.56**	-0.13	0.63	1.56**	1.56**	-0.13	0.63	1.56**	1.56**	0.63	0.63	0.86***				
42	5.66***	0.44	1.06**	0.56	-0.19	1.19**	1.19**	2.44***	-0.19	1.19**	1.19**	2.44***	2.44***	1.31***	-0.38	-1.88**	1.31***	1.31***	-0.38	-1.88**	1.31***	1.31***	1.38*	1.38*	0.88***				
43	5.34***	-0.56	0.56	1.44**	-0.19	2.06***	0.56	2.44***	-0.19	2.06***	0.56	2.44***	2.44***	1.69**	0.63	-0.13	1.69**	1.69**	0.63	-0.13	1.69**	1.69**	0.38	0.38	0.81***				
44	4.72***	0.44	2.56***	0.19	-1.06**	1.19***	2.31***	1.31***	-1.06**	1.19***	2.31***	1.31***	1.31***	0.56	0.63	-0.88	0.56	0.56	0.63	-0.88	0.56	0.56	0.13	0.13	0.90***				
45	5.27***	0.34	0.34	0.53	0.59	1.53***	3.28***	1.34***	0.59	1.53***	3.28***	1.34***	1.34***	1.03**	-1.81*	-1.19	1.03**	1.03**	-1.81*	-1.19	1.03**	1.03**	0.94	0.94	0.90***				
46	5.56***	1.13**	1.38***	1.00**	0.50	1.00**	1.00**	1.50***	0.50	1.00**	1.00**	1.50***	1.50***	0.88*	0.50	0.00	0.88*	0.88*	0.50	0.00	0.88*	0.88*	0.25	0.25	0.79***				
47	5.06***	0.75	1.75**	0.13	0.38	1.50*	1.63**	1.13*	0.38	1.50*	1.63**	1.13*	1.13*	0.75	-0.50	0.50	0.75	0.75	-0.50	0.50	0.75	0.75	0.25	0.25	0.68**				
48	5.25***	0.63*	0.38	0.75*	0.38	1.25***	1.25***	1.38***	0.38	1.25***	1.25***	1.38***	1.38***	2.00***	0.25	-1.00	2.00***	2.00***	0.25	-1.00	2.00***	2.00***	0.25	0.25	0.88***				
49	3.81***	-0.25	1.88***	-0.25	-0.25	1.75***	0.88*	0.88*	-0.25	1.75***	0.88*	0.88*	0.88*	0.88*	0.50	-0.50	0.88*	0.88*	0.50	-0.50	0.88*	0.88*	1.50*	1.50*	0.82***				
50	5.38***	-0.13	1.25**	0.63	0.50	2.00***	1.75***	0.88*	0.50	2.00***	1.75***	0.88*	0.88*	1.13*	1.25	-0.50	1.13*	1.13*	1.25	-0.50	1.13*	1.13*	-0.50	-0.50	0.81***				
51	5.22***	0.06	0.19	2.06**	-0.31	0.94	0.69	0.81	-0.31	0.94	0.69	0.81	0.81	3.56***	1.13	-0.13	3.56***	3.56***	1.13	-0.13	3.56***	3.56***	-0.63	-0.63	0.80***				
52	4.94***	0.13	1.38*	1.00	0.25	1.13*	1.50**	1.25*	0.25	1.13*	1.50**	1.25*	1.25*	1.38*	0.50	-2.00	1.38*	1.38*	0.50	-2.00	1.38*	1.38*	2.25*	2.25*	0.74***				
53	5.25***	0.00	0.88*	0.63	0.50	0.63	1.75***	1.75***	0.50	0.63	1.75***	1.75***	1.75***	1.25**	-0.50	0.50	1.25**	1.25**	-0.50	0.50	1.25**	1.25**	0.50	0.50	0.72**				
54	3.76***	0.81*	1.56***	0.56	-0.06	1.44***	0.81*	2.44***	-0.06	1.44***	0.81*	2.44***	2.44***	0.44	0.63	0.88	0.44	0.44	0.63	0.88	0.44	0.44	-0.63	-0.63	0.80***				
55	6.66***	0.69	0.94*	0.44	-0.06	1.19*	0.94*	1.94***	-0.06	1.19*	0.94*	1.94***	1.94***	1.94***	-0.38	-1.88*	1.94***	1.94***	-0.38	-1.88*	1.94***	1.94***	-0.88	-0.88	0.75***				
56	6.09***	0.31	0.81*	0.56	0.31	0.56	1.06**	1.81***	0.31	0.56	1.06**	1.81***	1.81***	2.06***	-0.63	-0.13	2.06***	2.06***	-0.63	-0.13	2.06***	2.06***	-0.13	-0.13	0.80***				

Table 23: Continued.

Resp.	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Collateral		Share of Investment		Financial Standing		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral		R ² Model Summary		Sig. F			
	B		B		B		B		B		B		B		B		B		B		B		B		B		B			
76	5.16***		-0.06		1.19**		1.06*		0.19		1.31**		0.81		1.44**		2.06***		-0.63		0.13		0.38		0.38		0.79***			
77	6.31***		-0.13		0.75**		0.25		0.38		2.25***		0.88***		2.75***		0.88***		-2.25***		0.00		-0.75		-0.75		0.94***			
78	4.63***		-0.38		1.75***		0.38		0.25		1.75***		2.50***		1.38**		0.38		0.25		0.00		-1.50*		-1.50*		0.86***			
79	4.66***		0.44		1.06**		0.06		0.06		1.94***		0.69*		2.19***		1.06**		0.63		0.13		-0.13		-0.13		0.90***			
80	5.00***		0.38		1.75***		-0.25		0.38		2.50***		1.13*		2.00***		0.13		0.50		-0.25		1.00		1.00		0.79***			
81	5.31***		0.38		1.63***		0.13		0.00		3.00***		0.63		2.00***		0.25		-0.75		1.00		0.00		0.00		0.88***			
82	4.88***		0.63		2.13***		0.25		-0.25		1.38**		2.00***		1.50***		-0.13		-0.25		-0.25		0.00		0.00		0.83***			
83	4.97***		0.19		1.06***		-0.06		-0.81***		3.44***		0.31		2.31***		1.56***		0.13		0.63		0.13		0.13		0.97***			
84	5.22***		-0.44		1.06**		0.19		-0.06		2.31***		2.44***		1.44***		1.06**		0.63		-0.88		0.38		0.38		0.89***			
85	5.06***		0.75*		0.63*		0.25		0.38		1.38***		1.38***		2.00***		1.25***		0.00		1.25*		-0.25		-0.25		0.84***			
86	5.25***		0.63*		0.63*		0.75*		0.00		0.88**		1.00**		1.75***		0.88**		-0.75		0.25		-1.00		-1.00		0.86***			
87	4.28***		0.06		0.06		0.44		0.06		2.19**		1.19		3.06***		0.94		0.88		0.63		-0.63		-0.63		0.74***			
88	4.47***		-0.69		1.44**		0.19		0.19		1.81***		2.56***		1.56**		0.94		-0.13		-0.13		-1.38		-1.38		0.79***			
89	5.19***		0.25		1.38***		0.00		0.25		1.25***		1.38***		0.88**		0.63*		0.00		-1.00*		0.00		0.00		0.88***			
90	5.47***		-0.06		0.81**		0.06		-0.06		2.06***		1.94***		2.06***		1.19***		-0.13		0.13		0.38		0.38		0.85***			
91	4.53***		-0.19		2.06***		-0.44		0.44		1.69***		0.81**		3.44***		0.19		1.13*		0.38		-0.63		-0.63		0.94***			
92	5.76***		0.06		1.56***		0.81***		0.44*		1.19***		1.56***		0.94***		1.44***		0.13		-1.13**		-0.13		-0.13		0.93***			
93	5.22***		-0.81*		0.44		1.69***		-0.19		2.56***		1.44***		1.81***		1.06**		0.88		0.63		0.13		0.13		0.88***			
94	4.63***		0.38		1.63***		0.38		0.00		2.00***		0.13		1.00***		2.00***		-1.00*		-0.25		0.75		0.75		0.92***			

Table 23: Continued.

Resp.	Constant		Risk Proximity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Collateral		Share of Investment		Financial Standing		Risk proximity x Share of Investment		Risk proximity x Financial Standing		Risk proximity x Collateral		R ² Model Summary		Sig. F	
	B		B		B		B		B		B		B		B		B		B		B		B		B		B	
95	5.13***		0.13		2.50***		1.75***		0.25		0.63*		1.63***		0.88**		0.25		-1.00		-0.50		0.25		0.91***			
96	4.72***		0.19		1.06***		0.31		0.06		2.69***		1.19***		1.69***		0.81**		0.88		0.88		-0.38		0.92***			
97	4.28***		0.19		1.31**		0.56		0.56		1.94***		0.44		1.69***		1.31**		-0.38		1.13		0.88		0.84***			
98	5.56***		0.25		2.13***		0.63		0.13		0.50		0.50		1.00*		0.88*		1.25		-0.25		-1.00		0.77***			
99	4.03***		-0.19		1.44***		-0.06		-0.06		2.06***		1.06***		2.81***		0.94**		1.13*		-0.38		0.88		0.92***			
100	5.31***		0.50		1.63**		0.38		-0.63		1.50**		0.75		2.00***		1.88***		0.25		-0.25		2.00*		0.78***			
101	5.47***		-0.06		0.81*		0.81*		0.69		1.56***		0.44		3.06***		0.69		0.38		-0.38		-0.13		0.86***			
102	5.59***		1.06**		1.06**		-0.56		-0.69		2.69***		0.69		1.31***		2.44***		0.63		-1.13		0.13		0.75***			
103	4.97***		0.94		1.94**		0.44		-0.69		2.31**		0.94		1.06		1.06		-0.13		0.13		0.13		0.69**			
104	4.44***		-0.63		1.50**		1.50**		0.13		1.50**		1.88***		1.75**		0.38		0.25		0.00		-0.75		0.76***			
105	4.34***		0.56*		1.06***		0.19		0.44		1.56***		0.94**		2.44***		0.81**		0.63		0.13		0.38		0.91***			
106	6.09***		0.06		0.81		0.19		-0.06		1.56**		1.69***		1.44**		1.81***		-0.38		-0.88		0.38		0.78***			
107	3.84***		-0.19		3.19***		0.69		-0.31		1.81**		0.56		1.81**		0.44		0.88		-1.13		1.63		0.83***			
108	4.88***		-0.50		1.50**		0.50		-0.38		2.13***		1.25**		1.88***		1.63***		0.50		-0.75		0.75		0.84***			
109	6.81***		-0.13		0.50		0.63*		0.75*		1.50***		1.50***		1.63***		1.63***		-1.00		-1.25*		-1.25*		0.84***			
110	5.06***		-0.50		0.25		0.88*		-0.25		1.88***		1.13**		1.75***		1.88***		0.00		-0.75		0.00		0.86***			
111	4.16***		0.94*		1.69***		1.19*		-0.44		1.56**		0.69		2.31***		0.06		1.13		0.88		0.38		0.83***			
112	5.75***		0.88*		1.25**		0.75*		-0.38		0.25		1.38***		2.75***		1.13**		-0.50		-0.75		1.00		0.79***			
113	6.53***		0.31		0.44*		0.81***		0.31		1.06***		1.19***		1.19***		1.69***		-0.13		-0.63		-0.13		0.84***			

Table 23: Continued.

	Constant	Risk Proclivity	Competence within the business project	CEO Tenure	Strategic Planning	Past Performance	Collateral	Share of Investment	Financial Standing	Risk proclivity x Share of Investment	Risk proclivity x Financial Standing	Risk proclivity x Collateral	R2 Model Summary	Sig. F
Resp.	B	B	B	B	B	B	B	B	B	B	B	B		
114	6.19***	0.63*	2.00***	-0.13	-0.38	1.88***	1.25***	1.50***	0.25	-1.00	-1.00	-0.50	0.89***	
SUM	567.34	15.50	144.06	56.94	3.88	201.06	128.50	191.44	135.13	6.13	-28.00	26.63	94.76	
Sum/114	4.98	0.14	1.26	0.50	0.03	1.76	1.13	1.68	1.19	0.05	-0.25	0.23	0.83	
Excluding those lending officers that do not show a significant F-value (11 of 114)														
Sum	511.19	12.49	130.07	49.23	3.64	183.38	115.04	176.97	124.90	10.75	-25.48	24.23	87.24	
Sum/103	4.96	0.12	1.26	0.48	0.04	1.78	1.12	1.72	1.21	0.10	-0.25	0.24	0.85	
Excluding lending officers that show low reliability on their responses (4 of 114)														
Sum	546.80	14.21	139.10	53.71	3.23	194.24	125.32	186.39	131.54	9.81	-27.17	26.06	92.20	
Sum/110	4.97	0.13	1.26	0.49	0.03	1.77	1.14	1.69	1.20	0.09	-0.25	0.24	0.84	
Excluding lending officers with different directional use of factors (10 of 114)														
Sum	517.25	18.02	126.03	55.41	10.05	179.42	114.88	176.84	119.11	3.66	-25.53	23.92	85.68	
Sum/104	4.97	0.17	1.21	0.53	0.10	1.73	1.10	1.70	1.15	0.04	-0.25	0.23	0.82	

Note: * p < .05; ** p < .01; *** p < .001.

Table 24: Continued.

Respondent	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Share of investment		Financial Standing		Collateral		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral	
	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t
19	25.03	0.63	3.58	0.63	0.21	5.26	1.05	2.31	6.52	1.05	1.47	0.63												
20	18.34	0.97	1.79	1.24	1.24	3.72	3.17	3.17	2.34	0.14	0.69	1.52												
21	25.30	-1.20	9.24	-1.20	-3.61	11.65	2.81	3.61	4.42	-1.20	0.40	3.61												
22	36.04	5.41	1.08	0.72	0.72	5.41	3.60	5.77	0.36	-1.80	-3.24	-0.72												
23	18.82	1.45	2.12	2.12	-1.23	2.56	4.12	2.56	0.56	-0.78	-0.11	-0.33												
24	21.54	0.95	3.53	1.18	-1.73	3.86	2.41	1.73	2.41	1.51	-0.95	-1.62												
25	18.95	-0.41	3.95	2.59	1.50	2.86	2.05	2.59	1.23	-0.41	-0.95	0.95												
26	26.02	0.15	2.00	2.31	0.46	3.85	3.54	2.92	3.23	-0.15	-0.15	-0.46												
27	30.55	-1.75	2.18	2.62	-0.87	6.11	5.67	6.55	3.93	-1.31	1.31	-0.44												
28	31.19	-3.00	6.17	0.88	-1.94	4.76	5.11	3.70	6.87	-0.18	-0.88	0.88												
29	53.35	0.32	7.99	-3.51	-3.51	14.37	2.87	14.37	7.99	-1.60	-1.60	-0.32												
30	19.73	-0.13	2.74	0.13	-1.44	4.05	2.48	3.53	2.22	0.39	-0.65	0.13												
31	26.59	-0.18	6.60	0.89	-2.68	5.53	4.82	3.39	4.46	1.61	-0.54	-1.61												
32	20.23	-0.34	5.06	-0.34	-1.69	5.73	2.36	3.03	2.36	0.00	0.00	0.00												
33	17.24	0.66	3.31	1.99	0.33	4.97	0.66	5.64	3.65	0.66	1.66	2.32												
34	35.22	-2.50	8.28	1.35	-1.35	4.81	4.43	3.27	6.35	0.58	0.19	0.19												
35	30.20	1.00	4.20	-0.20	-2.60	7.40	3.00	8.60	4.20	-0.60	-1.40	2.20												
36	32.77	1.50	4.93	2.36	-0.21	4.93	0.64	6.64	4.93	-2.36	0.21	1.07												
37	33.09	0.00	3.58	3.58	0.00	4.47	7.16	5.37	4.47	-1.79	1.79	1.79												
38	25.19	0.43	4.78	2.61	2.17	3.47	3.47	7.38	3.47	1.30	1.74	3.04												

Table 24: Continued.

Respondent	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Share of investment		Financial Standing		Collateral		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral		
	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	
39	28.93	-1.64	4.91	1.27	0.55	5.64	2.00	4.91	4.19	1.27	-0.91	1.27	4.19	1.27	-0.91	1.27	4.19	1.27	-0.91	1.27	4.19	1.27	-0.91	1.27	
40	24.18	0.39	2.20	0.39	0.39	3.49	2.72	3.75	2.20	-1.42	0.65	1.16	2.20	-1.42	0.65	1.16	2.20	-1.42	0.65	1.16	2.20	-1.42	0.65	1.16	
41	27.55	0.51	2.54	1.18	0.85	7.61	-0.85	5.58	4.23	-0.17	0.85	0.85	4.23	-0.17	0.85	0.85	4.23	-0.17	0.85	0.85	4.23	-0.17	0.85	0.85	
42	37.10	1.43	3.48	1.84	-0.61	3.89	3.89	7.99	4.30	-0.61	3.89	3.89	4.30	-0.61	3.89	3.89	4.30	-0.61	3.89	3.89	4.30	-0.61	3.89	3.89	
43	24.13	-1.27	1.27	3.29	-0.42	4.66	1.27	5.50	3.81	0.71	-0.14	0.42	3.81	0.71	-0.14	0.42	3.81	0.71	-0.14	0.42	3.81	0.71	-0.14	0.42	
44	31.49	1.46	8.55	0.63	-3.54	3.96	7.72	4.38	1.88	1.04	-1.46	0.21	1.88	1.04	-1.46	0.21	1.88	1.04	-1.46	0.21	1.88	1.04	-1.46	0.21	
45	32.28	1.05	1.05	1.63	1.82	4.69	10.06	4.12	3.16	-2.78	-1.82	1.44	3.16	-2.78	-1.82	1.44	3.16	-2.78	-1.82	1.44	3.16	-2.78	-1.82	1.44	
46	32.50	3.29	4.02	2.92	1.46	1.83	2.92	4.38	2.56	0.73	0.00	0.37	2.56	0.73	0.00	0.37	2.56	0.73	0.00	0.37	2.56	0.73	0.00	0.37	
47	20.06	1.49	3.47	0.25	0.74	2.97	3.22	2.23	1.49	-0.50	0.50	0.25	1.49	-0.50	0.50	0.25	1.49	-0.50	0.50	0.25	1.49	-0.50	0.50	0.25	
48	38.75	2.31	1.38	2.77	1.38	4.61	4.61	5.07	7.38	0.46	-1.85	0.46	7.38	0.46	-1.85	0.46	7.38	0.46	-1.85	0.46	7.38	0.46	-1.85	0.46	
49	23.48	-0.77	5.77	-0.77	-0.77	5.39	2.69	2.69	2.69	0.77	-0.77	2.31	2.69	0.77	-0.77	2.31	2.69	0.77	-0.77	2.31	2.69	0.77	-0.77	2.31	
50	28.43	-0.33	3.31	1.65	1.32	5.29	4.63	2.31	2.98	1.65	-0.66	-0.66	2.98	1.65	-0.66	-0.66	2.98	1.65	-0.66	-0.66	2.98	1.65	-0.66	-0.66	
51	21.04	0.13	0.38	4.16	-0.63	1.89	1.39	1.64	7.18	1.13	-0.13	-0.63	7.18	1.13	-0.13	-0.63	7.18	1.13	-0.13	-0.63	7.18	1.13	-0.13	-0.63	
52	21.50	0.27	2.99	2.18	0.54	2.45	3.27	2.72	2.99	0.54	-2.18	2.45	2.99	0.54	-2.18	2.45	2.99	0.54	-2.18	2.45	2.99	0.54	-2.18	2.45	
53	27.47	0.00	2.29	1.64	1.31	1.64	4.58	2.29	3.27	-0.65	-0.33	0.65	3.27	-0.65	-0.33	0.65	3.27	-0.65	-0.33	0.65	3.27	-0.65	-0.33	0.65	
54	18.72	2.01	3.87	1.39	-0.15	3.56	2.01	6.03	1.08	0.77	1.08	-0.77	1.08	0.77	1.08	-0.77	1.08	0.77	1.08	-0.77	1.08	0.77	1.08	-0.77	1.08
55	29.04	1.50	2.05	0.95	-0.14	2.59	2.05	4.23	4.23	-0.41	-2.05	-0.95	4.23	-0.41	-2.05	-0.95	4.23	-0.41	-2.05	-0.95	4.23	-0.41	-2.05	-0.95	
56	33.95	0.87	2.26	1.57	0.87	1.57	2.96	5.05	5.74	-0.87	-0.17	-0.17	5.74	-0.87	-0.17	-0.17	5.74	-0.87	-0.17	-0.17	5.74	-0.87	-0.17	-0.17	
57	24.53	-0.14	2.15	-0.43	-0.14	4.16	4.73	3.87	3.01	0.14	-0.14	1.29	3.01	0.14	-0.14	1.29	3.01	0.14	-0.14	1.29	3.01	0.14	-0.14	1.29	

Table 24: Continued.

Respondent	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Share of investment		Financial Standing		Collateral		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral		
	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	
58	29.59	0.17	4.46	1.82	0.17	4.46	1.82	0.17	4.46	1.82	0.17	4.46	1.82	0.17	4.46	1.82	0.17	4.46	1.82	0.17	4.46	1.82	0.17	4.46	1.82
59	24.28	2.01	3.56	0.15	-0.15	1.70	0.46	3.87	6.96	1.08	1.70	0.46	3.87	6.96	1.08	1.70	0.46	3.87	6.96	1.08	1.70	0.46	3.87	6.96	
60	14.91	0.89	3.26	2.07	0.30	1.88	1.28	1.48	1.48	0.30	1.88	1.28	1.48	1.48	0.30	1.88	1.28	1.48	1.48	0.30	1.88	1.28	1.48	1.48	
61	17.00	-1.36	-1.00	2.09	1.18	2.82	-0.09	3.00	1.36	1.18	2.82	-0.09	3.00	1.36	1.18	2.82	-0.09	3.00	1.36	1.18	2.82	-0.09	3.00	1.36	
62	16.71	0.48	2.18	0.24	-0.97	3.15	1.94	5.57	2.91	-0.97	3.15	1.94	5.57	2.91	-0.97	3.15	1.94	5.57	2.91	-0.97	3.15	1.94	5.57	2.91	
63	29.15	-1.30	0.93	1.67	1.67	5.39	3.16	7.61	4.64	1.67	5.39	3.16	7.61	4.64	1.67	5.39	3.16	7.61	4.64	1.67	5.39	3.16	7.61	4.64	
64	37.12	-1.08	2.52	2.52	1.44	3.60	3.96	4.32	4.32	1.44	3.60	3.96	4.32	4.32	1.44	3.60	3.96	4.32	4.32	1.44	3.60	3.96	4.32	4.32	
65	33.07	0.40	4.84	2.82	0.00	5.65	3.23	4.44	2.82	0.00	5.65	3.23	4.44	2.82	0.00	5.65	3.23	4.44	2.82	0.00	5.65	3.23	4.44	2.82	
66	26.38	-1.27	-0.64	-0.32	1.59	6.36	5.40	7.31	1.91	1.59	6.36	5.40	7.31	1.91	1.59	6.36	5.40	7.31	1.91	1.59	6.36	5.40	7.31	1.91	
67	34.47	-0.70	4.53	2.44	0.00	3.83	4.18	3.83	4.18	0.00	3.83	4.18	3.83	4.18	0.00	3.83	4.18	3.83	4.18	0.00	3.83	4.18	3.83	4.18	
68	54.59	2.60	4.68	2.60	0.00	9.36	5.72	7.28	1.04	0.00	9.36	5.72	7.28	1.04	0.00	9.36	5.72	7.28	1.04	0.00	9.36	5.72	7.28	1.04	
69	20.84	1.08	3.52	2.44	3.79	1.89	0.54	4.06	0.00	3.79	1.89	0.54	4.06	0.00	3.79	1.89	0.54	4.06	0.00	3.79	1.89	0.54	4.06	0.00	
70	28.27	-1.16	1.16	2.48	1.16	5.45	3.47	6.12	2.48	1.16	5.45	3.47	6.12	2.48	1.16	5.45	3.47	6.12	2.48	1.16	5.45	3.47	6.12	2.48	
71	23.94	0.30	6.50	2.96	0.89	7.09	1.48	0.59	-0.89	0.89	7.09	1.48	0.59	-0.89	0.89	7.09	1.48	0.59	-0.89	0.89	7.09	1.48	0.59	-0.89	
72	47.40	0.51	4.08	2.55	-1.02	14.27	6.12	4.59	1.53	-1.02	14.27	6.12	4.59	1.53	-1.02	14.27	6.12	4.59	1.53	-1.02	14.27	6.12	4.59	1.53	
73	21.29	0.00	7.41	0.93	0.31	4.32	2.78	2.78	1.23	0.31	4.32	2.78	2.78	1.23	0.31	4.32	2.78	2.78	1.23	0.31	4.32	2.78	2.78	1.23	
74	31.64	2.40	3.84	-1.44	0.00	9.59	0.00	8.15	2.40	0.00	9.59	0.00	8.15	2.40	0.00	9.59	0.00	8.15	2.40	0.00	9.59	0.00	8.15	2.40	
75	26.27	-1.13	4.88	0.00	-0.38	7.51	0.75	4.88	7.51	-0.38	7.51	0.75	4.88	7.51	-0.38	7.51	0.75	4.88	7.51	-0.38	7.51	0.75	4.88	7.51	
76	26.15	-0.16	3.01	2.69	0.48	3.33	2.06	3.65	5.23	0.48	3.33	2.06	3.65	5.23	0.48	3.33	2.06	3.65	5.23	0.48	3.33	2.06	3.65	5.23	

Table 24: Continued.

Respondent	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Share of investment		Financial Standing		Collateral		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral	
	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t
77	56.02	-0.55	3.33	1.11	1.66	9.98	3.88	12.20	3.88	-4.99	0.00	-1.66												
78	25.61	-1.04	4.84	1.04	0.69	4.84	6.92	3.81	1.04	0.35	0.00	-2.08												
79	36.14	1.70	4.12	0.24	0.24	7.52	2.67	8.49	4.12	1.21	0.24	-0.24												
80	22.40	0.84	3.92	-0.56	0.84	5.60	2.52	4.48	0.28	0.56	-0.28	1.12												
81	31.90	1.13	4.88	0.38	0.00	9.01	1.88	6.00	0.75	-1.13	1.50	0.00												
82	26.44	1.70	5.76	0.68	-0.68	3.73	5.42	4.07	-0.34	-0.34	-0.34	0.00												
83	51.86	0.98	5.54	-0.33	-4.24	17.94	1.63	12.07	8.15	0.33	1.63	0.33												
84	32.88	-1.38	3.35	0.59	-0.20	7.28	7.68	4.53	3.35	0.98	-1.38	0.59												
85	31.41	2.33	1.94	0.78	1.16	4.27	4.27	6.20	3.88	0.00	1.94	-0.39												
86	43.67	2.60	2.60	3.12	0.00	3.64	4.16	7.28	3.64	-1.56	0.52	-2.08												
87	15.61	0.11	0.11	0.80	0.11	3.99	2.17	5.58	1.71	0.80	0.57	-0.57												
88	19.42	-1.49	3.12	0.41	0.41	3.94	5.57	3.40	2.04	-0.14	-0.14	-1.49												
89	46.77	1.13	6.20	0.00	1.13	5.63	6.20	3.94	2.82	0.00	-2.25	0.00												
90	30.28	-0.17	2.25	0.17	-0.17	5.71	5.36	5.71	3.29	-0.17	0.17	0.52												
91	36.03	-0.75	8.20	-1.74	1.74	6.71	3.23	13.66	0.75	2.24	0.75	-1.24												
92	59.10	0.32	7.99	4.15	2.24	6.07	7.99	4.79	7.35	0.32	-2.87	-0.32												
93	30.39	-2.37	1.27	4.91	-0.55	7.46	4.19	5.28	3.09	1.27	0.91	0.18												
94	39.55	1.60	6.95	1.60	0.00	8.55	0.53	4.28	8.55	-2.14	-0.53	1.60												
95	39.32	0.48	9.59	6.71	0.96	2.40	6.23	3.36	0.96	-1.92	-0.96	0.48												

Table 24: Continued.

Respondent	Constant		Risk Proclivity		Competence within the business project		CEO Tenure		Strategic Planning		Past Performance		Share of investment		Financial Standing		Collateral		Risk proclivity x Share of Investment		Risk proclivity x Financial Standing		Risk proclivity x Collateral	
	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t	t
96	37.99	0.75	4.28	1.26	0.25	10.82	4.78	6.79	3.27	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76
97	26.37	0.58	4.04	1.73	1.73	5.97	1.35	5.20	4.04	-0.58	1.73	1.35	5.20	4.04	-0.58	1.73	1.35	5.20	4.04	-0.58	1.73	1.35	5.20	4.04
98	32.61	0.73	6.23	1.83	0.37	1.47	1.47	2.93	2.56	1.83	1.47	1.47	2.93	2.56	1.83	1.47	1.47	2.93	2.56	1.83	1.47	1.47	2.93	2.56
99	28.99	-0.67	5.17	-0.22	-0.22	7.42	3.82	10.11	3.37	2.02	7.42	3.82	10.11	3.37	2.02	7.42	3.82	10.11	3.37	2.02	7.42	3.82	10.11	3.37
100	23.53	1.11	3.60	0.83	-1.38	3.32	1.66	4.43	4.15	0.28	3.32	1.66	4.43	4.15	0.28	3.32	1.66	4.43	4.15	0.28	3.32	1.66	4.43	4.15
101	31.64	-0.18	2.35	2.35	1.99	4.52	1.27	8.86	1.99	0.54	4.52	1.27	8.86	1.99	0.54	4.52	1.27	8.86	1.99	0.54	4.52	1.27	8.86	1.99
102	20.19	1.92	1.92	-1.02	-1.24	4.85	1.24	2.37	4.40	0.56	4.85	1.24	2.37	4.40	0.56	4.85	1.24	2.37	4.40	0.56	4.85	1.24	2.37	4.40
103	17.67	1.67	3.44	0.78	-1.22	4.11	1.67	1.89	1.89	0.11	4.11	1.67	1.89	1.89	0.11	4.11	1.67	1.89	1.89	0.11	4.11	1.67	1.89	1.89
104	18.81	-1.32	3.18	3.18	0.26	3.18	3.97	3.71	0.79	0.26	3.18	3.97	3.71	0.79	0.26	3.18	3.97	3.71	0.79	0.26	3.18	3.97	3.71	0.79
105	35.89	2.32	4.39	0.77	1.81	6.45	3.87	10.07	3.36	1.29	6.45	3.87	10.07	3.36	1.29	6.45	3.87	10.07	3.36	1.29	6.45	3.87	10.07	3.36
106	30.31	0.16	2.02	0.47	-0.16	3.89	4.20	3.57	4.51	-0.47	3.89	4.20	3.57	4.51	-0.47	3.89	4.20	3.57	4.51	-0.47	3.89	4.20	3.57	4.51
107	17.16	-0.42	7.11	1.53	-0.70	4.04	1.26	4.04	0.98	0.98	4.04	1.26	4.04	0.98	0.98	4.04	1.26	4.04	0.98	0.98	4.04	1.26	4.04	0.98
108	25.31	-1.30	3.89	1.30	-0.97	5.52	3.24	4.87	4.22	0.65	5.52	3.24	4.87	4.22	0.65	5.52	3.24	4.87	4.22	0.65	5.52	3.24	4.87	4.22
109	39.93	-0.37	1.47	1.83	2.20	4.40	4.40	4.76	4.76	-1.47	4.40	4.40	4.76	4.76	-1.47	4.40	4.40	4.76	4.76	-1.47	4.40	4.40	4.76	4.76
110	31.29	-1.55	0.77	2.70	-0.77	5.80	3.48	5.41	5.80	0.00	5.80	3.48	5.41	5.80	0.00	5.80	3.48	5.41	5.80	0.00	5.80	3.48	5.41	5.80
111	21.87	2.47	4.44	3.12	-1.15	4.11	1.81	6.08	0.16	1.48	4.11	1.81	6.08	0.16	1.48	4.11	1.81	6.08	0.16	1.48	4.11	1.81	6.08	0.16
112	26.61	2.02	2.89	1.74	-0.87	0.58	3.18	6.36	2.60	-0.58	0.58	3.18	6.36	2.60	-0.58	0.58	3.18	6.36	2.60	-0.58	0.58	3.18	6.36	2.60
113	46.97	1.12	1.57	2.92	1.12	3.82	4.27	4.27	6.07	-0.22	3.82	4.27	4.27	6.07	-0.22	3.82	4.27	4.27	6.07	-0.22	3.82	4.27	4.27	6.07
114	43.62	2.20	7.05	-0.44	-1.32	6.61	4.41	5.29	0.88	-1.76	6.61	4.41	5.29	0.88	-1.76	6.61	4.41	5.29	0.88	-1.76	6.61	4.41	5.29	0.88

Table 24: Continued.

Respondent	Constant	Risk Proclivity	Competence within the business project	CEO Tenure	Strategic Planning	Past Performance	Share of investment	Financial Standing	Collateral	Risk proclivity x Share of Investment	Risk proclivity x Financial Standing	Risk proclivity x Collateral
Sum t _j	3301.71	45.40	418.07	155.41	12.50	591.56	371.46	559.53	390.22	4.58	-37.33	36.02
Sum t _j /root (k _j /k _{j-2})	3073.72	42.27	389.20	144.68	11.63	550.71	345.81	520.90	363.28	4.27	-34.75	33.54
1 / root 114 *												
Sum t _j /root (k _j /k _{j-2})	287.88	3.96	36.45	13.55	1.09	51.58	32.39	48.79	34.02	0.40	-3.25	3.14
Rank		7	3	6	10	1	5	2	4	11	8	9
Excluding those lending officers that do not show a significant F-value (11 of 114)												
Sum t _j	3083.04	39.51	390.28	140.94	11.46	557.59	343.86	531.31	369.78	8.70	-35.03	32.95
Sum t _j /root (k _j /k _{j-2})	2870.15	36.79	363.33	131.21	10.67	519.09	320.12	494.62	344.25	8.10	-32.61	30.67
1 / root 103 *												
Sum t _j /root (k _j /k _{j-2})	282.80	3.62	35.80	12.93	1.05	51.15	31.54	48.74	33.92	0.80	-3.21	3.02
Rank		7	3	6	10	1	5	2	4	11	8	9
Excluding lending officers that show low reliability on their responses (4 of 114)												
Sum t _j	3232.07	42.73	408.90	150.22	11.50	579.78	365.38	550.93	384.01	7.47	-36.69	35.41
Sum t _j /root (k _j /k _{j-2})	3008.89	39.78	380.66	139.85	10.70	539.75	340.15	512.89	357.49	6.96	-34.16	32.97
1 / root 110 *												
Sum t _j /root (k _j /k _{j-2})	286.89	3.79	36.29	13.33	1.02	51.46	32.43	48.90	34.09	0.66	-3.26	3.14
Rank		7	3	6	10	1	5	2	4	11	8	9
Excluding lending officers with different directional use of factors (10 of 114)												
Sum t _j	2955.74	51.94	357.09	152.34	34.77	511.93	328.25	503.30	335.48	1.59	-33.54	31.39
Sum t _j /root (k _j /k _{j-2})	2751.65	48.35	332.43	141.82	32.37	476.58	305.58	468.55	312.31	1.48	-31.22	29.22
1 / root 104 *												
Sum t _j /root (k _j /k _{j-2})	269.82	4.74	32.60	13.91	3.17	46.73	29.97	45.94	30.62	0.15	-3.06	2.87
Rank		7	3	6	8	1	5	2	4	11	9	10

Table 25: Statistically significant effects ($p < .05$) and relative importance (ω^2) – probability of supporting credit.

Respondent	Risk-taking proclivity ω^2	Competence within the Business Project ω^2	CEO Tenure ω^2	Strategic Planning ω^2	Past Performance ω^2	Share of Investment ω^2	Financial Standing ω^2	Collateral ω^2	Risk-taking proclivity x Share of Investment ω^2	Risk-taking proclivity x Financial Standing ω^2	Risk-taking proclivity x Collateral ω^2
1	0.07	0.07	0.07	0.03	0.21	0.13	0.13	0.03	0.05	0.01	0.00
2	0.01	0.00	0.14	0.04	0.03	0.34	0.09	0.16	0.00	0.01	0.03
3	0.01	0.07	0.00	0.02	0.02	0.30	0.04	0.36	0.02	0.01	0.01
4	0.00	0.03	0.00	0.01	0.58	0.03	0.11	0.11	0.00	0.00	0.00
5	0.00	0.10	0.00	0.01	0.23	0.00	0.10	0.45	0.00	0.00	0.00
6	0.01	0.07	0.00	0.01	0.22	0.01	0.24	0.27	0.00	0.00	0.01
7	0.01	0.02	0.05	0.00	0.20	0.03	0.23	0.26	0.02	0.00	0.00
8	0.00	0.10	0.03	0.00	0.19	0.10	0.32	0.01	0.06	0.01	0.01
9	0.00	0.20	0.02	0.00	0.20	0.06	0.23	0.02	0.00	0.01	0.05
10	0.00	0.10	0.03	0.01	0.17	0.04	0.30	0.06	0.03	0.00	0.02
11	0.04	0.07	0.09	0.00	0.26	0.14	0.17	0.00	0.00	0.00	0.00
12	0.00	0.00	0.12	0.02	0.07	0.03	0.19	0.24	0.00	0.00	0.02
13	0.00	0.00	0.00	0.00	0.34	0.09	0.21	0.14	0.04	0.00	0.02
14	0.11	0.16	0.00	0.00	0.39	0.04	0.01	0.03	0.00	0.02	0.00
15	0.02	0.07	0.00	0.00	0.35	0.01	0.29	0.01	0.01	0.00	0.06
16	0.00	0.00	0.00	0.02	0.08	0.12	0.19	0.42	0.00	0.00	0.00
17	0.00	0.13	0.02	0.07	0.31	0.04	0.08	0.11	0.04	0.00	0.04
18	0.01	0.45	0.00	0.02	0.10	0.00	0.15	0.05	0.01	0.06	0.00
19	0.00	0.11	0.00	0.00	0.24	0.01	0.04	0.37	0.01	0.02	0.00

Table 25: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2
20	0.01	0.04	0.02	0.02	0.20	0.14	0.14	0.08	0.00	0.00	0.03
21	0.00	0.27	0.00	0.04	0.43	0.02	0.04	0.06	0.00	0.00	0.04
22	0.20	0.01	0.00	0.00	0.20	0.09	0.23	0.00	0.02	0.07	0.00
23	0.03	0.07	0.07	0.02	0.10	0.26	0.10	0.00	0.01	0.00	0.00
24	0.01	0.17	0.02	0.04	0.20	0.08	0.04	0.08	0.03	0.01	0.03
25	0.00	0.23	0.10	0.03	0.12	0.06	0.10	0.02	0.00	0.01	0.01
26	0.00	0.05	0.07	0.00	0.19	0.16	0.11	0.13	0.00	0.00	0.00
27	0.02	0.03	0.04	0.00	0.22	0.19	0.25	0.09	0.01	0.01	0.00
28	0.05	0.21	0.00	0.02	0.12	0.14	0.07	0.26	0.00	0.00	0.00
29	0.00	0.10	0.02	0.02	0.34	0.01	0.34	0.10	0.00	0.00	0.00
30	0.00	0.10	0.00	0.03	0.23	0.09	0.17	0.07	0.00	0.00	0.00
31	0.00	0.27	0.00	0.04	0.19	0.14	0.07	0.12	0.01	0.00	0.01
32	0.00	0.25	0.00	0.03	0.32	0.05	0.09	0.05	0.00	0.00	0.00
33	0.00	0.09	0.03	0.00	0.21	0.00	0.27	0.11	0.00	0.02	0.04
34	0.03	0.35	0.01	0.01	0.12	0.10	0.05	0.21	0.00	0.00	0.00
35	0.00	0.08	0.00	0.03	0.26	0.04	0.35	0.08	0.00	0.01	0.02
36	0.01	0.16	0.03	0.00	0.16	0.00	0.29	0.16	0.03	0.00	0.00
37	0.00	0.07	0.07	0.00	0.11	0.29	0.16	0.11	0.02	0.02	0.02
38	0.00	0.14	0.04	0.03	0.07	0.07	0.34	0.07	0.01	0.02	0.06

Table 25: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2
39	0.02	0.18	0.01	0.00	0.24	0.03	0.18	0.13	0.01	0.00	0.01
40	0.00	0.07	0.00	0.00	0.18	0.11	0.21	0.07	0.03	0.00	0.02
41	0.00	0.04	0.01	0.00	0.42	0.00	0.22	0.13	0.00	0.00	0.00
42	0.01	0.07	0.02	0.00	0.09	0.09	0.38	0.11	0.00	0.05	0.03
43	0.01	0.01	0.10	0.00	0.21	0.01	0.29	0.14	0.00	0.00	0.00
44	0.01	0.35	0.00	0.06	0.07	0.28	0.09	0.01	0.00	0.01	0.00
45	0.00	0.00	0.01	0.02	0.11	0.53	0.09	0.05	0.04	0.02	0.01
46	0.11	0.16	0.09	0.02	0.03	0.09	0.20	0.07	0.00	0.00	0.00
47	0.03	0.19	0.00	0.01	0.14	0.17	0.08	0.03	0.00	0.00	0.00
48	0.03	0.01	0.04	0.01	0.13	0.13	0.15	0.33	0.00	0.02	0.00
49	0.00	0.29	0.00	0.00	0.25	0.06	0.06	0.06	0.00	0.00	0.04
50	0.00	0.10	0.02	0.01	0.27	0.21	0.05	0.08	0.02	0.00	0.00
51	0.00	0.00	0.17	0.00	0.03	0.02	0.03	0.52	0.01	0.00	0.00
52	0.00	0.11	0.06	0.00	0.07	0.13	0.09	0.11	0.00	0.06	0.07
53	0.00	0.07	0.03	0.02	0.03	0.29	0.07	0.15	0.00	0.00	0.00
54	0.04	0.15	0.02	0.00	0.13	0.04	0.37	0.01	0.00	0.01	0.00
55	0.03	0.05	0.01	0.00	0.08	0.05	0.22	0.22	0.00	0.05	0.01
56	0.00	0.05	0.02	0.00	0.02	0.09	0.25	0.33	0.00	0.00	0.00
57	0.00	0.05	0.00	0.00	0.19	0.25	0.16	0.10	0.00	0.00	0.02

Table 25: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2
58	0.00	0.19	0.03	0.00	0.19	0.22	0.09	0.04	0.00	0.00	0.00
59	0.03	0.11	0.00	0.00	0.02	0.00	0.13	0.44	0.01	0.02	0.02
60	0.01	0.20	0.08	0.00	0.07	0.03	0.04	0.04	0.03	0.07	0.01
61	0.04	0.02	0.09	0.03	0.16	0.00	0.18	0.04	0.02	0.01	0.01
62	0.00	0.06	0.00	0.01	0.12	0.04	0.37	0.10	0.00	0.04	0.00
63	0.01	0.00	0.02	0.02	0.18	0.06	0.36	0.13	0.00	0.02	0.03
64	0.01	0.06	0.06	0.02	0.12	0.15	0.18	0.18	0.01	0.00	0.00
65	0.00	0.18	0.06	0.00	0.24	0.08	0.15	0.06	0.01	0.00	0.04
66	0.01	0.00	0.00	0.01	0.26	0.19	0.35	0.02	0.00	0.00	0.00
67	0.00	0.17	0.05	0.00	0.12	0.14	0.12	0.14	0.00	0.06	0.00
68	0.02	0.08	0.02	0.00	0.32	0.12	0.19	0.00	0.12	0.01	0.00
69	0.01	0.16	0.08	0.19	0.05	0.00	0.22	0.00	0.01	0.00	0.01
70	0.01	0.01	0.05	0.01	0.25	0.10	0.31	0.05	0.01	0.00	0.01
71	0.00	0.33	0.07	0.00	0.39	0.02	0.00	0.00	0.00	0.01	0.00
72	0.00	0.05	0.02	0.00	0.64	0.12	0.06	0.01	0.00	0.02	0.01
73	0.00	0.44	0.00	0.00	0.15	0.06	0.06	0.01	0.00	0.03	0.06
74	0.02	0.07	0.01	0.00	0.44	0.00	0.31	0.02	0.01	0.00	0.00
75	0.00	0.13	0.00	0.00	0.30	0.00	0.13	0.30	0.02	0.00	0.00
76	0.00	0.09	0.08	0.00	0.12	0.04	0.14	0.29	0.00	0.00	0.00

Table 25: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2
77	0.00	0.03	0.00	0.01	0.29	0.04	0.43	0.04	0.07	0.00	0.01
78	0.01	0.17	0.01	0.00	0.17	0.35	0.10	0.01	0.00	0.00	0.03
79	0.01	0.08	0.00	0.00	0.29	0.03	0.37	0.08	0.00	0.00	0.00
80	0.01	0.16	0.00	0.01	0.32	0.06	0.21	0.00	0.00	0.00	0.01
81	0.01	0.14	0.00	0.00	0.47	0.02	0.21	0.00	0.01	0.01	0.00
82	0.02	0.28	0.00	0.00	0.12	0.25	0.14	0.00	0.00	0.00	0.00
83	0.00	0.05	0.00	0.03	0.53	0.00	0.24	0.11	0.00	0.00	0.00
84	0.01	0.06	0.00	0.00	0.29	0.32	0.11	0.06	0.00	0.01	0.00
85	0.04	0.03	0.00	0.01	0.14	0.14	0.30	0.12	0.00	0.03	0.00
86	0.04	0.04	0.06	0.00	0.09	0.11	0.36	0.09	0.01	0.00	0.03
87	0.00	0.00	0.01	0.00	0.21	0.06	0.40	0.04	0.01	0.00	0.00
88	0.02	0.10	0.00	0.00	0.16	0.32	0.12	0.04	0.00	0.00	0.02
89	0.00	0.24	0.00	0.00	0.19	0.24	0.09	0.05	0.00	0.03	0.00
90	0.00	0.04	0.00	0.00	0.25	0.22	0.25	0.08	0.00	0.00	0.00
91	0.00	0.19	0.01	0.01	0.13	0.03	0.54	0.00	0.01	0.00	0.00
92	0.00	0.21	0.06	0.01	0.12	0.21	0.08	0.18	0.00	0.03	0.00
93	0.03	0.01	0.14	0.00	0.33	0.10	0.17	0.06	0.01	0.00	0.00
94	0.01	0.19	0.01	0.00	0.29	0.00	0.07	0.29	0.02	0.00	0.01
95	0.00	0.41	0.20	0.00	0.02	0.17	0.05	0.00	0.01	0.00	0.00

Table 25: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2
96	0.00	0.07	0.00	0.00	0.48	0.09	0.19	0.04	0.01	0.01	0.00
97	0.00	0.12	0.02	0.02	0.27	0.01	0.21	0.12	0.00	0.02	0.01
98	0.00	0.44	0.04	0.00	0.02	0.02	0.09	0.07	0.04	0.00	0.02
99	0.00	0.11	0.00	0.00	0.23	0.06	0.43	0.05	0.02	0.00	0.01
100	0.01	0.14	0.01	0.02	0.12	0.03	0.21	0.18	0.00	0.00	0.05
101	0.00	0.04	0.04	0.03	0.14	0.01	0.56	0.03	0.00	0.00	0.00
102	0.04	0.04	0.01	0.02	0.29	0.02	0.07	0.24	0.00	0.01	0.00
103	0.04	0.18	0.01	0.02	0.26	0.04	0.05	0.05	0.00	0.00	0.00
104	0.02	0.12	0.12	0.00	0.12	0.19	0.16	0.01	0.00	0.00	0.01
105	0.02	0.08	0.00	0.01	0.19	0.07	0.46	0.05	0.00	0.00	0.00
106	0.00	0.04	0.00	0.00	0.16	0.19	0.14	0.22	0.00	0.01	0.00
107	0.00	0.44	0.02	0.00	0.14	0.01	0.14	0.01	0.01	0.01	0.03
108	0.01	0.12	0.01	0.01	0.24	0.08	0.19	0.14	0.00	0.01	0.01
109	0.00	0.01	0.02	0.04	0.15	0.15	0.18	0.18	0.01	0.02	0.02
110	0.01	0.00	0.05	0.00	0.24	0.08	0.20	0.24	0.00	0.01	0.00
111	0.05	0.16	0.08	0.01	0.14	0.03	0.31	0.00	0.02	0.01	0.00
112	0.04	0.08	0.03	0.01	0.00	0.10	0.42	0.07	0.00	0.01	0.01
113	0.01	0.02	0.07	0.01	0.12	0.14	0.14	0.30	0.00	0.01	0.00
114	0.03	0.28	0.00	0.01	0.25	0.11	0.16	0.00	0.02	0.02	0.00

Table 25: Continued.

Respondent	Risk-taking proclivity	Competence within the Business Project	CEO Tenure	Strategic Planning	Past Performance	Share of Investment	Financial Standing	Collateral	Risk-taking proclivity x Share of Investment	Risk-taking proclivity x Financial Standing	Risk-taking proclivity x Collateral
	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2	ω^2
Sum	1.53	13.64	3.34	1.20	22.74	11.46	21.43	12.60	0.98	0.96	1.14
Sum /114	0.01	0.12	0.03	0.01	0.20	0.10	0.19	0.11	0.01	0.01	0.01
Importance Rank	7	3	6	8	1	5	2	4	10	11	9
Excluding those lending officers that do not show a significant F-value (11 of 114)											
Sum	1.36	12.29	2.94	1.00	21.06	10.20	20.25	11.98	0.87	0.86	1.03
Sum /103	0.01	0.12	0.03	0.01	0.20	0.10	0.20	0.12	0.01	0.01	0.01
Importance Rank	7	3	6	9	1	5	2	4	10	11	8
Excluding lending officers that show low reliability on their responses (4 of 114)											
Sum	1.41	13.04	3.17	1.15	22.11	11.22	21.08	12.44	0.93	0.88	1.12
Sum /110	0.01	0.12	0.03	0.01	0.20	0.10	0.19	0.11	0.01	0.01	0.01
Importance Rank	7	3	6	8	1	5	2	4	10	11	9
Excluding lending officers with different directional use of factors (10 of 114)											
Sum	1.41	11.89	3.17	0.95	20.33	10.32	19.97	11.23	0.94	0.93	1.07
Sum /104	0.01	0.11	0.03	0.01	0.20	0.10	0.19	0.11	0.01	0.01	0.01
Importance Rank	7	3	6	9	1	5	2	4	10	11	8

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