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Bruns, V. and Fletcher, M. (2008) *Banks' risk assessment of Swedish SMEs*. *Venture Capital*, 10 (2). pp. 171-194. ISSN 1369-1066

<http://eprints.gla.ac.uk/33406>

Deposited on: 25 January 2011

Banks' Risk Assessment Of Swedish SMEs

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Bruns, V. and Fletcher, M. (2008), "Banks' Risk Assessment of Swedish SMEs", *Venture Capital*, Volume 10, No 2, 171-194.

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Acknowledgment: We would like to thank Johan Wiklund for his valuable comments on earlier version of this paper.

Banks' Risk Assessment Of Swedish SMEs

ABSTRACT

Building on the literatures on asymmetric information and risk-taking, this paper applies conjoint experiments to investigate lending officers' probabilities of supporting credit to established or existing SMEs. Using a sample of 114 Swedish lending officers, we test hypotheses concerning how information on the borrowers ability to repay the loan; alignment of risk preferences; and risk sharing affect their willingness to grant credit. Results suggest that features that reduce the risk to the bank and shift the risk to the borrower have the largest impact. The paper highlights the interaction between factors that influence the credit decision. Implications for SMEs, banks and research are discussed.

BANKS' RISK ASSESSMENT OF SWEDISH SMES

INTRODUCTION - IMPORTANCE OF BANK LENDING FOR SWEDISH SMES

Like other Western countries, borrowings from banks are by far the most common source of external financing for small business in Sweden (Winborg and Landström 2001; Berggren 2002). Berger and Udell (2003) report that debt represents 50 % of the capital structure of small firms in the US. 52% of firms less than two year old, have debt as their major source of funding with commercial bank loans the most common source of external financing. Whilst venture capital firms have been extensively researched, small firms' relationships with banks have been comparatively neglected (Riding, Haines and Thomas, 1994). When small business managers seek bank loans it is important that they understand the logic of the lending officers decision process in order to increase the chance of receiving credit and to understand which factors increase their chances to receive a better credit rating. A better credit rating enables the firm to finance their capital requirements and to decrease the cost of credit. In addition, a better credit rating might also effect the ability to generate external equity. Previous research has found bank loans to be the most important external source for financing small and medium sized enterprises (SMEs) capital requirements (Barton and Matthew 1989; Meyer 1993; Winborg and Landström, 2001), but that SMEs generally have difficulties obtaining such loans (Walker, 1989; Binks, Ennew and Reed, 1992). Sweden is considered to have a bank orientated relationship based financial system in which banks play an important role in the financing of firms (Sjögren and Zackrisson, 2005). Swedish banks lending has increased during the past several years and amounted to 2,044 billion SEK at the end of 2006, 41% of this lending is to the Swedish business sector which includes large firms and SMEs (Bankföreningen, 2007). 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. The economic significance of SMEs is reflected explicitly. For example, in the annual statement of one large Swedish bank, more than 98% of the corporate clients of this bank are SMEs (FöreningsSparbanken, 2006). SMEs account for

85% of the total lending of the bank to the business sector. These arguments indicate the importance of bank loans to SMEs from the perspective of both the bank and the firm.

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). 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 with relatively low issuing and information costs (Berger & Udell, 2003).

However, these funds are often not sufficient enough to finance innovation or growth, 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. Most firms are not expected to rely on venture capital due to constraints on both demand and supply (Cressy & Olofsson, 1997). Cressy (1993) found that less than 1% of start-ups in the UK 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 third place, with more than 1% 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 2005. Sweden's is Europe's third largest private equity market in absolute terms with a 6.4 percent share of the overall European private equity market in 2005 and behind the UK (51%) and France (16%).

Swedish private equity players invested more than 27 billion SEK (approx. €3 billion) in 2005, an increase of 85% compared to the level in 2004. (EVCA Yearbook 2006). A comparison of this with the lending of Swedish banks to the Swedish commercial and industrial sector, with lendings of 743 billion SEK in 2005 (Bankföreningen, 2006) and 829 billion SEK for 2006 (Bankföreningen, 2007), indicates that risk and venture capital finances a fraction of Swedish businesses.

Second, 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.

Third, bootstrapping 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, 2001). Loans from banks represent an important funding source for entrepreneurs in business development. Most SMEs are concerned with obtaining debt funding from banks because this is a more attractive, realistic and obtainable source than external equity. Bank finance compared to equity does not affect the ownership and management of the small firm. For example 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 particularly important for smaller firms. The cost for verification is lower for external debt than for external equity which requires a higher rate of return compared to debt.

BANK LENDING DECISION MAKING

Problems associated with SMEs receiving external finance may be attributed to the fact that the vast majority are privately held and owner managed rather than their size *per se*. First, as compared to publicly traded firms, privately held firms lack access to important financial instruments such as issuing new public stock. Second, owner managed firms are less transparent. Therefore, these firms have an information advantage *vis-à-vis* external financiers. This information asymmetry can be used opportunistically by the borrower, which can

restrain the willingness of external financiers to invest in the business (Fiet, 1995). Because of this information asymmetry it is critical for banks to properly evaluate the credit risk of a borrower. The expected profitability of credit engagements is the primary criterion for this decision. The accuracy of credit decisions has significant impact on the overall profitability of a bank (Ruth, 1987; Ammann 2001).

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 behaviour and moral hazard. Furthermore, although the owner-manager may reveal all the formal information that he or she has access to, this information may be incomplete or erroneous.

Consequently, the credit process represents a critical bank function. It has to ensure that credit is granted to customers who are capable and willing to repay the loan and interest, and denied to those who are not. As a result, it is essential that banks develop methods that reduce risk and uncertainty in managing loans to SMEs. Because individual lending officers make decisions on granting credit to SMEs, such methods translate directly into decision-making processes of the lending officers. Therefore, improved understanding of lending officers' decision-making can provide better understanding of the efficacy of banks' credit processes. Such knowledge, in turn, is valuable for banks as well as for SMEs applying for loans.

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 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 potentially does not lose anything. For the lender, the situation is the opposite. The lender yields a limited gain (interest) if the borrower's project is successful. If the project is unsuccessful, the lender loses the amount lent. Therefore, borrowers and lenders have different risk preferences. This leads to the well-known adverse selection problem (Stiglitz and Weiss, 1981). Investors have strong incentive to use their own money for the projects

where returns are certain and attempt to borrow money for riskier projects. Hence, adverse selection may lead SMEs to only ask for external funding for their riskiest projects, but it is difficult for potential lenders and investors to find out if this is the case because of information asymmetry (Cressy and Toivanen, 2001).

In order to deal with this potential problem, banks and other lenders have developed measures to safeguard against losses. First, they gather information that can inform them on the chances of the borrower failing to repay the loan. Such information is typically associated with the characteristics of the borrower (Sargent and Young, 1991; Sinkey, 1992; Scherr, Sugrue & Ward, 1993). However, in the UK for example there has been a move away from “character lending” (Bank of England, 1994). Banks are increasingly taking the view that lending decisions should be based on the cash flow, business plan and prospects, thus adopting an income based approach (Fletcher, 1995). But where asymmetries of information exist banks can adopt a capital based approach with an emphasis on gearing and financial assets (security) on risk assessment (Berry, Faulkner & Jarvis, 2001; Binks & Ennew, 1996).

Second, in order to align the risk bearing function of lender and borrower, they can demand the borrower to make part of the investment (Myers and Majluf, 1984; Shapiro 1990). Third, in order to shift the risk from the bank to the borrower, they can ask for collateral (Bergström and Lennander, 1997; Anderson, 1999), or ensure that the financial standing of the borrower is solid enough to repay the loan should the project fail (Altman, 1983; Sinkey, 1992; Beaulieu, 1994 & 1996).

Despite banks efforts to homogenise the loan decision making process across loan officers, research suggests that the decisions made by loan officers actually vary according to the loan officers’ level of experience (Andersson, 2001). Fletcher (1995, p37) argues “Although there is delegated decision making, bank managers make their lending decisions against a background of rules and head office instructions. There are many variables which influence the rules and the work environment, and affect the lending decision (for example, training, internal guidelines, upward referral system and discretionary limits, specific head office directives). The lending decision is a process of interaction between the rules and a

manager's experience ...", which explains the variation in decision outcome even with formal guidelines for the credit decision. Some banks in the UK have recently adopted credit scoring to support decision making, allowing managers to focus on developing relations with customers (Deakins, Ram, Smalbone and Fletcher, 2004).

Loan officers are attempting to determine the likelihood of the borrower repaying the loan. Based on explicit decision policies set forth by the bank, loan officers would likely sum up the different signals / factors received by the borrower to rate the risk for any given customer. In Sweden, although lending officers are supported by the formal decision system of the bank, the individual lending officer is an essential factor in the credit decision process. The business credit, compared to the customer credit, is still a manual and individual process in Swedish banks (Bruns, 2001). It is the individual bank manager's obligation to document his analysis which combined with the formal decision system will build the basis for the banks decision. The final decision is often made on a higher hierarchical level, depending on the amount and riskiness, from the local bank office committee to the banks headquarters. This is in contrast to recent developments in the UK, where banks have used credit scoring systems and centralized decision making to help overcome difficulties in assessing risk in small firm loan applicants (Deakins et al., 2004)

Concerning the characteristics of the firm affecting the likelihood of receiving funding, an extensive literature review shows that information pertaining to the characteristics of the borrower typically deals with the general risk proclivity of the SME (Sargent et al., 1991; Scherr et al., 1993; Sinkey, 1992), the competence within the business project (Berggren, Lindström & Olofsson, 2001; Harhof & Körting, 1998; Hedeling & Sjöberg, 1993 & 1995; Petersen & Rajan, 1994); the CEO's personal experience (Beaulieu, 1994 & 1996; Cooper et al., 1989 & 1995; Davidson & Honig, 2003; Hedelin, 1999; Jankowicz & Hisrich, 1987; Keasey & Watson, 1991; Pettit & Singer, 1985); the extent of strategic planning (Beaulieu, 1994 & 1996; Sinkey, 1992; Berger, 1997/1998; Mintzberg & Waters, 1985; Matthews & Scott, 1995); and the past performance of the firm (Gibson 1993; Kam 1990; Altman 1983); Beaulieu, 1996; Berger & Udell, 1995; Deakins & Hussain, 1994; Tiermey &

Truglio, 1997; Uzzi, 1999). For a review of previous research that discusses the use of these factors, the reader is referred to Table 1 in the appendix. In the following section, we develop hypotheses of how these information factors affect the willingness of lending officers to grant credits. We also hypothesize how factors that affect the risk bearing of the parties affect the probability of granting credit. More specifically, we hypothesize how the SME's share of the investment; current financial standing; and the SME's collateral affect the willingness to grant credits independently as well as in interaction with the general risk proclivity of the SME.

AIM OF THE RESEARCH AND DEVELOPEMENT OF HYPOTHESES

Previous research is contradictory concerning the importance that lending officers place on different factors to make their credit assessment. 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. Studies in the field of strategic management (Stahl & Zimmerer, 1984), consumer behaviour (Ettenson, 1993), and venture capital (Riquelme & Rickards, 1992; Shepherd, 1997; Zacharakis, 1995; Zacharakis & Meyer, 1998) found that decision makers do not correctly recall their decision-making.

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. We extend previous research by implementing a conjoint experiment to observe the utilization of decision criteria in real-time decisions by loan officers. The aim of the research is to explore the factors that influence lending officers' decisions concerning credit support to existing SMEs. To approach this issue, we rely on conjoint experiments. Conjoint analysis has been successfully employed in a variety of disciplines since the early 1960s (Gustafsson, Herrmann & Huber, 2001) and successfully used in entrepreneurial settings, e.g. Zacharakis, 1995; Muzyka, D., Birley, S. and Leleux, B. 1996; Shepherd, 1997. In addition, we examine a

broad array of factors previously identified in the literature and assess both direct and interaction effects. This allows us to tease out the range and complexity of factors influencing their decisions.

The SME's Risk Proclivity

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 (Berger and Udell, 2003), which might imply shifting risk to the debt holder after the credit contract is executed (Bruns, 2004). 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 behaviour 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. 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 (Bruns, Wiklund and Shepherd, 2005). Therefore, a fundamental challenge is associated with the tendency of banks to be risk averse in assuring loan repayment and growing SMEs taking risks in search of high returns.

Lending officers attempt to predict the behaviour and operational risk of the SME. This means that both the risk of the 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 it can lead to substantial information asymmetry (Jensen and Meckling 1976; Pettit and Singer 1985; Barton and Matthew 1989; Ang 1991; Binks, et al., 1992). Despite the potential

problems of obtaining the relevant information of the risk proclivity of the borrowing SME, research suggests that it is one of the most important factors influencing the willingness of banks to supply credits. Building on the insights of the risk proclivity of growing SMEs and previous empirical findings concerning the importance banks put on estimating the risk proclivity of their customers, we pose the following hypothesis:

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

Competence within the Business Project

The quality of the human capital of the people working in the SME is a critical factor influencing the likelihood that the business is able to expand successfully (Dess and Picke 1999). However, the quality of human capital cannot be easily observed or measured by external parties, such as banks (Pettit and Singer 1985; Keasey and McGuinness 1990; Scherr, et al., 1993). One way to assess the quality of the human capital is to examine the SMEs success with projects that require similar competence, knowledge and skills (Brüderl and Schüssler, 1990). An SME that has successfully completed a similar project or a project that requires comparable competence, know-how and skills more likely has the capability to execute the new project. A positive track record impacts a credit decision when similar projects have been successful (Sargent and Young, 1991; Scherr et al., 1993). For the lending officer, it is therefore advantageous to learn whether a similar project has been completed successfully in the past. This track record is used to evaluate the probability of success for the new project which in turn influences the likelihood of fulfilling the credit agreement. Thus:

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

CEO Tenure

Another important aspect of the human capital of the SME is directly tied to the qualities of the CEO. Human capital theory posits that individuals with more or higher quality human capital achieve higher performance in executing relevant tasks (Becker, 1975). Human capital provides small business managers with knowledge that assists them in identifying

opportunities and knowledge of ways to more effectively and efficiently pursue growth. In the entrepreneurship literature a frequently investigated aspect of human capital is previous experience. This experience may lead to expertise in running an independent business (Wright, Robbie and Ennew, 1997) and provide benchmarks for judging the relevance of information (Cooper, Folta and Woo, 1995) which can enhance performance (Davidsson and Honig, 2003). Therefore, the development and performance of SMEs tend to be correlated to the small business manager's individual human capital (Brüderl and Schüssler, 1990). The experience and track record of the CEO are therefore regarded as strong indicators of the company's future performance (George, 1991) and its ability to succeed with a new business project.

Longer tenure as a small business manager demonstrates more experience and therefore more human capital. Further, managers with longer experience tend to be older therefore they might be more risk averse since their investment time horizon is shorter (Scherr et al., 1993). 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 and a tendency to involve in projects that have low as opposed to high risk. This should lead lending officers to be more likely to support credit to CEOs with longer tenure. Thus:

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

Strategic Planning

In evaluating the creditworthiness of a customer, the lending officer has to evaluate the firm's ability to respond to changing conditions and develop and implement effective strategies (Berger, 1997/1998). For this purpose, the customer's business plan, as part of the strategic planning, can be used in two-ways. First, it is an indicator of the ability of management to communicate the strategy of the firm to external parties. The firm's strategy should be clear and consistent in order to persuade external parties, such as banks, who make commitments to the firm's future success (Sargent and Young, 1991). An SME that articulates its intentions in

a formal plan 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 information, and an understanding of the factors that affect financial performance and product quality are indirect indicators for the quality of management (Sinkey 1992) and are therefore 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 receive a bank loan. Thus:

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

Past Performance

The past financial performance of a firm is an important factor to estimate its ability to repay a loan (Gibson, 1993). Past profitability shows the firm's past operational success and thus provides tangible representations of the competence of the SME. Indicators for a company's past performance are found in quantitative measures based on accounting information. A firm's generated profit or loss is 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). These measures are ratios based on the firm's financial statement, i.e. balance sheets and income and cash flow statements. Financial ratios have been reported as reliable predictors of corporate failure by some researchers (e.g. Altman, 1983), which indicate their importance in the prediction of default on credit. Therefore information on past financial performance, such as financial ratios, 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, make an estimation of the probability of the success of a new project on the basis of such historical statements.

Further, because financial statements have to be audited by audited accountants, the figures presented are likely to be accurate and reliable. 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, the firm has been successful in the past, this would indicate that it has the competence to develop new projects. Thus:

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

SMEs' Share of Investment

Due to the combined role of management and ownership the owner-manager has both financial and human capital at risk in the firm. Financing a new project, the owner-manager is often required to substantiate cash investment, which secure that she or he will act in the investor's best interest.

An external equity holder has much better control than a bank, 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 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 (Berger & Udell, 2003).

It can be argued that the firm's willingness to finance a larger part of the project by equity would be seen as a positive signal by the bank lending officer. First, a larger share of the investment being 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. Thus, it serves to align the interests of the lender and borrower, decreasing chances of opportunistic behaviour (Bruns, 2004). 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 of the bank due to a lower amount of external financing. Consequently, the lending officers evaluation of success with the business project and the

evaluation of supporting a credit request is influenced by the firm's/owner's share of investment. Thus:

Hypothesis 6: Lending officers' probability of supporting credit increases with an increased share of the investment done by the borrowing SME.

Financial Position

The current financial position of a firm is dependent, 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 position of the borrower influences the credit decision somewhat differently than past performance does. Current financial position 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. Therefore, the effect of financial standing on the credit decision is similar to that of collateral – a strong financial position indicates that the borrower is able to repay the loan irrespectively of the outcome of the individual project. Thus:

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

Collateral

One way for the bank to protect itself against a credit default is to limit the freedom of action of the owner-manager (Hand, Loyd and Rogow, 1982) which reduces the probability of opportunistic behaviour. This can be done through requiring collateral. Collateral represents an alternative source of repayment for the bank and is liquidated if the borrower defaults. Besides collateral from the firm, the lender often requires non-corporate assets such as personal guarantees or collateral from the owner-manager. Personal guarantees or collateral is 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 case of failure. Further, securities, such as personal guarantees and collateral, ensure that the borrower is committed to the company and motivated to resolve serious problems (Berger, 1997/1998) because personal assets are at risk. Thus the risk for opportunistic behaviour is limited (Toivanen and Cressy, 2000).

Collateral that is independent of the project's or firm's success, such as bonds and 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. Therefore, because of the uncertainty of the value, such collateral represents greater risk for the bank, and is typically less valued (Leeth, 1989). This should lead banks to be less restrictive in lending money to SMEs that provide collateral that is independent of the borrowing SME's future success. Thus:

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

Interaction Hypotheses

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 ensure to retrieve its loan regardless of the outcome of the project, risk-taking becomes less of a concern. Therefore, we would expect 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.

It may be important to consider the SME's share of financing the investment concurrently as the risk proclivity. A larger share supplied by the borrowing firm shifts the risk bearing from the lender to the borrower and serves to assure that the borrower acts in the best interest of the lender. Also, for a given project, the amount the bank needs to supply decreases with an increase in the share of the investment supplied by the borrowing SME. Therefore, a higher portion of the SME's share to finance the capital requirement can compensate, in part, for a higher risk proclivity. Thus:

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

An SME's financial position is likely evaluated in combination with its risk proclivity. A strong financial position can compensate, in part, for a higher risk proclivity, because the bank is likely to retrieve the loan regardless of the outcome of the project. For an SME with a weak financial position, on the other hand, chances of receiving a loan should decrease rapidly with increases in risk proclivity, because they will not be able to repay the loan should the project fail. This leads to the following interaction hypothesis:

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

The probability of a bank asking for collateral increases with the estimated risk of a project because the probability of credit default increases. Deakins and Philpott (1993) have argued that security can be used as a surrogate for more important information concerning the risk of a proposition in the decision-making process. This implies that firms investing in riskier projects would face greater demands for collateral. 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 (Coult, 1992). Collateral or securities do not increase the borrower's ability to repay the credit and interest. Instead, collateral is a last resort of repayment for the bank in case the borrower is not able or willing to fulfil the credit obligations. Consequently, collateral is a form of insurance for the bank to assure that the amount lent can be recovered in case of default. This taken into account, we still would expect collateral to be used to offset the risk-taking of the bank. Thus:

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

RESEARCH METHODOLOGY

Experimental Design

Berry et al. (1993) have highlight the variety of lending propositions that the banker will encounter for example, established/new business, existing/new customer, size of business. This current study was carried out to investigate how Swedish lending officers make credit

decisions to existing SMEs and the importance of criteria used to form the decision. Indeed researchers have recently turned their attention to the problem of moderate “non-stellar” growth firms with growth potential, that may be unable to attract funding needed to ensure prosperity (Oakey, 2007). In order to understand the importance of different factors in lending officers’ credit assessment, it was felt insufficient to rely on official bank policy. In order to test the hypotheses, as discussed above, we used conjoint experiments. This allowed us to focus on concurrent rather than retrospective reporting, which limits problems of recall and social desirability biases common in survey research on decision-making (Shepherd and Zacharakis 1997, 1999). 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. This allows us to focus on concurrent, real time rather than retrospective reporting, which limits problems of recall and social desirability biases common in survey research on decision-making (Shepherd and Zacharakis 1997 & 1999).

The lending officers evaluated the likelihood of them granting credit to a series of hypothetical existing SMEs. The firms have an established relationship with the bank but it is a new contact for the lending officer.

As a baseline, all firms were characterized as selling five products or services; having a market share of 5% in a local market; competition being neither intense nor weak; situated in a city of 120.000 inhabitants; the five biggest customers generate 40 % of sales; and cash flow matches industries average. Finally, the firms wish to borrow an amount equal to its equity. The target variable was tapped by the question: “How would you rate the probability that you would support this firm’s credit request?” It was measured on a nine-point scale anchored in "Not at all Likely" (scored 1) and "Very Likely" (scored 9).

Variation in the hypothetical SMEs consisted of eight attributes corresponding to the direct effect hypotheses; each attribute having two levels (e.g., high/low, see Table 2 for details on attributes and levels). An orthogonal fractional factorial design lead to 16 hypothetical SMEs, allowing each main effect and selected two-way interactions to be investigated (Hahn and Shapiro, 1966). Each of the 16 profiles was replicated in order to

assess test-retest reliability. These 32 profiles were randomly assigned to avoid order effects. A pre-test conducted with lending officer and academics confirmed the validity of the attributes and levels.

The subjects conducting the experiment consisted of 114 lending officers who decide on SME credit. They represent four of the five commercial banks active in Sweden and were recruited from the bank branches within a region known for its SMEs and entrepreneurial spirit. Data collection was conducted at the participants' place of work. To alleviate potential concerns about bias a representative sample of bankers from the four banks evaluated the proposals, rural /urban, age, experience. These four banks represent 61,7 % of all Swedish bank offices and 69,7 % of all Swedish bank employees. One hundred and eight of the participating bank officers were employed among 55 bank branches within a 150-kilometer radius from Jönköping, Sweden, a region well known for its above average number of SMEs and entrepreneurial spirit. A pilot study with six bank managers, representing the same bank branch was conducted. The bank branch is located about 1,000 kilometres from Jönköping. We approached the district manager, division manager, or branch manager by telephone to explain the importance of the research from an academic and bank points of view. Four of the five largest commercial banks in Sweden supported the research. The regional and local or bank organizational level was chosen as a pool of lending officers with experience in assessing credit applications from SMEs. We focused on lending officers with relevant experience rather than a random sample.

By conventional research standards the sample size seems limited. However smaller sample sizes are suitable for conjoint experiments and our sample size is larger than most conjoint or policy capturing studies.

The sample represents a wide range of bank officers. 86 % were male, education background varied between nine-year compulsory education (7.9 %), Senior high school (41.2 %), some university education (28.9 %), bachelor's degree (14.0 %), and master's degree (7.9 %). Age ranged between 25 and 61 years (average 45.5 years) and bank employment ranged from 1 to 42 years with experience in assessing credit request from one month to 36 years. The average

credit request ranged from 26 MSEK for micro companies to 102 MSEK for small companies, and 196 MSEK for medium-sized companies. The bank branch where the respondent was employed ranged in size from three to 100 employees, and employees in the credit department between one and 20. The approach enabled the situation to be as near as possible to actual lending conditions and by predetermining the lending attributes, the risk assessment was framed in a realistic and consent context.

Analysis

An individual-subject regression analysis was performed for each individual. The regression coefficients were then aggregated across all subjects and the corresponding individual t-statistics were aggregated to a single Z score, as suggested in the literature (Dechow, Husson and Sloan, 1994).

The Z scores for each factor and the selected two-way interactions, derived from the individual t-statistics, are reported in Table 3. The t-statistics for each individual bank manager is main factor and the selected two-way interactions are calculated by using a linear regression analysis. The results of this calculation are aggregated to the Z-values for each factor and the selected two-way interactions indicate bank officers' significance to support the hypothetical credit request. The calculated Z-values show which main factors and selected two-way interactions are statistically significant, Z-values greater than 1.645 indicate a statistical significance at a 5 % level, a Z-value greater than 2.3 a significance at a 1 % level, and a Z-value greater than 3.0 a significance at a 0.1 % level. 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).

The calculations of the aggregated Z-values show that with the exception of strategic planning the main factors, are greater than 3.0, which indicates their significance at a 0.1 % level in lending officers' assessments to support hypothetical credit requests. Risk-taking proclivity interaction with both financial standing and collateral are also statistically

significant ($p < .001$). 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.

Correlation analysis was used to test the test-retest consistency of responses for the sixteen replicated profiles. A Person R correlation was calculated between each of the bank manager's responses on the 16 original cases and the 16 replicated lending profiles. To compare the means between the 16 original profiles and the 16 replications a paired sample t-test indicated the respondent's consistency in the credit assessment. These correlations range between 0.35 and 0.96, strongly supporting the reliability of the attributes included in the study.

RESULTS

Table 4 shows the means of the aggregated results for the sample of lending officers. Examining the significant coefficients for the variables pertaining to information asymmetry, we find that risk proclivity has a negative effect on probability of granting credit, supporting H1. Competence within the business project, CEO tenure, and past performance all have positive effects on the probability of granting credit, supporting H2, H3, and H5, respectively. No significant effects were found for the level of strategic planning, leaving H4 unsupported. Concerning risk bearing, the SME's share of the investment, financial standing and collateral had positive effects on chances of receiving credit supporting H6, H7 and H8, respectively.

It is also interesting to examine the magnitude of the significant aggregated standardized regression coefficients and their rank order. These results show that in order of magnitude, the most important factor for the lending officers decision to support a growing SMEs credit application was past performance ($\beta = 0.43$). Then follow financial standing ($\beta =$

0.41), competence within the business project ($\beta = 0.31$), the strength of collateral offered ($\beta = 0.29$), the SME's share of investment ($\beta = 0.28$), CEO tenure ($\beta = 0.13$), and finally, risk proclivity ($\beta = 0.04$).

The two-way interaction effects are displayed at the bottom of Table 2. Two interactions are significant; financial standing and collateral both interact with risk-taking. No significant interaction is found between the SME's share of the investment and risk-taking proclivity. Therefore, H9 is not supported. In order to establish the characteristics of the significant interactions, we plotted the effect of risk-taking on the probability of supporting credit 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). Weak financial standing enhances the negative effect that risk-taking has on the probability of supporting credit, supporting H10. The negative effect of risk-taking increases at a faster rate for firms with strong collateral. Thus, H11 is not supported.

DISCUSSION

The findings of this paper provide insights into lending officers' credit decision-making. In order of magnitude, the findings suggest that past performance, financial standing, competence within the business project, collateral, the borrower's share of the investment, CEO tenure, and risk-taking proclivity all affect the likelihood of a bank supporting a SME's credit request.

Out of the four factors that have the strongest effect on the probability of supporting credit, three relate to tangible features, i.e. past performance, financial standing, and collateral, that reduce the risk of the bank and shift the risk-taking to the borrowing SME. The importance of financial standing and collateral indicates that factors that make opportunistic behaviour a non-issue, because the bank will receive its money back irrespectively of the outcome of the project, are valued by the lending officers. This suggests that banks indeed place strong emphasis on the tangible accounting figures SMEs present. For example, the two most important factors (financial standing and past performance) indicate that the firm has the

necessary funds to operate the company (Beaulieu, 1996). Further, financial information is easily accessible and because an external auditor audits them, they are likely to be highly valid and reliable.

From the banks' viewpoint this is a likely rational strategy. It appears that several other factors identified in the literature, and included in our study, are more difficult to measure accurately. Therefore, banks might be unwilling to base their decisions on factors that may be considered vague or difficult to measure. As stated in the literature, as outsiders lending officers have difficulties evaluating SME behaviour, intentions, and incentives (Jensen and Meckling, 1976). This is especially the case in privately held firms where less firm information is revealed. Because of asymmetric information, lending officers lack inside information about the firm and therefore have difficulties evaluating its capabilities and actions (Sinkey, 1992). For example, while the human capital of a small business manager likely influences his or her ability to manage the company, years of CEO tenure might be too weak a proxy to actually tap this ability because the quality of the experience is unknown.

Alternatively, it may be that these factors in fact are of less importance to the outcome of the project and the chances of the borrowing SME fulfilling its credit obligations. For example, the human capital of the CEO might have relatively little impact on the success of an individual project because other factors such as customer demand come into play. Consequently, the firm's competence within the business project is more important than the CEO's individual experience. The success of the project does not necessarily lay in the CEO's abilities (Scherr et al., 1993).

Another interesting observation 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. It appears more difficult for firms that lack a track record to receive funding and to receive funding for genuinely new projects. It also signals that new firms are more

difficult to assess and that the credit assessment for new established firms should be based on other than the conventional factors.

The fact that the comprehensiveness of the business plan was the only 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 and Gumpert, 1985). If prevalence were an indicator, “common wisdom” would suggest that business plans are of crucial importance to the success of small firms (Kahrs, 1995; Rich and Gumpert 1985). For example, financial resource providers (Barclays Bank, 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 our findings, there appears to be little use for SMEs that have been in business for a while to (re-)write comprehensive plans when applying for loans. In an SME with limited resources, business planning inevitable takes resources away from other activities; activities that may be more important when managing a SME organization.

However, the study shows that relying on the eight main factors provides an incomplete understanding of lending officers evaluation. A greater understanding can be gained by considering selected two-way interactions. We found two significant interactions. As hypothesized, the probability of supporting credit decreases with high risk proclivity, but at a faster rate for firms with weak financial position. This suggests that a strong financial position can compensate, at least in part, for a high risk 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.

We also found an interaction between risk-taking proclivity and the strength of the collateral, as hypothesized. However, the form of the interaction was different from what we anticipated. Borrowers with weak collateral were unlikely to receive a loan regardless of their risk-taking proclivity, whereas borrows with strong collateral were significantly more likely to receive a loan if their risk-taking was low. This finding suggests that strong collateral does

not offset the negative aspects of high risk proclivity. As suggested in some 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 a last resort of repayment. However, banks want to secure their lending safeguard against moral hazard and avoid situations to finance project with low probability of losses. If a situation should occur where banks have to call on securities, they consider strong collateral, such as bonds and shares, as more important than weak collateral, such as floating charge, or receivables. This study supports previous studies which highlight the importance of trading experience and past performance in risk assessment (Deakins and Hussain, 1994; Fletcher, 1995). Of particular interest is the lack of importance attributed to Swedish bankers on the CEO's prior experience and capabilities which suggests that Swedish loan officers are, on the whole, more interested in project information, than management/CEO capabilities. Further research should be undertaken to investigate the impact of different CEO and management characteristic on banks' risk assessment.

This study also underpins Mason and Stark (2004), that SME managers need to be aware of the need to customize their funding proposal according to whether they are seeking bank loan, approaching venture capital funds or seeking finance from business angels.

CONCLUSION AND IMPLICATIONS

The findings of this paper provide insights into bank lending officers' credit decision-making concerning SMEs. Our findings suggest that banks place the strongest emphasis on the tangible accounting figures SMEs present, and factors that shift the risk from the bank to the borrower. Further, the general risk-taking proclivity of the borrower interacts with the financial position of the borrower and collateral that is provided.

This study examines the factors that lending officers actually use when deciding on credit granting towards SMEs. Whether or not these factors actually reflect aspects that are relevant to the probability of a borrower repaying a loan is an open question. Therefore, banks would benefit from comparing these results to their data on credit defaults. This comparison could lead to valuable insights and provide the basis for altering guidelines for credit

decisions. At a more basic level, banks managers can use our results 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 the behaviour of lending officers? In essence, by providing knowledge about current decision-making procedures our research could assist banks to improve their decision-making processes..

It appears that SMEs that perform well and are financially strong need not worry about receiving credit, at least not if the credit application does not exceed their current equity. For new ventures that lack a track record, and SMEs that have a weak track record, the situation is more problematic. It appears that developing a strong business plan for the project to finance is not the way forward for established companies investing in new ventures, even if they have no customer track record with the bank applying for credit. Rather, in the absence of a strong track record and strong financials, these firms would benefit from showing that they have the competence to perform the activities the application concerns. In addition, they need to provide strong collateral, such as private property. Thus, for the owner-managers of these firms, receiving a bank loan could mean taking a large personal risk.

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Appendix

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

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
Altman, 1984							X	
Altman, 1983					X		X	
Anderson, 1999								X
Andersson & Helander, 1993							X	
Ang, 1991, 1992	X			X				
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
Bruns, 2002		X		X	X		X	X
Bruns, 2005	X	X	X	X	X	X	X	X
Burtis, 1991							X	
Chan & Kanatas, 1985; Chan & Thakor, 1987								X
Cooper et al., 1995			X					
Cooper et al., 1989			X					
Cornel & Saunders, 1991		X					X	
Coult, 1992								X
Cranfill, 1989/1990		X		X	X		X	
Cressy et al. 1997b							X	X
Davidson & Honig, 2003			X					
Deakins & Hussain, 1994					X		X	
Dixon, 1991		X						
Evans & Jovanovic, 1989	X		X			X		X
Firth, 1979					X		X	
Fischer, Reuber, & Dyke, 1993		X	X					
Fletcher, 1995		X	X		X	X		X
George, 1991		X	X	X			X	
Gibson, 1983		X			X		X	X

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
Glassman, 1987			X		X		X	X
Gorman & Sahlman, 1986		X						
Gopinath, 1995				X			X	X
Green, 1998				X	X			
Hamm, 1996			X		X			X
Harhoff and Körting 1998		X						
Hedelin, 1999			X	X				
Hedelin & Sjöberg, 1993; 1995		X	X					
Leeth & Scott, 1989								X
Levin & Travis, 1987	X				X			X
Libby, 1976							X	
Libby, 1979	X		X		X		X	
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		
Petersen & Rajan, 1994		X	X				X	
Pettit & Singer, 1985	X	X	X			X		X
Reed & Gill, 1989				X	X		X	X
Robinson, 1987			X					
Rodgers, 1991	X					X	X	
Ruth, 1987		X			X		X	X
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					
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	
Thorne, 1989								X
Tiermey & Truglio, 1997					X		X	

	Risk-taking proclivity	Competence within the business project	CEO tenure	Strategic planning	Past performance	Share of investment	Financial standing	Collateral
Timmofts, 1987			X					
Toivanen & Cressy, 2000								X
Tyebjee & Bruno, 1984			X				X	
Uzzi, 1999					X		X	X
Vaughn, 1997			X		X		X	
Walker, 1989						X	X	
Wright, Robbie, & Ennew, 1997			X					
Zacharakis & Meyer, 1998		X	X					
Zacharakis & Shepherd, 2004			X					

Note: References in full can be obtained from the authors

Table 2: Attributes and Attribute Levels of the Conjoint Experiment

Attribute		
Risk proclivity	The firm prefers high-risk projects with chances of very high returns.	The firm prefers low-risk projects that have high probability to gain 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/her position 8 years ago, has a business education, is regarded as honest, honourable and reliable. The CEO lacks previous work experience in the industry and in a management.	The CEO started his/her position 2 years ago, has a business education, is regarded as honest, honourable and reliable. The CEO lacks previous work experience in the industry and in a management.
Strategic planning	The company has a comprehensive business plan which is documented and followed.	The company follows a distinct strategic line, but its plans for doing so are not documented.
Past performance	The company's profitability is well above the industry average.	The company's profitability is lower than the industry average.
SME's share of investment	The firm finances 35 % of the capital requirements either by internal generated funds or by additional capital of the owner(s).	The firm finances 5 % of the capital requirements either by internal generated funds or by additional capital of the owner(s).
Financial position	The firm's liquidity and solvency (<i>share of equity in relation to total capital</i>) is well above the industry average.	The firm's liquidity and solvency (<i>share of equity in relation to total capital</i>) is lower than the industry average.
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.

Table 3: 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: * = $p < .05$; ** = $p < .01$; *** = $p < .001$.

Table 4: Aggregated Results of Lending Officers Probability of Supporting SME Credit

Variable	Aggregated mean of standardized regression coefficient	Rank
Risk-taking proclivity	0,04**	7
Competence within the business project	0,31***	3
CEO's tenure	0,13***	6
Strategic planning	0,01	8
Past profitability	0,43***	1
SME's share of investment	0,28***	5
Financial position	0,41***	2
Collateral	0,29***	4
Aggregated mean of R2	0,87	

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