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The use of the accounting beta as an overall risk indicator for unlisted companies

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Abstract

Purpose – The purpose of this research is to verify whether or not the accounting beta, a recognized measure of overall risk in publicly traded companies, can be used with unlisted businesses.

Design/methodology/approach – The paper presents an empirical study using factorial and regression analysis to measure which components of the global risk of SMEs are linked to accounting beta.

Findings – The results show that accounting beta does not seem to constitute a global measure of SMEs' risk, being explained mostly by financial risk and not by commercial, technological, management and entrepreneurial risks components.

Research limitations/implications – Researchers will have to turn towards other models than accounting beta that include financial and nonfinancial dimensions of risk in order to obtain an adequate assessment of the overall SMEs' risk.

Practical implications – Risk is the element that determines access to external financing as well as the lending conditions. Results obtained in this research show that accounting data cannot be used to express overall risk of SMEs, because they are not global enough and are not good predictors of future situations.

Originality/value – This article presents limits inherent to financial data to properly measured global risk of SMEs.

Keywords Financial risk, Financial management, Small to medium-sized enterprises

Paper type Research paper

Introduction

Most enterprises will one day need to reach out to external sources of financing to ensure their development. Whether for investment in organizing their production, in their installations, or in their working capital, the firms that can depend indefinitely on their ability to generate all of their financial needs for development or operations are rare indeed. But, financing is not free and is not available under just any conditions. Indeed, these conditions are established in accordance with various parameters, most important of which is the risk that the business will default on its contractual obligations toward its lender and thus be unable to deal with its financial commitments. The conditions for obtaining and using these funds are defined in accordance with basic principles in finance that stipulate that any asset must yield a return proportional to the risk it entails for its title holder.

The determination of the risk level of an enterprise as precisely as possible is then important, since this indicator will be utilized eventually to verify access to external financing and to determine under what conditions. Thus, the identification of SME risk poses a certain number of problems judging by the comments of the contractors on the possibilities of external financing and those of lenders, who consider *de facto* these enterprises as of very high risk (Laveren and Bortier, 2003; Pretorius *et al.*, 2003; Rahman *et al.*, 2003).

In spite of the fact that banks constitute the first source of external borrowing of the SMEs, several studies have shown that relations between these two business partners are laborious (see Belletante and Levratto (1995) and Jullien and Paranque (1995) for France; Maillat and Crevoisier (1996) for Switzerland; Janssen and Wtterwulghe (1998) for Belgium; St-Pierre and Bahri (2003) for Canada; and Lane and Quack (2001) for England). Bankers and entrepreneurs, operating in two different worlds, do not have the same reflexes and values in their respective management roles. It is not surprising then to see differences in how each perceives the other (Sarasvathy *et al.*, 1998). A study by Pretorius *et al.* (2003) has shown some differences in the attitudes of bankers and entrepreneurs. While the bankers are averse to risk, the entrepreneurs are risk takers; the bankers have a short-term outlook and seek an immediate return, while the entrepreneurs aim for returns, both pecuniary and other, in the long term; for the bankers, guarantees are key to obtaining financing, while for the entrepreneurs it is of paramount importance to seize opportunities, and the acceptance of a loan request must be based on the project and not on guaranties.

Also, the bankers suspect that the entrepreneurs lack transparency in their loan request and in the utilization of the funds obtained while the entrepreneurs complain that their business risk is overvalued, resulting in financing conditions that are too harsh thereby diminishing their competitiveness. This observation has also been made in countries other than those listed above, but to different degrees, as demonstrated in the following studies. The cautious attitude of Malaysian bankers toward SMEs can be explained by the fact that they at times consider these enterprises as nonperformers (Rahman *et al.*, 2003). For Belgian bankers, the SMEs present superior risks, given the differences between the objectives of management and those of the bankers, among other things (Janssen and Wtterwulghe, 1998). For their part, the bankers of South Africa are less inclined to finance SMEs because of their high level of risk and the weakness of their expected returns (Pretorius *et al.*, 2003). The lenders also invoke the fact that the time spent evaluating a file must be proportional to the return they can draw from the transaction, which often places entrepreneur and banker at odds because the urgent needs of the first to ensure the company's development are not as important a preoccupation for the second.

Thus, it seems important to develop effective and efficient methods for measuring the borrower's risk that take into account all SME dimensions, including their intrinsic qualities, that could be pertinent indicators of their potential. We therefore endorse the position of Allegret (in Chanel-Reynaud and Bloy, 2001) who affirms that: "(…) the approach adopted by the banks within the framework of their financial diagnosis is unsuitable to the context in which enterprises, in particular the SMEs, currently evolve. In this way, the new financial diagnosis of an enterprise must be capable of taking into account the turbulence and recurring bumps that have affected enterprises since the early 80;" thus, the need to leave the usual framework in order to apprehend the overall

risk of the enterprise. The authors refer here to the financial framework usually used by lenders to determine the risk of an enterprise.

Preceding studies suggest that if we succeeded in developing an all-inclusive index of the overall risk of an SME, the lenders would find it easier to make rapid and objective decisions based on the reality of the business. Because such an index would reflect the body of risks, management could not reproach the financial system of an overvaluation of their risk, and thus of imposing financing conditions that they consider to be too harsh.

And yet, there are few models that allow evaluation of the total risk of a small enterprise. In banking circles, we often make use of "financial" models or models based in great measure on information taken from financial statements, since these are considered more objective than all other kinds of information (see Lévy and Sauvage, 2003 for the quotation system of the Banque de France; Müller, 2003 for Switzerland; St-Pierre, 2004 for Canada). However, we do not take into account the fact that the financial information does not reflect the structure of the enterprise, the quality of its business practices, or the various risk factors that can affect its performance from one day to the next, perhaps even its very survival. Risk is a "prospective" concept of a future event apt to hinder the realization of a particular objective (Hillson, 2004; Barthélémy, 2000). For a lender, risk is considered a threat and is linked with the event or situation that would prevent the enterprise from meeting its financial obligations. But, this event is rarely apparent in the financial statements. The fact that the future of the business rests on a key employee, or on a recent innovation, the decision of the enterprise to work with a concentrated or a diversified clientele, the use of avant-garde or outmoded technologies are some of the situations or events whose consequences are only reflected in the financial statements once they are reality, i.e. when it is too late to intervene.

Our study is intended first and foremost to be exploratory; it consists in verifying if an all-inclusive risk index such as the accounting beta, already tested in large and small publicly held corporations, can be considered as an overall measure of SME risk. In the present study, we wish to pursue the reflection that Vos (1992) initiated several years ago in his study on the SME accounting beta in which he invited researchers to work to better understand and develop specific measures of risk in unlisted businesses.

We will review in the next section the results of certain studies on the use of the accounting beta as a measure of risk in unlisted businesses. We will then summarize the principal factors impacting total SME risk that serve to define our empirical model. We will close with an analysis of the results as well as the conclusions and the limits of this research.

Risk assessment in unlisted businesses
The accounting beta as a measure of the overall risk in an SME
The financial literature suggests that the expected return on an asset (R_j) depends on a risk-free rate that compensates the investor for the delay in his consumption over time and for the loss in purchasing power (R_f), and a premium linked to the business and financial risks of the investment. This premium is determined by the amount of risk taken by the investor (β_j) that multiplies the price of each unit of risk ($R_m - R_f$). This relation, well known in finance and described by the Capital Asset Pricing Model (CAPM), can be expressed as:

$$R_j = R_f + \beta_j(R_m - R_f)$$

However, several researchers maintain that certain characteristics specific to SMEs impose limits on the pertinence of applying the CAPM in the context of these enterprises. Indeed, the CAPM rests on hypotheses that are only marginally realistic when applied in the context of privately held corporations (Khadjavi, 2003). The model assumes in this way that unsystematic risk can be eliminated by the diversification of the portfolio of the investor averse to risk, which implies that the total risk reduces to systematic risk. Now, the literature on venture capital seems to affirm that the specific risk occupies a particularly important place in unlisted corporations (Gompers and Lerner, 1999) because of the limited capacity of their owners to diversify their investment. The high cost of external funds, the investment of a large part of their wealth, and their total involvement in the management of their business constitute an obstacle to the diversification of their portfolio. Moreover, the nonmonetary benefits of control and the underestimation of the risks can, according to Moskowitz and Vissing-Jorgensen (2002), explain the lack of diversification by the entrepreneurs. This absence of diversification of human and financial capital in SMEs (McMahon *et al.*, 1993) implies that the expected returns are linked to factors other than those covered by the systematic risk. However, this does not invalidate the application of the CAPM to the SMEs, but necessitates certain adjustments in the components of the model (Vos, 1992; McMahon *et al.*, 1993).

The risk-free rate (R_f) is estimated from the return on stock considered safe in the economy, such as the return on federal bonds whose term is equivalent to the period of the investment, while the price of each unit of risk is a function of the spread between the return of a market portfolio or one made up of shares that reflect the whole of the economy (R_m) and the risk-free rate. When the enterprise shares are traded on the stock exchange, the risk coefficient (β_j) that measures the systematic risk is relatively easy to estimate subject to certain hypotheses, but it is quite different with the shares of private companies (McMahon *et al.*, 1993). In that case, we can use two different approaches for its estimation. We can resort to the stock exchange data of a company with similarities to the firm studied, and calculate its beta coefficient. A regression between the return obtained for this share and the returns obtained for a market portfolio will allow the determination of an approximate beta coefficient. When required, a correction for the debt difference between this enterprise and the private corporation could be made. However, one of the limits to this method is the difficulty in finding a firm really similar to the SME to be evaluated. Another way of estimating this coefficient is to utilize the accounting data published regularly by the enterprises. The coefficient thus obtained is the accounting beta[1]. The advantage in this method is that it takes into account directly information on the firm, thus its intrinsic risk factors, which is not the case with the preceding method. However, the literature does not indicate which risk factors are taken into account by the accounting beta, which is what we propose to verify in the present study.

Vos's (1992) study is among the very few where the adequacy of the accounting beta in measuring the total risk in unlisted businesses was tested. As in several other studies (Ball and Brown, 1969; Beaver *et al.*, 1970; Beaver and Manegold, 1975; Ismail and Kim, 1989), his results show a positive correlation between the market betas and the accounting betas in small public corporations for two of the three years covered by the study. Vos examined the risk-return relation in a sample of 65 public corporations and 44 private corporations in New Zealand. He found that there is greater variance in

accounting betas among private companies than is the case with public ones. Moreover, they are not linked with accounting profit in any significant way, while this relation is significant in the case of public corporations. The author then affirms that the accounting beta seems to be an incomplete measure of risk for SMEs; he suggests the development of a new model that allows the return of a private corporation to be linked to various components of risk among which, in an explicit way, a specific premium for the risk linked to the company that the investor cannot diversify. Furthermore, Vos (1992) invites researchers to try to better define SME risk, which is what we propose to do by examining the risk factors associated with the accounting beta.

The various components of risk in SMEs

It would seem that no commonly accepted definition of risk can be extracted from the literature; there is also little agreement on how to measure it. The comprehension of risk by researchers differs with the objective pursued, the utilization hoped for, and the type of organization studied. This may be why models of risk evaluation are often incomplete when attempting to estimate the total risk of a company. In an SME context, determining the elements of total risk is relatively complex because of their great heterogeneity and the difficulty in separating property from management. The entrepreneurs often have objectives that are implicit (Julien and Marchesnay, 1996), very variable (LeCornu *et al.*, 1996), and at times unique (Naffziger *et al.*, 1994), which will influence their management practices and render SMEs difficult to compare with one another. The literature contains a range of models for diagnosing risk that deal with this SME heterogeneity by adopting specific points of view like those of the lenders and managers (St-Pierre, 2004; Aubert and Bermard, 2004). Given the point of view adopted, these models identify elements of risk that they attach to generic dimensions. To better grasp the risks that confront the SME, it is important to follow a systemic approach and to consider the points of view of different authors that are often complementary, as we can see in what follows.

In a study on bankers, Wynant and Hatch (1991) recognized that the measure of total risk of the borrower's credit by the banker constitutes a complex task and depends on several factors. According to them, the total SME risk can be divided into: business risk (threat of the environment, lack of adequate skills and resources within the company, etc.), influenced by industry and market conditions, the firm's antecedents, its size, and the fitness of the management team; and financial risk (debt structure relative to revenue).

Similarly, Twarabimenye (1995) defined the criteria for evaluating loan-specific risk by bankers. The author identified three types of risk encountered by SMEs: the managerial risk (level of management qualification, planning for the changing of the guard, degree of managerial commitment); the macroeconomic risk (tendency of the GDP, anticipated return of the industry); and the financial risk (profitability level, debt load, asset productivity, level of working capital, and value of the guaranties).

Carlton (1999) is also interested in the identification of as complete a typology as possible and consolidates this information in a schedule of risks with which a business must deal: the strategic risks (bad marketing strategy, etc.), the financial risks (cash flow problems, etc.), the operational risks (design errors, sabotage, etc.), the business

risks (problems with suppliers, disrespect for legal circumstances, etc.), and the technical risks (equipment problems, etc.).

To determine a risk-related premium applied to SMEs, Cotner and Fletcher (2000) identified five factors each of which is made up of at least two elements of risk. The revenue related risk factor is composed of the level, variability, and growth rate of sales. The operational risk factor is linked to the level of the fixed exploitation costs. The financial risk factor is linked to the coverage of the interests, the capacity for indebtedness, and the composition of the debt. The management and control risk factor is linked to the confidence of the investors in the management team, to the organizational experience, and to the type of control (family property, minority stockholders, etc.). Finally, the strategic risk factor considers the position of the firm relative to its suppliers, its clients, the existing market competitors, and the threat of new inputs and that of substitutes.

St-Pierre (2004) recognizes that the total risk of the enterprise depends on the business or operational risk, the financial risk, and the entrepreneurial risk. The business risk is made up of the management risk (lack of knowledge about management and lack of human resources, insufficiency of resources devoted to management, etc.), commercial risk (potential market, possibility of losing an important client, reaction of competitors, fluctuations in demand, distribution difficulties, etc.), and technological risk (production structure, utilization of an inadequate technology, absence of technological development monitoring, absence of R&D or continuous improvement activities, etc.). The financial risk is related mainly to capital structure, to the identity and origin of the financial partners, to the financing contracts (redemtion dates and restrictive clauses), and to the capacity for reinvestment by the current owners. Finally, the entrepreneurial risk depends mostly on the personality of the director, his aversion to risk, and his personal objectives with regard to the development and organization of his business.

These different models reflect the multidimensional character of the enterprise and provide information on the various elements that make up the total risk of the SME, i.e. the business risk and the financial risk. In Table I, we propose a synthesis of these risk elements that we have classified as the management risk, the commercial risk, the technological risk, the financial risk, and the entrepreneurial risk.

Management risk	Lack of management tools (ex. cash flow budget), absence of a board of directors or management committee, absence of a designated head for each of the company's functions
Commercial risk	Competitive position of the company; actual and potential markets; competitor reaction; demand fluctuations; distribution difficulties
Technological risk	Problems with suppliers; lack of production personnel training; problems with the equipment; inadequate production structure, absence of technological development monitoring, absence of R&D or continuous improvement activities
Financial risk	Profitability level; debt load; interest coverage; capacity for indebtedness; financing contracts (redemption dates and restrictive clauses); capacity for reinvesting by the current owners
Entrepreneurial risk	Age, experience, and training of the owner-manager

Table I.
The total risk components of SMEs

The hypothesis we propose to verify can then be written as:

$$\text{Accounting beta} = f\,(\text{Risk}_{\text{management}};\ \text{Risk}_{\text{commercial}};\ \text{Risk}_{\text{technological}};$$
$$\text{Risk}_{\text{financial}};\ \text{Risk}_{\text{entrepreneurial}})$$

where the measurement of the accounting beta is equivalent to that used by Vos (1992):

$$\text{Accounting beta} = (\Delta\text{ROE}_i/\Delta\text{ROE}_m)$$

where:

ΔROE_i = the variation in the return on the stockholders' assets (capital) of the enterprise based on two successive periods;

ΔROE_m = the variation in the return on the stockholders' assets (capital) of a market (sectorial) portfolio based on the same two successive periods.

Methodology and results

Description of the sample used

The data used in the present study were taken from the database PDG® containing information on more than 300 Canadian "private" manufacturing SMEs having between 10 and 450 employees. The information extracted had to do with, among other things, the personal details of the entrepreneur (age, experience, willingness to share control of his company, desire for growth, strategic orientation), business practices utilized by the company in management and human resources, production, market development, control, production systems utilized, innovation and export activities, strategic alliances, investments made in the management and production technologies, as well as the financial statements of the last five years. After eliminating the observations containing missing data, the final sample on which our study rests involves 128 SMEs. Table II lists some characteristics of the sample where we can see some diversity, as indicated by the dispersion in the data.

Analysis of the results

To verify the hypothesis of this research, we have used a two-step approach. The first step in our procedure consists of identifying the variables that contribute the most to the definition and explanation of the overall risk of the enterprise. Since the specific determinants of each of the components of the overall risk of SMEs are not that well identified in the literature, we have decided to use a great

	Average	Standard deviation
Age of the enterprise	23.6 years	18.0 years
Number of employees	75	71
Sales (in Canadian $)	10,025,151	10,078,087
Export rate (%)	23	28
% of sales to the three principal clients	43	25
Bank indebtedness ratio (%)	36.22	17.13
Gross profit margin (%)	25.04	9.98
Net profit margin (%)	4.37	4.36

Table II.
Some of the variables that describe the sample

number of the indicators linked to the risk factors identified above (see Table I) and included in the database, i.e. the elements that can affect management risk, commercial risk, technological risk and entrepreneurial risk. To reduce the large number of indicators to a few principal dimensions reflecting the types of risk, we have started with factor analysis.

The factor analysis that allows validation of the construct (Kerlinger, 1986) is used to reduce the number of risk indicators into constructs representing the different types of risk the enterprise is confronted with. These constructs are then used in a multiple regression analysis, where the accounting beta is the dependent variable. Factor analysis is sensitive to sample size. In the present study, each type of risk is examined separately. In this way, for example, the reduction of the indicators that represent the commercial risk as a construct is carried out independently of the indicators of management risk. We have respected the ratio 5:1, i.e. a minimum of five observations for each indicator of this construct (Tabachnick and Fidell, 1989). All the factors identified have an adequacy index of the factorial solution measured by Kaiser-Meyer-Olkin (KMO) that exceeds 0.5, which complies with the suggestions of Hair *et al.* (1995) who note that a KMO less than 0.5 is unacceptable. Table III shows the components of each of the risk factors and their saturation coefficients, which measure the strength of the bond between the indicator and the factor associated with it. The results shown indicate that the management risk is associated primarily with the utilization of management tools in the enterprise (budgeted financial statements, cash flow) and the presence of a board of directors. Commercial risk is associated with the follow-up of current and potential clients as well as competitor analysis. Technological risk is primarily associated with the training of foremen and production employees and

Type of risk	Variables	Saturation coefficient $(n = 128)$
Management risk	Use of budgeted financial statements	0.66560[a]
	Presence of a board of directors	0.62094
	Use of a cash flow budget	0.60152[a]
	Designated head for the various functions	0.45796[a]
	Training of managers	0.41768[a]
Commercial risk	Market study of current clients	0.82218[a]
	Market study of potential clients	0.79104[a]
	Competitor analysis	0.70292[a]
Technological risk	Training of foremen	0.79146[a]
	Training of production employees	0.71697[a]
	Collaboration with a supplier for production	0.55090[a]
	Collaboration with a client for production	0.51624[a]
	Collaboration in R&D	0.49134[a]
Financial risk	Interest coverage ratio	0.89757[a]
	Short-term debt	− 0.77272[a]
	Level of liquidities	0.75571[a]
Entrepreneurial risk	Age of the owner-manager	0.83231[a]
	Experience in management	0.77503[a]
	Training of the owner-manager	− 0.45847[a]

Note: [a] $p < 0.0001$

Table III.
Factor analysis in
principal components

collaboration with different partners. Financial risk is associated with the interest coverage ratio, the short-term debt, and the level of liquidities. The entrepreneurial risk is expressed primarily by the age and experience of the owner-manager.

The second step in our procedure consists of introducing into a regression analysis the five factors retained from the factor analysis. The objective of this procedure is to verify the related influence of these risk factors on the accounting beta. We have tested three regression models, with the results shown in Table IV. The first model demonstrates the high degree of significance (0.0001) of the factor "financial risk" in the explanation of the accounting beta. The importance of this factor is verified by its contraction in regressions (Model 2), where we can see that the adjusted coefficient of determination goes from 28.46 percent to an insignificant 1.76 percent (Fisher Test). Finally, as seen in the third model, this factor alone among those retained contributes the better part of the variance in the coefficient Beta (0.2713).

The results shown in Table IV do no allow the risk indicators that best explain the accounting beta to be identified with precision. We have retained the indicators making up the risk factors (Table III) for a second regression analysis to verify their influence on the accounting beta. The stepwise regression method is used in order to identify only those independent variables (risk indicators) that are significant in explaining the accounting beta.

Model 4 in Table V shows the influence of these variables on the accounting beta. The adjusted coefficient of regression obtained is 0.6204, clearly greater than that obtained with the use of factors (0.2846). The level of liquidities representing the financial risk is the most significant variable of the model; to this is added the interest coverage ratio, the training of managers, and the collaboration with clients on matters of production. To more fully appreciate the role of the measure of the liquidities and of the interest coverage ratio that represent the financial risk in the explanation of the accounting beta, we have eliminated them from Model 5; we then observe a substantial decline in the adjusted coefficient of determination (from 0.6204 to 0.0433). These results suggest the importance of the financial risk, as measured by the level of liquidities and the interest coverage ratio, and the very weak impact of the indicators of the business risk and the entrepreneurial risk in the determination of the accounting beta. This is further confirmed in Model 6, where the liquidity level and the interest coverage ratio alone account for more than 58 percent of the observed variance in the accounting beta.

	Model 1		Model 2		Model 3	
	$n = 128$	Probability	$n = 128$	Probability	$n = 128$	Probability
Ordinate at the origin	0.07101	0.3524	0.0094	0.9154	0.06448	0.3961
Factor: financial risk	0.53664	<0.0001			0.53304	<0.0001
Factor: management risk	0.03359	0.6795	−0.03596	0.7035		
Factor: business risk	0.08034	0.3206	0.14906	0.1141		
Factor: technological risk	−0.19282	0.0212	−0.18804	0.0543		
Factor: entrepreneurial risk	0.06319	0.4005	0.00051	0.9953		
Fisher test (F-value)	11.10	<0.0001	1.57	0.1870	48.28	<0.0001
R^2	0.3128		0.0485		0.2770	
Adjusted R^2	0.2846		0.0176		0.2713	

Table IV.
Relation between some risk "factors" and the accounting beta of the SMEs

	Model 4		Model 5		Model 6	
	$n = 128$	Probability	$n = 128$	Probability	$n = 128$	Probability
Ordinate originally established	−1.38749	<0.0001	0.15103	0.5201	−1.62603	<0.0001
Liquidity level	2.13746	<0.0001			2.17279	<0.0001
Interest coverage ratio	−0.28454	0.0535			−0.29170	0.0532
Adjusted management experience	0.01034	0.1485	0.01643	0.1457		
Training of managers	−0.24737	0.0099	−0.21448	0.1527		
Collaboration with clients for production activities	−0.25430	0.0648	−0.46524	0.0316		
Fisher test (F-value)	42.51	<0.0001	2.92	0.0370	92.32	<0.0001
R^2	0.6353		0.0659		0.5963	
Adjusted R^2	0.6204		0.0433		0.5898	

Table V.
Relationship between risk
indicators and the
accounting beta of the
SMEs

All of the results obtained in the context of this exploratory analysis lead to the observation that the accounting beta does not seem sufficient as a measure of the overall risk of SMEs, being linked very closely to the financial dimensions of the enterprise. As we have already stated, these dimensions are not prospective and do not allow anticipation of possible problems in the enterprises that could help the lenders to detect future bad debtors. This discussion on the capacity of financial data to measure "overall" the risk of SMEs is as pertinent as that in use for about twenty years according to which the financial statements of the enterprises yield significant limits on the evaluation of their performance.

In the early 1980s, a certain number of authors criticized accounting models to measure the performance of organizations in a turbulent and highly competitive business environment (Gomes *et al.*, 2004; Kennerley and Neely, 2003; Said *et al.*, 2003; Medori and Steeple, 2000). Cumby and Conrod (2001) added that the limits of accounting or financial measurements are even more important or flagrant for innovative companies, where value is strongly linked to intangible assets and intellectual capital (Amir and Lev, 1996). We thus criticize measurements derived from financial statements by the fact that they are historic and offer little indication on future performance, not taking into account intangible elements of the value of an enterprise and not being tied to the strategy pursued by the management (Kennerley and Neely, 2003; Ittner *et al.*, 2003; Kaplan and Norton, 2001).

Conclusion

The development of a model allowing a synthetic risk rating to be defined for privately-held companies is a subject that has not attracted the attention of researchers these last few years. On the other hand, it is a subject of great importance to the extent that such a rating would permit a more acute definition of the real risk of a privately held corporation and, consequently, eventual access to external financing and financing conditions.

The results obtained in this study lead to the observation that the accounting beta does not capture all the dimensions of SMEs' risk but focus almost exclusively on the financial information. As emphasized by Eccles (1999), the financial data cannot yield all the dimensions of enterprise performance. Indeed, quality, client satisfaction, innovation, and market share are elements of strategic information that better reflect the competitivness and the performance of an enterprise, but that do not necessarily find expression in the income earned. Also, Cumby and Conrod (2001) remind us that the financial performance "sustainable" in the long term is attributable to nonfinancial factors like client loyalty, employee satisfaction, internal processes, and the degree of innovation of the business. Ittner and Larcker (1998) agree completely by affirming that the accounting data cannot take into account the investment in intangible assets such as client satisfaction. The same remains true for the factors of vulnerability or the risk of enterprises that we find difficult to comprehend from a prospective point of view through financial statements.

Our conclusions go beyond those of Vos (1992), who suggested that it was necessary to add a "size premium" for privately-held corporations. Finding inspiration in the literature on the failure of enterprises, we suggest adding under certain conditions to the financial data nonfinancial information related to the organization of the business, its ways of doing things, the particularities of its market, its decision-making structure,

and the indicators of vulnerability that could "explain" the financial data. Making greater use of this nonfinancial information, we can also counter the problems related to the manipulation of financial statements, to their historic and temporal character.

In a globalization context where great pressure is constantly applied on SMEs for an increased use of new management and production technologies, continuous innovation, and the adoption of good business practices, time will play an increasingly critical role. Thus, a "rapid" evaluation of risk using an overall and prospective model could certainly contribute in facilitating access to external financial resources that could be essential to their development, within waiting periods that take into account the demands of competitiveness.

Limitations and further research

The principal limit of this research is its external validity. The sample is non-probabilistic and may not be representative of all manufacturing SMEs. Other studies on other samples are needed to validate our conclusions. Another limit of this research concerns measurement of non financial risk indicators that are to be explored more deeply to assure their validity.

Being essentially exploratory, this research may be extended to further our understanding of components of SMEs' risks and try to find an all-inclusive index that could shorten delays in decision making. We do not know for sure if accounting beta is not an appropriate measure. The results presented here are too partial to formulate this conclusion. We must increase the number of nonfinancial being helped by literature on bankruptcy and new literature on risk management inspired by project management concepts (Hillson, 2004), to capture more globally all dimensions of risk. Also, to further investigate the components of overall SMEs' risk we should conduct empirical study on a sample of firms having expressed financial difficulties and explore links between nonfinancial variables and financial results. Finally a possible lag effect may exist between non financial variables and financial ones that should be studied on a longitudinal basis.

Note

1. The accounting beta can be obtained by dividing the variation in the return on capital of the business based on two successive periods by the variation in the return on capital of a market (sectorial) portfolio based on the same two successive periods.

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(See opposite page for the Appendix.)

Appendix

Variables	Measures
	Management risk
Utilization of budgeted financial statements	Utilization of budgeted financial statements, yes = 1 no = 0
Presence of a board of directors	Presence of a board of directors, a consultative committee, or a management committee, yes = 1, no = 0
Utilization of a cash flow budget	Utilization of a cash flow budget, yes = 1, no = 0
Positions with a designated head	Percentage of management positions (production, marketing/sales, finances/accounting, quality assurance, R&D, and management of human resources) assumed by a designated head other than the president
Training of managers	Training activities for managers (other than the director) (average number of hours per month). No training = 0, training from 1 to 5 hours = 1, training from 6 to 10 hours = 2, training for 10 hours or more = 3
	Business risk
Market study of current clients	Frequency of market studies of current clients: 1 (weak) to 5 (strong)
Market study of potential clients	Frequency of market studies of potential clients: 1 (weak) to 5 (strong)
Competitor analysis	Frequency of competitor analysis: 1 (weak) to 5 (strong)
	Technological risk
Training of foremen	Training activities for foremen (team leaders) (average number hours per month). No training = 0, training from 1 to 5 hours = 1, training from 6 to 10 hours = 2, training of 10 hours or more = 3
Training for production employees	Training activities for production employees (average number of hours per month). No training = 0, training from 1 to 5 hours = 1, training from 6 to 10 hours = 2, training of 10 hours or more = 3
Collaboration with a client for production purposes	Binary variable; if yes = 1, no = 0
Collaboration with a supplier for production purposes	Binary variable; if yes = 1, no = 0
Collaboration in the area of design and R&D	Collaboration in the area of design and R&D with at least one business partner (purchaser, research centre, teaching institution, other SME, competitors, suppliers, clients), if yes = 1, no = 0
	Financial risk
Interest coverage ratio	The ratio of earnings before interest and taxes to interest costs
Short-term bank indebtedness	(Credit margin utilized + Portion of the long-term debt due during the year)/total assets
Liquidity level	Ratio of earnings plus sales to depreciation
	Entrepreneurial risk
Training of the director	Training activities for the director (average number of hours per month). No training = 0, training from 1 to 5 hours = 1, training from 6 to 10 hours = 2, training of 10 hours or more = 3

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