

Continued Entrepreneurship and Small Firm Growth

Per Davidsson

The label entrepreneur is often used for the founder of a firm. Do owner-managers of small firms then remain entrepreneurial? Do they actually innovate, expand, and start additional ventures?

While there are clear signs that small firms are of increasing importance to the economy, several studies suggest that the willingness among small firm managers to pursue goals for growth and development is limited. At the same time, some of them certainly continue to behave entrepreneurially.

This empirical study focuses on explanations of continued entrepreneurship – and its absence – in small firms. Some of the issues addressed are:

- Which characteristics of the manager, the firm, the industry, and the environment promote, and which restrain small firm growth?
- Is it possible to delineate groups of more and less entrepreneurial small firms?
- Does the high-tech category represent a new and more entrepreneurial type of small firm?

More than 400 managers of small firms were interviewed for this study. Data on structural factors were collected from external sources. While using micro-level data, the study aims at building knowledge that is useful at the macro-level.



ISBN 91-7258-281-2

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AKADEMISK AVHANDLING

som för avläggande av ekonomie
doktorsexamen vid Handelshögskolan
i Stockholm framlägges till offentlig granskning
fredagen den 2 juni 1989, kl. 10.15
i sal Ragnar å högskolan, Sveavägen 65
Stockholm 1989

Continued Entrepreneurship and Small Firm Growth



STOCKHOLM SCHOOL OF ECONOMICS

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A Dissertation for the Doctor's Degree
in Business Administration
Stockholm School of Economics 1989

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ISBN 91-7258-281-2

UDK 658.114

608.2

65.016

658.017.3

334.746.4

159.9

Preface

Conducting a research project and running one's own small firm actually have a lot in common. Both often start with an idea about a new combination of existing pieces or fragments of knowledge. As most presumptive researchers and business founders are not particularly wealthy, there is an immediate need for external sources of finance. I would therefore like to acknowledge my gratitude to Ruben Rausing's Foundation for Research on New Enterprise and Innovation for seed money (pilot study and part of the main study), and Jan Wallander's Foundation for venture capital (main study). Their financial support made the research presented in this book possible.

Researchers and business founders appear to have similar motivations. Monetary incentives tend to be secondary, which is sound since the financial pay-off is uncertain. Instead, a desire for independence or autonomy, often combined with a certain need for achievement, appear to be important for both groups.

Despite independence being an often stated reason for starting one's own firm, all "independent" small firms are heavily dependent on their environment. The same goes for researchers. In this regard I feel I have been in a privileged position. Advisors, teachers, and colleagues who generously shared their knowledge and provided encouragement were always there.

First and foremost I am indebted to my thesis advisor, Professor Karl-Erik Wärneryd. Rather than pushing his own ideas, he has throughout the process given hints that helped me refine my own thoughts. At least that was what he made me feel, which is clearly a sign of a good advisor.

I am also indebted to my co-advisors, Professor Claes-Robert Julander and Associate Professor Bo Sellstedt. They complemented Karl-Erik's advice in a very fruitful way. Besides the dissertation committee, I would like to thank Richard Wahlund, Karin Brynell, Marie Bergholm, Carina Holmberg, Odd Fredriksson, Associate Professor PG Holmlöv, and Professors Erik Ruist, Claes Fornell, and Lennart Sjöberg for valuable comments, advice, and encouragement at various stages of the process. Probably without realizing it, Rune Castenäs, Sari Scheinberg, and Professor Ian MacMillan in important ways sparked my motivation to go on.

Anders Åberg, research manager, and Ingemar Essén, former CEO of The National Swedish Organization of Small Businesses, also made a seemingly small, yet very important contribution. I am convinced that their supportive introductory letter had a major impact on the respondents' willingness to participate and hence on the quality of the study. I am also grateful to Reijo Ljungberg at Statistics Sweden, who gave me access to industry-level data.

A similarity between researchers and small firm managers not yet mentioned is that the potential freedom these occupations offer tend to be illusory. In part the tendency to work "too much" is explained by the fact that the work itself is so rewarding. At least in my case an additional explanation is that I, like many small firm managers, have a difficulty in delegating. Despite this I actually managed to get indebted to Anja Gonzales and Susanna Molander, who prepared some of the figures, and to Lut Guyens, who compiled the reference list.

A small firm is often a family business. In certain respects this is true also for this research project. Thus my mother, Inger Davidsson, took active part by checking my English. As I made more than a few changes after her reading the manuscript, the remaining mistakes are likely to have been beyond her control.

My son Carl, then 17 months old, painted the cover illustration. Hanging on the wall right above my computer, this picture cheered me up in moments of despair. It may also serve to illustrate the interplay between internal and external determinants of the result of any creative process, including entrepreneurship and research. While the masterpiece is no doubt Carl's own creation, the fact that others restricted his choice of colors probably improved its appearance.

Some six months ago I planned the following lines for this preface: "I will not dedicate to my wife or kids something they would find utterly boring. Neither will I conform to the odd practice of thanking them for having accepted my neglecting them, because I do not think I did. Instead, I would like to thank them for making life great."

I still agree with the opinions voiced in the quotation and I followed most of the intentions. Carl and Malin did not loose their father in the process, but I must admit that their mother's husband has not been around much in the last few months. Kerstin's understanding and encouragement have been wonderful and admirable. While I remember having claimed that $Q71 = 0$ is the most appropriate life situation for conducting this kind of work, I no longer believe this is true. This project is a clear case of $Q71 = 3$, and I hope I will be able to compensate for that within the near future (the solution to this riddle will be revealed to the careful reader).

Finally, this book would not have existed without the participation of 468 small firm managers. Of all resources needed to bring this product to the market, their co-operation was probably the most indispensable one. I sincerely hope there was something in it for them.

Stockholm in April, 1989

Per Davidsson

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1. An Economic-Psychological Approach to Continued Entrepreneurship in Small Firms

1.1 Introduction

The research presented in this book has two basic origins. First, there was my early interest in related matters; as an undergraduate I took optional courses in new product development and small business management, and also wrote a thesis on the diffusion of innovations. Second, as a doctoral student I soon learned about George Katona's work on discretionary economic behavior.

One of Katona's hobby-horses was the simple yet immensely important observation that in conditions of relative affluence a very large proportion of all economic behavior is discretionary; i.e. not forced in a certain direction by external pressures (Katona, 1974; 1975; see e.g. Wärneryd, 1988a; Vanden Abeele, 1988). Katona's position was that economic behavior is contingent on an ability to act as well as a willingness to do so. He emphasized that both can be measured.

As these factors differ between individuals, the responses to economic stimuli will not be uniform. To explain and predict economic behavior, knowledge about them is needed. At the same time, the investigation of individual differences can be pursued to such a level of detail that practically no generalizations can be made. The quest is thus to find a meaningful level of disaggregation, so that micro-studies are helpful at the macro-level.

Most of Katona's work concerned consumption and saving, but I felt that his ideas would be applicable to my areas of interest as well. This conclusion led to the conduct of a pilot study on growth willingness in small firms, comprising literature studies as well as analyses

of personal interviews with eleven small firm managers supplemented with economic data on their firms (Davidsson, 1986).

The pilot study largely confirmed the meaningfulness of highlighting discretionary behavior. The impression was the following: Small firm managers are often not under an economic pressure that is severe enough to result in uniform responses to economic stimuli. Neither are they greedy enough to disregard other personal goals in their pursuit of profit. This does not mean that running a firm is easy living. Most of the managers work hard for a modest return (cf. Wärneryd et al, 1987). What it means is rather that if continued development of their firm is not necessitated by a threat to its very survival and thus to the support of their family, small firm owner-managers may choose not to exploit economic opportunities.

Their behavior certainly is influenced by external factors. At least to some extent they are also aware that such is the case. However, they differ considerably as regards what external conditions they take into consideration, in their judgement of the appropriate response to these conditions, and in their ability to achieve the desired result.

The pilot study gave the impression that small firm owner-managers to a relatively low degree conform to the received view of the entrepreneur as a daring, innovative, and business-minded person. A few of the interviewees did, however, match that description. These more and less "entrepreneurial" individuals also appeared to differ systematically along other dimensions in a way that would be worthy of examination in a broader study.

Clearly, another researcher would have chosen another problem to study. Given the problem another approach to it would have been chosen, as regards research questions as well as theories and methods. Even given the same "tool-box", there is just no end to how different this book would have appeared had it been written by another person. Hence, this book is the result of the triggering or supporting influence of external stimuli - Katona's ideas, access to finance, and many, many others - mediated by the personal interests and abilities of the author.

1.2 The Problem

Setting up a new business firm is an entrepreneurial act. But what happens afterwards? Why do some firms continue to develop and expand, whereas others remain small and behave conservatively? This is the main question to be addressed in this study.

The literature on small firms adds up to a rather divided picture as regards their entrepreneurial efforts. On the one hand, data from various countries clearly show that the importance of the small business sector to the economy is great and increasing (Alderin, 1986; Ettinger and Weereld, 1988; Kirschhoff and Phillips, 1987). In addition, there are good theoretical reasons to believe that entrepreneurs, interpreted as creators of development, are well represented in small companies.

For example, Arrow (1983) discusses certain differences at the organizational level between small and large companies and concludes that a specialization develops such that a disproportionate amount of radically new projects will be taken care of by small companies, as long as development costs are reasonable. Empirical data presented by Scherer (1984) seem to confirm this pattern.

Others have focused on characteristics of individuals rather than on those of organizations. Ronen (1983) discusses the phenomenon of mutual self-selection. That is, the large, bureaucratic organization opposes radical change and the entrepreneur shuns the large, bureaucratic organization. Gilad et al (1986) argue that a disproportionately large amount of new ideas could be expected to emanate from small companies solely on the basis of the entrepreneurial way of gathering information. McClelland (1961) predicted an overrepresentation of entrepreneurial people among small business managers because that role would suit people who are high in Achievement Motivation.

On the other hand, quite a number of studies have indicated that small business managers' willingness to pursue continued development of their firms may be rather limited, once they are established on the

market (e.g. Beckérus and Roos, 1985, Boswell, 1972; Deeks, 1976; Golby and Johns, 1970; Mayer and Goldstein, 1964; Utterback and Reitberger, 1982; and several others).

This reluctance apparently pertains also to situations when continued development is regarded as both feasible and profitable. For example, in a large Swedish survey of some 1400 companies two thirds of the managers stated that there was room for profitable expansion. Of those who perceived such opportunities, 50 percent said they would not try to exploit them (SHIO, 1986).

Thus, from a societal perspective there is reason to believe that the entrepreneurial potential of small firms is not utilized to the full. There is therefore good reason to seek more knowledge about the factors that promote and deter entrepreneurship in small firms.

From a theoretical perspective such knowledge is needed for strengthening the empirical micro-level basis of theories of entrepreneurship and theories of the firm. From a policy-making point of view, it is helpful when making choices between support to large vs. small firms, active vs. passive support, general vs. selective support, to what extent new venture creation vs. development of existing firms should be promoted, and how such support should be tailored to yield a maximum return to society.

1.3 Purpose

The purpose of this study is to improve our knowledge about entrepreneurial behavior in small firms. The primary focus lies on continued entrepreneurship - and its absence - in existing small firms and among people who have already established themselves as small firm managers. In particular, determinants of growth-orientation will be analyzed, but also other indicators of entrepreneurial behavior are included in the study.

The purpose has been pursued by means of an empirical study based on a survey of a stratified random sample of small firms in four industries, complemented with data from external sources. The design and

the analyses of the empirical study have been guided by a general framework which is based on theory and the results obtained in the pilot study and in previous empirical studies.

1.4 Definitions

1.4.1 The Concept of "Small Firm"

To define the concept "small firm" is more complicated than it might at first seem. Definitions vary between industries, countries, and studies. For practical purposes a definition based on number of employees is often used; in Sweden the limit is commonly set at either 50 or 200 employees. However, calling a broker operation with 50 employees small and a car manufacturer with 500 employees large is quite misleading. Therefore, other quantitative and qualitative criteria are sometimes used.

The so called "Bolton Report", which is to date one of the most comprehensive empirical studies of small firms, arrived at three such criteria. First, the firm should be small in relation to its market. Second, it should be managed by its owner(s) in a personalized way and not through the medium of a formal management structure. Third, it should also be independent in the sense that it does not form part of a larger enterprise and the owner-manager(s) should be free from outside control in taking their principal decisions (Bolton, 1971).

This is, essentially, the kind of "small firm" considered in this book. The empirical study concerns owner-managed firms. The firms are also quite small, having 2 to 20 employees according to the sampling frame. This makes market dominance and formal management structures unlikely.

1.4.2 Entrepreneurs and Continued Entrepreneurship

The interest is not directed at the small firm as such. Instead, the focus is on the small firm manager in his/her role as an entrepreneur, a change agent in the economy.

Unfortunately, there is no consensus on the definitions of "entrepreneur" and "entrepreneurship." Among economists, entrepreneurs are to varying degrees associated with risk-taking, innovativeness, alertness to and exploitation of opportunity, and creation or coordination of firms and markets (see section 2.2.2). Among non-economists the definitions vary even more. Sometimes very broad definitions are given, encompassing ordinary business management as well as "entrepreneurial" behavior by employees (Cole, 1965, McClelland, 1961). In empirical research the terms have been associated predominantly with the start-up of new firms or ownership-management of a small firm, sometimes with innovativeness or success as additional criteria.

Such a wide and varied use of a concept may make it useless. The lack of conceptual clarity makes comparisons of research findings difficult and generalizations dubious (cf. Kets de Vries, 1977; Brockhaus, 1982). Therefore, calls for sharper distinctions have been frequent (Carland, et al, 1984, Harwood, 1982; Low and MacMillan, 1988; Martin, 1982; Sexton and Bowman, 1985).

The confusion between the entrepreneur, the inventor, the investor, and the small business manager could be somewhat clarified with the following distinctions:

1. The entrepreneur may or may not be the creator of a new product or process (inventor). The essential thing is that s/he recognizes the value of an idea and actively exploits it.
2. The entrepreneur exploits ideas through forming and/or expanding (a) business firm(s). Thus, s/he is (at some time) a (small) firm manager.
3. The entrepreneur may or may not bear the (full) financial risk. A passive investor is not an entrepreneur, however radical and risky the idea is. Active involvement is required.
4. All small business managers are not entrepreneurs. To qualify as an entrepreneur, s/he has to be oriented towards and actively pursue change.

In the present context, the last distinction is an important one. In this study, small firm owner-managers are dealt with. They may have more or less of an entrepreneurial inclination, but for a small firm

manager found anywhere along the continuum, factors might be identified which support or hamper his/her propensity to act entrepreneurially. For good reasons, it has been suggested that the entrepreneurial event, rather than the entrepreneur, be the unit of interest.

"This avoids such questions as whether an individual who has carried out one entrepreneurial act is or is not an entrepreneur. ...The event becomes the dependent variable while the individual or group that generates the event become the independent variables, as do the social, economic, political, and cultural contexts. (Shapero and Sokol, 1982, p.77).

This also highlights the need for studies of what happens to new ventures after the start-up phase, i.e. studies of continued entrepreneurship. Except perhaps for survival vs. failure, this is a neglected area in empirical entrepreneurship research. Much more effort has been devoted to the study of personal and other characteristics associated with new venture creation.

This study focuses primarily on growth and growth aspirations in terms of turnover and number of employees. Now, is growth entrepreneurship? The answer to that is contingent on to which extent the manager is free to choose. If economic behavior is discretionary, pursuing continued development of the firm is the more entrepreneurial choice when refraining from doing so is another feasible alternative, just like founding a firm is more entrepreneurial than not doing so.

Some other indicators of continued entrepreneurship will also be considered. These involve a) whether the studied firm is the respondent's first own firm, b) whether the respondent currently runs additional firms, c) production of products developed in house, d) current new product development, and e) geographical market dispersion.

Issues concerning "entrepreneurial origin" will also be addressed. That is, founding a firm rather than inheriting one is considered an indication of entrepreneurship, as is going into business for oneself in the absence of role models.

1.5 Research Approach

The problem will be approached from an Economic-Psychological perspective. Economic Psychology may be characterized as the scientific study of human choice behavior when the choices entail economic consequences (Wärneryd, 1981; for overviews of the field of economic psychology see also van Veldhoven, 1981; van Raaij, 1981; Wärneryd, 1988a).

In comparison with a purely economic approach, Economic Psychology is characterized by emphasis on the use of micro-level empirical data for building so called low-level theory by inductive methods. As compared with a purely psychological approach, Economic Psychology puts more emphasis on the structural variables that influence and restrict individual behavior.

The present study is economic in the sense that certain concepts, variables, and types of explanations are borrowed from economic theories. In addition, the broader perspective is that of the role of entrepreneurship in furthering economic progress.

The approach is psychological in its use of psychological theories and explanations. The role of individuals is in focus. These individuals are of the "flesh-and-blood" kind, having multiple and different motivations that direct their behavior. Also, the empirical approach is of the kind used within behavioral sciences rather than within empirical economics.

In economics, theoretical relationships are regarded as general laws. Empirical deviations at the individual level are a "noise" that is supposed to cancel out in the aggregate. Their underlying causes may therefore be neglected.

Also in economic psychology generalizations are sought for, albeit less broad ones. Individual differences are not regarded as noise. Instead, they act as intervening variables with important, measurable, and predictable effects. In short, negligibility assumptions are replaced by domain assumptions (Musgrave, 1981). In Katona's words:

"Instead of deriving predictions from immutable principles of human nature, the behavioral scientist assumes that under conditions a1, b1, c1 a set of stimuli would elicit one response whereas under conditions a2, b2, c2, the same set of stimuli would elicit a different response. Attitudes and expectations, which as intervening variables modify the response, are subject to change according to time and circumstances. Instead of searching for a single necessary response to change in income, prices, or interest rates, the behavioral scientist studies circumstances under which a stimulus will produce the same or a different response." (Katona, 1974, pp.1-2)

The intervening variables in this study refer to characteristics of the industry and the firm as well as those of the individual. Differences attributable to e.g. characteristics of the industry or the geographic environment will be dealt with by means of subgroup analyses or by including such data as explanatory or control variables in analyses of the whole sample.

While external causes of behavior and outcomes are recognized the chosen approach relies heavily on the assumption that the individual is important, i.e. that the characteristics and motivations of small firm owner-managers have considerable influence on the performance of their firms. In discussing the influence of internal and external forces on small firm growth, Boswell (1972, pp. 67-68) concludes that:

"Barring Carlylean or Marxist extremes, the interplay between personal and economic factors, between internal pushes and external pulls, is hardly less complex in the growth and evolution of businesses than in other historical developments. ... Nonetheless, on balance the argument comes down more on the side of internal pushes than external pulls. First, in a sense founders themselves freely choose the growth situations. After all, they enter these contexts or even initiate them by means of innovation. In the case of a particular firm, therefore, it is their initiative which precedes the other pressures. Second, production, marketing or other criteria may strongly suggest that a firm is too small and badly needs to grow, but if this is actually going to happen, management must recognize the need and they may not do so. In this sense managerial response is necessary for the outside pressures to operate. Third and most important, in practice managerial ambition and ability seem to be a necessary condition for growth; more, they can be a sufficient one."

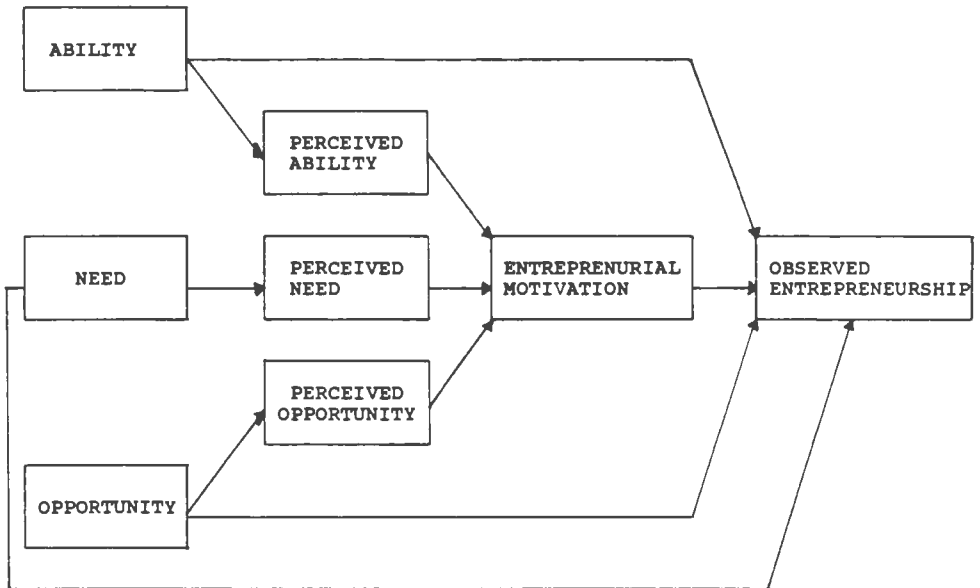
Boswell arrived at this conclusion by studying small firms empirically. Further empirical support for the importance of the individual may be found e.g. in a large-scale Dutch study. Data collected in 1978 were used to predict the position of the firms in 1984. It was found

that one of the most important predictors was the owner-manager's expectations as to the future development of his firm. This subjective estimate proved to be more reliable than objective data like net profits and turnover. Other important predictors were also related to the individual, e.g. the owner-manager's age and data on management techniques (Mok and Van den Tillart, 1987).

1.6 The General Framework

The frame of reference which has guided this study is displayed visually in figure 1.1.

Figure 1.1 The General Framework



This framework - or model - may be regarded as a more detailed version of Katona's notion of willingness and ability as determinants of economic behavior (Katona, 1975). The frame of reference can be summarized as follows:

1. (Continued) entrepreneurial action stems from a deliberate effort towards fulfillment of personal needs and wants. Small firms are not machines; they are operated by people who want to obtain something. Hence, observable entrepreneurial behavior is contingent on Entrepreneurial Motivation. As used here, this term thus refers to the desirability of alternative future states.
2. An important determinant of entrepreneurial motivation is what we may label the Need for (entrepreneurial) action. Growth or new products may be objectively needed to ensure the survival of the firm and/or an acceptable standard of living for the owner-manager and his/her family. But this is not always the case; the need for entrepreneurial action will vary over time and differ between firms/managers. Thus the small firm manager often has freedom to choose whether or not opportunities should be exploited. That is, behavior is discretionary. Under objectively the same conditions, some may judge the current state of affairs as satisfactory, whereas others do not. It is this Perceived Need that directs motivated action.
3. In addition to need, there has to be some Opportunity, external conditions that can be gainfully exploited, to act upon. Again, it is reality as perceived that directs behavior. Humans are not able to take into consideration all relevant external conditions and differ considerably as regards what aspects of the external world they take into consideration in the same objective situation. Also their interpretation of the same facets of external conditions may differ. Hence, differences in Perceived Opportunity, which may reflect overestimation as well as underestimation of objective possibilities, are likely to affect entrepreneurial motivation.
4. A third condition is that the individual also has to have some Ability, skills that are needed to take advantage of opportunity in order to satisfy needs. Again, the individual does not act on the basis of his/her objective ability. The more or less well-founded Perceived Ability is what induces or reduces motivation. If an individual has confidence in his/her ability to improve his/her situation s/he is more likely to act.

5. Perceived need, ability, and opportunity are only partly determined by objective ability, need, and opportunity. The perception factors are also influenced by other factors, e.g. highly specific dispositions, experiences, and circumstances that are not of much interest in a general model.
6. While motivated action is contingent on perceptions, the individual cannot escape from reality altogether. Therefore, objective need, opportunity, and ability will have direct effects on the results; i.e. on observed entrepreneurial behavior. (The philosophical question whether or not an objective, external reality actually exists or not is not addressed here. As an alternative, objective reality may be conceived of as the average judgement arrived at by a sufficient number of well-informed observers.)

This framework is of course a simplification. To learn something, we need abstraction. The question is rather whether this is a fruitful way to simplify the complexity. Some empirical problems in relation to the framework will be discussed in section 2.4.2.

It must be emphasized that the model in figure 1.1 is a framework. The empirical analyses are not aimed at verifying or rejecting it in a strict sense. For one thing, the data collected are cross-sectional and therefore cannot prove any causal hypothesis to be true or false. Relating analyses and interpretations to a general framework is nevertheless of great value. Such an approach adds more substantive meaning to established empirical relations. Moreover, careful analyses with appropriate methods can make causal hypotheses more or less likely.

1.7 A Preview of Subsequent Chapters

In the next chapter will be reviewed some theories and results from previous studies. The reviewed theories and studies are those which in some way have influenced the General Framework and the design of the empirical study, or served as a guideline when making and interpreting analyses.

Chapter 3 describes the design of the empirical study and the methods employed. Chapters 4 to 8 constitute the empirical part of the study. The reader is also referred to General Appendix 3, where descriptive data on central variables are given.

Chapters 4 and 5 form the most central part of the study. In these chapters analyses of determinants of growth and growth motivation in small firms are presented. In these chapters, the General Framework is followed explicitly. That is, a causal modeling approach is applied. For this purpose a relatively new technique, PLS-analysis, is utilized.

In the remaining empirical chapters, 6 through 8, the role of intervening variables is analyzed in a different way. Basically, these chapters deal with systematic differences between subgroups. Also aspects of entrepreneurship other than expansion are considered explicitly in these chapters. All three are new versions of earlier reports from this project. While completely rewritten for this book, also the present versions can be read separately.

In Chapter 6 more homogeneous types of entrepreneurs (or small firm owner-managers) are extracted from the sample. The behavior, attitudes, and dispositions of the extracted types are compared with earlier attempts at developing an "entrepreneurial typology."

Chapter 7 elaborates on an aspect of perceived need which has been very much discussed in entrepreneurship studies, viz. the need for Achievement, and its relation to entrepreneurial behavior.

In the last empirical chapter, Chapter 8, an especially interesting group, the small high technology firms, is contrasted with groups of more conventional small firms.

The analyses in the different empirical chapters often refer to the same variables, approached from different angles. While this might lead to some repetition, there is also a point in looking at data in a variety of ways.

Finally, in Chapter 9 a summary of the conclusions and implications of the study can be found. These conclusions and implications concern practical issues as well as some suggestions for the future theoretical and methodological development within the field of entrepreneurship research.

2. Theoretical Background and Previous Studies

2.1 Approaches to the Study of Entrepreneurship

Entrepreneurship can be studied in many ways and for different purposes. And it has been. Scholars from virtually all fields of the social sciences - economics, sociology, anthropology, psychology, history, political science, and various branches of business administration - have made contributions to the field. Also, an inter- or multi-disciplinary field which may be labeled "entrepreneurship and small business research" is evolving.¹

The theories and methods employed vary greatly depending on within which field a study is conducted. The same is true for the level of analysis (individual, firm, industry, society), the definition of entrepreneurship, and its status as independent or dependent variable.

2.2 A Review of Some Relevant Theories

2.2.1 A Briefing on The Entrepreneur in Different Theories of The Firm

Mugler (1987) categorized approaches to theories of the firm along two dimensions. The following review is based on a modified version of his categorization. As the reader may notice the categorization is a bit crude, but it suffices for the present purpose.

First, the assumed decision criteria used by the owner(s) may be:

- A) economic criteria, or
- B) satisfaction of diverse wants.

Second, the number of persons or units making decisions may be conceived of as:

- C) one, or
- D) many.

With this conception there are four possible approaches, viz. AC, AD, BC, and BD theories, respectively.

Neoclassical economic theory of the firm is an example of AC theory. In its simpler versions, the decision criterion is profit maximization. This goal may be regarded either as the true preference or as the only feasible alternative because of competitive pressure. As the firm also is assumed to have a well defined production function, the behavior of the firm is forced in a unique direction. Given these assumptions, the "entrepreneur" is given no option at all to act "entrepreneurially."

Most economists who show an interest in the entrepreneur explicitly or implicitly employ an AC theory of the firm. Profit is the decision criterion considered. Disequilibrium conditions are assumed so as to allow room for profitable entrepreneurial action.

Examples of AD theories are managerial theories, transaction cost economics, and principal-agent theories (see Ricketts, 1987) which are developments of conventional economic theory and of the early works of Berle and Means (1932) and Coase (1937). Such theories have been developed primarily to provide a more appropriate analytical framework for the modern large corporation as opposed to the theoretical firm in neoclassical theory. The focus is not on the entrepreneur-owner as an individual.

The behavioral theory of the firm developed by Cyert and March (1963) is an example of BD theory. Here, multiple goals are assumed and maximization is considered impossible. This theory, too, aims predominantly at large firms.

Another theory which may be considered "BD" and which also has more direct implications for smaller firms is Agency Theory (Jensen and Meckling, 1976; Fama 1980; Fama and Jensen, 1983a, 1983b). Here, also

the owner-manager is (in some analyses) assumed to pursue non-economic goals at the expense of profit.

All these theories may provide insights that are valuable in an empirical study of entrepreneurship in small firms, but such studies typically apply a BC perspective. The entrepreneur is considered the only important decision-maker and s/he is driven by economic and non-economic motivations. Also some economists, notably Schumpeter (cf. below), have applied this perspective.

This study can also be regarded as a BC approach. Unfortunately, this is the kind of approach for which there is least to lean on in terms of well-developed theory. Putting it the other way round, it may be the kind of approach for which theoretical development is most urgently needed.

2.2.2 Some Economists' Views on the Entrepreneur and the Entrepreneurial Function

Casson (1982) stated that almost all social sciences have a theory of the entrepreneur, except economics. While this is not the whole truth, neither for economics nor the other social sciences, economists with an interest in the dynamic aspects of the economy tend share Casson's dissatisfaction with the received theory's (lack of) treatment of entrepreneurship. This can be exemplified by the following quotations:

"The received theory of competition gives the impression that there is no need for entrepreneurship. ...the standard competitive model hides away the vital function of the entrepreneur" (Leibenstein, 1968, p.72).

"The theoretical firm is entrepreneurless - the Prince of Denmark has been expunged from the discussion of Hamlet." (Baumol, 1968. p.66).

While it is true that the role of the entrepreneur is played down within the neoclassical paradigm and although it is sometimes put in question whether a separate, economic theory of entrepreneurship is needed (cf. Demsetz, 1983), economists do have something to say on the issue. They tend to focus on the function rather than on the individual. Economists have also shown greater interest in the

macroeconomic significance of entrepreneurship. To the extent that they treat determinants of entrepreneurial behavior their real interest is still directed to the effect of entrepreneurship on macroeconomic development (cf. Kirzner, 1982; 1983).

Different theorists have stressed different aspects of entrepreneurship. Risk-bearing was the function stressed by those early theorists who brought the term entrepreneurship into common use in economics (Cantillon, 1756; Mill, 1848). Knight (1921) viewed the entrepreneur as "the taker of non-quantifiable uncertainties" i.e. risks that cannot be insured against. Some more recent attempts at formal models build on Knight's ideas (Kihlstrom and Laffont, 1979; Casson, 1982).

Schumpeter (1934) associated entrepreneurship with innovation. He built much of his dynamic economic theory on the entrepreneur, whom he viewed as a heroic rather than an economic figure, driven more by a vision than by prospects of financial gain. By fighting for the realization of his vision the entrepreneur brings about the "creative destruction" necessary for true economic development (Elliott, 1983).

Other theorists have brought to focus the entrepreneur's role as a middleman, a coordinator, an organizer, or a gap-filler (Leibenstein, 1968, among others; see also reviews by Ricketts, 1987 and Kirzner, 1983). All those roles basically deal with furthering economic development by making better use of existing opportunities or creating new ones. More efficient use of scarce resources was also the characteristic Adam Smith associated with the "private adventurer" in his famous critique of the joint stock company (Smith, 1776/1776, p. 265).

Creation and perception of opportunity has been especially stressed by Kirzner and Shackle. Kirzner (1979) views the entrepreneur as someone who is especially alert to opportunities as yet overlooked in the market. Shackle, whose theory concerns human choice behavior in general, would say that the entrepreneur creates opportunity which was not there until imagined by the entrepreneur:

"If my theme be accepted, there is nothing among which the individual can make a choice, except the creations of his own thought" (Shackle, 1979, p.26).

Casson's (1982) entrepreneur is a specialist in making judgemental decisions. This relates to opportunity perception as well as to risk-bearing.

While economic theorists have had different ideas about the entrepreneurial function they would probably all agree that entrepreneurship has something to do with "making a difference on the market." Forced to do so by the very nature of the subject they admit that entrepreneurs behave differently from other people. They often attribute these differences to perception of opportunity.

Their main focus remains, however, on factors they regard as possible to affect by political action, i.e. enhancing objective opportunity for profitable entrepreneurship (cf. Baumol, 1968; 1983; Casson, 1982). In his attempt at developing a formal model, Baumol (1983) discusses factors that restrict opportunity, such as taxes and regulations. The question how the entrepreneur's actions affect the development of a specific firm is generally not addressed (Leibenstein, 1968, being an exception). Thus, company growth is not seen as an entrepreneurship phenomenon.

2.2.3 Theories of Company Growth

Theories and discussions of company growth are found in several fields of the economic sciences. In most of them, the willingness to pursue growth is taken for granted.

In the simplest versions of the neo-classical model (see e.g. Mansfield, 1979) the "optimal size" of the firm can be uniquely determined. No differences are expected between firms within the same industry. Firms in different industries with different cost structures would, however, end up at different optimal sizes.

As the analysis rests on comparative statics, the time dimension is excluded. Hence, growth is not analyzed directly. If interpreted as a model including time and if a non-optimal starting point is chosen, growth would follow from the assumption of profit maximization and from the shape of the production cost function.

A number of problems are inherent in this approach. First, "profit maximization," a behavioral assumption which is necessary for the emergence of perfect competition, is in itself ambiguous. For one thing, when applied to dynamic models the time preference of the "maximizer" is not known (this can be solved by making additional assumptions, cf. Solow, 1971). Second, the analyses refer to the size of a production process and not to the size of a firm in "the world as we know it" ("The firm' is not a firm", as Penrose, 1959, puts it). A real world firm may have multiple plants, several product lines, and grow through diversification. Third, cognitive limits of the individual may make maximization impossible (Simon, 1955).

The above problems have led to theoretical developments and refinements in various directions, inside and outside the neo-classical framework. Other factors than the shape of the production cost function are identified as constraints (e.g. financing, threat of take-over raids, transaction costs, dilution of ownership control, risk-averseness; see e.g. Eichner, 1980; Marris, 1964; Williamson, 1975; Leech, 1987; Aiginger, 1987). Also, the constraints may refer to growth rate instead of size. Profit maximization is often replaced by maximization of sales, growth, or utility ("managerial theories"). Most models rely on deductive reasoning from a set of assumptions. Stochastic or semi-stochastic theories have also been proposed, the best-known being Nelson and Winter's (1982) "Evolutionary Theory".²

Scholars in the field of Industrial Economics (see Scherer, 1984; 1980) employ analytical tools from economics while making less a priori assumptions and putting more emphasis on empirical analysis. The focus lies on the role of variables like industry structure and market dynamics. Hence, explanations of company growth would be sought in such structural factors. The industry, not the firm, would be the preferred unit of analysis.

With few exceptions the more refined economic theories focus on large corporations rather than claiming validity also for small, owner-managed firms. Moreover, the imposed constraints are upper limits. The possibility that profitable growth opportunity may be deliberately

disregarded is normally not considered. These theories may therefore be of limited value for the study of small firm growth.

An economic theory that may be of more direct relevance to the study of small firm growth is Agency Theory. This theory focuses on the effects of a separation of ownership and control, and the assumed differences between owner-managers and hired managers. Jensen and Meckling (1976) provide a formal, but non-mathematical, analysis of optimal size starting from the assumption of an owner-manager whose interests are not equivalent to the interests of the firm. One implication is that the step from full ownership to (some) outside equity financing may be an obstacle to growth. The reasons are asymmetric information, (suspected) opportunism, and the accompanying monitoring costs.

Agency Theory also points out that hired managers have to protect their position on "the market for managers" (Fama, 1980). Hence, owner-managers may be no less or even more prone than hired managers to pursue personal goals other than profits, since they do not risk being fired.

Economic theories of company growth highlight important external and firm-related constraints. Taken together, the theories do not imply that the owner-manager has no freedom to choose whether to expand or not. Rather, the diversity of assumptions and solutions suggests the opposite.

Even stronger support for a certain degree of freedom of choice is provided by empirical results, which show that cost functions tend to be L-shaped rather than U-shaped (Mansfield, 1979). Within one and the same industry, a distribution of profitable firms of considerably different sizes co-exist (Kumar, 1984). This could hardly be due to transitory market imperfections.

Aside from microeconomic growth theories, models aimed at identifying different stages of development as a firm expands appear from time to time. A large number of such models have been proposed.³

As Cooper (1982) points out this literature is primarily discursive and wisdom-based. Some points about certain kinds of growth thresholds, however, are recurrent themes and may be worth considering. Such critical phases which many owner-managers may choose never to enter may be a) hiring a complete stranger for the first time, b) delegation of decision power and central business functions for the first time, c) relying on external sources of finance or selling out equity for the first time, d) geographical move of the firm or the opening up of additional plants or outlets because present premises no longer suffice, and the like.

The models also stress that different abilities are required at different stages of development. The transition from a small, entrepreneurial firm to an established company of a somewhat larger size may therefore be difficult to handle for the founder. In fact, the very characteristics that made him/her successful in the start-up phase may actually be growth-detering (cf. also Maidique, 1980; Rogers and Larsen, 1984).

2.2.4 Sociological Theories

Some sociologists have employed a level and focus of analysis which is similar to that used by economists. According to Weber (1930), capitalism and entrepreneurial drive arose out of the "Protestant Work Ethic." Thus, individuals exploit their entrepreneurial talents because it is socially desirable to do so. A more recent contribution by Etzioni (1987) also stresses socio-cultural legitimation.

Other sociologists have focused more on the social motivation of individual behavior. Hagen (1962) and Stanworth and Curran (1973) view "relative deprivation" or "social marginality" as an incentive towards entrepreneurship. Individuals who because of the social context experience a situation where there is a discrepancy between his/her personal abilities and aspirations on the one hand, and his/her social role on the other, undoubtedly have an incentive to change their situation. An entrepreneurial response is especially likely if other opportunities open to others are for some reason barred.

The observation that members of certain marginal groups in society (Jews, Parsees, overseas Chinese) tend to be especially likely to become entrepreneurs support such a view. Counter-indications also exist (Fleming, 1979). Stanworth and Curran (1973) also discuss sources of social marginality at the individual level (life events that change the bases for social comparison), thereby arriving at conclusions very similar to those found in psychological theories dealing with the motivating effect of a discrepancy between aspirations and the current state of affairs (cf. below).

There is also a branch of literature dealing with the role of attitudes towards entrepreneurship in the general population, local culture, and entrepreneurs' networks (e.g. Rogers and Larsen, 1984; Birley, 1985; Dennis, 1986; Jackson and Brophy, 1986). Personal networks are heavily emphasized in the Scandinavian tradition (cf. Johannisson, 1986; 1988).

The sociological approach appears appropriate for explaining variables like rate of firm creation or average survival rate/growth rate for firms within a given geographical area or a given social context. What is highlighted are underlying opportunity factors, much like the economic approach.

To account for the considerable variation that still remains within the same context, individual level explanations are needed. In the sociological approaches reviewed above the only individual level factors considered are social comparison and the individual's ability to build an efficient network. These are psychological or socio-psychological variables.

2.2.5 Psychological Theories

2.2.5.1 Theories of Individual Motivation

Different schools of psychology view behavior as directed by external stimuli (Stimulus-Response, or S-R), by characteristics of the individual (Organism-Response, or O-R), or by both (Stimulus-Organism-Response, or S-O-R). Some theories play down the role of stimuli,

instead focusing on the outcomes of behavior and how these outcomes shape subsequent behavior (Response-Reinforcement, or R-R).

Most applied theories embody external as well as internal explanations of behavior and thus are S-O-R theories. In such theories, the characteristics of the individual ("organism") are the intervening variables. The behavioral effect of an external stimulus is assumed to be contingent on the individual's dispositions, attitudes, values, and suchlike. As an example, if small firm managers are not under a severe economic pressure and if they have different goals, the nature of these goals would determine their reactions to economic opportunities.

Theories on motivation vary in terms of the degree to which motivation is regarded as based on cognitions (reason, conscious evaluation) or affect (which is regarded as having predominantly sub-conscious causes). Of the theories reviewed below, only Expectancy Theory is purely cognitive.

In elementary economic theory, the behavior of the entrepreneur - or the firm - is governed by the profit motive; profit maximization is pursued. Psychological theory, aiming more at the "true nature of man" than at simple but useful approximations, cannot accept such an oversimplified view of human motivation towards action.

The best-known psychological theory of motivation is probably Maslow's Hierarchy of Needs Theory (Maslow, 1954). His argument might provide some insight into why and when other factors than profits are likely to influence the willingness to act entrepreneurially. The important features of his theory are, in this context:

1. Physiological and safety needs are lower-order needs that are predominantly satisfied externally (money being one means of satisfying them), whereas the higher-order social, esteem, and self-actualization needs are satisfied internally to the person.
2. A substantially satisfied need no longer motivates (satiation; a central theme in many theories on motivation).

Thus, this theory would suggest that the profit maximization assumption is reasonable for firms under economic pressure. For the owner-manager of a fairly stable firm operating above subsistence level, higher-order needs are likely to be the primary motivators. The satisfaction of such needs is not - or only partly - possible to "buy" with more money. Therefore, other goals may be pursued independent or even at the expense of monetary reward. As was mentioned in section 1.1, the pilot study indicated that such is frequently the case with small firm owner-managers.

A motivational theory which suggests that profit may be an important motivator for some small firm owner-managers also in the absence of strict economic need is the Theory of Psychogenic Needs (Murray, 1938). According to this theory, which has been popular in studies on entrepreneurship, work motivation depends on three major needs:

1. The need for Achievement (nAch) - the drive to excel, to achieve in relation to a set of standards, to strive to succeed.
2. The need for Power (nPow) - the need to make others behave in a way they would not behave otherwise.
3. The need for Affiliation (nAff) - the desire for friendly and close interpersonal relationships (definitions from Robbins, 1984).

The need for Achievement is the need that has been pointed out as especially important for entrepreneurial motivation. The concept is intimately associated with the name of David McClelland. His book "The Achieving Society" (McClelland, 1961) was a large-scale attempt to apply psychological theory and methods to tackle economic problems. In the book, nAch is treated primarily as a cultural variable. McClelland viewed his work as an extension of Weber's (1930) ideas. Others have used it primarily as a personality characteristic.

According to McClelland, running one's own firm is a suitable role for a person high in nAch. This is so because such people are motivated towards action in situations when they a) are personally responsible for the outcome, b) when there is neither very high nor very low probability of success, and c) when concrete feedback about the results is readily obtainable.

Thus, this theory suggests that money can serve as a potent motivator although lower-order needs are substantially satisfied and/or initial aspirations have been reached. If profit is used as concrete feedback about results for which the person is responsible, then the striving for attainment of the true goal (achievement) coincides with the behavior predicted by the profit maximizing assumption.

As to the other two psychogenic needs mentioned, the general view seems to be that a high need for Affiliation is counter-productive for entrepreneurship (see e.g. Bellu, 1987). Some authors have discussed the possibility that a combination of nAch and a high need for Power is required for the successful further growth of a founder-managed firm. McClelland's later work on differences between entrepreneurs and managers seems to support that speculation (cf. Brockhaus, 1982; Wärneryd, 1988b).

Money may thus remain important for some individuals. Reward may also be non-monetary, multi-dimensional, and different for different individuals. Expectancy Theory (Vroom, 1964) deals with this. This cognitive theory of motivation has much in common with attitude theories which rely on cognitive structure (e.g. Fishbein and Ajzen, 1975) and is also akin to the concept of expected utility in economic theory.

The basic idea is that the propensity to act in a certain way depends on an expectation that the act will be followed by a given outcome, and on the relation between that outcome and the goals of the individual. In short:

1. The propensity to act is contingent on the expected outcomes of the act. These expectations may or may not be well-founded.
2. Expectation of the attainment of personal goals as a result of the act enhances the willingness to act, whereas expectation of outcomes that work against personal goals reduces motivation.
3. The strength of the relation between an expected outcome and the propensity to act depends on the importance (valence) attributed to the dimension the outcome concerns.
4. The propensity to act is also dependent on the individual's perceived ability to produce the desired result with a given level of effort.

Hence, the prediction is simply that entrepreneurial action is likely only to the extent that the individual believes that important positive consequences would result if s/he were successful. His/her belief that s/he is able to produce a successful result is also important. Applying this perspective, identifying the important expected outcomes becomes a major issue for empirical research.

Locus-of-Control Theory (Rotter, 1966) focuses on the individual's perceived ability to influence the outcomes of events. More internally oriented people are more inclined to believe that reality can be affected by their own efforts. Those who are more externally oriented believe in the power of external circumstances.

Because internal beliefs would enhance the perceived chance of success, entrepreneurial behavior has been associated with this characteristic. A number of studies have shown that more internal Locus-of-Control and high need for Achievement tend to go together (cf. Begley and Boyd, 1987; Brockhaus, 1982).

Proponents of the theory tend to - at least implicitly - regard "more internal" as "better." However, believing that one can affect reality when this is actually not the case may be a counter-productive "illusion of control" (Langer, 1975). An extreme internal orientation may well motivate action but not necessarily help produce results.

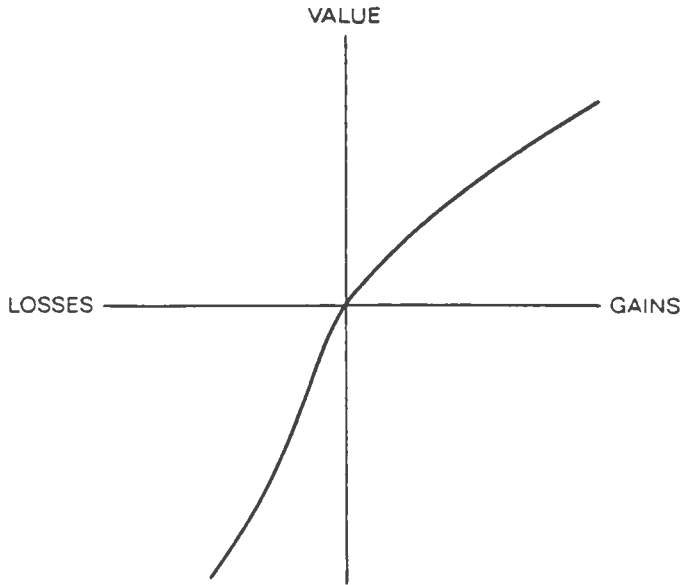
Summing up, it must be pointed out that the theories reviewed here are not the most recent or most sophisticated developments available in the literature (cf. Atkinson, 1964; Weiner 1985a; 1985b; Weiner et al, 1972). The reason why the "simpler" theories were reviewed here is twofold: a) they make points which are general enough to be given consideration also in a study with a much broader scope than just some aspects of individual motivation, and b) they have frequently been used in previous studies on entrepreneurship (see section 2.3.3).

2.2.5.2 Theories of Human Decision Making

Prospect Theory (Kahneman and Tversky, 1979; 1984) is an empirically based cognitive theory of human decision making under risk. According

to Prospect Theory the individual has a value (or utility) function like the one depicted in figure 2.1.

Figure 2.1 A Prospect Theory Value Function



"Losses" and "gains" concern objective, nominal amounts. "Value" refers to the subjective evaluation. Central features of the function are:

1. It is defined in terms of deviations from a reference point. Relative rather than absolute judgements are made.
2. It is concave for gains and convex for losses, i.e. marginal utility/disutility decreases with distance from the reference point.
3. It is steeper for losses than for gains. This means that a loss of a certain amount reduces utility more than a gain of the same amount increases utility.

In a typical Prospect Theory experiment, the subjects are asked to choose between a certain outcome with a lower (absolute) mathematical expectation and a risky alternative which has a higher mathematical expectation. Preferences are manipulated by altering the absolute size

of the stakes, the probabilities, and the reference point used. It has been clearly demonstrated that all three variables matter (for various kinds of empirical evidence see e.g Kahneman and Tversky, 1979; 1984; MacCrimmon and Wehrung, 1986; McNeil et al, 1982; Thaler; 1980; Wahlund, 1988).

The most important implication of the theory is that it suggests that people in general are risk averse in gain situations and risk seeking in loss situations. Assuming that "zero outcome" is the reference point used, the choice situation:

A: A CERTAIN GAIN OF $x/2$

B: $p(\text{GAIN OF } x) = 0.50$

$p(\text{ZERO OUTCOME}) = 0.50$

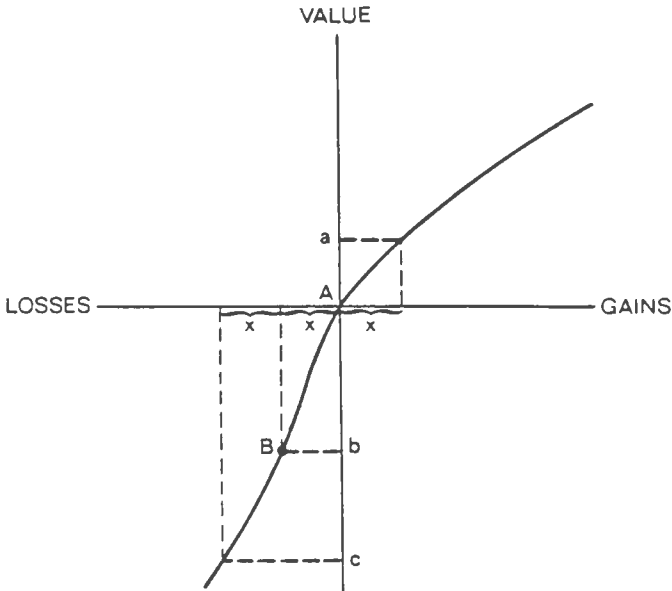
would result in a majority choosing the safe gain (A). If "loss" were used instead of "gain", preferences would switch over in favor of the B alternative (cf. Thaler, 1980, pp. 41-42). This follows from the form of the curve, with decreasing marginal utility in both directions. Asymmetric preferences would appear also with other amounts and probabilities. Thus, risk-taking propensity is viewed as depending on the (perceived) situation.

Employing Prospect Theory, we may sketch entrepreneurial ventures - before they are undertaken - as choices between an alternative with a certain outcome (normally the status quo) and a risky, entrepreneurial alternative (as Knight, 1921, did). We may further assume that entrepreneurs, like people in general, are risk-averse in gain situations and risk-seeking in loss situations. The reference point then becomes the crucial factor.

In what may be labeled the "normal situation," the individual uses present state as reference point (point A in figure 2.2). In this situation, a gain of an amount x has a lower absolute value than a loss of the same amount ($A_a < A_b$). The individual may in this situation still be prepared to trade off safety for other pleasures. However, in a choice between the status quo (assumed to be a riskless choice) and a risky alternative, the latter would have to have a (considerably) higher mathematical expectation to be preferred. Thus,

widespread conservatism is to be expected among small firm managers who are content with the status quo.

Figure 2.2 The Value Function in "Normal" and "Loss Side" Situations



In some cases, the present state may not be the natural reference point for the individual. Instead, an aspiration level which lies above the present state (or any other state expected to result from the certain - "no entrepreneurial action" - alternative) may serve this purpose. If such is the case, the individual will perceive the alternative with the certain outcome as leading to a point on the loss side of the function. In figure 2.2, this is represented by point B, whereas point A is the aspiration level.

From a point B perspective, a gain of an amount x has a higher absolute value than a loss of the same amount ($Ab > bc$ because of the convexity of the curve). In this "loss side situation," risky alternatives with mathematical expectation lower than that of the certain alternative may be preferred. A "loss side situation" is also likely to trigger active search for opportunities. Moreover, opportunities actually encountered are likely to be evaluated in a biased fashion

such that the probability of achieving the desired outcome is overestimated (Morlock, 1967; Slovic, 1966; cf. also Tyebjee, 1987).

Reasons why entrepreneurs may view prospects from a "loss side situation" are:

1. That the satisfaction of basic economic needs are not ensured by the status quo alternative (cf. Hierarchy of needs theory).
2. That the individual has not as yet reached his/her initial aspiration level.
3. That the individual has an innate tendency to shift aspirations upwards on goal attainment (cf. need for Achievement).
4. That aspirations have shifted upwards due to recognition of the relative success of relevant others (cf. social marginality, social comparison).
5. That a unique "window of opportunity" (Ray, 1986) makes the individual aware that goals which were earlier conceived of as unattainable may actually be reached. If, for example, an individual who has held the belief that getting rich was possible only by means of winning on the pools (or the like) becomes aware of a business opportunity which s/he perceives him/herself as capable of exploiting, s/he may be quick to internalize the merits of a successful outcome. S/he may then view the status quo from that perspective (a "dream goal" becomes a goal worth striving for, cf. Locus-of-Control theory).

Thus, it may be speculated that only in a "loss side situation" - as subjectively perceived - is an individual prepared to take any considerable risks in entrepreneurial endeavors.

The theory also allows for limited risk-taking when no discrepancy between actual state and aspiration level is experienced. As was noted above, not only the reference point but also the absolute size of the stakes and the probabilities involved influence choice behavior.⁴ The true stakes and probabilities are rarely known in a real choice situation. Prospect Theory may therefore also be interpreted as suggesting that:

6. If an individual mentally reduces the size of the stakes involved - perhaps because of an above average confidence in his/her ability to take corrective action (cf. Locus-of-Control) - that person would be more inclined to act upon the (risky) opportunity.

7. People who take risks in entrepreneurial endeavors may be subject to an optimism bias as a personality trait; i.e. they may underestimate the risks involved regardless of the situation.

To sum up, Prospect theory suggests that entrepreneurial acts are undertaken, not because the people involved are innately more favorably disposed towards risks, but because they find themselves in situations in which they are more willing to accept risks or because of differences in risk perception.⁵

An interesting recent contribution to Economic Psychology is Frey's Ipsative Theory of Human Behavior (Frey, 1988). While using the analytic tools of utility maximization theory, Ipsative Theory intends to explain some systematic deviations from objectively rational behavior that have been found by experimental psychologists.

Frey introduces the concepts of objective vs. ipsative possibility sets. The ipsative possibility set (IPS) is the possibility set which a particular individual takes to be relevant to him/herself. The IPS is different from the objective possibility set (OPS). According to Frey the difference does not lie in differences as regards information and intelligence.

Frey discusses reasons for and consequences of overextension and underextension of the IPS. The IPS may be overextended as a consequence of human nature because people consistently underestimate the probability of negative events and overestimate the probability of positive events. This relates to "illusion of control" and "optimism bias." The IPS may also be "deliberately" overextended to induce motivation and work effort which would otherwise not come forth (cf. Thaler, 1980, and his discussion of pre-commitment).

The IPS may also be underextended. This takes place when the individual does not make full use of possibilities which are at hand, thus failing to maximize utility. The individual may, however, not experience this loss because the objective opportunity was never considered (cf. Thaler, 1980, and the reference to studies showing that people care less about opportunity costs than about actual costs).

On the basis of this theory it may be speculated that people with an entrepreneurial inclination are characterized by a) more overextension as a consequence of human nature (optimism bias) and/or b) more overextension by design (setting high goals to make certain the attainment of some of them) and/or c) better recognition of opportunities actually available (cf. Kirzner's entrepreneur, who is always looking for opportunities) and/or d) less biased evaluation of opportunity costs as compared to actual costs.

2.3 Previous Empirical Studies

2.3.1 Empirical Entrepreneurship Research

Several problems delimit the possibility of arriving at a coherent picture from empirical entrepreneurship research. First, "entrepreneur" may refer either to a business founder or an owner-manager, sometimes with "success" or "innovative behavior" as an additional criterion. In some cases entrepreneurial characteristics have been derived from prospective business founders or people with an "entrepreneurial occupation." Second, the basis for comparison may be non-founders, less successful owner-managers or business founders, hired managers, people in general, some other group, or none at all. Third, the criterion variable may be foundation of a firm, ownership of a firm, survival vs. failure, performance, or something else. Finally, the bulk of results are based on small samples or were obtained in mail survey studies with response rates in the 10 to 40 percent bracket.

In the following review attempts have been made to concentrate on results that a) appear to have some generality and/or b) refer to or have implications for continued entrepreneurship rather than start-up only, and/or c) for other reasons are especially relevant to the empirical study presented in this book.

2.3.2 External and Firm-Related Factors

2.3.2.1 External Factors

The study of the influence of external factors on entrepreneurship appears to have been relatively limited. In recent reviews such factors have been highlighted as possibly more important than characteristics of the individual. More specifically, Pennings (1982) as well as Low and MacMillan (1988) suggest that organizational births may be better explained by macro-variables, whereas analyses on the micro-level are more appropriate for the performance of established firms.

Several references to external factors such as market growth, customer structure, or industry structure were made by the interviewees in the pilot study (Davidsson, 1986, pp. 18, 25, 45, 52, 67, 72, 78). These comments concerned positive as well as negative influences on past growth and on growth aspirations for the future.

Studies have shown that an attractive (reasonably large and growing) market facilitates initial success. A highly dynamic (chaotic) market does not (Stuart and Abetti, 1986).

Other studies show fairly consistent differences between industries. Examples of this are higher failure rates and lower growth rates in retail and service industries than among manufacturing, especially high-technology manufacturing, firms (Doutriaux, 1987; Dunkelberg et al, 1987; Plaschka, 1987; Reynolds, 1986; and studies referred to in Cooper, 1982). Sandburg and Hofer (1987) include several measures of industry characteristics in their study and establish positive relations between market growth, barriers to entry, and market heterogeneity on one hand, and performance on the other. The pilot study also indicated a positive relation between market growth potential and growth aspirations (Davidsson, 1986, p. 81).

In their essay on the influence of the environment on entrepreneurship, Bruno and Tyebjee (1982) list a number of factors. These are: a) venture capital availability, b) presence of experienced entrepreneurs, c) technically skilled labor force, d) accessibility of suppliers, e) accessibility of customers or new markets, f) favorable government policies, g) proximity of universities, h) availability of

land or facilities, i) access to transportation, j) receptive population, k) availability of supporting services, and l) attractive living conditions. The authors also review studies which have investigated the influence of such factors, but contend that substantial empirical evidence is lacking for many of them.

Access to finance is something that varies considerably over time and between countries. Swedish studies from the relevant period of time show that the situation has - or had for a while - improved since the late 70's and that external financing was not considered a main problem for small firms in general (Olofsson, 1985; Statens Industriverk, 1985). This was also the impression gained from the pilot study. It was noted that lack of capital might still be a problem for highly innovative firms, employing new technology (Davidsson, 1986, p. 91; cf. also Klofsten et al, 1988).

The effect of the rather restrictive Swedish labor market legislation was also addressed in the pilot study, both in the interviews and as one of the variables in a conjoint analysis choice task. The results were mixed for the influence of attitudes towards and experience of the effects of this legislation on growth issues (Davidsson, 1986, pp. 92. Some managers stressed the problem of finding suitable employees without making specific reference to labor market legislation (Davidsson, 1986, pp. 44, 51, 57). Taxes as a hindrance was brought up by a few.

To sum up, studies suggest that such factors as industry structure, market growth, geographic location, access to capital and labor, taxes, and other legislation are likely to affect entrepreneurial behavior.

Within each industry and within each geographical area considerable variation in performance, growth, innovativeness, and other measurable behavior of the firm yet remains unexplained by external variables. This is where the individual comes in. The remaining variation is likely to be due to individual factors which intervene between external conditions and behavior.

2.3.2.2 Firm Age, Firm Size, Profitability, and Growth Rates

It should be remembered that most firms never grow large. An examination of any size distribution complete with data on entry rates or average age of the firms would show that. According to Cooper (1982), about 79 percent of all companies in the US have fewer than 5 employees. Reynolds (1986) characterizes 61 percent of his sample as firms that start out small and remain so. Dunkelberg et al (1987) report that a clear majority of their sample show no or very modest increase in number of employees.

But some firms grow, and they grow at different rates. Evans (1987) found solid evidence that age and size of the firm are negatively related to growth rates. Kumar (1984) provided additional support for the effect of firm size, also for non-manufacturing firms. Kumar also found greater variation in growth rates among smaller than among larger firms. and his results show a relatively low degree of serial correlation of growth rates. That is, the variance in growth explained by past growth was modest.⁶

These results are also confirmed in studies on smaller samples and using less rigorous methods. Boswell (1972), Doutriaux, 1984, and Simyar et al (1988) all found a negative relation between age and growth. Boswell's study also provided some, albeit weak, evidence for a rather low degree of serial correlation. Younger firms tended to be more growth-oriented also in the pilot study (Davidsson, 1986, p. 83).

According to studies referred to by Watkins (1973), firm age is also negatively correlated with innovativeness, whereas firm size is not.

The relation between growth and profitability appears to have been little studied in samples of small firms. Either sign of the relation, and either causal direction, is conceivable. Profits improve growth opportunity while it is also true that excessive growth may reduce profitability.

Within the framework used here profitability would be assumed to reduce need. It should therefore have a negative influence on motivation. There is also some empirical support for this assumption; a number of studies suggest that it is under economic pressure that organizations discover and exploit opportunities that were neglected during better times (cf. March & Sevón, 1988, p. 380 ff).

There is also the problem of time lag. Profits (growth) at what point in time would influence growth (profits) at what later point in time? Finally, capable, business-oriented managers may run firms which grow faster and at the same time are more profitable, thus making the two variables correlate in a spurious manner.

Thus, the empirical relation between profitability and growth as well as between profitability and growth motivation is intricate. Kumar (1984) found a positive relation between current profitability and current growth which he, peculiarly, interprets as profitability causing growth.

2.3.3 Characteristics of Entrepreneurs

2.3.3.1 Background Characteristics

There seems to be some consensus that age of the owner-manager is negatively related to innovativeness and growth-orientation (cf. Boswell, 1972; Wärneryd, 1988b). Also, business founders tend to be more entrepreneurial than non-founders (Begley and Boyd, 1987; Boswell, 1972; Brandstätter, 1988; Dunkelberg et al, 1987; Kayser, 1987).

The pilot study indicated a positive relation between ability factors such as business education and previous experience on the one hand, and growth aspirations on the other. Examples of entrepreneurship as a compensation for low formal education were also encountered (Davidsson, 1986, pp. 35, 83).

In the literature the picture is very mixed. Gasse (1982) refers to two studies that showed a positive correlation between education and

firm size or growth rate. A third study he refers to found no such evidence. As to experience, familiarity with the industry does not always seem productive (Smith, 1967). Previous experience as a business founder may be more important (Mayer and Goldstein, 1964; Lamont, 1972).

Plaschka (1987) found no or little effect of various kinds of experience on entrepreneurial success (survival vs. non-survival). On the other hand, in a study by Lorrain and Dussault (1988) prior business knowledge was one of the few variables that distinguished between successful and failing business founders. Pickle (1964) established fairly strong relations between a number of ability factors (thinking ability, human relations ability, communications ability, and technical knowledge) and a composite measure of success. Smith (1967) characterizes more entrepreneurial small business managers as having more variety in education and work experience. Finally, Hoad and Rosko (1964) found positive effects of education and experience, and especially of the interaction of the two. In their study no difference was found between managerial and non-managerial experience.

There may also be important industry differences. Experience and the building of teams with complementary competence are pointed out as key success factors primarily in studies of high-technology firms (Roberts, 1972; Roure and Maidique, 1986; Stuart and Abetti, 1986). In the pilot study, there was a tendency towards more growth-orientation among firms that were partnerships (Davidsson, 1986, p. 86). Other studies point in the same direction (Cooper & Bruno, 1977; Utterback & Reitberger, 1982).

2.3.3.2 Risk-taking

Engaging in entrepreneurial endeavors means taking some kind of risk (financial, social, psychological), as judged by an outside observer. Most empirical studies suggest that small firm managers do not have favorable attitudes towards taking risks (e.g. Deeks, 1976; Krasner, 1986) and do not regard themselves as risk-takers (e.g. Beckérus and Roos, 1985). Neither do they seem to differ from other groups in tests of objective risk-taking (Brockhaus, 1980a; Krasner and Ray, 1984;

Unni, 1987). If anything, entrepreneurs seem to be slightly less attracted to taking risks in situations perceived as pure games of chance (McClelland, 1961, Bellu, 1988).

This paradox may be explained in several ways. First, entrepreneurs' risk-taking may be domain-specific (cf. Ray 1986). Second, their risk-taking may be situation-specific. They may stop taking great risks once their aspirations have been satisfactorily met, as suggested by some of the psychological theories reviewed above. Third, they may be capable risk-managers. This explanation is favored by e.g. Low and MacMillan (1988) and supported by some results on incrementality in decision making (cf. van de Ven et al, 1984; Gibb, 1987). Finally, they may have biased risk-perception as compared to non-entrepreneurs.

2.3.3.3 Need for Achievement

In "The Achieving Society" (McClelland, 1961) rather convincing empirical evidence, obtained through a variety of methods, for a link between nAch and national development was presented. In their continued work McClelland and his associates regularly find support for their hypothesis (McClelland, 1965, 1966; McClelland and Winter, 1969; Miron and McClelland, 1979).

Other researchers have found at least some support for a connection between nAch (using various measures of that concept or related concepts such as "self-achievement" or "achievement values") and entrepreneurial behavior at the individual level, although many of them do not seem convinced that nAch is a very important factor (e.g. Begley and Boyd, 1987; Bellu, 1988; Borland, 1975; Hornaday and Aboud, 1971; Hull et al, 1980; Panday and Tewary, 1979).

The nAch findings have also been questioned and sometimes heavily criticized. This concerns the definition and the measurement of the concept (Hornaday and Aboud, 1971; Gasse, 1982; Wärneryd, 1988b), the effectiveness of nAch training (Brockhaus, 1982; Gibb, 1986), the results concerning entrepreneurial success (Deeks, 1976; Khan, 1986; Plaschka, 1987), as well as the relation to macroeconomic development (Finison, 1976). In more recent reviews the position taken is often

that nAch is not an important cause of entrepreneurial behavior. (Brockhaus, 1982; Low and MacMillan, 1988).

The concept of nAch no doubt suffers from the unclear definition and the measurement problems involved. The basic idea that individuals and cultures differ with respect to the value attributed to (economic) achievements and that these differences affect entrepreneurial efforts is still a very plausible one.

In summary, nAch seems to be a more forceful predictor at the national than at the individual level.⁷ As running one's own firm is not the only suitable alternative for an individual high in nAch, differences in Achievement Motivation are likely to predict continued entrepreneurship with higher accuracy than it discriminates between independent businessmen and hired managers.

2.3.3.4 Locus-of-Control, Self-Confidence, and Optimism

The overall impression of the empirical evidence is that the Locus-of-Control scale does not differentiate between independent businessmen and managers or between founders and non-founders, but that small business owner-managers are more internally oriented than the general population (Begley and Boyd, 1987; Brockhaus, 1982; Kets de Vries, 1977; Wärneryd, 1988b). One longitudinal study suggests that a more internal orientation may be positively related to entrepreneurial success (Brockhaus, 1980b).

High self-confidence has in a number of studies been reported as a trait that is characteristic of entrepreneurs. In fact, this trait appears most frequently and consistently in a compilation of results from empirical studies presented by Hornaday (1982).

High self-confidence and a more internal Locus-of-Control may or may not be well-founded. According to a large-scale study by Cooper et al, (1986) small business owners are, at start-up, moderately over-optimistic about the success probability of "any business like theirs." When it comes to the success chances of their own venture

they show considerable optimism bias. Judging from the results obtained by Egge (1987), a majority of business founders agree in retrospect that they were overly optimistic at the time of start-up.

While optimism bias is also a characteristic of people in general (cf. Frey, 1988; Low, 1988) it may be pronounced in particular among entrepreneurs. As discussed in the theory section, optimism may facilitate action but does not necessarily lead to successful results.

2.3.3.5 The Profit Motive

In empirical research, economic motivation typically ranks lower than the pursuit of other goals (Bamberger, 1986; Beckerus and Roos, 1985; Williams, 1983).⁸ This holds for stated reasons for starting a firm as well as for the motivations of established managers. There is a host of studies in which it is claimed that other goals are pursued at the expense of profits (e.g. Boswell, 1972; Deeks, 1976; Golby and Johns, 1970; Mayer and Goldstein, 1964). This seems to be especially true for the established firms; in early phases economic motivation may direct behavior out of sheer need and other valued goals may therefore be sacrificed in the pursuit of profit. In later stages such trade-offs are not made as readily.

Some results obtained in a fairly large Belgian survey are suggestive. Among those who did not plan to expand (a majority of the sample), the most preferred explanation for this was - by far - that the present situation was satisfying. Likewise, the most preferred explanation for not launching new products was that the company was flourishing even without new products (Donckels et al, 1987).

This is not saying that small firm managers do not care about profits. They do. The implication is rather that the extent to which economic incentives can make them consider doing things differently, i.e. exhibit continued entrepreneurship, is uncertain. The reviewed psychological theories would suggest that economic incentives may work for those who are not satisfied with the status quo, for those who use money as a measure of success, when the risks involved are (perceived

as being) low, or when the accompanying non-monetary outcomes serve other goals.

2.3.3.6 Other Motivational Factors and Personal Values

An overwhelming array of characteristics and motivations of entrepreneurs or small firm managers can be found in the literature (cf. Hornaday, 1982, pp. 26-27). One reason for this is that basically the same characteristics appear under several disguises; another that no or inadequate bases for comparison were used in some studies.

Some themes are recurrent. One is autonomy. Apparently the chance to control one's work situation is important. A multitude of studies report high evaluation of independence, frustration with previous jobs and problems to cope with authorities, low need for support, reluctant attitude towards consultants and other outside sources of advice and finance, authoritarian leadership style, the desire to do what one likes best and the possibility to select workmates as reasons for becoming self-employed, and the like (see e.g. Bolton, 1971; Brockhaus, 1982; Collins et al, 1964; Gasse, 1982; Kets de Vries, 1977; 1985).

While important for the decision to start one's own business, such values and behavior may be in conflict with continued development of the firm. Smith (1967) claimed that fear of loss of personal control is the major reason for avoiding growth. In the Donckels et al (1987) study, this reason ranks second only to satisfaction with the status quo (cf. above). A strong case for the possible loss of personal control as a growth deterrent in owner-managed firms is also made in an empirical study by Pondy (1969).

Other recurring non-economic motivations are e.g. need for approval and need for personal development, and concerns for product and service quality, good and personal customer relations, the family-like atmosphere of the small firm, and the like (Bamberger, 1986; Bolton, 1971; Scheinberg and MacMillan, 1988; Smith, 1967).

Motivations such as building something for the future and to make an important contribution to society also appear in the literature, but such goals seem to be important only for those who actually made significant contributions and probably were not goals at all at the time of the start-up (cf. Ronen, 1983; Stanworth and Curran, 1973).

2.3.4 Are They All the Same?

The above review of empirical results may - despite the admitted inconsistencies - give a spuriously coherent picture of the nature of the entrepreneur/small business manager. In fact, it is not uncommon that researchers complain that there is as much variation within the group as there is between "entrepreneurs" and any group used for comparison. Entrepreneurs thus seem to defy aggregation (cf. Cooper and Dunkelberg, 1987). This holds for personal characteristics as well as for behavior and performance. It is also likely that many of the inconsistent and peculiar results found in the literature are due basically to the fact that too diverse and uncontrolled samples have been used.

Some researchers have chosen to restrict their studies to certain industries. Others have tried to discern different types of entrepreneurs and link differences in behavior and performance to type belongingness. This stream of research is also relevant to this study and will be dealt with in separate chapters. That is, the literature on entrepreneurial typology is reviewed in Chapter 6, whereas previous results referring to "technical entrepreneurs" or "small high-tech firms" will be dealt with more thoroughly in Chapter 8.

2.4. The General Framework Revisited

2.4.1 How the Reviewed Theories and Results Relate to the Framework

In the general framework outlined in section 1.6 it was argued that entrepreneurial behavior is contingent on three basic factors: Need, Opportunity, and Ability. It was also argued that perceived rather than objective reality directed motivation towards entrepreneurial action, but that objective factors also may have direct effects on

results. This means that micro-level factors have an intervening function. In the present section I shall discuss how the reviewed theories and empirical results relate to this framework.

Opportunity factors are typically put in the forefront in economic theories. General opportunity factors enhancing or restricting opportunity are pointed out at the society level (e.g. taxes, legislation), the industry level (e.g. industry structure and market dynamics as well as conditions on the markets for inputs; finance, labor etc.), and the firm level (e.g. firm size and profitability). Empirical results show that such factors are important in the aggregate but that considerable freedom of choice remains on the individual level.

Socio-cultural legitimation may also be considered an opportunity factor, since it is likely to be reflected in taxes, legislation, and possibly market response.

Perceived Opportunity, and individual differences in this regard, is the main focus in Frey's Ipsative Theory. Economic theorists like Kirzner and Shackle view superior perception (or more creative imagination) as a quality of the entrepreneur. In the discussion of Prospect Theory it was speculated that biased risk-perception might influence the evaluation of a given opportunity and that an attractive opportunity, when perceived, might alter the individual's risk-taking propensity.

Locus-of-Control theory and the empirical results relating to this concept may also be regarded as opportunity-perception issues. Results concerning extensive information gathering as a characteristic of successful entrepreneurs also relate to opportunity perception (Gilad et al, 1986; see section 1.2).

Competitive pressure creates an objective Need to act in a certain way in economic theories. But if profit maximization is interpreted as the true preference, objective need would not have an independent effect on behavior; profit maximization would be pursued regardless of wealth. For example, also the monopolist is assumed to maximize profits in basic neo-classical theory. It is therefore natural that

the work within theories that make maximization assumptions has focused more on the upper limit, i.e. on opportunity issues.

Behavioral theories of the firm assume satisficing rather than maximizing behavior. In that case, the degree to which profits are pursued is dependent on the objective need situation.

Objective need is cumbersome to assess empirically. That would require detailed knowledge about the economic position of the firm and its owner-manager (and his/her objective decision alternatives, i.e. "opportunity cost" situation). Its importance may be inferred from the results showing that entrepreneurial inclination appears to decrease with firm size, firm age, and age of the owner-manager.⁹

Perceived Need is straightforward and not situation-dependent in most economic theories (cf. above). In the the psychological theories on motivation and the aspects of Prospect Theory that were treated here, perceived need is the main theme. These theories suggest the interpretation that Entrepreneurial Motivation depends on the individual's position relative to his/her aspiration level. That is, on the perceived need for economic improvement. Sociologists emphasizing social marginality and social comparison have a similar focus. When no such need is felt, Maslow's theory suggests that other (higher and non-economic) goals come to the fore. Prospect Theory predicts reduced risk-taking propensity. A high need for Achievement could explain why some people in such a situation still act as if profits as such were the goal.

Empirical results concerning the profit motive, need for Achievement, and risk-taking suggest that perceived need may be a major issue.

Psychological theories assume that motivation is multidimensional and differs between individuals. In Expectancy Theory, motivation is explained in terms of expected outcomes. Empirical results that point out what specific expected outcomes may reduce or contribute to Entrepreneurial Motivation, were also reviewed.

Ability factors are less treated in the reviewed theories but have been included in many empirical studies. Although results have been conflicting, these studies suggest dimensions that may be important. Examples of such dimensions of ability are education (level and content), founding experience, industry experience, managerial experience, and the formation of entrepreneurial teams with complementary competence.

As regards Perceived Ability, theory and results dealing with Locus-of-Control, illusion-of-control, optimism, and self-confidence suggest that also these subjective aspects are worthy of examination.

The reviewed theories and previous studies have singled out numerous factors that may a) increase the opportunities for continued entrepreneurship, b) elicit search for such opportunities, and c) affect the propensity to exploit them. In all, the proposed framework apparently well covers the possible important determinants of entrepreneurial behavior.

2.4.2 Some Empirical Problems

While helpful in guiding an empirical study, the proposed General Framework does not solve all the problems involved. The framework presupposes a fairly straightforward causal structure. There may of course be more complex relationships.

First, when applying a dynamic perspective there should be a feedback loop from the results of previous actions to the objective factors as well as to the perception factors. Second, some aspects of the general explanatory factors may be causally interrelated. Third, there may be interactions and contingencies rather than separate effects. These additions will to some extent be considered in the empirical analyses.

There are also some problems with the separation into Ability, Need, and Opportunity factors, and with their very labels. The same goes for any attempt to describe reality with some degree of abstraction, i.e. omission of details.

The objective factors are conceptually fairly easily separable. Need is high in case the firm's future survival is threatened or if the owner-manager's economic gain from the firm is sub-standard relative to a relevant (objective) norm. Opportunity is determined by the characteristics of the firm and the environment. Ability may be inferred from education and experience or measured by means of psychological test instruments.

Some sub-factors may be difficult to label unambiguously. Larger firm size may not only indicate that there is less need for entrepreneurial action, but also that more of the opportunities available have been exploited already. Likewise, a growing and dynamic market may force individual firms to grow and innovate (thus affecting "need") and not just provide them with an opportunity for doing so. Profitability may relate to opportunity as well as to need. Furthermore, these relations may also have opposite signs (cf. section 2.3.2.2).

A problem with Opportunity is that macro-level conditions are not variables in a study of this kind. Taxes, legislation, general economic climate etc. cannot be varied and their influence therefore not measured. In relation to such variables, all the included variables are (possible) intervening variables.

As to perception factors, perceived need is reflected in the extent to which the individual is content with the current state of affairs. Perceived ability and perceived opportunity may both be asked for in a rather direct manner and are then fairly easily separable. Both may also be inferred from e.g. Locus-of-Control or general optimism. It is in that case hardly possible to say whether it is the assessment of the attractiveness of the opportunity or the judgement of the individual's own capacity - or both - that differ between people who do and who do not act upon the same opportunity in the same situation.

Finally, in an empirical study it is neither practical nor possible to separate in an unambiguous way the effects of objective factors from those of subjective factors. This is so because neither measures of objective reality nor those of perceptions will be perfect. In a model

where the perception factors are introduced as intervening variables, imperfect measurement will have the following effects:

1. The general effect of leaving unexplained variation in endogenous variables, which would be possible to explain with perfect measures of the included theoretical variables.
2. Spurious direct effects of objective factors because the perception measures used will not cover some measured aspects of objective reality which actually were perceived.
3. Perception factors will appear more independent of objective factors than they really are. Measured perception factors may cover aspects of the objective reality that were not measured.

An additional problem is that data collection was based on an early version of the General Framework. Thus, the empirical study is not in all respects what it would have been, had the framework as outlined in Chapter 1 been fully developed first.

Despite the problems, developing a conceptual framework and relating an empirical study to it must be worthwhile. What are the alternatives? To the author's mind, mere contemplation over a large number of unstructured factors would be less likely to produce useful knowledge.

Notes

1 For overviews of entrepreneurship research or aspects thereof, see Kent, Sexton and Vesper (1982), Sexton and Smilor (1986), Gibb (1986), Wärneryd (1988b), and Low and MacMillan (1988). Economists' contributions may also be found in Ronen (ed., 1983) and Ricketts (1987).

2 For overviews of microeconomic growth models see Evans (1987), Kumar (1984), Marris and Mueller (1980), Marris and Wood (1971), and Ricketts (1987).

3 For reviews see e.g. Churchill and Lewis (1983); Cooper (1982); Low and MacMillan (1988); Ylinenpää, (1988). Churchill and Lewis also present their own model and provide some empirical backing. Non-American authors who have made similar contributions are e.g. Hartikainen (1986); Lemar (1982).

4 It has been demonstrated that the averseness for symmetric fair bets (e.g. 50 percent chance of winning x and 50 % chance of losing x) increases with the size of the stakes (Kahneman and Tversky, 1984). This result also follows from the fact that the loss side of the function is steeper than the gain side.

5 These ideas on Prospect Theory and entrepreneurship are in part built on other authors' discussions on the same theme (Ronen, 1986; Wärneryd, 1988) and in part of this author's own creation. A more elaborate discussion may be found in Davidsson (1988a).

Some ideas that can be derived from this theory about the behavior of firms were suggested long before Prospect Theory was developed. Evaluation of alternatives in terms of gains and losses relative to some target (reference point, aspiration level) rather than in terms of their effects on final wealth was a central feature of early behavioral theory of the firm (Simon, 1955; Cyert and March, 1963; Simon and Stedry, 1972). The concave/convex form of the value function is also consistent with the search ideas in that theory (cf. March and Sevón, 1988).

It may also be noted that some aspects of Prospect Theory resemble Shackle's theory of choice behavior, although the theories were almost certainly developed independently. For example, Shackle also allows for a "loss side" and a "gain side", which may have different functional forms, and in both theories probabilities are exchanged for decision weights which need not sum up to unity (see Ford, 1983, Ch. 2)

6 Both these studies use large data bases; in Evans's case about 20 000 (US) firms and in Kumar's 800 to 1800 (UK) firms over three different time periods. Evans calculates his growth measure from the number of employees but refers to other articles of his in which assets or sales are used, yielding results consistent with those obtained for employee growth. Kumar used growth of net assets.

7 In a recent study of motivational differences in northern and southern Italy, Bellu (1987) makes a strong case for the psychogenic needs theory at the national level. Comparing four different occupational groups, $nAch$ scores were higher and $nAff$ scores lower - in both cases significantly so - in the north than in the south within each occupational group.

8 This was also indicated in the pilot study. Economic motivation was

mentioned or admitted by most of the 11 small business managers interviewed, but in all cases but one it was clearly a secondary motive (cf. Davidsson, 1986, p. 90)

9 The older the firm, the more it has proven viable doing what it does. An older firm is also more likely to operate in a less dynamic industry. The larger the firm, the more likely it is to yield profits (in absolute terms) that are high enough to ensure a satisfactory standard of living for its owner-manager. Thus, the assumption is that older and larger firms are more "on the safe side", something which is supported by numerous studies showing a positive relation between survival and both age and size (cf. March and Sevón, 1988, p.390).

As to the manager's age, an older individual is likely to be in a life-cycle stage that implies a lower need for additional income (support burden; mortgage and interest on housing etc. generally decline with age given that demands on standard of living do not increase. An older individual is also more likely to have reached his/her initial aspirations at (or adjusted them to) the present state of affairs (which is actually a "perceived need" issue).

3. Method

3.1 Introduction

Important method-related concerns already have been dealt with in the previous chapters. This chapter will focus more on the technical aspects of the research method.

3.2 Choice of Method

The first step in the research process was to review the literature on small business growth. Surprisingly few studies dealing with the issue and practically none focusing on it were found. It was therefore concluded that an empirical study could be valuable.

The pilot study that was conducted as the next step has been mentioned earlier. In addition to yielding ideas worthy of closer examination, the results of the pilot study also led to the conception of growth as an instance of continued entrepreneurship. Insight into the small business managers' language and thinking was also gained. The latter is very important for the design and interpretation of the results of a quantitative study.

In the main study, the problem of "Continued Entrepreneurship and Small Firm Growth" has been approached with a quantitative, survey-based method. The reasons for this choice are the following:

1. The survey method makes it possible to test on a larger sample the ideas generated in the pilot study and in other qualitative studies, as well as those derived from theory or suggested by the results of earlier quantitative studies that mostly had a more restricted scope. There was no lack of ideas, but there was limited knowledge about the relative importance of and interrelations among the different factors suggested.
2. A quantitative study permits comparisons between firms within a subgroup and between subgroups (e.g. within an industry and

between industries. If the number of cases in a study is small, general similarities and differences are likely to be hidden behind, or impossible to sort out from, circumstances that are specific to each case. With the chosen approach, i.e. emphasis on intervening variables, a quantitative approach is necessary.

3. The use of representative samples and statistical techniques makes it possible to measure, rather than subjectively judge, the relations between variables. Multivariate techniques also provide a means of separating true relations from spurious ones with some confidence. Recent developments of multivariate statistical methods have increased enormously the possibility to use survey data for theory construction and not just for testing simple hypotheses (cf. section 3.4.3).
4. Statements about (aggregates of) firms not investigated can be made. Under ideal conditions, it is exactly known which population the sample represents. When circumstances are less ideal, there is still some possibility to judge the representativeness of the sample.

This does not mean that the weaknesses of the method should be denied. Certainly, there are aspects of the problem which at the present state of knowledge cannot be successfully penetrated in a survey. In addition, there may be other aspects that are possible to investigate with the chosen method but which this study fails to cover.

All aspects of the problem are not captured by this study. For those which are investigated the results have been obtained using a sample and analytical methods that permit some claims about the generality of the results.

3.3 Data Collection

3.3.1 The Sample

The sampling frame used for this study is taken from Statistics Sweden's register of all Swedish companies. In order to have some control over the variation in the sample and to make possible certain kinds of comparisons, several restrictions were imposed.

First, the sample is restricted to firms that, according to the criterion used in the register (based on pay-roll taxes), had between 2 and 20 employees. Second, only certain industries were sampled. For this purpose, 5-digit level SNI-codes were used (a Swedish standard

resembling the U.N. ISIC-system). Third, the sample was restricted to independent firms, i.e. those that were not subsidiaries of firms that have 20 or more employees.

Substantial representation of firms from different industries and of different size-classes was ensured by means of stratification of the sample. Four "industries", each of which comprises between four and eleven SNI-categories at the 5-digit level, were specified and sampled. The industries are (the labels within quotation marks will be used in the following):

1. Manufacturing of metal products and machinery ("Manufacturing")
2. Manufacturing of (certain) electronic, electric, an optical equipment ("High-Tech")
3. Repair Services (several kinds of; "Repair Services")
4. Retailing with clothing and home equipment ("Retailing")

Three size strata were specified; 2-4, 5-9, and 10-19 employees, respectively. Thus, 12 (4*3) strata were constructed. From each stratum a simple random sample of 45 firms was drawn. Hence, the total sample comprises 540 cases.

In all, the sampling frame comprised - with the imposed restrictions - 12 130 firms. This could be compared with the total number of commercially active firms in the register which is 492 000 (1988 figures). Most of these (380 000) are classified as having less than two employees. Over all industries (excluding agriculture, forestry, and fishing) the total number of independent small firms within the specified size classes is approximately 85 000, out of which some 50 000 are found in the smallest size class, 23 500 in the intermediate, and 11 500 in the largest size class.

Telephone interviews and a mail follow-up questionnaire were used for data collection. One reason for using telephone interviews was that this was more likely to result in a satisfactory response rate. From the sample of 540 firms, 441 managers were interviewed and 337 of those completed the mail questionnaire. The author conducted 64 of the interviews.

When an attempt was made to collect additional data from an official register, it was discovered that some cases that had been included in analyses in previous reports from this project, were actually not members of the population. Apparently, the sampling procedure did not exclude subsidiaries of foreign-based firms or of a special kind of state-owned commercial organizations ("Affärsverk"). All "suspect" cases were checked with the official register, and original comments from interviewers were re-examined. As a result, a total of 30 cases (18 of which were interviewed) were excluded.

Of the remaining 510 cases, 423 (83%) were interviewed and 322 (63%) also completed the mail questionnaire. These response rates are considerably higher than the 10-40 percent obtained in most published studies relying solely on mail questionnaires (cf. Begley and Boyd, 1987; Birley, 1985; Jones, 1982; Teach et al, 1985; Welsch and Young, 1982). Due to internal non-response, the effective sample size is somewhat smaller than the above figures in most analyses.

A more detailed description of the sample, response rates, and non-response is given in General Appendix 2.

In all, the sampling frame used and the response rates obtained offer a comparatively high level of certainty as regards what population(s) the sample(s) represent. The most important aspect of this is that the influence of unknown sources of systematic biases is restricted.

The representativeness of the sample has not been utilized to the full since in most analyses the sub-samples are aggregated and not weighted according to the size of the underlying populations. Weighting has not been used since the results would then refer mainly to very small retailers, something which certainly was not the purpose of stratifying the sample.

This also means that population parameters cannot be inferred from the sample on statistical criteria. Aggregate results thus refer to a test of theory on the actual sample or - alternatively - to a hypothetical population made up of different sub-groups that have the same relative representation as in the sample analyzed.

3.3.2 Questionnaire Data

There is a translated version of the questionnaires in General Appendix 1. Below and in the result chapters reference is made to specific variables in the form (Qxx). These variable numbers are also given in the questionnaires.

Several variables relating to each "box" in the General Framework are included in the questionnaires. Their contents will be briefly summarized here. More details on the relation between specific questions and the concepts used in the General Framework are given in the result chapters.

It was found in the preliminary stages that to obtain satisfactory response rates, only questions that the manager would be willing and able to answer without consulting other people or written documentation should be included. Therefore, data on profits, assets, and suchlike were not collected.

The telephone interview started with some firm-related questions (Q6-Q18). These serve as indicators of the objective variables in the framework, including observed entrepreneurship (growth and new product development).

Q19 and Q20 concern economic satisfaction, i.e. perceived need. These questions are followed by a number of questions concerning motivation towards growth (Q21-Q33).

The next part, Q34-Q39, contains statements aiming at psychological characteristics. Some of these are used as indicators of perceived ability. Finally, Q40-Q49 deal with the individual's background, including indicators of past and present entrepreneurship.

The first part of the mail questionnaire concerns the firm's market, i.e. opportunity issues (Q51-Q56). Detailed questions about ownership (Q57-Q61) are followed by questions concerning perception of opportunity (Q62-Q85). These concern the firm, the markets for inputs and output, and factors like taxes and legislation.

Factors important for over-all satisfaction are covered by Q86-Q96, while Q97-Q108 deal with sources of ideas and advice. These two subsets of variables are not used in the causal modeling approach in chapters 4 and 5. Finally, the need for Achievement is measured with reactions to statements in the last variable subset, Q109-Q116. This subset also includes additional beliefs about the consequences of growth.

Considerable effort has been devoted to ensuring the quality of the data. This involves e.g. selection and training of interviewers, pre-testing of preliminary questionnaires on 18 respondents, checks for interviewer effects, and thorough screening to detect punching errors.

3.3.3 Data From External Sources

The study has been complemented with data from external sources. With the sampling frame, data on industry classification, size class, and geographic location of the firms were obtained. Also official and non-official (more disaggregated) data from Statistics' Sweden and other sources have been added afterwards. These data concern structure and dynamics of the industries as well as characteristics of different geographic areas. More details are given in the empirical chapters.

The inclusion of external, "objective" data is an important extension of the study. This makes possible analyses of the impact of structural factors and permits the pursuit of one of the central questions of this study, viz. how individual factors intervene between structural factors and behavior.

Attempts were also made to collect post-interview size data for the firms from an official register. It turned out that at this time such data were available only for a small minority of the sample. They will therefore not be used.

In terms of the General Framework (cf. section 1.6) the external data are used as indicators of (objective) Opportunity.

3.4 Data Analysis and Interpretation of the Results

3.4.1 General Issues

The use of statistical techniques requires some careful thinking about the balance between theory and data. On the one hand, omitting theory leads to the exploitation of random variation and spurious relations. On the other hand, if data are used only to test existing theory, alternative patterns of relations will be ignored and no really new (tentative) knowledge gained.

It must be stressed, though, that achieving a balance is not an easy undertaking, since different theories arrive at different predictions and earlier empirical studies frequently show conflicting results. It has been attempted in this book to give the reader a fair picture of which results do and which do not accord with a priori expectations.

A problem of a more technical nature is that in the data analyses techniques which (are assumed to) require data with metric properties have been used to analyze ordinal data. Also other assumptions underlying the models have been violated. This is in fact a very common way of squeezing more information out of data, and it is not difficult to find rationales for doing so.

First, substantive theories also make simplifying assumptions. The fact that we know that a theory is "wrong" in the sense that it does not consider all empirical deviations from the theoretical abstractions does not make it useless (in fact, it can help making it useful). In the same manner, statistical theory makes simplifying assumptions that are rarely - if ever - perfectly valid. Yet, making use of the theory can have considerable advantages compared with the alternative of not using it.

Second, the measurement paradigm developed by e.g. Stevens (1946) and Suppes and Zinnes (1963) has been seriously challenged (cf. Borgatta and Bohrnstedt, 1980; Michell, 1986). There is thus no consensus as regards what use of statistics is "permissible" for different "levels of measurement."

In addition, the techniques have been shown not to be very sensitive to at least certain kinds of violations (Bentler, 1978; Henkel, 1976; Norusis, 1986). It is also sometimes forgotten that the strongest assumptions in statistical theory often concern only the tests of statistical significance and not the estimation procedures as such (Fornell, 1986).

This is not saying that any violations of assumptions underlying statistical methods can be accepted. However, refraining from using the methods solely because some assumptions are violated is just as absurd as refraining from letting substantive theory guide research. Again, it is a matter of balance; whether to risk drawing conclusions which are actually not based on empirical realities or to overlook interesting information which is available only at the cost of making assumptions about metric properties of measures or about forms of population distributions.

In the empirical chapters so called "distribution-free" methods will be used as well as methods that are based on a number of assumptions as regards distributional form and metric properties of measures.

3.4.2 Conventional Data Analysis Methods Used

Several statistical methods will be used. Applications of the multivariate techniques multiple regression, multiple discriminant analysis, and cluster analysis can be found in the empirical chapters.

These "first generation" multivariate methods are all well established in applied social science research. They will therefore only be given brief descriptions here.

Multiple regression analysis is a technique for analyzing multivariate (linear) direct effects of a set of explanatory variables on one dependent variable. Multiple discriminant analysis aims at explaining analyzed cases' group membership (categorical affinity) using the information in a set of explanatory variables. Cluster analysis also splits a sample into more homogeneous groups. While discriminant analysis examines the explanatory variables' ability to group cases

according to an existing categorical variable, cluster analysis creates the categories by an analysis of the pattern of variation in a set of variables.

All three methods are described in Norusis (1986) and in a multitude of textbooks on multivariate statistical methods.

Besides these, bivariate and univariate methods are used, such as t-tests, Mann-Whitney's U-test (a distribution-free alternative), contingency table tests (χ^2), and simple frequency distributions. These are described in any standard textbook on statistical inference, e.g. Chou (1974).

3.4.3 Partial Least Squares (PLS) Analysis

The research problem concerns a complex system of directly and indirectly related concepts at a fairly high level of abstraction. These cannot be measured directly with a single measure.

The interest is thus not focused on the distributions of, or relations between, questionnaire items such and such, but on complex relations between theoretical variables which can only be assessed indirectly, using several measures.

Methods that are capable of handling this kind of analyses have been developed in the last two decades. The best-known of this "second generation of multivariate analysis" (Fornell, 1987) is Covariance Structure Analysis, commonly referred to as LISREL, which is the name of the computer program (see Jöreskog and Sörbom, 1984).

Jöreskog's first version of LISREL was launched in the early seventies. This was "a landmark achievement" in the development of statistical methods for the social sciences (Wold, 1986). LISREL and similar methods that were developed later have combined the strengths of econometric and psychometric methods. They have narrowed considerably the gap between theory and data, and they give rich possibilities for exploratory (model building) as well as confirmatory (model testing) analyses of complex causal systems.

For "Philosophy of Science" aspects of the methods and expositions over the historical development behind them see e.g. Wold (1982; 1986), Fornell (1987), Bagozzi (1984), and Cliff (1983).

Inspired by Jöreskog's LISREL, Herman Wold developed a similar but in important respects different predictive-causal method of analyzing complex systems. This method, Partial Least Squares analysis (or PLS) will be used in chapters 4 and 5 of this book. As the method is to date not as well established as LISREL, it will be described in some detail below. This description builds on Wold (1982; 1986), Fornell (1987), Fornell and Bookstein (1982), Adelman et al (1987), Lohmöller (1984) and Wahlund (1988). All of those also provide formal treatments of the estimation technique.

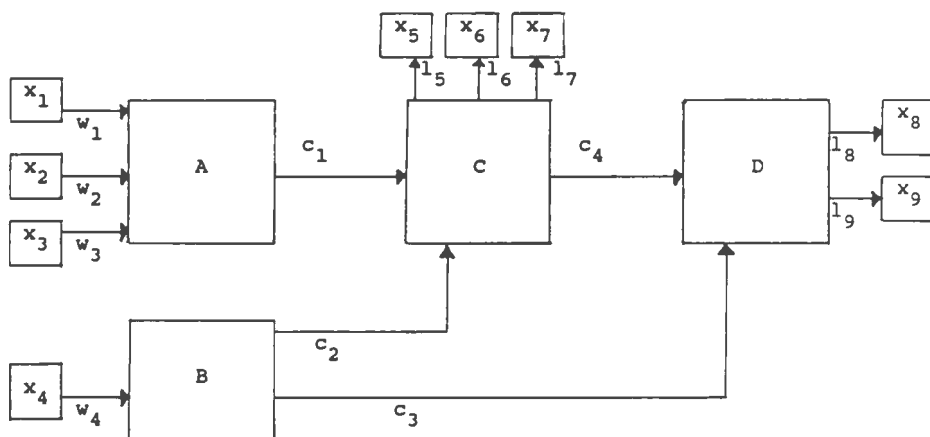
Important features of PLS analysis are:

1. As the name says, it is a Least Squares (LS) technique. LISREL, on the other hand, applies Maximum Likelihood (ML) estimation (although least squares options are available).
2. The method is very general and embodies several earlier LS methods such as Regression, Principal Component, and Canonical Correlation analysis as special cases.
3. Like LISREL, the method is applicable to analysis of causal systems of variables that are measured directly (manifest variables, MV's) or indirectly with a number of directly measured indicators (latent variables, LV's).
4. LV's in PLS are linear combinations of their indicators (like in principal component analysis). LV's in LISREL are not defined by their indicators (like in ML factor analysis).
5. LV's in PLS are of two types, Reflective and Formative (explained below). In LISREL only reflective LV's are permitted.
6. The estimation procedure optimizes the explanation of specified variances. LISREL, on the other hand, aims at explaining all covariances among the variables included in the model.
7. The technique thus is prediction-oriented, i.e. optimal prediction - not optimal parameter accuracy - is the goal. ML-techniques are parameter-oriented and cannot at the same time achieve optimal prediction in the LS sense. PLS estimates are consistent-at-large, i.e. approach consistency as sample size and number of indicators of an LV increase.
8. LISREL can handle (small) non-recursive systems. Bi-directional causality is not permitted in current versions of PLS.

9. PLS can be applied to large models and small samples. LISREL estimation requires large samples and becomes intractable if the number of variables and structural relations is large.
10. PLS can be used with correlational data or raw data. If raw data are used, the results can be tracked back to effects in terms of units on the original scale (unlike LISREL, since LISREL LV's are not defined by the indicators)
11. In PLS, only very mild assumptions are made. The method is "distribution-free" and "independence-free." LISREL makes strong distributional assumptions.
12. PLS models can be evaluated by examination of R^2 measures for endogenous variables and the size of path coefficients, regression weights, loadings, and (certain) residuals. Over-all measures like average communality etc. can also be used. With raw data, jack-knife standard errors of coefficients and Stone-Geisser's over-all test of predictive relevance can be used. As is the case with LISREL, however, good and simple criteria for model acceptance or rejection do not exist.
13. Unlike LISREL, parameter estimates outside the admissible parameter space do not occur in PLS analysis.

To get an idea of how PLS estimation works, consider the fairly simple model in figure 3.1.

Figure 3.1 PLS-Analysis - An example



Note: A,B,C,D = Latent Variables; c_i = path coefficients (structural relations); x_i = Manifest Variables (indicators); w_i = regression weights (multiple regression coefficients; model parameters for formative LV's); l_i = loadings (simple regression coefficients; model parameters for reflective factors).

In this model, A, B, C, and D are latent variables. The x_i 's are their manifest indicators. For formative factors the regression weights (w_i ; multiple regression coefficients) are displayed; for reflective factors loadings (l_i ; simple regression coefficients) are the corresponding model parameters.

As to the structural relations (c_i), this model suggests that B and C have direct effects on D and that A and B have direct effects on C. A has an influence on D only indirectly, via C. In addition to its direct effect, B also has an indirect influence on D via C.

For the relation between A and D, the model is supported if the path coefficients c_1 and c_4 are of substantial size and can explain the raw correlation between A and D. That is, the residual correlation corresponding to the omitted direct A-D relation should be (close to) zero. If data accord with the specified B-D relation, this will show in terms of substantial size of the path coefficients c_2 , c_3 , and c_4 . If the model were run with any one of these relations omitted, residual correlations of substantial size would emerge, suggesting that the omitted relation be included.

Note that the analysis technique also makes possible the detection of direct and indirect effects of opposite signs between two variables which appear to be unrelated. Assume for instance that B is age, C is experience, D is a performance measure, and that the zero-order correlation between B and D is zero. Behind this zero correlation a PLS analysis may reveal a positive effect of experience on performance (c_4), a "pure" negative effect of age (c_3), and a positive effect of age on experience (c_2). This pattern could sum up to a zero total effect ($c_3 + c_2 * c_4$).

In the model above, C and D are reflective factors. The idea underlying the specification of a reflective factor is that the latent variable causes the variation in its indicators. That is why the arrows are drawn from the LV to the MV's for such factors. This is also the idea underlying the dominant measurement paradigm within psychometrics. Factors in factor analysis or items in an index should

have high inter-correlations; be measures of the same underlying construct.

A and B are specified as formative factors. In that case the theoretical variable (LV) is constructed by a number of indicators which are not necessarily highly correlated. This corresponds to the philosophy behind attitude indices which are constructed from evaluations of a number of attributes (e.g. Fishbein and Ajzen, 1975). Although the attribute evaluations are not necessarily highly correlated with each other, they sum up to a meaningful construct.

All MV-LV relations are specified by the analyst, i.e. which MV's are indicators of which LV as well as the direction of the relationship. It should be stressed that the choice between reflective and formative specification is not always crystal clear on the basis of e.g. theory. Often the analyst's judgement and the research objective must guide the decision. In the choice, structural fit and explanatory power (formative) is traded for "good measurement" and unambiguous interpretation of the LV's (reflective).

The LV's position within the causal system also influences the formative/reflective choice. Generally, LV's that are only acting as dependent variables in the system should be specified as reflective factors. This facilitates interpretation of their nature and of causal effects at the manifest level.

The computing process involves an iterative technique that builds on fix-point estimation (Wold, 1965). Fix-point estimation, in its turn, is based on conditional expectation.

In the first iteration, one part of the parameters is considered to be known and therefore fixed while the other part is estimated (specified or default starting values are used). The subset of estimated parameters is fixed in the next iteration and what was previously fixed is estimated. This process goes on until a convergence criterion is met. The estimation problem is thus reduced to a series of iterative simple and multiple regressions.

While both weights and loadings are computed regardless of specification, the optimization criterion is different depending on whether formative or reflective LV's are used.

With formative LV's, the optimization criterion is minimization of residual variance ($\max R^2$) for the LV's to which the formative LV in question is causally related. A formative LV is thus constructed from its indicators to act as a "good neighbor" within the causal system.

Also for reflective LV's, being a "good neighbor" is one criterion. In addition the estimation aims at maximizing the factor loadings. Both kinds of LV's can be included in the same analysis.

In figure 3.1 LV (B) has only one indicator (MV). In such a case, the LV is identical to the MV and specification of direction of the MV-LV relationship does not matter.

A "strong" PLS model is characterized by high explanatory power, small residual correlations within the causal system, exclusion of many of the possible structural relations (since model fit is trivial if no relations are excluded), and high loadings which makes interpretation of the LV's easy. Note that while weights, not loadings, are model parameters for formative LV's the loadings can still be used for interpretation of the LV. This is important if the indicators are multi-collinear, as the regression weights are unreliable in such situations.

The applications of PLS in this study are based on correlation data. The variables are standardized and path coefficients can therefore be interpreted in the same manner as standardized regression coefficients (Beta coefficients).

3.4.4 Evaluation of Results

A number of methods will be used for assessing the substance and generality of the results:

1. Analyses of the same data with several, fundamentally different, methods (cf. Bentler, 1978).

2. Analyses of subgroups and comparison of the results obtained for different subgroups (of course, differences may reflect interesting real differences as well as low reliability, cf. section 3.2, point 2).
3. Judgements about the substantive meaning of established differences. That is, are the differences sizeable enough to be regarded as important?
4. Comparison with expectations based on theory and/or previous studies.
5. Comparison of the ability of alternative models to describe or reproduce the observed data (cf. Bentler, 1978; Bagozzi, 1984).
6. Statistical tests of significance.

A number of reasons for not relying too heavily on significance tests can be identified (see e.g. Henkel, 1976). This does not make them useless. It has been mentioned earlier that in this study they generally refer to the relation between theory and data. They are also used as a "guard against according substantive meaning to results which can easily be explained by 'chance'..." (Henkel, 1976, p.87).

When valid statistical tests of population parameters cannot be performed the number of cases investigated, and how they were selected, remain the bases for claims about generality. The survey was designed so that the results refer to a group of small firms which was selected randomly. At the same time they represent a controlled variety of types of small firms.

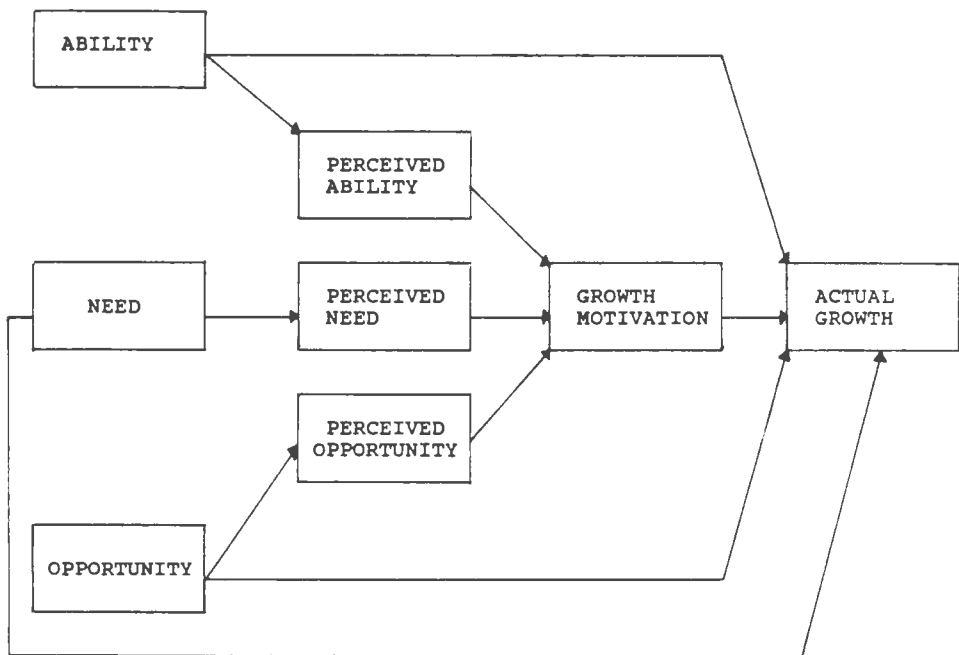
This makes it likely that relations that are found to be "substantial" or "statistically significant" are valid for a large group of firms that were not investigated. Especially if such results are stable over the sampled industries, they are likely to hold also for other industries.

4. Determinants of Growth

4.1 Introduction to Analyses of Growth and Growth Motivation

In this and the following chapter the analyses will follow explicitly the general framework outlined in section 1.6. The focus lies on the relations between the theoretical variables. In the specific case of growth, the model becomes:

Figure 4.1. A Model of Determinants of Small Firm Growth



The model suggests that a primary cause of growth is the individual's growth motivation. It has been mentioned earlier that one impression from the pilot study was that small firm managers are normally not under severe economic pressure, and that they may trade off profits in favor of other personal goals. It is under such conditions that motivation is interesting. For if motivation directs behavior and differs between individuals, different behavioral responses to the same external stimulus should be expected.

For groups of individuals who have similar motivation (e.g. "high" or "low"), similar behavior could be expected. That is, the behavioral response is assumed to be predictable for groups. That renders meaningful the measurement of motivation for predictive purposes, e.g. in repeated surveys. To obtain a deeper understanding and in order to learn how motivation could be affected, its underlying causes must be considered.

According to the model, motivation towards growth is determined by the individual's perception of the ability, need, and opportunity for growth. All three factors influence the subjective monetary and non-monetary gains and costs that growth is expected to bring about as well as assessments of the risk that the outcome will not be the expected one.

Each individual will not perceive all relevant aspects of reality, nor will individuals perceive them in the same way. The part which is perceived will affect behavior through mediating attitudes and aspirations. Thus, there are indirect effects of objective variables on growth.

Direct effects of objective variables will arise because behavior is not entirely discretionary. At least as measured in an empirical study, individuals may be found to do something they do not consider to be their most preferred choice because that alternative is not perceived as feasible. Direct effects will also occur because all aspects of reality that affect results are not adequately perceived. As Pfeffer and Salancik (1978, p.73) put it: "Something not attended to by the organization cannot affect its actions, even though it may

subsequently affect its results." This is self-evident but nevertheless often forgotten. Empirical direct effects may also be spurious (cf. section 2.4.2).

Regrettably, with cross-sectional data the model as a whole cannot be tested directly. In this study, some objective ability, need, and opportunity data which may explain previous growth are available, but not ex ante data on motivation and perception variables. Growth data concern the 1984-1986 period, whereas growth motivation and perception data are taken at one point in time, viz. Nov-Dec 1986.

The analysis is therefore carried out in three steps. In this chapter an attempt is made to explain previous growth by differences in objective ability, need, and opportunity in the relevant time period. The growth motivation mediator is thus left out.

In the next chapter effects of various ability, need, and opportunity factors on growth motivation are estimated. The relation between growth motivation and subsequent real growth, although highly interesting, cannot be tested directly. However, in conjunction the results of the analyses in this and the next chapter have implications for that relation. These implications - the third step - will be discussed in section 5.7.

The variables in the analyses are described as they appear. Descriptive data for key variables are given in General Appendix 3.

The analysis method used in the two chapters is PLS (Partial Least Squares). The method was described in section 3.4.3. The computer program used is Lohmöller's (1984) LVPLSC.

It must be emphasized that the analyses concern the signs, strengths, and structure of relations between theoretical variables. Correlation data are used and effects are expressed in terms of standard deviations. Predictions in terms of original scales of manifest variables will not be provided.

4.2 Analyses of Determinants of Previous Growth

4.2.1 Introduction

The remainder of this chapter deals with causal analyses of previous growth. The analyses are intended to answer the following questions:

1. To what extent can previous growth be explained by differences in ability, need and opportunity, when the mediating influence of differences in growth motivation are not considered?
2. What is the relative importance of ability, need, and opportunity for the prediction of growth?
3. What is the relative importance of each (sub-)factor in determining (growth-relevant) ability, need, and opportunity? ¹
4. To what extent do different industry sub-samples yield the same results?

The analysis has been carried out as follows: One dependent and 14 independent factors were specified in terms of which manifest variables should serve as indicators of which first-order factor. Some of the first-order factors were specified as formative and others as reflective factors (cf. section 3.4.3). This specification was based on a judgement of which was the theoretically more reasonable way to define the factor.

In the first PLS-analysis, the dependent factor (Growth Rate) was regressed on the 14 pre-specified first-order factors (each of which had 2 to 5 indicators). The only difference between this analysis and an ordinary multiple regression is that all the variables are composite measures. This step yields the empirical definition of the first-order factors, i.e. the weights which show how they are linearly combined from their manifest indicators.

The factor correlation matrix from the first analysis was then used as input in a second-order analysis. The first-order factors were used as

formative indicators of the second-order factors Ability, Need, and Opportunity. Growth was regressed on these three factors. While the work behind it is complex, the main analysis presented is - in terms of relational structure - fairly simple. No causal relations among the explanatory factors are assumed.

The 382 cases that had valid data on both growth measures have been used. Mean-substitution has been used for indicators of the explanatory factors (0-10 cases per variable). Since in these analyses no individual responses on questions asked in the mail questionnaire are used, non-response due to non-completion of the follow-up was not an issue here.²

4.2.2 Specification of Variables Used in the Analyses

4.2.2.1 The Dependent Variable

Measures of previous growth have been computed from statements of current size in turnover and in number of employees (Q14-15; Q13) and the corresponding figures three years previously (Q16-17; Q18). Instead of "three years ago" first year in operation was used for the youngest firms (here and in the following, "Qxx" refers to variable numbers; see General Appendix 1).

From these data, annual growth rates in terms of turnover and number of employees have been computed, constituting the two indicators of the dependent factor "Growth Rate." In order to reduce the skewness of the distributions, the logarithms of ratios of size measures were used instead of percentages, i.e. $(\text{size at } t_0 / \text{size at } t_{-n})^{1/n}$.

4.2.2.2 The Explanatory Variables

Also the explanatory variables are composite measures. The explanatory first-order and second-order factors used are specified in table 4.1. A detailed description of the indicators can be found in the appendix to this chapter, table A4.1.

Table 4.1 Explanatory First-Order and Second-Order Factors:

<u>Factors</u>	<u>Indicators</u>	<u>Data Source</u>	<u>Higher value means...</u>
ABILITY (F)			MORE ABILITY
1. Industry/Management Experience (F)	1,2	Tel. Int.	More experience
2. Entrepreneurial Experience (F)	3,4	Tel. Int.	More experience
3. Education (F)	5,6	Tel. Int.	Higher education
NEED (F)			MORE NEED
4. Age/Maturity (F)	7,8	Tel. Int.	Older/More mature *
5. Firm size (R)	9,10	Tel. Int.	Larger *
6. Profitability (R)	11,12	Tel. Int.	More profitable *
OPPORTUNITY (F)			MORE OPPORTUNITY
7. Rate of Innovation within SNI-group (F)	13,14	External/ QDSM	Higher rate
8. Industry Structure (R)	15,16	External	More concentrated
9. Entry Barriers (F)	17,18	QDSM	High barriers
10. Market Growth (R)	19,20	External	High growth
11. Char. of Geogr. Area; County (R)	21-24	External	More favorable
12. Char. of Geogr. Area; Community (R)	25-29	External	More favorable
13. Geographic Market Dispersion; SNI-group mean (R)	30,31	QDSM	More dispersed
14. Customer Structure; SNI-group mean (R)	32,33	QDSM	More concentrated

Note: Capital letters are used for second-order factors. QDSM = Questionnaire data, SNI-group mean. These variables are aggregate, group-average measures for subgroups of this sample.³ External data (data not given by respondents) were assigned to each case on the basis of its industry classification or geographic location, which in turn were available from the sampling frame. "*" = a negative (total) effect on Growth Rate is expected. (R) indicates a reflective factor; (F) a formative factor.

There is a priori reason to believe that the quality of measurement differs between factors. For example, Age/Maturity, Geographic Characteristics and Industry Structure are likely to be well measured. The indicators used for Market Growth and Profitability are shaky. For the latter turnover per employee relative to industry/size-class average is used. While probably positively correlated with profitability, this is of course not a perfect measure.

4.2.3 Expected Relationships

Concerning the relation between the second order factors and Growth Rate it is assumed that:

- The higher the Ability, the higher the Growth Rate.
- The higher the Need, the higher the Growth Rate.
- The more Opportunity, the higher the Growth Rate.

The relation between first-order and second-order factors is more intricate. The following has been assumed:

- Industry experience, management experience, entrepreneurial experience and education (general and business) enhance growth-relevant Ability (cf. sections 2.3.3.1 and 2.4.1).
- Higher firm age, age of the manager, firm size, and profitability are expected to reduce the Need for growth (cf. Ch. 2, note 9; also sections 2.3.2.2 and 2.4.1).
- Opportunity for growth should be better in an industry that is less (naturally) fragmented, has a higher market growth rate and a higher rate of (product) innovation. Growth Opportunity is also enhanced by a favorable geographic location.⁴

More complex models including the double loadings discussed in section 2.4.2 have been tested. As it turned out that the simpler structure described above equally well takes care of all substantial empirical relations contained in the data, only analyses based on this simpler structure are presented.

4.2.4 Results

4.2.4.1 The First-Order Model

The results from the first step are displayed in table 4.2. The factor correlation matrix is given in the chapter appendix, table A4.2.⁵

It turns out that one first-order factor within each block does not show the expected relation with Growth Rate and they are therefore left out in the second step.

Industry/Management Experience has a non-negligible negative correlation with previous Growth Rate. Although this correlation may be interesting the factor could hardly be conceived as an indicator of (growth-relevant) Ability, and it is therefore left out in step 2.⁶

Table 4.2 Path Coefficients and Correlations from the First Step
(Growth Rate regressed on 14 first-order factors)

<u>First Order Factor</u>	<u>Exp. Sign</u>	<u>Path Coeff.</u>	<u>Correlation</u>
1. Industry/Management Experience	+	-0.09	-0.11
2. Entrepreneurial Experience	+	0.06	0.20
3. Education	+	0.14	0.16
4. Age/Maturity	-	-0.21	-0.38
5. Firm Size	-	-0.29	-0.34
6. Profitability	-	0.06	-0.02
7. Rate of Innovation	+	0.12	0.29
8. Industry Structure	+	0.06	0.18
9. Entry Barriers	+	-0.02	-0.01
10. Market Growth	+	0.06	0.15
11. Geogr. Characteristics; County	+	0.01	0.09
12. Geogr. Characteristics; Community	+	0.02	0.08
13. Geogr. Market Dispersion	+	-0.13	0.16
14. Customer Structure	+	0.05	0.25

$$R^2 = 0.27$$

Profitability - as measured here - does not contribute to the explanation of previous Growth Rate. The simple correlation is very small and the path coefficient small and contrary to expectation in the positive direction.⁷

Also one Opportunity factor, viz. Barriers to Entry, causes some trouble. The path coefficient and the correlation are both very small and in the "wrong" direction. The reason may be weak measurement, but it is also likely that the risk of competition from spin-offs is not much of a concern in any of the selected industries. Had other industries been chosen, e.g. consulting or advertising agencies, the factor might have been more important (cf. Davidsson, 1986).

The negative coefficient for Geographic Dispersion probably due to high intercorrelations among the explanatory factors and does not necessarily mean that the true net effect is negative. Since the correlation is positive as expected and since the problem is not attributable to this factor alone, it will be used also in the second step (cf. note 1 and Darlington, 1968).

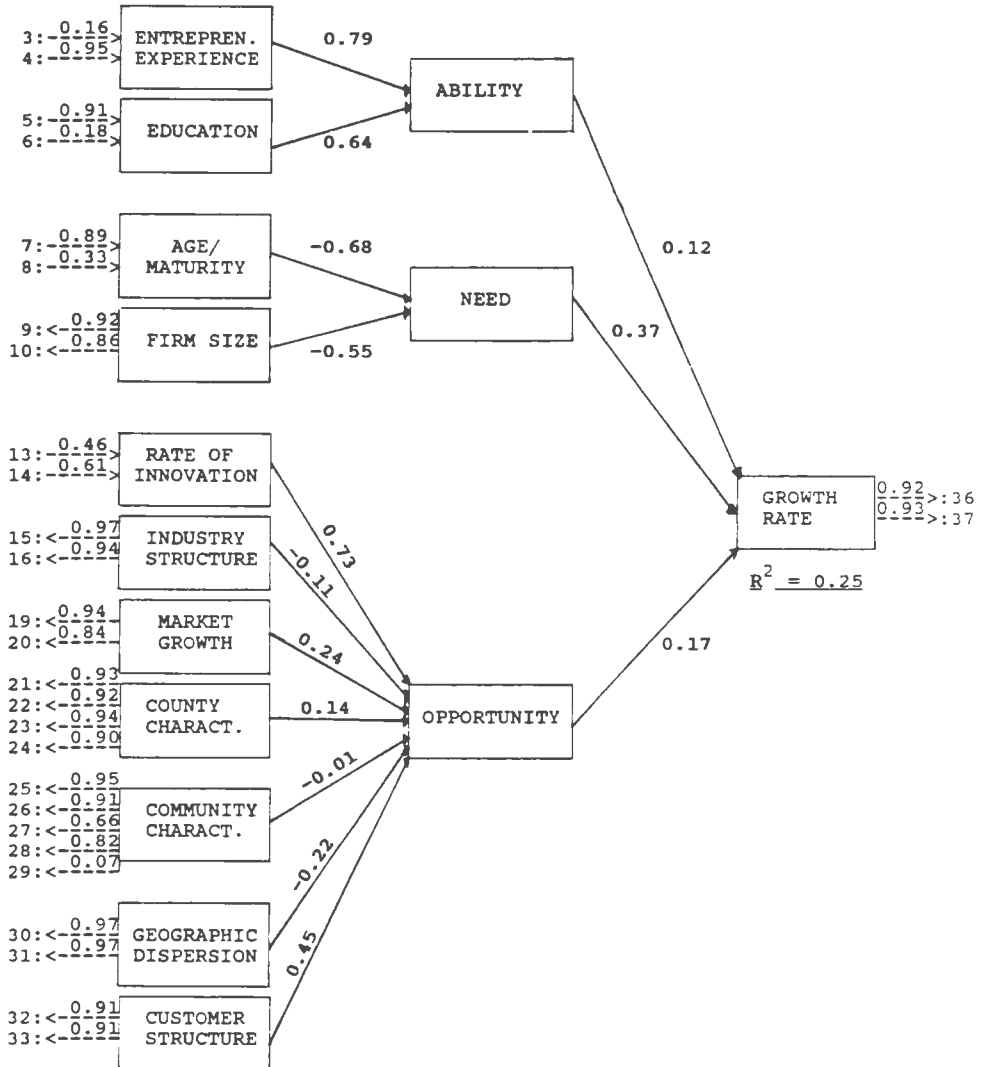
Also other relations may seem too weak to deserve further consideration. However, one of the very reasons for analyzing indirectly measured constructs is that several indicators, each of which would by itself be regarded as "insignificant", may be needed to estimate relations suggested by theory. In addition, parameter accuracy in PLS analysis increases with the number of indicators used. Therefore, all first-order factors except the three commented on above will be used in the second step.

4.2.4.2 The Second-Order Model

The model arrived at is displayed in Figure 4.2. Factor loadings are displayed in table A4.3 in the chapter appendix.

Starting from the left, the figure shows: a) identification numbers for manifest variables; see table A4.1 in the chapter appendix, b) arrows with weights/loadings for the manifest variables, c) the first-order factors, d) arrows with weights for the relationships between first-order and second-order factors, e) the explanatory second-order factors, f) arrows with path coefficients (multiple regression coefficient) for the effects of the second-order explanatory factors on g) the dependent factor, h) the dependent factor's loadings, and i) identification numbers for its manifest indicators.

Figure 4.2 Previous Growth - The Second-Order Model



Note: The correlations among the explanatory second-order factors are: Ability - Need (0.24), Need - Opportunity (0.30), and Ability - Opportunity (0.32).

It turns out that the three factors "Ability", "Need", and "Opportunity" do indeed explain a substantial share of the variation in Growth Rate. Nevertheless, even more remains to be explained. The position taken by the author is of course that a substantial part of the remainder could have been explained by measures of growth motivation, had such measures been available.⁸

The path coefficients further show that all three second-order factors have unique impact on Growth Rate that is large enough to deserve consideration. Need stands out as the most important factor, but the coefficients for the other factors are not negligible. The importance of Need is consistent with the idea that purely economic variables may be strong predictors of behavior up to a point, but that above a level of mere subsistence additional profit may be traded off for other valued goals that are not viewed as compatible with further expansion.

The expectations are confirmed as concerns the relations between first-order and second-order factors. An inspection of the weight and loading matrices reveals that no first-order factor is totally redundant and that they all load on "their" factor with the expected sign. Three coefficients (weights) with the "wrong" sign appear among the Opportunity indicators (Industry Structure, Community, and Geographic Market Dispersion). Because of high intercorrelations within that block these coefficients are likely to have large standard errors and interpretations should be made with caution. That the "true" net effects are negative is hard to imagine. The loadings are positive (cf. also note 1).

Then what are the growth-relevant underlying factors of Ability, Need, and Opportunity? For Ability and Need the pattern is fairly clear-cut. In both cases, each first-order factor gets a substantial weight and loading. Entrepreneurial Experience appears to be slightly more important than formal Education, and Age/Maturity slightly more important than Firm Size.

Going one step further back it turns out that both first-order Ability factors are almost identical to one of their indicators. A dummy for "founder" is in this case appropriate as a single indicator of

Entrepreneurial Experience. Likewise, "business education" does not provide any growth-relevant information that is not contained in the "general education" variable.

The high inter-correlations among the first-order Opportunity factors make it hard to judge their relative importance from weights alone. Judging from correlations and factor loadings, Rate of Innovation, Customer Concentration, Industry Concentration, Geographical Market Dispersion, and Market Growth - in the order given - seem to be the most important indicators of growth-relevant Opportunity. Geographic Characteristics of the kind included in the measure do not seem to be important general determinants of company growth.

4.2.4.3 Industry Differences and Similarities

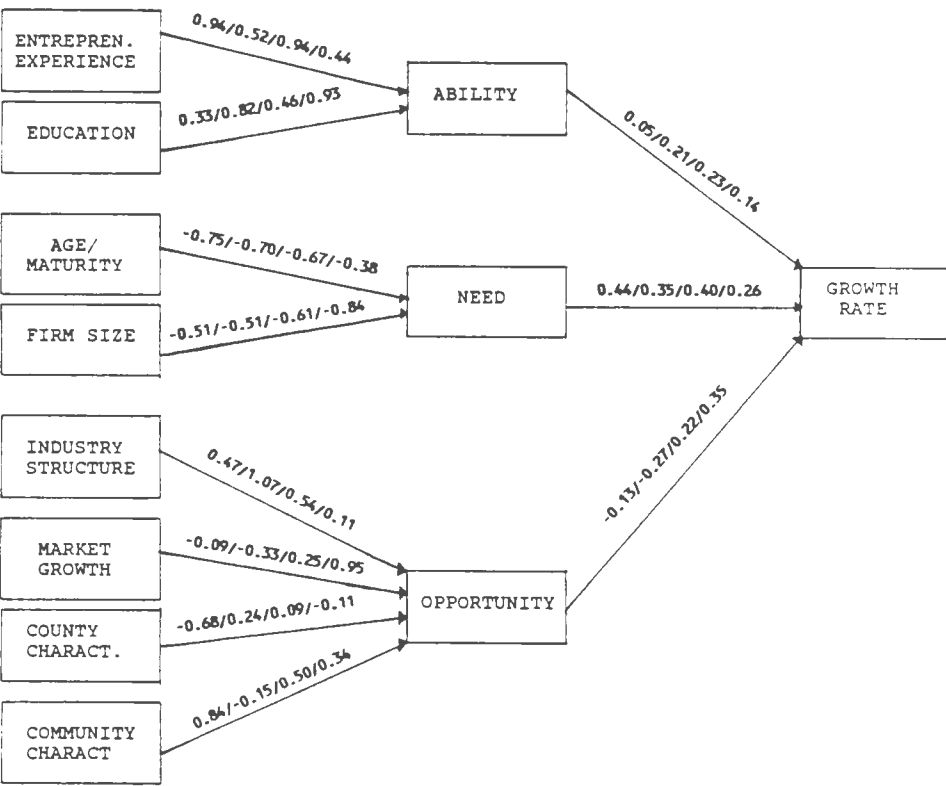
The analyses have also been performed separately for each industry (Manufacturing, High-tech, Repair Services, and Retailing). In the separate analyses SNI-class means on questionnaire items cannot be used as indicators as there is too little within-industry variation on these variables (each "industry", which is the stratification variable, contains a between four and eleven "SNI-classes", which refers to 5-digit level SNI codes). Only the indicators that are based on external data are used for the Opportunity factor in the analyses below.

The path coefficients for each industry are displayed in figure 4.3. Factor loadings are given in table A4.4 in the chapter appendix.

It turns out that R^2 is generally higher in the subgroup analyses despite the smaller number of explanatory factors, but that this is achieved at the cost of an unstable and hard-to-interpret pattern for the Opportunity factor. Especially for the Industry Structure and Market Growth factors, within-group variation is much smaller than the variation in the full sample. This causes problems and the weights and path coefficients relating to Opportunity displayed in figure 4.3 must be judged as unreliable.

As a matter of fact it is in some cases not perfectly clear whether the resulting Opportunity factor should be regarded as reflecting "high" or "low" Opportunity, since different first-order factors load with different signs. Thus the paradoxical conclusion that high Opportunity causes low Growth Rate for firms in some industries should not be drawn.

Figure 4.3 Summarized Results for Separate Industries



Note: The first coefficient on each arrow refers to the Manufacturing sample, followed by High-Tech, Repair Services, and Retailing.

$$R^2 = 0.26/0.35/0.29/0.26.$$

This does not necessarily mean that the results relating to Opportunity in the full sample analysis are unreliable. A careful inspection of the results for the full sample and for the specific industries suggests the following:

- There is a difference between Manufacturing and High-Tech on the one hand and Repair Services and Retailing on the other as regards within which interval of the Industry Structure scale cases in the subgroups fall. While this difference in level may be a valid indicator of growth-relevant Opportunity, the smaller differences within the intervals actually represented in the subgroups do not seem to carry any valid information of that kind.
- The relation between Market Growth and Opportunity is established with some certainty. In the industries which have a positive relation between Opportunity and Growth, Market Growth has a high (the highest) positive loading. In the two industries for which a negative relation between Opportunity and Growth Rate is indicated, the loading for Market Growth is either negative or very small.
- The full sample analysis may conceal an interesting relation between Geographic Characteristics and Growth Rate. Whereas the relation may be zero or spuriously negative for Manufacturing and High-Tech firms, the sub-analyses reveal a possible positive relationship for Repair Services and Retail firms. This is particularly pronounced for Characteristics of the Community. The pattern seems logical since it is primarily for the latter type of firms one would expect general characteristics and development of the local environment to be relevant factors in determining growth Opportunity.⁹

For the other two second-order factors the pattern is clearer. In all the separate analyses, Ability and Need affect Growth Rate in the expected direction, and in all of them Need appears to be the more important of the two. The effect of Ability appears to be negligible in the Manufacturing sample.

As to the relative importance of first-order factors for second-order factors, the pattern is somewhat unstable. In each sample, both first-order factors appear to be important indicators of Ability and Need, respectively. The variations in relative importance across industries may be chance events.

4.2.5 Summing Up the Analyses

The empirical analyses suggest that:

1. Data accord fairly well with the pre-specified three growth-relevant factors Ability, Need, and Opportunity.
2. All three factors affect Growth Rate, but Need stands out as more important than the other two in the full-sample analysis as well as in three out of the four industries.
3. Entrepreneurial (founding) Experience and (general) Education are important indicators of growth-relevant Ability.
4. Age/Maturity and Firm Size are important indicators of Need for growth.
5. Factors characterizing the industry (structure, growth, innovation etc.) are important indicators of growth-relevant Opportunity.
6. Characteristics of the geographic area seems to be of little general importance but can be important in industries where firms normally are bound to a local market.
7. Total explanatory power is substantial but not overwhelming.

In all, the results confirm the importance of some of the structural factors that have been suggested by theory and previous studies, but they certainly also leave room for motivation as an additional and/or mediating factor for explaining differences in the growth of small firms.

The results will be further discussed alongside the discussion of results regarding determinants of growth motivation in section 5.7.

Notes

1 As for interpretations of relative importance it must be stressed that such assessments are never possible to make in an unambiguous way with these kind of data. First, the quality of measurement may vary between factors. Assessments of relative importance thus refer to the factors as measured. Second, indicator weights and path coefficients for highly correlated independent variables are unreliable measures of relative importance. This may even cause independent variables that have a positive correlation with the dependent variable to have a negative coefficient (suppressor effect, see Darlington, 1968), while as a matter of fact there is no reason to believe that the "true" net effect is negative. An analysis of loadings and simple correlations between the independent and the dependent variables can provide some additional guidance for the interpretation of relative importance.

2 As the cases used are the same for each correlation computation, raw data could have been used as input in the first-order analysis. This would have made possible the use of jack-knife standard errors and blind-folding relevance measures (cf. Lohmöller, 1984; Wold, 1986) for model evaluation, but only for the first step. Hence with regard to the main analysis the only model parameters that would have been possible to evaluate in this way are the least interesting ones, viz. the weights/loadings for manifest indicators of first-order factors.

3 While individual responses on issues like customer structure, geographical market dispersion etc. in 1986 should not be used as predictors of Growth Rate in the 1984-1986 period, it was judged that mean responses for SNI categories could be used as proxies reflecting industry differences. The QDSM indicators are thus mean responses for 15 SNI-code groups (4 or 5-digit level; aggregated from 31 original groups), each of which was represented by at least 10 cases in the sample.

4 Several of the first-order Opportunity factors relate to the degree of fragmentation within the industry. The Industry Structure factor indicates to which extent large (and/or small) size of operations is viable within the industry. The Geographic Dispersion factor also indicates to which degree restraint to a local market is the normal case. Entry Barriers reduce the risk of employee spin-offs and other new entrants, making growth less risky and easier to obtain. Customer Structure also basically reflects industry fragmentation since those who have many customers tend to be those who are in fragmented industries (here Retailing; Repair Services).

Market Growth: If the industry as a whole grows there should be more growth Opportunity for the individual firm.

Rate of Innovation: A high rate implies that the industry has not reached a mature stage (cf. Utterback and Abernathy, 1975). There should be more growth Opportunity for small firms within a non-mature industry, which is likely not to be dominated by a few, large firms.

Geographic Characteristics: urbanization, population growth, and access to higher education are taken as indicators of a favorable environment. In such an environment, the economy is more likely to be vivid and growing, creating more growth Opportunity for the individual firm.

See also sections 2.2.2, 2.2.3, 2.3.2.1, and 2.4.1.

5 Separate first-step analyses were also performed with either turn-over growth or employee growth as the dependent variable. Differences of some

substance were that a) Explanatory power is slightly higher for turnover growth (0.26 vs. 0.23) and b) Entrepreneurial Experience is more strongly related to turnover growth (coeff. 0.17 vs. 0.08; correlation 0.18 vs. 0.11).

6 As was noted in section 2.3.3.1, previous studies show conflicting evidence on this issue. One reason for the negative correlation may be self-selection; people with considerable industry and/or management experience may have left larger organizations to found their own businesses because they did not like to work for a larger firm. If such is the case, they are also likely to avoid growth of their own firm if possible. Dissatisfaction with previous job is often given as a reason for founding one's own business. See Brockhaus (1982) and Shapero & Sokol (1982) for further references.

7 The most probable reason for this small correlation is revealed in the separate regressions on the two growth indicators. Profitability has a positive relation to growth in number of employees but a negative relation to turnover growth (Coeff. 0.16 vs. -0.04; Correlation 0.10 vs. -0.12). Since profitability is measured approximately with relative turnover per employee, firms with very high "Profitability" may actually have been undermanned. Hence the positive correlation with growth in number of employees. This is perhaps best described as an Opportunity effect (high Profitability → high Opportunity). The "high Profitability - low Need" hypothesis gets some support in the turnover regression. If Profitability is specified as influencing Opportunity as well, the expected opposite signs do indeed turn up (positive influence on Opportunity and negative on Need). However, neither effect is substantial.

Additional explanations for the weak over-all relationship are a) that no such relation exists, b) that a relation between profitability and Need does exist but that "Need" is not necessarily "Need for growth" but "need for improving profitability - e.g. through cutting costs - and c) that the measure is too rough to unmask such a relationship.

8 R^2 drops from 0.27 to 0.25 from the first to the second step. This is a very low cost for going from 14 to 3 concepts and is, moreover, mainly due to the exclusion of the negative influence of Industry/Management Experience on Growth.

9 A negative empirical relation is of course not necessarily spurious. In growth areas the expansion of larger firms may cause considerable problems for smaller firms when they need to recruit personnel. Small firms cannot compete with the same career possibilities for managers and perhaps neither with salaries or fringe benefits.

It may be noted that in the Manufacturing sub-sample there is a positive loading of considerable magnitude for Characteristics of the Community. Since the loading for Characteristics of the County is negative, interpretations should be made with caution.

Chapter Appendix (4)

Table A4.1. Description of Manifest Variables (indicators)

<u>Var No.</u>	<u>Variable Description</u>	<u>Scale type</u>	<u>Data source</u>
1	Prior industry experience	ordinal(3)	Q47
2	Prior management experience	ordinal(3)	Q45
3	Prior own business experience	ordinal(3)	Q42
4	Business founder	dummy	EQ 1 if Q44=3
5	General education	ordinal(4)	Q48
6	Business education	ordinal(4)	Q49
7	Firm age	interval; log	computed from Q9
8	Managers' age	interval; log	computed from Q41
9	Firm size in 1983, No. of empl.	interval	Q18
10	Firm size in 1983, turnover	interval	Q16-17
11	Turnover/employee in 1983 rel. to industry/size-class mean	interval	computed from Q16-18 and stratification vars.
12	Turnover/employee in 1983 relative to industry mean	interval	computed from Q16-18 and stratification vars.
13	New products necessary for survival	ordinal(4); reversed	SNI-class mean of Q66;
14	"Qualified High-Tech Firm"	dummy	Sampling frame *
15	Average number of employees for all firms in SNI-class	interval; logarithm	Statistics' Sweden **
16	No. of firms with 1-4 empl. relative to No. of firms with 10-19 employees in SNI-class	interval; reversed	Statistics' Sweden **
17	Perceived risk of spin-offs	ordinal(5)	SNI-class mean of Q67
18	Capital needed for start-up	ordinal(5)	SNI-class mean of Q68
19	Total employment in SNI-class in 1986 relative to 1980	interval	Statistics' Sweden **
20	Total employment in SNI-class in 1986 relative to 1984	interval	Statistics' Sweden **
21	Population within county	ordinal(6)	Statistics' Sweden ***
22	Pop. change 1984-86; county	interval	Statistics' Sweden ***
23	Pop. density within county	ordinal(6)	Statistics' Sweden ***
24	Major university within county	dummy	Other external
25	Population within community	ordinal(7)	Statistics' Sweden ***
26	Pop. change 1984-86; community	ordinal(8)	Statistics' Sweden ***
27	Pop. density within community	ordinal(7)	Statistics' Sweden ***
28	Major university; community	dummy	Other external
29	Minor university; community	dummy	Other external
30	Percent of turnover within home county (reversed)	interval	SNI-class mean of Q53
31	Exports	interval	SNI-class mean of (Q55+Q56)
32	Type of customers	ordinal(3)	SNI-class mean of Q51
33	Importance of 3 largest cust.	ordinal(4)	SNI-class mean of Q52
34-35	NOT USED IN THE ANALYSES (GROWTH MEASURES NON-LOGARITHMIZED)		
36	Annual growth rate 1983-86; No. of employees	interval; logarithm	computed from Q13; Q18
37	Annual growth rate 1983-1986; turnover	interval; logarithm	computed from Q14-15;

(cont.)

Legend:

- * Certain categories within the original "High-Tech" sample are given a "1" on this dummy, viz. "Manufacturing of computers & business machines" (SNI 3825) and "Manufacturing of tele-communications equipment" (SNI 3832). In all, these categories are represented by 49 firms in the sample. Cf. also chapter 8.
- ** Non-official statistics from work material which was kindly made available to the author by Statistics' Sweden officials. It was stressed that these data, which are based on the same register as the sample frame, are less well suited for comparisons over time because of re-classifications and other adjustments. This affects the reliability of the Market Growth indicators (15,16). Some obvious re-classifications of large firms were corrected for by aggregating SNI groups, but not-so-obvious problems may still affect the measures. The low reliability for over time comparisons is also the reason why another possible Opportunity factor - development of industry structure - was not used in the analyses.
- *** Official Statistics from Statistics' Sweden. Although interval data were available, most population figures have been re-scored into categories on ordinal scales.

Figures within brackets for ordinal scales indicate number of categories for the scale in question. "Industry" is the stratification variable, i.e. there are four "industries." Each industry contains a (small) number of "SNI-classes", which refers to four- or five-digit level SNI codes.

Qxx = variable number; see General Appendix 1.

Table A4.2. Correlation of First-order Factors (*100)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	100														
2	0	100													
3	-13	-4	100												
4	0	-28	-13	100											
5	-1	-18	13	31	100										
6	6	-1	-3	-5	28	100									
7	-10	23	22	-27	-15	2	100								
8	0	23	15	-12	-9	7	53	100							
9	-10	4	12	7	1	0	4	38	100						
10	1	14	7	-9	-8	-7	23	44	-14	100					
11	-2	15	8	-6	-7	-3	17	13	2	11	100				
12	-2	11	12	-3	-5	-1	17	10	1	17	73	100			
13	1	25	19	-16	-16	4	52	72	21	38	20	22	100		
14	10	25	12	-26	-19	2	63	73	0	41	12	11	69	100	
15	-11	20	16	-38	-34	-2	29	18	-1	15	9	8	16	25	100

Note: For explanations of factor numbers see table 4.2 in the main text.
Factor 15 is the dependent factor; annual Growth Rate.

Table A4.3. Factor Loadings (*100)

	Ability	Need	Opportunity	Growth
2. Entr. Experience	77	0	0	0
3. Education	61	0	0	0
4. Age/Maturity	0	-85	0	0
5. Firm Size	0	-76	0	0
7. Rate of Innovation	0	0	92	0
8. Industry Structure	0	0	57	0
10. Market Growth	0	0	47	0
11. Geo. Char (County)	0	0	28	0
12. Geo. Char. (Comm.)	0	0	25	0
13. Market Dispersion	0	0	51	0
14. Customer Structure	0	0	79	0
15. Previous Growth Rate	0	0	0	100

Table A4.4. Factor Loadings in Separate Analyses of Industries

	Manufacturing				High-Tech				Repair Services				Retailing			
	Ab.	Ne.	Op.	Gr.	Ab.	Ne.	Op.	Gr.	Ab.	Ne.	Op.	Gr.	Ab.	Ne.	Op.	Gr.
Ent.exp	94	0	0	0	57	0	0	0	89	0	0	0	37	0	0	0
Educ.	34	0	0	0	85	0	0	0	36	0	0	0	90	0	0	0
Age/Mat	0	-87	0	0	0	-88	0	0	0	-80	0	0	0	-57	0	0
Size	0	-69	0	0	0	-76	0	0	0	-76	0	0	0	-93	0	0
Struct	0	0	54	0	0	0	92	0	0	0	79	0	0	0	-29	0
M-Growth	0	0	-29	0	0	0	20	0	0	0	83	0	0	0	96	0
County	0	0	-33	0	0	0	20	0	0	0	39	0	0	0	29	0
Commun.	0	0	59	0	0	0	-17	0	0	0	67	0	0	0	44	0
Growth	0	0	0	100	0	0	0	100	0	0	0	100	0	0	0	100

5. Determinants of Growth Motivation

5.1 Introduction

5.1.1 On the Use of Subjective Measures

The previous chapter shows that objective data can explain part of the variation in previous growth. A larger part remained unexplained. A plausible reason for this is that small firm managers have some freedom of choice regarding whether opportunities for growth should be exploited or not. If such is the case, knowledge about the subjective factors that direct behavior is needed.

Subjective factors can have objective effects. That is, these effects are not unique to each individual. Neither do the effects of subjective factors necessarily cancel out in the aggregate. They may do so, but even in such cases the wrong conclusions may be drawn if intervening subjective factors are neglected. It certainly makes a difference for e.g. policy-making if a) all react "a little" or b) some react "a lot" while the majority does not react at all in response to certain economic stimuli. It also makes a difference if a zero effect in the aggregate is interpreted as "no effect" or "positive effect in some groups; negative in others."

Therefore, knowledge about intervening variables is essential. A subjective variable of particular interest is motivation. The study of motivation and its underlying causes yields information about the conditions for changes in objective factors to have certain effects and about the likely reaction to such changes in different groups of the whole population of small firm managers. For good or bad, it also yields knowledge about how motivation could be influenced directly, i.e. without changes in external conditions.

In this chapter an attempt is made to explain differences in Growth Motivation with various Ability, Need, and Opportunity factors. The interrelation between three Growth Motivation factors, viz. Cognitive and Affective attitudes towards growth, and Growth Aspirations, will also be examined.

For reasons stated in section 4.1 the relation between motivation and behavior cannot be studied directly here. Generally, attitudes and aspirations are believed to affect behavior (cf. Abelson et al, 1968; Atkinson et al, 1983; Lewin et al, 1944). Empirical evidence for the strength of such relationships is mixed, but knowledge about conditions for attitude-behavior consistency is growing (Foxall, 1984; Pieters, 1988).

Major reasons for or only weak relationship to appear seem to be that the study concerns an issue which many of the respondents have little interest in or knowledge about, or that measurement did not adequately capture the (social and monetary) cost aspects. There is also some consensus that attitude measures have greater explanatory power at the aggregate level, whereas intentions are more reliable for individual predictions (Vanden Abeele, 1988; Wärneryd, 1988a).

In the particular case of small firm growth, motivation measures are likely to predict behavior at the individual level with satisfactory accuracy for those managers who have growth (or non-growth) as a manifest and valued goal. For those who are more ambivalent or have not really considered the issue thoroughly, unforeseen situational factors are likely to make individual predictions uncertain.

Nevertheless, repeated measures of motivation are likely to have predictive value also for the latter as a group. This is so because if motivation for some reason is increased in the group, a larger number would choose the growth alternative when faced with a situation suggesting growth, although we could not tell who would and who would not face such situations.

5.1.2 An Introduction to the Analyses

In the analyses, objective data as well as perceptions and attitudes will be used.¹ The latter are not intended to fully cover the concepts "perceived ability", "perceived need", and "perceived opportunity" in the General Framework. Rather, such measures are included to account for aspects of perceived reality which are not adequately approximated by the objective measures.

Objective measures, in their turn, may capture perceived aspects of reality that are not accounted for by the perception variables. Therefore, direct effects of objective measures on growth motivation (not depicted in the theoretical model) are expected.

The analysis strategy employed will differ from that chosen for the analyses of previous growth. Instead of constructing one factor for each higher-level theoretical concept (Ability, Need, Opportunity, and Growth Motivation) a number of sub-factors representing aspects of these concepts will be used. Thus the conceptual level will be similar to that used in the first step in the analyses of previous growth.

Causal relations between sub-factors of the same higher-order theoretical construct, as well as between sub-factors of different higher-order constructs, will be suggested and analyzed. Such causal relations between sub-factors of Ability, Need, and Opportunity were not indicated in the General Framework since they represent relations between specific aspects; not general, one-directional relations between the higher-order theoretical concepts.

The main purpose of the analyses is to develop a structural model of determinants of Growth Motivation. Specific questions to be answered by the analyses are:

1. To what extent may variation in Growth Motivation be explained by differences in objective and perceived Ability, Need, and Opportunity? In particular, explanations of variation in Growth Aspirations are sought for, including the influence of other Growth Motivation factors (i.e. attitudes).

2. What is the relative importance of Ability, Need, and Opportunity (and aspects of those) in determining Growth Motivation in general and Growth Aspirations in particular?
3. To what extent do different industry sub-samples yield the same results?

Although one would always want more data on certain aspects, abundant information on growth motivation and its possible determinants is available in this study. This gives rich possibilities but also causes some problems, mainly the problem of overly complex explanatory models. For the main analysis presented (figure 5.7) the number of explanatory variables has been reduced in a number of ways:²

1. Preliminary analyses. Some variables were never seriously considered for inclusion or were omitted after preliminary (non-PLS) analyses.
2. Using factors instead of manifest variables. This has been done throughout and results in a considerable reduction of the number of variables without much information loss.
3. "Collapsing" factors. Based on the results of the analyses of previous growth it was concluded that the number of ("first-order") Opportunity factors could be reduced. Thus, external data on industry characteristics have been combined in a single factor. Likewise, variables describing characteristics of county and community have been combined into just one factor (Geographic Location).
4. Subset analyses. Even with the reductions described above it would be a very demanding task to construct and evaluate a "total" model without further screening. Therefore, three separate subset models for a) Ability factors and Growth Motivation factors, b) Need factors and Growth Motivation factors, and c) Opportunity factors and Growth Motivation factors, were constructed, analyzed and remodeled first. The results from these analyses served as tentative hypotheses when the total model was constructed. The subset analyses will be presented and commented on below.
5. Empirically based reduction of "total model". The total model suggested by the actual relations found in the subset analyses was further reduced in such a way that factors which had very little effect on target variables (Growth Motivation factors plus Perceived Opportunity) were excluded. This makes the final model more tractable.

When reconstructing the models, an absolute size of a coefficient of 0.10 has been used as a guideline, but not slavishly employed, for regarding it as "substantial." This level also approximates what would be needed for statistical significance if more conventional methods were used.³

The analyses are based on pairwise correlations. Since data from the mail questionnaire are used, the number of cases on which a correlation is based varies considerably, from 285 to 419. Mean-substitution has not been employed.

5.2 Variables Used in the Analyses

5.2.1 The Target Variables

Target variables are those which the analyses try to explain. Growth Aspirations is the primary target variable. Among the included variables this Growth Motivation factor is assumed to have the closest relation to actual subsequent growth.

The Growth Aspirations factor is measured with two indicators: a) the difference between present size (Q13, Q14-15) and an "ideal size" five years ahead (Q23, Q24-25) in terms of number of employees and b) the same for turnover. As was the case with previous growth, the measures actually entered in the analyses are logarithms of size ratios rather than percentages.

Two additional Growth Motivation factors are included in the models. The first is Cognitive Attitude towards growth. The indicators for this factor are expectations of what (positive or negative) consequences growth would have with respect to eight specific dimensions: workload, work tasks, employee well-being, private finances, control, independence, crisis survival ability, and product/service quality (Q26-Q33). The inclusion of this factor is based on the view that behavior or behavioral intentions are contingent on the expected utility of performing an act or obtaining an object, like in Expectancy Theory (see sections 2.2.5.1, 2.3.3.5, and 2.3.3.6).

The other attitude factor is labeled Affective Attitude. This involves an "over-all attitude" kind of measure, assumed to reflect also feelings towards growth that are not (directly or consciously) based on cognitions. Such affective reactions are by some theorists regarded as the output of a separate, non-cognitive system and by others as the result of cognitions which may have been forgotten, leaving only a trace in the form of a general positive or negative feeling towards an object or an act (cf. Pieters and van Raij, 1988). This factor has two indicators (Q21, Q22).⁴

Although not defined as a Growth Motivation factor, Perceived Growth Opportunity has also been considered as a target variable when the total model was constructed. The indicators are:⁵

- Expected profitability within the industry in the next few years (Q62 reversed).
- Perceived room for expansion with present products/services (Q63 reversed).
- Perceived room for expansion without additional personnel (Q64).
- Perceived room for expansion without new premises or new machinery (Q65).
- Perceived necessity of introducing new products/services for securing future survival (Q66 reversed).

Cognitive and Affective attitudes are assumed to be antecedents of Growth Aspirations. The two attitude components are more complicated to order causally. That the Affective Attitude is partly based on cognitions is an assumption which could hardly be challenged with this kind of measure (as opposed to measurement of somatic reactions). A positive or negative general feeling may also lead to biased information processing when evaluating specific outcomes (cf. section 2.2.5.2). The question of causal direction is left to be empirically resolved.

Some other factors will also be endogenous in the models and thus to some degree act as "dependent" variables. This serves to make possible a more accurate separation of direct and indirect effects on the target variables.

Some descriptive data on the target variables are given in General Appendix 3.

5.2.2 Explanatory Variables

As explanatory variables are used a number of Ability, Need, and Opportunity factors. These will be presented, and their expected relationships described, as they appear in their respective subset model (sections 5.3.1 to 5.3.3).

The logic behind variable selection and labeling of factors was outlined in chapter 2. The explanatory factors and their indicators are further described in the chapter appendix, table A5.1.

5.3 Analyses of Subset Models

5.3.1 Ability Models

5.3.1.1 Explanatory Factors and Expected Relationships

The explanatory factors used in and the expected relationships in the preliminary Ability Model are described below. All expected relationships are stated in terms of expected effects on Growth Aspirations.

Education (general and business education) is expected to have a direct positive effect on Growth Aspirations as well as an indirect positive effect via a positive effect on Perceived Ability.

Entrepreneurial Experience (founding and management of one's own firms) is expected to have an indirect positive effect on Growth Aspirations because of a positive effect on Perceived Ability.

Industry/Management Experience (prior to becoming self-employed) is expected to have a total effect of unknown sign because of a positive effect of experience on Perceived Ability and a negative effect on Cognitive Attitude. The latter assumption is partly based on the results obtained in chapter four and not regarded as strictly causal (cf. section and 4.2.4.1).

Ownership Dispersion is expected to have a positive direct effect because there are "more mouths to feed" (i.e. a "Need" issue; see also Need models). An indirect positive effect via Cognitive Attitude is also expected because broader competence in management or board should result in more positive expectations.

Perceived Ability (self-confidence/self-reliance) is expected to have an indirect positive effect on Growth Aspiration via a positive effect on Cognitive Attitude.

The assumed relations between Growth Motivation factors are described in section 5.2.1. In this particular analysis, it has been assumed that the effect of Ability factors on Affective Attitude is mainly indirect, mediated by Cognitive Attitude.

5.3.1.2 Results for the Preliminary Ability Model

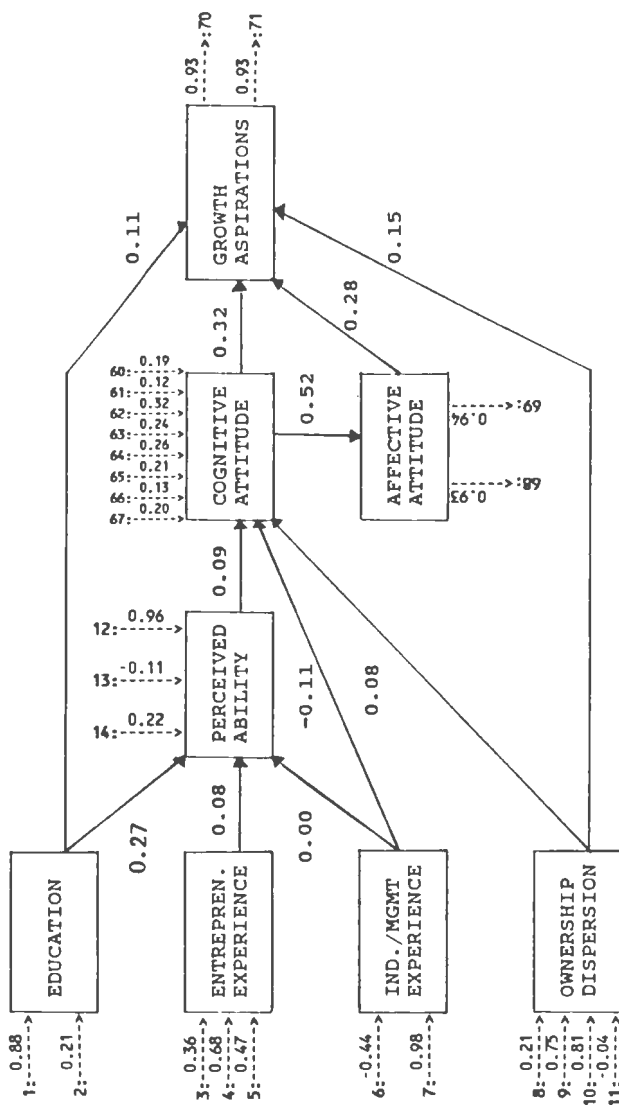
The causal schema implied by the expected relationships outlined above and the results of this analysis are displayed in figure 5.1.⁶

Data seem well to fit the structural relation between Growth Motivation factors, and 35% of the variation in Growth Aspirations is explained by the model. These relations will be further commented on in the discussion of the total model (section 5.4.2).

The problem factor in the model is Perceived Ability. Only the effect of Education on Perceived Ability is of substance. Perceived Ability does not have substantial relations forward in the model, which results in residual correlations for the relations between Education and Entrepreneurial Experience on the one hand and Cognitive Attitude on the other. That is, the indirect route via Perceived Ability cannot explain the correlation between the explanatory Ability factors and Growth Motivation. The Perceived Ability variable is therefore excluded from further analyses.

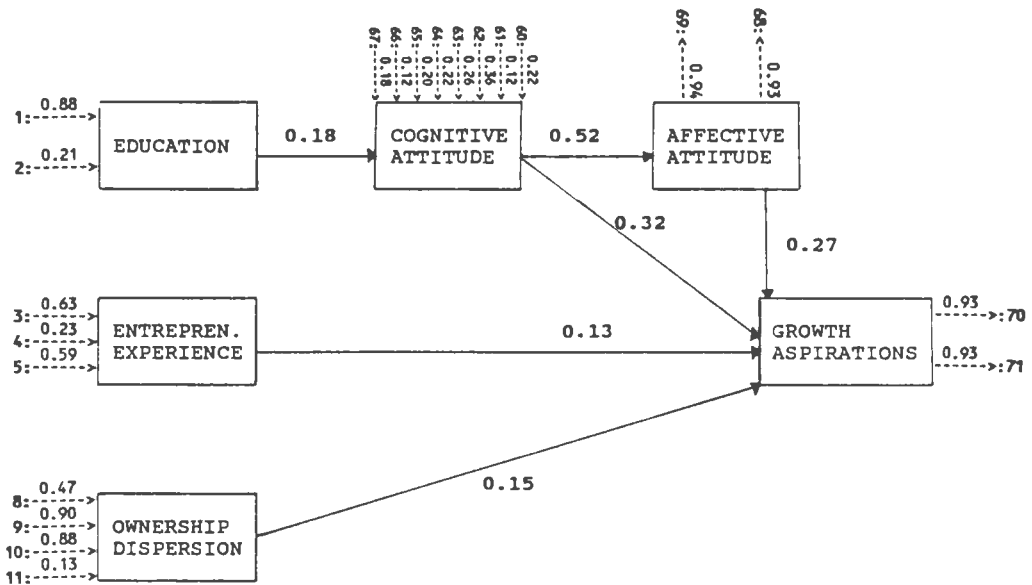
While this is not saying that perceived ability is unimportant, the measure used here appears to be weak and fails to provide additional explanatory power besides the more objective Ability factors.

Figure 5.1 Preliminary Ability Model - Expected Structure and Results



Note: R^2 : Growth Aspirations = 0.35; Cognitive Attitude = 0.03; Affective Attitude = 0.27. The direction of the weights/loadings arrows indicate whether the factor is reflective or formative. The numbers before colons (1-71) are identification numbers for manifest variables; cf. table A5.1 in the chapter appendix.

Figure 5.2 The Revised Ability Model



Note: R^2 : Growth Aspirations = 0.37; Cognitive Attitude = 0.03; Affective Attitude = 0.27. See also note for table 5.1.

5.3.1.3 The Revised Ability Model

In figure 5.2 the revised Ability model is displayed. Also the Industry/Management Experience variable turned out to have no forward directed substantial coefficients when the model was adjusted and has therefore been excluded. A direct effect of Entrepreneurial Experience on Growth Aspirations was the specification which fitted data best. Interestingly, no direct effect of Education on Growth Aspirations is found.

The resulting model explains 37% of the variation in Growth Aspirations. As can be seen, Ability factors explain very little of the variation in the attitude measures. No residual correlations larger than 0.09 in absolute size remain with this specification.⁷

In all, expectations are borne out as regards signs of total effects on Growth Aspirations but the structure had to be modified for most of the factors mainly because of the weak relations to and from the Perceived Ability factor. The total effect of Ability factors on Growth Motivation are modest.

5.3.2 Need Models

5.3.2.1 Explanatory Factors and Expected Relationships

The preliminary Need model is more complex than the Ability model. More variables are included, and a more complex causal structure is assumed.

No causal direction between Cognitive Attitude and Affective Attitude is specified. Empirical investigation will have to show whether one of the routes accords well enough with the data to permit a specification of causal direction.⁸

The explanatory factors used and the expected relationships in the preliminary Need Model are described below. All expected relationships are stated in terms of expected effects on Growth Aspirations.

Age/Maturity (firm age, manager's age, years as CEO) is expected to have several indirect effects on Growth Aspirations, summing up to a negative total effect.⁹

Ownership Dispersion is expected to have a positive direct effect because of the fact there are "more mouths to feed" (cf. Ability model). In addition, positive and negative indirect effects via Previous Growth and Firm Size are expected. The total effect is assumed to be positive.¹⁰

Profitability (relative turnover per employee) is expected to have a positive effect on Economic Satisfaction and therefore an indirect negative effect on Growth Aspirations.

Need for Achievement (abbrev. nAch; measured with four attitude statements) is expected to have positive effects on Affective Attitude and Previous Growth and thus indirect positive effects on Growth Aspirations.¹¹

Previous Growth Rate (cf. Chapter 4) is expected to have a positive direct effect and a negative indirect effect because of the definitional relation to Firm Size, summing up to a total effect of unknown sign.¹²

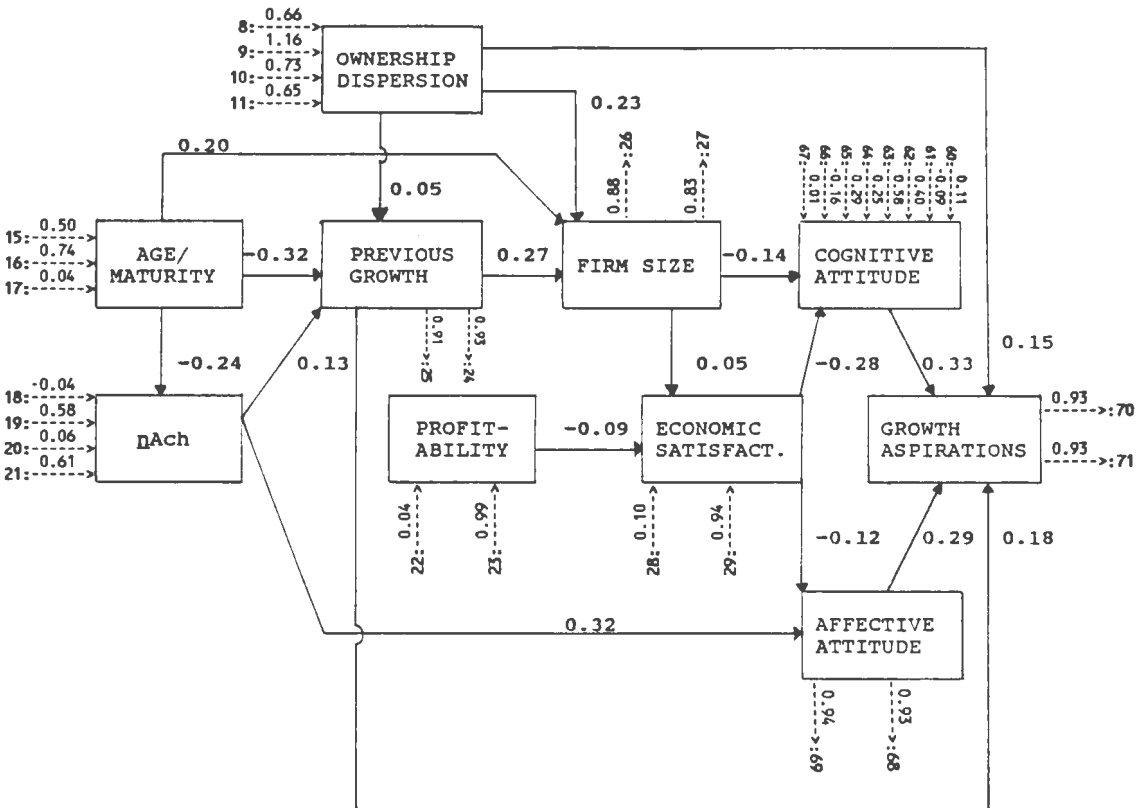
Firm size (turnover, number of employees) is assumed to affect Growth Aspirations in the negative direction because of a negative effect on Cognitive Attitude and a positive effect on Economic Satisfaction.¹³

Economic Satisfaction (with profitability and personal pay-off) is expected to have a negative effect because of decreasing marginal utility of increased income.

5.3.2.2 Results for the Preliminary Need Model

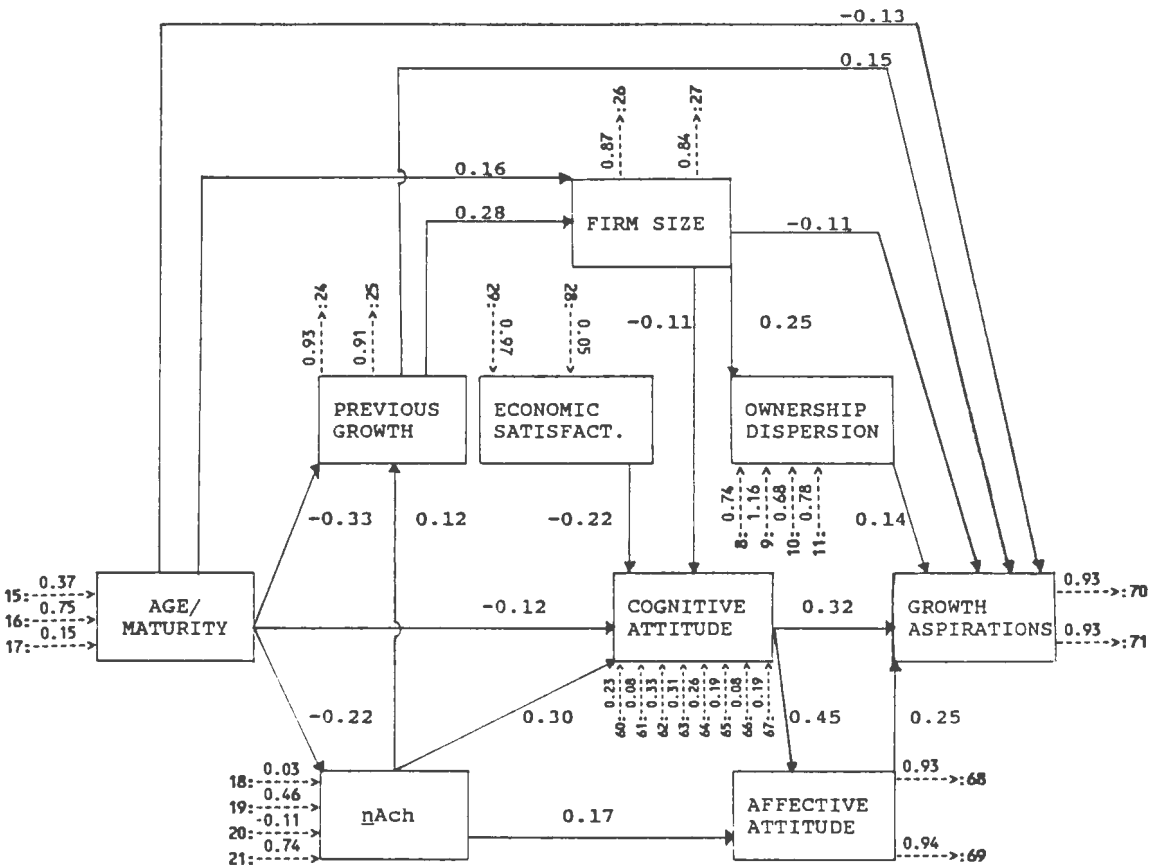
The structural model implied by the expected relationships outlined above and the results of the analysis are displayed in figure 5.3.¹⁴

Figure 5.3 Preliminary Need Model - Expected Structure and Results



Note: R^2 : Growth Aspirations = 0.36; Cognitive Attitude = 0.11; Affective Attitude = 0.12. See also note for table 5.1.

Figure 5.4 The Revised Need Model



Note: R^2 : Growth Aspirations = 0.39; Cognitive Attitude = 0.20; Affective Attitude = 0.25. See also note for table 5.1.

The results show that data fit the suggested basic structure fairly well. The largest residual correlations (for relations directed forward in the preliminary model) imply that more direct effects between Age/Maturity and Growth Motivation factors should be included. As no causal relation between Cognitive Attitude and Affective Attitude was specified, a residual correlation between those two factors turns up. An examination of the factor correlation matrix reveals that Cognitive Attitude → Affective Attitude appears to be the "main route" also for the Need factors except for nAch.

Only one factor is redundant, viz. Profitability. That Profitability is so weakly related to Economic Satisfaction must be taken as a sign of weakness of the measure and/or the logic behind its use. It has been mentioned earlier that even the relation between a perfect measure of profitability and Growth Aspirations is not perfectly clear. For example, aspirations for financial standard may adjust upwards as income increases. Some effect of profitability on Economic Satisfaction would yet be expected.

Two of the specified relations are so weak that they will be excluded. The first is the Firm Size → Economic Satisfaction connection. The second is the effect of Ownership Dispersion on Previous Growth.¹⁵

5.3.2.3 The Revised Need Model

In figure 5.4 the revised Need Model is displayed.¹⁶ With this specification, the model explains 39% of the variation in Growth Aspirations. Note that a Cognitive Attitude → Affective Attitude link has been specified and that the Ownership Dispersion and Firm Size relation has been reversed to Firm Size → Ownership Dispersion. No residual correlations with target variables larger than 0.09 remain with this specification.¹⁷

The model has several interesting features. In contrast to the Ability model, the Need model also explains a substantial share of the variation in growth attitude factors. Age/Maturity and nAch are central variables in the model. They have substantial direct or indirect influence on all Growth Motivation factors. Also the other "perceived

Need" factor, Economic Satisfaction, appears to have substantial effects. Most relations are partitioned into a positive and a negative sub-effect via the positive/negative effects of Firm Size and Previous Growth.

By and large, data are in line with expectations as regards sign of total effects and basically also as regards structure. Aside from the reversal of the Ownership Dispersion and Firm Size relation the adjustments made are minor and mainly restricted to the inclusion of direct effects where a total effect of the same direction was already expected. It is also notable that none of the "objective" Need factors is substantially related to Economic Satisfaction.

5.3.3 Opportunity Models

5.3.3.1 Explanatory Factors and Expected Relationships

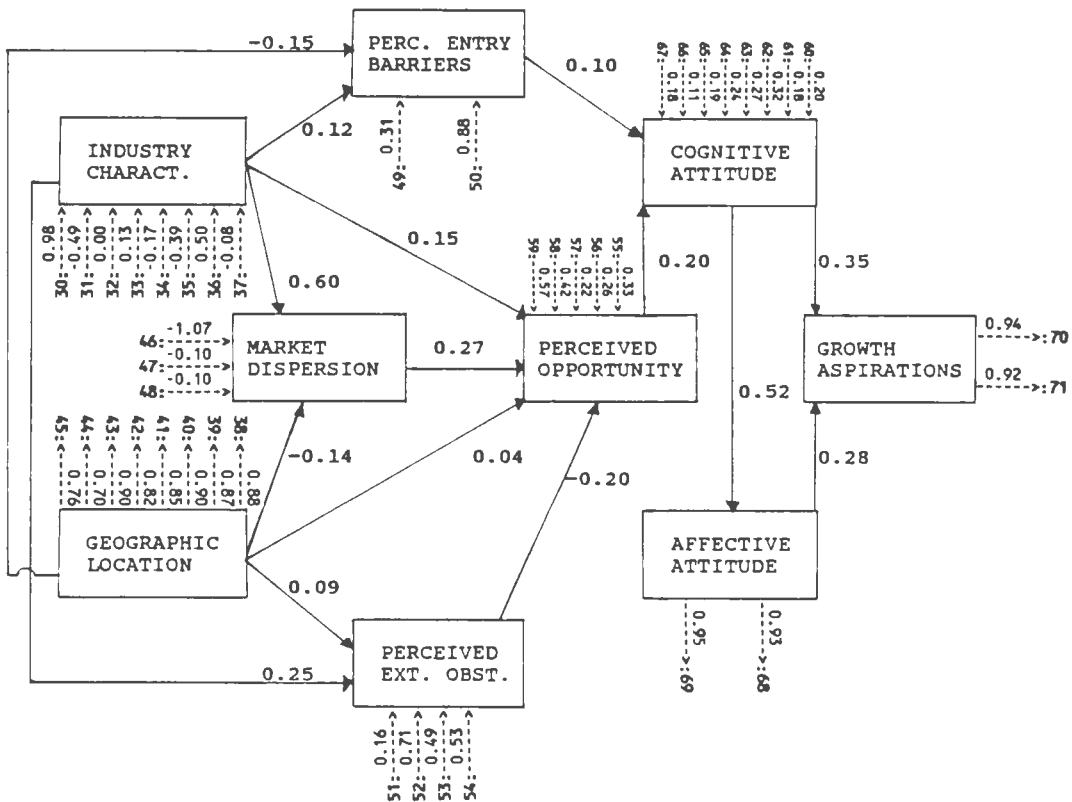
The explanatory factors used and the expected relationships in the preliminary Opportunity Model are described below. All expected relationships are stated in terms of expected effects on Growth Aspirations. Cognitive Attitude -> Affective Attitude is assumed.

Industry Characteristics (structure, growth etc.). Growth-enhancing Industry Characteristics are assumed to have several indirect effects on Growth Aspirations, most of which are - of course - assumed to be in the positive direction.¹⁸

Geographic Location (population statistics, university in the area). A favorable Geographic Location is expected to have a positive total effect via several indirect effects.¹⁹

Geographic Market Dispersion (percent of turnover within home county; exports) is expected to have a positive effect via Perceived Opportunity (opportunities beyond the local environment would be included more readily in the perceived opportunity set when the firm is already active outside the local market).

Figure 5.5 Preliminary Opportunity Model – Expected Structure and Results



Note: R²: Growth Aspirations = 0.31; Cognitive Attitude = 0.05; Affective Attitude = 0.27. See also note for table 5.1.

Perceived Barriers to Entry (risk of spin-offs; start-up capital needed) imply lesser perceived risk of employee spin-offs or other new competitors, hence a positive effect via Cognitive Attitude is expected.

Perceived External Obstacles to Growth (taxes, legislation, finance, labor) are expected to reduce Growth Aspirations because Perceived Opportunity is reduced.

Perceived Opportunity for Growth (cf. sections 5.2.1 and 2.4) is expected to have a positive effect via a positive effect on Cognitive Attitude (more positive/less negative outcomes of growth expected).

5.3.3.2 Results for the Preliminary Opportunity Model

The structural model implied by the expected relationships outlined above and the results of the analysis are displayed in figure 5.5.²⁰

Data seem to fit the structural model well, but two substantial residual correlations emerge. Both imply additional direct effects on Growth Aspirations, viz. from Industry Characteristics and from Perceived Opportunity. Weak relations are found for two of the expected effects of Geographic Location. The Perceived Entry Barriers variable is a border-line case as regards further consideration.

A very strong relation between Industry Characteristics and Geographic Market Dispersion may be observed. This basically reflects the structural differences between Manufacturing and High-Tech industries on the one hand, and Repair Service and Retailing on the other.

5.3.3.3 The Revised Opportunity Model

In figure 5.6 the revised Opportunity model is displayed.²¹ With this specification, the model explains 39% of the variation in Growth Aspirations, or just as much as the Need model. Unlike that model very little of the variation in other Growth Motivation factors is explained. No residual correlations larger than 0.09 remain.²²

Figure 1 is a path diagram illustrating the relationships between six variables. The variables are arranged in a flow from left to right. The variables and their associated R-squared values (indicated by dashed lines) are:

- INDUSTRY CHARACTER** (R-squared: 0.25)
- GEOGRAPHIC LOCATION** (R-squared: 0.16)
- PERCEIVED EXT. OBST.** (R-squared: 0.51, 0.52, 0.53, 0.54)
- PERCEIVED OPPORTUNITY** (R-squared: 0.60, 0.61, 0.62, 0.63, 0.64, 0.65, 0.66, 0.67)
- COGNITIVE ATTITUDE** (R-squared: 0.69, 0.70)
- AFFECTIVE ATTITUDE** (R-squared: 0.69, 0.70)
- GROWTH ASPIRATIONS** (R-squared: 0.93, 0.93, 0.71)

The standardized path coefficients (indicated by solid arrows) are:

- INDUSTRY CHARACTER to PERCEIVED EXT. OBST.: 0.25
- INDUSTRY CHARACTER to PERCEIVED OPPORTUNITY: 0.25
- INDUSTRY CHARACTER to AFFECTIVE ATTITUDE: 0.18
- GEOGRAPHIC LOCATION to PERCEIVED EXT. OBST.: 0.59
- GEOGRAPHIC LOCATION to PERCEIVED OPPORTUNITY: -0.16
- PERCEIVED EXT. OBST. to PERCEIVED OPPORTUNITY: 0.21
- PERCEIVED EXT. OBST. to COGNITIVE ATTITUDE: 0.52
- PERCEIVED OPPORTUNITY to COGNITIVE ATTITUDE: 0.22
- PERCEIVED OPPORTUNITY to AFFECTIVE ATTITUDE: 0.32
- PERCEIVED OPPORTUNITY to GROWTH ASPIRATIONS: 0.19
- COGNITIVE ATTITUDE to AFFECTIVE ATTITUDE: 0.26
- AFFECTIVE ATTITUDE to GROWTH ASPIRATIONS: 0.93

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Especially interesting factors in the model are Industry Characteristics and Perceived Opportunity, which both have strong direct and indirect effects on Growth Aspirations. This is clearly a case where subjective reality is partly explained by objective data, but where the former has a unique explanatory power when entered jointly with the objective variable.

In this model too, a partition in positive and negative effects is found, viz. the case of the Industry Characteristics factor which mainly has positive effects but also a negative effect because of a positive relationship with Perceived External Obstacles.

The revised model is very similar to the preliminary model. No major adjustments had to be made to get a fit. The only pronounced difference is the low relevance (and the sign of total effect) of Geographic Location.

5.4 Total Models

5.4.1 The Preliminary Total Model

As has been mentioned above the empirical relations in the "revised models" above serve as tentative hypotheses in the total model (cf. figures 5.2, 5.4, and 5.6). Apart from these hypotheses, some structural relations between explanatory factors previously not included in the same models have been introduced.²³ Some adjustments of the indicator-factor relations have also been made.²⁴

Coefficients and R^2 for the preliminary Total Model may be found in the chapter appendix, tables A5.2 and A5.3. While containing some very weak relations, the model appears to fit data well.²⁵ With 15 explanatory factors and 35 (direct) causal relations this model is excessively complicated and further reductions are called for. Reducing the preliminary Total Model to the final Total Model has virtually no effect on explanatory power as regards target variables.

5.4.2 The Final Total Model

In this section the analysis constituting the main result concerning Growth Aspirations is presented. The revised model has 12 explanatory factors and 24 direct causal relations, i.e. another three factors have been excluded from the model.

The final Total Model is displayed in figure 5.7. Explanatory power is reported in table 5.1, correlations of factors in table 5.2, and total effects (direct plus indirect) in table 5.3. Residual correlations and factor weights/loadings are given in the chapter appendix, tables A5.4-A5.6.²⁶

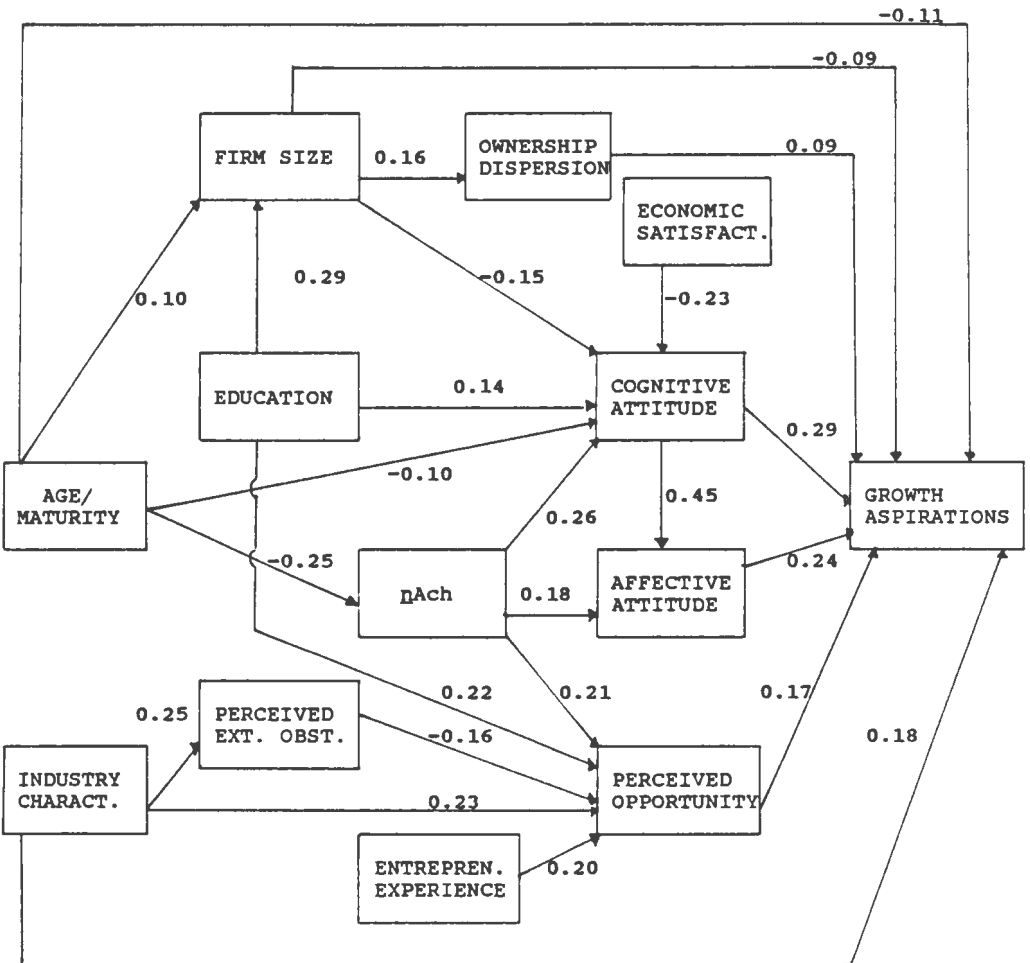
The 12 explanatory factors account for 44% of the variation in Growth Aspirations.²⁷ With this type of data that figure is neither particularly high nor particularly low.²⁸ In cross-sectional social science studies like this one, explanatory power for manifest dependent variables rarely exceeds 0.40. When composite variables (indices, factors) are used levels of 0.60-0.70 are sometimes reached.

In comparison to the "revised Ability Model" it may be noted that the direct effect of Entrepreneurial Experience on Growth Aspirations has been changed to an indirect effect via Perceived Opportunity.

Concerning "Need" factors, an effect of $nAch$ on Perceived Opportunity has been introduced (cf. also notes 23 and 24) and the Previous Growth factor has been excluded. The redundancy of the Previous Growth factor is an interesting contrast to the steady-state growth assumption applied in some theories of firm growth (e.g. Marris, 1964). This result also contradicts strong versions of Aspiration Theory, i.e. that aspirations tend to "adjust to the attainable" (see e.g. Simon and Stedry, 1972).

Also two "Opportunity" factors have been excluded, viz. Geographic Location and Geographic Market Dispersion.²⁹ Surprisingly, a substantial effect of Perceived Opportunity on Cognitive Attitude did not emerge in the preliminary Total Model and was therefore excluded in the final run.

Figure 5.7 Determinants of Growth Motivation - Final Total Model



Note: Weights/loadings for manifest variables are reported in tables A5.5 and A5.6 in the chapter appendix.

Table 5.1 Explanatory Power – Variance Explained (R^2)

<u>Target Variables:</u>	<u>R^2</u>
Growth Aspirations	0.44
Affective Attitude	0.29
Cognitive Attitude	0.21
Perceived Opportunity	0.27
<u>Other Endogenous Variables:</u>	
Ownership Dispersion	0.03
Need for Achievement	0.06
Firm Size	0.08
Perceived External Obstacles	0.06

Table 5.2 Correlation of Factors (*100)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Age/Mature	100												
2 Own. Disp.	-28	100											
3 Industry	-21	24	100										
4 Entr. Exp.	-16	9	16	100									
5 Education	-19	22	14	5	100								
6 Ec. Satisf.	3	1	-2	-13	2	100							
7 nAch	-25	25	15	3	26	-11	100						
8 Firm Size	5	16	3	7	27	5	8	100					
9 Ext. Obst.	-1	3	25	3	-5	-8	-5	-9	100				
10 Perc. Opp.	-22	17	28	25	33	-12	32	14	-12	100			
11 Cogn. Att.	-21	8	5	5	18	-27	33	-10	-5	21	100		
12 Aff. Att.	-20	12	3	9	1	-15	33	0	-7	19	51	100	
13 Growth Asp.	-32	23	29	18	19	-21	33	-8	2	36	50	46	100

Table 5.3 Total (direct + indirect) Effects (*100)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Age/Mature	100	0	0	0	0	0	0	0	0	0	0	0	0
2 Own. Disp.	2	100	0	0	5	0	0	16	0	0	0	0	0
3 Industry	0	0	100	0	0	0	0	0	0	0	0	0	0
4 Entr. Exp.	0	0	0	100	0	0	0	0	0	0	0	0	0
5 Education	0	0	0	0	100	0	0	0	0	0	0	0	0
6 Ec. Satisf.	0	0	0	0	0	100	0	0	0	0	0	0	0
7 nAch	-25	0	0	0	0	0	100	0	0	0	0	0	0
8 Firm Size	10	0	0	0	29	0	0	100	0	0	0	0	0
9 Ext. Obst.	0	0	25	0	0	0	0	0	100	0	0	0	0
10 Perc. Opp.	-5	0	18	20	22	0	21	0	-16	100	0	0	0
11 Cogn. Att.	-18	0	0	0	9	-23	26	-15	0	0	100	0	0
12 Aff. Att.	-13	0	0	0	4	-11	30	-7	0	0	45	100	0
13 Growth Asp.	-21	9	21	3	5	-9	18	-13	-3	17	40	24	100

As regards explanations of variations in Growth Aspiration it is evident that the attitude factors are the strongest predictors. This is particularly true for Cognitive Attitude, which has the largest direct effect and a total effect on Growth Aspirations that is almost twice the size of that of any other factor. To a considerable degree growth aspirations appear to be based on a conscious evaluation of the expected outcomes of growth.

Which specific expected outcomes of growth, then, are important for the owner-manager's Growth Aspirations? Table 5.4 displays the results of an ordinary multiple regression where Growth Aspirations is regressed on the 8 indicators of Cognitive Attitude.³⁰

Table 5.4 The Effect of Expected Outcomes of Growth on Growth Aspirations

<u>Dependent variable:</u>			
Growth aspirations (index; logarithms of indicators were first standardized, then combined)			
<u>Explanatory variables:</u>	<u>Unst.Coeff.</u>	<u>St. Error</u>	<u>Beta</u>
Workload (Q26)	0.135 *	0.076	0.083
Work tasks (Q27 rev)	0.051 n.s	0.070	0.035
Employee well-being (Q28 rev)	0.289 **	0.100	0.156
Private finances (Q29 rev)	0.374 ***	0.106	0.162
Control (Q30 rev)	0.262 **	0.095	0.133
Independence (Q31 rev)	0.269 **	0.099	0.138
Crisis surv. abil. (Q32 rev)	0.025 n.s	0.073	0.016
Quality (Q33 rev)	0.081 n.s	0.086	0.047
Smallest size-class (dummy)	0.296 *	0.175	0.075
High-tech industry (dummy)	0.984 ***	0.193	0.224
Constant	-0.209	0.172	
Adj. R^2 = 0.29			

Note: Significance levels: *= <0.05 ; **= <0.01 ; ***= <0.001 . Tests are single-tailed. The regressions have been carried out with pairwise deletion of missing data; for correlation computations min. n=385.

According to these results, the expected outcomes that affect Growth Aspirations most are those regarding Employee well-being, Control, Private Finances, and Independence. Money is a motivator among others. Interestingly, 40% of the sample do not believe that their private finances would improve if their firm were twice as big (see General Appendix 3).

Non-economic motivations are also important. The specific expected consequences that appear to be important have earlier been discussed by some authors, in particular by Smith (1967). A contribution of this study is that the influence of such other, non-monetary motivations is not only suggested but measured.

The relation between expected outcomes on the one hand and Growth Aspirations on the other has been analyzed in greater detail in previous reports from this project (Davidsson 1987a; 1987b; 1989). There it has also been shown that:

- The relations between some expected outcomes and growth aspirations appear to be asymmetric. This is especially pronounced for Control, which seems to work as a growth deterring factor only, and Independence, which appears to have an influence only in the positive direction. These results resemble ideas from Herzberg's Motivation-Hygiene Theory (Herzberg, 1966). When these asymmetries are considered, monetary reward no longer stands out as the most important expected outcome.
- There is a relation between size and expected outcomes such that growth deterring forces seem to increase in importance with increasing size while the growth motivating forces are diminished with increasing size.

Importantly, it can also be shown that these variables do not correlate significantly with measures of previous growth.

In the PLS-analysis, also Affective Attitude has a unique influence alongside Cognitive Attitude. This may be interpreted in several ways. One explanation is that some managers want or do not want growth for no very specific reason - they just happen to like the idea or not like it. Another is that some managers base their over-all judgement on expected outcomes that were not adequately covered by the Cognitive Attitude indicators used. A third and very plausible explanation is that the managers base their Affective Attitude on different expected

outcomes (of those included). In an averaging computation, this leaves room for a unique effect of Affective Attitude.

Other factors also have direct effects on Growth Aspirations. Industry Characteristics and Perceived Opportunity both have direct effects of some substance. Also, all three objective Need factors have (marginal) direct effects.³¹ Ability factors do not have any direct effects on Growth Aspirations according to this model.

If the interest is turned to explanations of Growth Motivation, including attitudes towards growth, it is apparent that Need factors have the greatest influence, followed by Opportunity factors and Ability factors. Note that this is the same order of importance as that arrived at in the analyses of previous growth (Chapter 4).

In fact, except for the relatively modest effect of education on Cognitive Attitude only Need factors are shown to have a sizeable effect on attitudes. Especially the "Perceived Need" factors (nAch and Economic Satisfaction) seem to affect attitudes substantially (and therefore no direct effects on aspirations had to be introduced). The more objective Need factors (Age/Maturity, Firm Size, and Ownership Dispersion) have only direct effects (Ownership Dispersion) or direct and indirect effects on Growth Aspirations (via Cognitive Attitude).

Interestingly, Opportunity factors affect Growth Aspirations but not attitudes. Indirect effects of objective Opportunity and a direct effect of Perceived Opportunity on Cognitive Attitude were expected. The latter effect appeared to be of substance in the "revised Opportunity Model." Apparently, this correlation is absorbed by the direct effects of Education and nAch in the Total Model.

Perceived Opportunity is one of the more important factors affecting Growth Aspirations. The factor has a unique contribution to explanatory power alongside objective Opportunity (Industry Characteristics) and is only partly explained by the latter. The Ability factors Education and Entrepreneurial Experience actually contribute more to the explanation of variations in perceived Opportunity than do other Opportunity factors (see "revised Opportunity Model").³²

Achievement Motivation also appears to have a substantial effect on the perception of Opportunity. This latter effect suggests that Perceived Opportunity may to some extent reflect optimism.

Ability factors appear to have little influence on Growth Motivation. As has been mentioned above, however, they have substantial influence on Perceived Opportunity and therefore some indirect influence on Growth Aspirations. In fact, Education is the factor that has the highest correlation with Perceived Opportunity (cf. table 5.2).

5.5 Industry Differences and Similarities

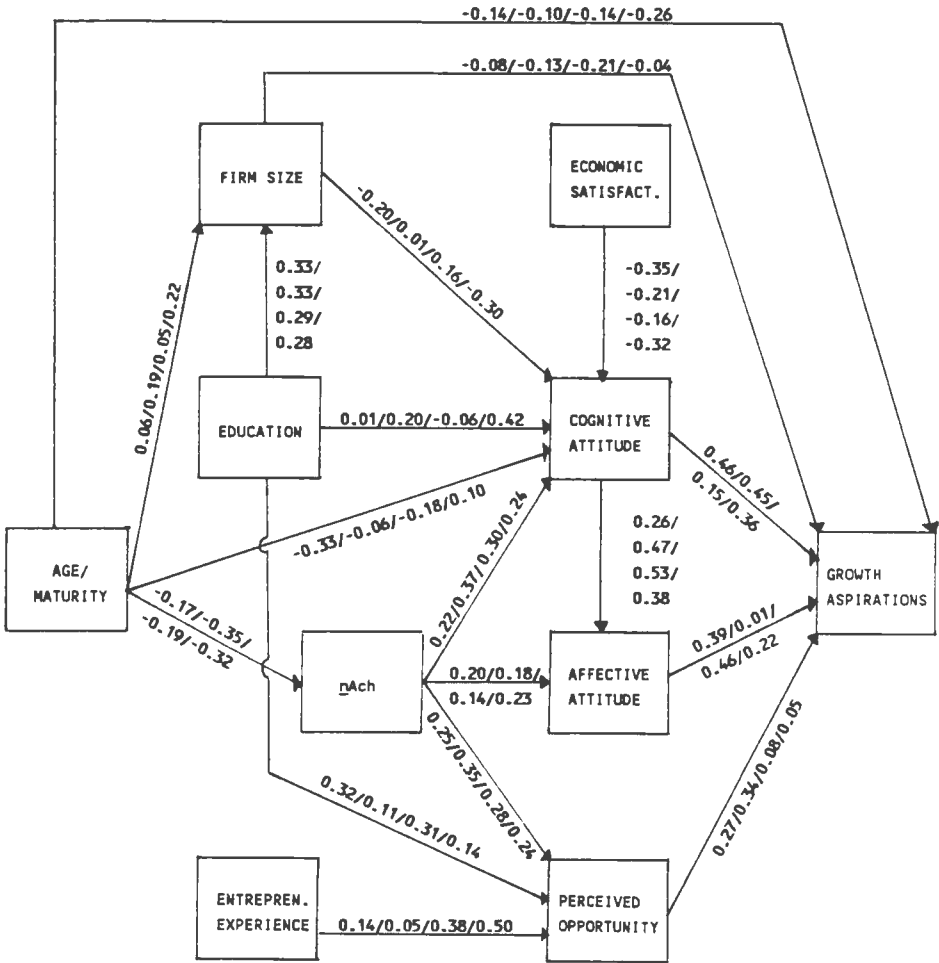
To examine the stability of the results and to detect interpretable industry differences, the "Final Total Model" has also been analyzed separately for each industry. In these analyses, the Industry Characteristics factor has been left out (cf. the problems with the Opportunity factor in section 4.2.4.3). Also two other factors, viz. Ownership Dispersion and Perceived External Obstacles, caused some trouble with inconsistent loadings of varying sign. As this makes it difficult to interpret them and compare them over samples, also those factors have been excluded.

The analyses are summarized in figure 5.8. Explanatory power as regards target variables is given in table 5.5.

Table 5.5 Explanatory Power Within Sub-Groups

<u>Factor:</u> <u>Sub-sample:</u>	Perceived Opportunity	Cognitive Attitude	Affective Attitude	Growth Aspirations
Manufacturing	0.26	0.32	0.41	0.60
High-Tech	0.17	0.31	0.31	0.46
Repair Service	0.28	0.34	0.19	0.40
Retailing	0.33	0.24	0.36	0.37
Full Sample	0.27	0.21	0.29	0.44

Figure 5.8 Determinants of Growth Motivation in Separate Industries



Note: On each arrow the coefficients are presented in the following order: Manufacturing/High-Tech/Repair Services/Retailing.

The R^2 's are on the average somewhat higher in the subgroup analyses. This is so in spite of the fact that the number of explanatory factors has been reduced and that "optimal" models were not developed for each subgroup.³³

For prediction of Growth Aspirations the model performs better with the (predominantly) manufacturing subgroups (High-Tech and Manufacturing). One reason for this may be, simply, that the design of the study makes it cover better the growth-relevant factors in such industries. Another reason may be that indivisibilities are more pronounced in the other two industries, making incremental growth harder to obtain and Growth Aspirations more of the "either no or substantial growth" kind, something which reduces the possibility of obtaining a very high R^2 .

Some of the group differences regarding specific relations may be interpreted as reflecting the influence of indivisibilities. For example, the effect of Entrepreneurial Experience on Perceived Opportunity is stronger among Retailers and Repair Service firms. It may be that previous experience is a more essential requirement for the ability to look beyond the constraints of present premises and the local market in industries where such constraints are more severe.

On the other hand, the link between Perceived Opportunity and Growth Aspirations is much weaker in these industries. This may be due to the fact that further growth would require new premises and possibly geographic relocation, which is risky considering the nature of customer relations in such industries.

In the analyses of Previous Growth there was an indication that Geographic Location might be important in the Repair Services and Retail industries, which should be more dependent on the local environment and its development (proximity to universities, though, may be important for high-tech firms; cf. Ch. 8). It was therefore checked whether Geographic Location had an effect on Growth Motivation in these industries although the factor had been shown to have no substantial effect in the full-sample analysis. Interestingly, this turned out not to be the case. This may be one example of a truly

direct (not perception mediated) effect of Opportunity on actual growth (cf. section 4.1).

Stability of relationships over sub-samples has been examined through a comparison of the sign and magnitude of total effects and of correlations within the groups. These comparisons are summarized in table A5.7 in the chapter appendix. The following relationships with target variables are very stable over subgroups:³⁴

- All effects of need for Achievement (except its correlation with Growth Aspirations).
- The effects of Age/Maturity on Perceived Opportunity and Growth Aspirations.
- The effect of Economic Satisfaction on Affective Attitude (total effect only).
- The effect of Firm Size on Growth Aspirations (total effect only).
- The effects of Cognitive Attitude on Affective Attitude and Growth Aspirations.
- The effect of Affective Attitude on Growth Aspirations (correlation only).

Also the following relations emerge with the same sign in each industry subgroup:³⁵

- Need for Achievement on Growth Aspirations (correlation).
- Age/Maturity on Cognitive Attitude and Affective Attitude.
- Education on Perceived Opportunity.
- Economic Satisfaction on Cognitive Attitude and Growth Aspirations.
- Entrepreneurial Experience on Perceived Opportunity and Growth Aspirations.
- Firm Size on Growth Aspirations (correlation).
- Perceived Opportunity on Growth Aspirations.
- Affective Attitude on Growth Aspirations (total effect).

Finally, the following effects turn out to have inconsistent signs over subgroups:

- All effects of Education not previously mentioned.
- Firm Size on Cognitive and Affective attitudes.
- Economic Satisfaction on Affective Attitude (correlation).

In all, the degree of consistency is especially high for the inter-relations among the Growth Motivation factors and for the Need factors nAch and Age/Maturity. Thus, these Need factors do not only appear to be the strongest predictors of Growth Motivation but also those whose effects are the most consistent over different industries.

The influence of Opportunity and Ability factors appear less general in the subgroup analyses. The links between Education and Perceived Opportunity and between Perceived Opportunity and Growth Aspirations get some general support. ³⁶

5.6 Summing Up the Analyses

The empirical analyses of determinants of Growth Motivation show that:

1. A substantial share of the variation in Growth Aspirations and the other target variables can be explained by the factors included in this study. However, there appears to be room for inclusion of other predictors and/or improved measurement of the theoretical constructs used, since even more of the variance remains unexplained.
2. Ability, Need, and Opportunity all seem to have some influence on Growth Motivation.
3. Need appears to be more important than the other two, since it influences all measures of Growth Motivation and not only Growth Aspirations, and since its influence show a greater degree of consistency over sub-samples.
4. Opportunity - as measured here - appears to influence Growth Aspirations without the mediation of attitudes.
5. Ability appears to have little or no direct influence on Growth Motivation but possibly an indirect effect via an influence on the Perception Opportunity for Growth.
6. Measures of perceived reality have a unique influence on Growth Motivation alongside more objective measures. These perceptions are in turn only to a very low degree explained by the objective measures included in this study.
7. Within the system of Growth Motivation factors data support a Cognitive -> Affective sequence of causal order, and also unique direct effects of each attitude factor on Growth Aspirations.
8. Cognitive Attitude is the single factor which has the greatest predictive power for Growth Aspirations. The most relevant aspects of Cognitive Attitude appear to be expectations regarding the consequences of growth for employee well-being, independence, private finances, and control.

5.7 Discussion of the Results Regarding Determinants of Previous Growth and Growth Motivation

The analyses in this and the preceeding chapter have shown that ability, need, and opportunity - as measured in this study - all have some unique effect on growth motivation as well as on actual growth. In both cases need factors were shown to have the greatest influence.

For those explanatory factors which could be used in both analyses it has also been demonstrated that factors which contribute to the explanation of actual growth also tend to have a similar influence on growth motivation. Thus, the effect of ability, need, and opportunity on growth appears to be mediated by growth motivation. This strengthens the belief that growth motivation measures like those used in this study are valid predictors of subsequent growth behavior.

The analyses were more successful in explaining growth motivation - at least aspirations - than in explaining previous growth. Partly, this is no doubt due to the fact that more and different variables were used as predictors of the former. Some of the subjective variables were not included as predictors of previous growth because of the lack of data from a relevant point in time. For several of these there is good reason to believe - on the basis of earlier empirical studies or theory - that they actually affect behavior as well.

In addition, it was demonstrated that these subjective predictors of growth motivation were in turn only to a very modest degree explained by the objective factors included in this study. It is therefore likely that measures of growth motivation would not only be valid predictors of growth behavior but also that they would have a unique contribution in competition with the objective factors that were shown to have a substantial influence on previous growth.

None of this has of course been strictly proven. There is the eternal problem of causality. Even if methods like PLS move us one step closer to proving causality they will never take us all the way there (cf. Cliff, 1983).

Something which is likely to reduce the predictive value of growth motivation measures is that intentions do not always lead to results. Objective factors may have a direct influence on growth besides the motivation-mediated effects (cf. sections 1.6 and 4.1). While most factors have a similar influence on previous growth and on growth aspirations, a careful examination of the results implies the existence of certain direct effects of this kind.

Consider first the case of education. In the analyses of growth motivation, education had only a very weak and indirect positive effect on aspirations; an effect which also showed little consistency over subgroups. The total effect on aspirations was negligible, and the correlation with affective attitude practically zero. Assuming less than one-to-one correspondence between motivation measures and subsequent growth, the effect of education on growth would be small indeed.

However, in the analyses of previous growth, it was shown that education is an important dimension of growth-relevant ability, which in turn had a modest but non-negligible effect on growth. This effect turned out to be reasonably stable over subgroups. It has also been shown that education is fairly strongly related to firm size within all four industries.

This pattern suggests that more educated small firm managers may on the average be no more growth motivated than the less educated. Among those who want to expand, however, education appears to help produce the desired result.

Similarly, the effect of firm size appeared to be weaker in the analysis of growth motivation than when actual growth was analyzed. It may be that managers of somewhat larger firms are not much less growth motivated. After all, those who run such firms may be in that position because they were initially more growth-oriented. If it is assumed that the "best", "easiest", or "most profitable" growth opportunities are exploited first, continued growth may be harder to obtain for the larger firm, although this fact may not be adequately perceived. This

may cause a negative effect of Firm Size on actual growth which is in part independent of its effects on growth motivation.³⁷

In all, although strict proof is not there, the analyses support the General Framework outlined in Chapter 1 and in section 4.1. That is, the analyses support the assumptions that a) perceptions of ability, need, and opportunity influence growth motivation, b) objective ability, need, and opportunity can only in part explain differences in the perception of these three factors, and c) truly direct effects of these three objective factors on growth may exist alongside the motivation mediated effects.

In particular, the results support the idea that the individual matters. The results for age of the firm and of the individual, number of years as CEO, need for Achievement, and degree of economic satisfaction, i.e. the Need factors included in the study, suggest that small firm growth has a great deal to do with the owner-manager's satisfaction or dissatisfaction with the current state of affairs.

The results arrived at may actually look fairly simple and to some extent even trivial. That growth might depend on opportunity, need, and ability and that individual differences matter are, after all, not very provocative ideas. So it is not very surprising that this turned out to be the case.

If the impression is that the results are self-evident, this study has really achieved something, because then it has brought some order to chaos. For it was by singling out more general concepts from the multitude of variables used or suggested in previous studies, relating these concepts to theory, and applying a suitable analysis method, that the relative simplicity offered here was made possible.

The only alternative way to reach a similar degree of simplicity when dealing with a complex real-world phenomenon is to make negligibility assumptions, i.e. to choose not to take into consideration a number of (potential) contingencies. If that is done in an empirical study, it inevitably leads to loss of explanatory power. Studies like the

present one can help to sort out the factors that may be left out without much loss of information and those which may not.

The results finally presented are not that easily grasped. But to the author's mind they certainly are more informative than would be the vast number of analyses of relations between manifest variables that would have resulted if each manifest level relation had been carried out separately.

This is not saying that descriptive analyses or those referring to relations between manifest variables are useless. On the contrary, they can be of much value if guided by theory. In the following chapters, some of these alternative ways of analyzing the data will be explored.

Notes

1 Statements of facts collected in the questionnaires (education, firm age, firm size etc.) are regarded as objective data.

2 As regards point (1), the main reasons for not including certain variables were that a) their causal relations to growth issues were theoretically unclear or assumed to be non-existent or b) that empirical relations actually turned out to be uninteresting. In some cases additional reasons were e.g. little dispersion within the sample or that the question concerned only a sub-sample of respondents. Q10 and Q40 are examples of the former; Q7-8 and Q73-77 of the latter.

Q86-Q96 were originally included in the questionnaire mainly to serve as weights for the expected outcomes variables (Q26-Q33) in an Expectancy Theory conception (see section 2.2.5.1). It has been shown in an earlier paper that such weighting does not contribute to explanatory power for growth aspirations (Davidsson, 1987a). Thus, these variables would add little more than unnecessary complexity. That weighting expectations with evaluations add little or nothing to explanatory power has also been found in a number of previous studies (Pieters, 1988, p.165).

Q109, Q111, Q113, and Q115 were included to cover more dynamic consequences of growth. These were also left out in the PLS-analyses because of a lack of unique contribution besides Q26-Q33.

The "network" variables (Q97-Q107) are examples of variables whose causal relationship with growth issues are theoretically unclear. The risk taking propensity indicators (Q35, Q38) reflect more than anything else the author's rather naive conception of risk-taking when developing the questionnaire - the subtle matter of risk-taking requires much more refined measurement to be really meaningful (cf. sections 2.2.5.2, 2.3.3.2, and Davidsson, 1988a).

3 More specifically, the criteria for re-modeling have been:

- 1) All specified causal relations should be theoretically reasonable.
- 2) Explanatory factors are removed from further consideration if they have no causal links forward in the causal chain which are at least 0.10 in absolute size.
- 3) Expected causal relations are removed if the empirical relations (path coefficients) are smaller than 0.10 in absolute size.
- 4) Causal relations which were not originally expected are included when theoretically reasonable with the purpose of reducing residual correlation with target variables to a minimum. Such residual correlations that are 0.10 or larger in absolute size are avoided as far as possible.
- 5) When reducing the "total" model a total effect (direct plus indirect) of at least 0.10 on the primary target variable (Growth Aspirations) or a total effect on any secondary target variable (other Growth Motivation factors and Perceived Opportunity) of at least 0.15 is required for further consideration.

These criteria are not always compatible and slight deviations from them have been made when this is judged to result in a more accurate model.

4 Some respondents have given answers which show that they are less positive towards modest (Q21) than towards substantial (Q22) growth. This has been interpreted as showing that they consider 25 percent growth to be too little. Therefore, Q21 has been recoded to (Q22+1) in such cases in the PLS-analyses.

5 As may be noted, Q64-Q65 really concern excess capacity. Their relations to other issues reveal that they do at least partly reflect the ability or motivation to perceive growth opportunity. For instance, the answers to the two questions have a significant positive inter-correlation, and the employee variable has a significant positive correlation with employee growth aspirations. These correlations would be hard to explain if the questions only reflected true excess capacity.

Q66 may also be viewed as indicating Need, but it is here regarded as indicating that the firm operates on a more rapidly developing - and therefore probably growing - market.

6 Separate analyses with either turnover or employee growth have also been conducted. Differences of some interest are:

- 1) R² is slightly higher for employee growth aspirations (0.33 vs. 0.30)
- 2) Education seems to have a stronger effect on turnover than on employee growth aspirations (tot. effect 0.15 vs. 0.09; corr. 0.23 vs. 0.16).
- 3) Same is true for Entrepreneurial Experience (tot. effect 0.00 vs. 0.00; residual 0.16 vs. 0.04; corr. 0.21 vs. 0.09). Note that the same pattern was found in the analysis of previous growth.
- 4) Affective Attitude appears to be more closely related to employee growth aspirations (coeff. 0.30 vs. 0.22; corr. 0.47 vs. 0.39).

7 Largest residual correlation is Education → Affective Attitude (-0.09), i.e. the model estimates a positive total effect of Education on Affective Attitude of 0.09 whereas the zero-order correlation is nil.

8 For some factors, the Cognitive → Affective route appears reasonable. If decreasing marginal utility of money and e.g. fears of control loss and reduced employee well-being, which increase with firm size, are assumed, Firm Size would affect specific expectations which in turn would result in a more negative general feeling towards growth. As regards e.g. Achievement Motivation it may be argued that high nAch is associated with a positive Affective Attitude towards growth, which in turn leads the individual to interpret reality with a growth-positive bias (Affective Attitude → Cognitive Attitude). In the first analysis, the two attitude components are specified as uncorrelated. While this will result in a correlation which is smaller than if no such restriction is imposed, a zero correlation will not turn up in the solution since the algorithm aims at fulfilling other criteria as well.

9 First, nAch - which is assumed to have a positive effect on Growth Aspirations - is assumed to decline with increased Age/Maturity (satiation tendencies), resulting in a negative effect. Second, those with high scores on Age/Maturity were high on this issue also three years ago, as compared with the rest of the sample. Thus a negative relation between Age/Maturity and Previous Growth is assumed. Since Previous Growth is assumed to have positive as well as negative effects on Growth Aspirations the total effect of this route may be either positive or negative. Thirdly, older firms should be larger (even with the sample restriction used in this study) and a negative effect on Growth Aspirations via a positive relation to Firm Size is therefore assumed.

10 If Ownership Dispersion has a positive effect on Growth Aspirations and if Growth Aspirations affect actual growth, there should also be a positive effect of Ownership Dispersion on Previous Growth (provided that the dispersion of ownership has not occurred ex post), or a direct effect on Firm Size in case this growth has not occurred during the last three years

(firms which are not wholly manager-owned may even have been larger from start-up on). Summing up the latter two effects they would be negative.

11 High nAch individuals are assumed to be more growth-oriented. This causes the positive effect via Affective Attitude. If nAch is a stable personality characteristic which affects behavior, there should also be a positive relationship between nAch and Previous Growth. The total effect of the latter route may be either positive or negative.

12 The assumed positive effect may be due to a) that those who have experienced growth are innately more growth-oriented and will remain so, b) that experience of positive reinforcement enhances growth-orientation regardless of initial attitudes, or c) of a tendency of aspirations to "adjust to the attainable" (Aspiration Theory, see e.g. Simon & Stedry, 1972).

13 A negative effect on Cognitive Attitude is expected because it is assumed that a majority of small firm managers would view further growth beyond a certain point as a threat to non-monetary goals, whereas the financial pay-off and the utility derived from it is assumed to increase at a marginally decreasing rate with increases in firm size.

14 Separate analyses with turnover and employee growth aspirations have also been conducted. Some differences of interest are:

1) Previous Growth appears to have a much stronger positive effect on turnover growth aspirations (tot. eff. 0.24 vs. 0.07; coeff. 0.25 vs 0.08; corr. 0.29 vs. 0.11).

2) nAch seems to be more strongly related to turnover growth aspirations (tot. eff. 0.10 vs. 0.11; resid. 0.08 vs. 0.00; corr. 0.34 vs. 0.25). This seems logical: high nAch individuals are likely to want results and personal responsibility for these results, not a large staff per se.

15 The failure to find a substantial positive effect of Firm Size on Economic Satisfaction can be interpreted as showing either that a) growth does not pay, b) firms grow to the size were they yield acceptable profits and this size differs between firms, or c) that aspirations actually do adjust so that higher income does not have an effect on Economic Satisfaction.

Since Ownership Dispersion is related to Firm Size and to Growth Aspirations but not to Previous Growth, one could ask whether it is not actually Firm Size that causes Ownership Dispersion rather than the other way round. Neither direction is entirely satisfactory as the causal direction.

16 The adjustments made are:

1) A Cognitive Attitude -> Affective Attitude causal direction has been specified. Therefore, a nAch -> Cognitive Attitude link has been introduced and the direct effect of Economic Satisfaction on Affective Attitude relation has been deleted.

2) The Ownership Dispersion -> Firm Size relation has been reversed, the Ownership Dispersion -> Previous Growth direct effect deleted, and a direct effect of Firm Size on Growth Aspirations introduced.

3) Direct effects of Age/Maturity on Cognitive Attitude and Growth Aspirations have been included.

4) The Profitability factor has been excluded.

The reversal of the Ownership Dispersion -> Firm Size relation also has the - unintended - effect of making Age/Maturity, nAch, and Previous Growth causally related to Ownership Dispersion in the system. These relations

have not been interpreted as being causal. Therefore, minimizing the residual correlations for the omitted direct effects has not been attempted.

17 Largest residual correlation is Ownership Dispersion → Affective Attitude (0.09), reflecting a possible direct positive influence judged to be too small to deserve inclusion.

18 First, Industry Characteristics are assumed to have a positive effect on Geographic Market Dispersion, which in turn is assumed to have a positive total effect on Growth Aspirations. Second, Industry Characteristics have an effect on Perceived Entry Barriers, adding further to a positive effect of Industry Characteristics on Growth Aspirations. Third, if opportunity for growth differs between industries this will be at least partly perceived, hence a positive effect of Industry Characteristics on Perceived Opportunity, which of course is supposed to have a positive effect on Growth Aspirations. Finally, Industry Characteristics also have a negative indirect effect on Growth Aspirations. Managers in growth-enhancing industries are more likely to have direct or indirect experience of growth and therefore (rightfully or not) perceive more external obstacles.

19 A positive effect because of more Perceived Opportunity is assumed to be the strongest one. This positive effect is assumed to be partly counter-balanced because of negative effects on Growth Aspirations via Geographic Market Dispersion (with a favorable Geographic Location staying local is feasible - but this will restrict perception of opportunity to those available on the local market), on Perceived Entry Barriers (risk of spin-offs will be perceived as higher in a more active economic environment) and on Perceived External Obstacles (more direct or indirect experience of external obstacles in an economically active environment).

20 Separate analyses for turnover and employee growth aspirations have been run for the Opportunity model, too. Differences of some interest are:

- 1) R^2 is higher for employee growth aspirations (0.29 vs. 0.23). This is, however, not the case with the "model arrived at."
- 2) Industry Characteristics appear to be more closely related to turnover growth aspirations (tot. eff. 0.03 vs. 0.03; resid 0.22 vs. 0.15; corr. 0.23 vs. 0.16).
- 3) Same is true for Perceived Opportunity (tot. eff. 0.09 vs. 0.09; resid. 0.18 vs. 0.10; corr 0.36 vs. 0.26).

21 The adjustments made are:

- 1) The Perceived Entry Barriers factor has been excluded. The corresponding factor was shown to be redundant in the analyses of previous growth (section 4.2.4.1) and it was argued that this may be due to the selection of industries. In other industries Perceived Entry Barriers may be very important, especially when barriers are perceived to be very low and hence the risk of employee spin-offs high.
- 2) Effects of Geographic Location on Perceived External Obstacles and Perceived Opportunity are excluded.
- 3) Direct effects of Industry Characteristics on Perceived Opportunity and Growth Aspirations have been included.

22 Largest residual correlation is Geographic Market Dispersion → Cognitive Attitude (0.06), i.e. the model slightly underestimates the relation between those factors.

23 The following structural relations were added in the preliminary Total Model:

- 1) A positive effect of Firm Size on Geographic Market Dispersion (not strictly causal; more geographic dispersion is likely in larger firms regardless of which caused what)
- 2) A positive effect of Entrepreneurial Experience on Perceived Opportunity (the more experienced should perceive more opportunity)
- 3) A positive effect of Education on Perceived Opportunity (the better educated should perceive more opportunity)
- 4) A positive effect of Industry Characteristics on Previous Growth (cf. analyses of determinants of Previous Growth, section 4.2.4)
- 5) A positive effect of $nAch$ on Perceived Opportunity (another case of growth-positive bias in perception and/or the effect that s/he who actively seeks opportunity is more likely to find it).

24 In the total models, only two of the $nAch$ indicators are used and the factor is specified as reflective (cf. section 7.6).

Another minor adjustment is that the "other" category dummy used as indicator of Ownership Dispersion has been excluded. The indicator is largely redundant, refers to a small number of cases, and gets a small loading with the "wrong" sign in the Ability model.

25 Only one residual correlation larger than 0.09 in absolute size emerges, viz. that between Education and Affective Attitude (-0.12; cf. note 7).

26 Also the total model has been run with both turnover and employee growth aspirations as single dependent measure. It turns out that R^2 is somewhat higher in the case of turnover (0.41 vs. 0.37). The attitude factors, especially Affective Attitude, appear to have more to say about employee growth aspirations (coeff. 0.29 vs. 0.16). The direct effects from factors "further back" in the model are weaker in the analysis of employee growth aspirations (around or below 0.10).

27 R^2 is lower for the other target variables. An inspection of the factor correlation matrix reveals that many explanatory factors correlate more highly with Growth Aspirations than with the attitude factors. This challenges the assumption of causal order made here, i.e. that attitudes are antecedents of aspirations rather than the other way round. The main reason for this correlation pattern may be, however, that attitudes are measured with ordinal scale indicators whereas the Growth Aspirations indicators are measured on interval scales. Jöreskog & Sörbom (1984) have shown in a Monte Carlo experiment that Pearson product-moment correlations consistently underestimate the true correlations when ordinal variables are involved. Thus, structural relations to and from ordinal-scale factors in the model are likely to be underestimated, as are R^2 's for such factors (and also for factors measured with interval scale indicators to the extent that they are explained by factors with ordinal indicators). This may also explain why so many direct effects which were not originally expected had to be introduced to get a satisfactory model fit.

28 It should be noted that an R^2 above 0.80 would easily be reached if size aspired for were used as the dependent factor instead of growth aspired for. Current size would then explain some 70 percent of the variation and the other factors about 40 percent of the remainder. Since current size would explain 100 percent of size aspired for if there were no growth aspirations (and no "shrink" aspirations, either) focusing the analyses on that relation would be far off the mark.

29 The exclusion of the Geographic Market Dispersion factor caused considerable empirical redefinition of the Industry Characteristics factor. Therefore, the latter has been specified as reflective in the final analysis since such a specification makes it correspond better to the Industry Characteristics factor analyzed in the Opportunity model.

30 In this analysis dummies were introduced for the stratification variables "smallest size class" (2-4 employees) and "high-tech" industry. Preliminary analyses revealed that these groups had significantly higher Growth Aspirations and that this could not be fully explained by the fact that they also had more positive expectations.

31 Direct effects of Firm Size and Ownership Dispersion on Growth Aspirations were retained although the coefficients do not reach 0.10 in absolute value. Omitting these relations would have resulted in unacceptable residuals. Because of the way the two factors are interrelated, deletion of one of the relations would not strengthen but weaken the other.

32 That Perceived Opportunity to a large extent appears to be independent of objective Opportunity factors is probably also a result of the fact that the former predominantly refer to firm-specific matters whereas the latter basically cover matters which are industry-general.

33 If optimal models were constructed for each sub-group, R^2 's would of course be further increased. It can also be shown that restricting the analysis to even more homogeneous samples increases R^2 . For example, in an analysis of the "qualified" High-Tech group (manufacturing of computers, business machines and tele-communications equipment only; cf. Chapter 8) 74 percent of the variation in Growth Aspirations can be explained.

34 A total effect has been judged as "very stable" if a) the largest sub-sample coefficient is greater than 0.20 (in absolute magnitude) and the largest coefficient is less than twice the size of the smallest coefficient, or b) the largest coefficient is less than 0.20 and the difference between the largest and the smallest coefficient is less than 0.10.

A correlation has been judged as "very stable" if a) the largest sub-group coefficient is greater than 0.30 and the largest coefficient is less than twice the size of the smallest coefficient, or b) the largest coefficient is less than 0.30 and the difference between the largest and the smallest coefficient is less than 0.15.

In both cases, consistency as regards sign is required.

35 As regards the mentioned effects of entrepreneurial experience, however, inconsistencies emerge as regards the sign of the indicators' weights, i.e. indicators (4) and (5) get (small) negative loadings in the high-tech sample.

36 As regards consistency in terms of the indicator - factor relations differences do occur, but they are not alarming. For example, employee well-being, independence, private finances, and control get relatively high loadings on the Cognitive Attitude factor in all sub-samples.

37 The interpretation of results regarding firm size should, however, be subject to some caution since the sampling criteria employed make biases particularly likely regarding the influence of this variable.

Chapter Appendix (5)

Table A5.1 Variables and Factors Used in the Analyses

<u>FACTORS/Indicators</u>	<u>Scale Type</u> <u>FACTOR Type</u>	<u>Data Source</u>	<u>Higher value means...</u>
A. <u>ABILITY FACTORS</u>			
EDUCATION (ED)	FORMATIVE		MORE EDUCATED
1. General education	ordinal(4)	TI; Q48	More educated
2. Business Education	ordinal(4)	TI; Q49	More educated
ENTREPRENEURIAL EXPERIENCE (EE)	FORMATIVE		MORE EXPERIENCE
3. Prior own bus. exp.	ordinal(3)	TI; Q42	More experience
4. Runs multiple firms	ordinal(3)	TI; Q43	More experience
5. Founder of firm	dummy	TI; comp. Q44	Yes (1 if Q44=3)
INDUSTRY/MANAGEMENT EXPERIENCE (I/M)	FORMATIVE		MORE EXPERIENCE
6. Prior managem. exp.	ordinal(3)	TI; Q45	More experience
7. Prior industry exp.	ordinal(3)	TI; Q47	More experience
OWNERSHIP DISPERSION (OD)	FORMATIVE		MORE DISPERSION
8. Resp. (+family) share	interval	TI/MQ; Q12;Q57	Larger share (N.B. neg. loading)
9. Partnership	dummy	MQ; comp. Q58	Yes (1 if Q58>0)
10. VenCap	dummy	MQ; comp. Q60	Yes (1 if Q60>0)
11. Other	dummy	MQ; comp. Q61	Yes (1 if Q61>0)
PERCEIVED ABILITY (PA)	FORMATIVE		MORE ABILITY
12. Attitude item	ordinal(5)	TI; Q34	More ability
13. Attitude item	ordinal(5)	TI; Q36	More ability
14. Attitude item	ordinal(5)	TI; Q39 rev.	More ability
B. <u>NEED FACTORS:</u>			
AGE/MATURITY (A/M)	FORMATIVE		OLDER/MORE MATURE
15. Log Manager's age	interval	TI; comp. Q41	Older
16. Log Firm age	interval	TI; comp. Q9	Older
17. Log Years as CEO	interval	TI; comp. Q11	More Years
NEED FOR ACHIEVEMENT	FORM/REFL *		HIGHER <u>n</u> ACH
18. Attitude item	ordinal(5)	MQ; Q110 rev.	High <u>n</u> Ach
19. Attitude item	ordinal(5)	MQ; Q112	High <u>n</u> Ach
20. Attitude item	ordinal(5)	MQ; Q114 rev.	High <u>n</u> Ach
21. Attitude item	ordinal(5)	MQ; Q116	High <u>n</u> Ach

(cont.)

Table A5.1 Variables and Factors Used in the Analyses (cont.)

<u>FACTORS/Indicators</u>	<u>Scale Type</u> <u>FACTOR Type</u>	<u>Data Source</u>	<u>Higher value means...</u>
PROFITABILITY (PR)	REFLECTIVE		MORE PROFITABLE
22. Turnover/empl.(1986) relative to industry/ size-class average	interval	TI; comp. Q13, Q14-15	More profitable
23. Log of increase in turnover/employee 1983-86	interval	TI; comp. Q16-17, Q14-15	More profitable
PREVIOUS GROWTH (PG)	FORMATIVE		HIGHER GROWTH
24. Log of annual growth rate 1983-86; empl.	interval	TI; comp. Q13, Q18	High growth
25. Log of annual growth rate 1983-86; T-0	interval	TI; comp. Q114-15; Q16-17	High growth
FIRM SIZE (FS)	REFLECTIVE		LARGER
26. Size in 1986; empl.	interval	TI; Q13	Larger
27. Size in 1986; T-0	interval	TI; Q14-15	Larger
ECONOMIC SATISFACTION (ES)	FORMATIVE		MORE SATISFIED
28. Attitude item	ordinal(4)	TI; Q19 rev	More satisfied
29. Attitude item	ordinal(4)	TI; Q20 rev	More satisfied
C. OPPORTUNITY FACTORS:			
INDUSTRY CHARACTERISTICS (IC)	FORM/REFL *		MORE GROWTH- ENHANCING
30. Average No. of empl. for all firms in SNI-class	interval; log	SSI	Less fragmented industry
31. No. of firms with 1-4 relative to No. of firms with 10-19 emp. in SNI-class	interval; rev	SSI	Less fragmented industry
32. Total employment in SNI-class 1986 rel. to 1980	interval	SSI	Higher Growth
33. Total employment in SNI-class 1986 rel. to 1984	interval	SSI	Higher Growth
34. "Qual. Hitech Firm"	dummy	SF	1=Yes; Else=0
35. Service Firm	dummy	TI; comp. Q6	Yes (1 if Q6=2) (N.B. neg loading)
36. Type of customers	ordinal(3)	MQ; Q51	More corp. buyers
37. Customer concentr.	ordinal(4)	MQ; Q52	Higher concentration

(cont.)

Table A5.1 Variables and Factors Used in the Analyses (cont.)

<u>FACTORS/Indicators</u>	<u>Scale Type</u> <u>FACTOR Type</u>	<u>Data Source</u>	<u>Higher value means...</u>
GEOGRAPHIC LOCATION (GL)	REFLECTIVE		MORE FAVORABLE
38. Population within home county	ordinal(6)	SS0	Larger population
39. Pop. change 1984-86; county	interval	SS0	More increase
40. Pop. density; county	ordinal(6)	SS0	Higher density
41. Major univ. within home county	dummy	other external	Yes
42. Population; community	ordinal(7)	SS0	Larger population
43. Pop. change 1984-86 community	ordinal(8)	SS0	More increase
44. Pop. density; comm.	ordinal(7)	SS0	Higher density
45. Major univ. within home community	dummy	other external	Yes
GEOGRAPHIC MARKET DISPERSION (GMD)	FORMATIVE		MORE DISPERSED
46. Percent of T-0 within home county	interval	MQ; Q53	Larger share (N.B. neg. loading)
47. Exports; Nordic Coun.	dummy	MQ; comp. Q55	Yes (1 if Q55>0)
48. Exports; World	dummy	MQ; comp. Q56	Yes (1 if Q56>0)
PERCEIVED BARRIERS TO ENTRY (PEB)	FORMATIVE		HIGH BARRIERS
49. Perc. spin-off risk	ordinal(5)	MQ; Q67	Low risk
50. Perc. capital needed for start-up	ordinal(5)	MQ; Q68	Larger amount
PERCEIVED EXTERNAL OBSTACLES (PEO)	FORMATIVE		MORE OBSTACLES
51. Perc. difficulty getting loans	ordinal(5)	MQ; Q69	Easier (N.B. negative loading)
52. Perc. difficulty recruiting	ordinal(5)	MQ; Q70	Easier (N.B. negative loading)
53. Experience of labor market law problems	dummy	MQ; Q72 rev	No (N.B. neg. loading)
54. Taxes obstacle to growth?	quasi-interval	MQ; Q78-Q85 comp. individ. average score	To a lesser degree (N.B. neg. loading)

(cont.)

Table A5.1 Variables and Factors Used in the Analyses (cont.)

<u>FACTORS/Indicators</u>	<u>Scale Type</u> <u>FACTOR Type</u>	<u>Data Source</u>	<u>Higher value means...</u>
PERCEIVED GROWTH OPPORTUNITY (PO)	FORMATIVE		MORE OPPORTUNITY
55. Perc. future profitability in industry	ordinal(4)	MQ; Q62 rev.	More profitable
56. Perc. expansion poss. with exist. products	ordinal(4)	MQ; Q63 rev.	More room for expansion
57. Perc. expansion poss. without new physical facilities	ordinal(5)	MQ; Q64	More room for expansion
58. Perc. expansion poss. without add. empl.	ordinal(5)	MQ; Q65	More room for expansion
59. Perc. necessity of new prod. development	ordinal(4)	MQ; Q66 rev.	More necessary
D. <u>GROWTH WILLINGNESS FACTORS:</u>			<u>MORE WILLINGNESS</u>
COGNITIVE ATTITUDE (CA)	FORMATIVE		MORE POSITIVE
Consequence of growth on..			
60. Workload	ordinal(5)	TI; Q26	more positive
61. Work tasks	ordinal(5)	TI; Q27 rev.	more positive
62. Empl. well-being	ordinal(5)	TI; Q28 rev.	more positive
63. Private Finances	ordinal(5)	TI; Q29 rev.	more positive
64. Control	ordinal(5)	TI; Q30 rev.	more positive
65. Independence	ordinal(5)	TI; Q31 rev.	more positive
66. Crises Survival Ab.	ordinal(5)	TI; Q32 rev.	more positive
67. Quality	ordinal(5)	TI; Q33 rev.	more positive
AFFECTIVE ATTITUDE (AA)	REFLECTIVE		MORE POSITIVE
68. Moderate growth	ordinal(8)	TI; Q21 recoded	more positive
69. Substantial growth	ordinal(7)	TI; Q22	more positive
GROWTH ASPIRATIONS (GA)	REFLECTIVE		HIGHER ASPIRATIONS
Present size compared with "ideal" size 5 years ahead (ratio)			
70. As reg. employees	interval; log	TI; comp. from Q13; Q23.	higher aspirations
71. As reg. turnover	interval; log	TI; comp. from Q14-15; Q24-25	higher aspirations

Note: TI=Telephone Interview; MQ=Mail Questionnaire; Qxx=Variable Number; see General Appendix 1. SSI=Statistics' Sweden; non-official statistics; SSO=Statistics' Sweden; official statistics; SF=Sampling Frame; (x)=Number of response categories for ordinal variables.

* IC and nAch are formative factors in subset analyses; reflective in "Final Total Model".

See also note for table A4.1 (appendix to Chapter 4).

Table A5.2. Path Coefficients (*100) - Preliminary Total Model

	A/M	OD	GL	IC	EE	ED	ES	nACH	PG	FS	GMD	PEO	PO	CA	AA	GA
A/M	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OD	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0
GL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ED	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
nACH	-23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PG	-30	0	0	20	0	0	0	11	0	0	0	0	0	0	0	0
FS	21	0	0	0	0	27	0	0	27	0	0	0	0	0	0	0
GMD	0	0	-17	56	0	0	0	0	0	11	0	0	0	0	0	0
PEO	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0
PO	0	0	0	17	19	22	0	18	0	0	12	-17	0	0	0	0
CA	-9	0	0	0	0	12	-23	24	0	-15	0	0	8	0	0	0
AA	0	0	0	0	0	0	0	18	0	0	0	0	0	45	0	0
GA	-9	10	0	14	5	0	0	0	10	-11	0	0	15	29	25	0

Note: Abbreviations are explained in table A5.1.

Table A5.3. Explanatory Power (*100) - Preliminary Total Model

	A/M	OD	GL	IC	EE	ED	ES	nACH	PG	FS	GMD	PEO	PO	CA	AA	GA
	0	3	0	0	0	0	0	5	19	15	33	6	28	21	29	44

Note: Abbreviations are explained in table A5.1.

Table A5.4 Residual Correlations (*100) - Final Total Model

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Age/Mature	100												
2 Own. Disp.	-29	97											
3 Industry	-21	23	100										
4 Entr. Exp.	-16	8	16	100									
5 Education	-19	18	14	5	100								
6 Ec. Satisf.	3	0	-2	-13	2	100							
7 nAch	0	16	10	-1	21	-10	94						
8 Firm Size	0	-2	1	7	0	4	3	92					
9 Ext. Obst.	4	-2	0	-1	-9	-8	-8	-8	94				
10 Perc. Opp.	-5	0	0	0	0	-8	-1	3	0	73			
11 Cogn. Att.	0	-2	-3	0	0	0	0	0	-5	5	79		
12 Aff. Att.	-6	4	-2	6	-12	0	-2	7	-3	5	1	71	
13 Growth Asp.	0	0	0	5	4	-7	2	-1	1	-2	-3	0	56

Note: Bold type is used for residuals concerning relations with target variables. For pairs of variables that are not specified as being causally related, the "residual" correlation is equal to the zero-order correlation. See also chapter notes; note 16.

Table A5.5. Factor Weights (*100) – Final Total Model

	A/M	OD	IC	EE	ED	ES	nACH	FS	PEO	PO	CA	AA	GA
15	33	0	0	0	0	0	0	0	0	0	0	0	0
16	61	0	0	0	0	0	0	0	0	0	0	0	0
17	35	0	0	0	0	0	0	0	0	0	0	0	0
8	0	-2	0	0	0	0	0	0	0	0	0	0	0
9	0	62	0	0	0	0	0	0	0	0	0	0	0
10	0	74	0	0	0	0	0	0	0	0	0	0	0
30	0	0	25	0	0	0	0	0	0	0	0	0	0
31	0	0	19	0	0	0	0	0	0	0	0	0	0
32	0	0	11	0	0	0	0	0	0	0	0	0	0
33	0	0	11	0	0	0	0	0	0	0	0	0	0
34	0	0	25	0	0	0	0	0	0	0	0	0	0
35	0	0	-11	0	0	0	0	0	0	0	0	0	0
36	0	0	24	0	0	0	0	0	0	0	0	0	0
37	0	0	23	0	0	0	0	0	0	0	0	0	0
3	0	0	0	69	0	0	0	0	0	0	0	0	0
4	0	0	0	43	0	0	0	0	0	0	0	0	0
5	0	0	0	37	0	0	0	0	0	0	0	0	0
1	0	0	0	0	63	0	0	0	0	0	0	0	0
2	0	0	0	0	54	0	0	0	0	0	0	0	0
28	0	0	0	0	0	4	0	0	0	0	0	0	0
29	0	0	0	0	0	98	0	0	0	0	0	0	0
19	0	0	0	0	0	0	49	0	0	0	0	0	0
21	0	0	0	0	0	0	70	0	0	0	0	0	0
26	0	0	0	0	0	0	0	70	0	0	0	0	0
27	0	0	0	0	0	0	0	47	0	0	0	0	0
51	0	0	0	0	0	0	0	0	-14	0	0	0	0
52	0	0	0	0	0	0	0	0	-74	0	0	0	0
53	0	0	0	0	0	0	0	0	-38	0	0	0	0
54	0	0	0	0	0	0	0	0	-57	0	0	0	0
55	0	0	0	0	0	0	0	0	0	17	0	0	0
56	0	0	0	0	0	0	0	0	0	36	0	0	0
57	0	0	0	0	0	0	0	0	0	18	0	0	0
58	0	0	0	0	0	0	0	0	0	47	0	0	0
59	0	0	0	0	0	0	0	0	0	59	0	0	0
60	0	0	0	0	0	0	0	0	0	0	24	0	0
61	0	0	0	0	0	0	0	0	0	0	9	0	0
62	0	0	0	0	0	0	0	0	0	0	32	0	0
63	0	0	0	0	0	0	0	0	0	0	31	0	0
64	0	0	0	0	0	0	0	0	0	0	26	0	0
65	0	0	0	0	0	0	0	0	0	0	18	0	0
66	0	0	0	0	0	0	0	0	0	0	8	0	0
67	0	0	0	0	0	0	0	0	0	0	19	0	0
68	0	0	0	0	0	0	0	0	0	0	0	52	0
69	0	0	0	0	0	0	0	0	0	0	0	55	0
70	0	0	0	0	0	0	0	0	0	0	0	0	53
71	0	0	0	0	0	0	0	0	0	0	0	0	55

Note: Weights are model parameters for formative factors (A/M, OD, EE, ES, PEO, PO, CA). For variable numbers see table A5.1.

Table A5.6. Factor Loadings (*100) - Final Total Model

	A/M	OD	IC	EE	ED	ES	nACH	FS	PEO	PO	CA	AA	GA
15	63	0	0	0	0	0	0	0	0	0	0	0	0
16	84	0	0	0	0	0	0	0	0	0	0	0	0
17	80	0	0	0	0	0	0	0	0	0	0	0	0
8	0	-68	0	0	0	0	0	0	0	0	0	0	0
9	0	67	0	0	0	0	0	0	0	0	0	0	0
10	0	77	0	0	0	0	0	0	0	0	0	0	0
30	0	0	87	0	0	0	0	0	0	0	0	0	0
31	0	0	78	0	0	0	0	0	0	0	0	0	0
32	0	0	51	0	0	0	0	0	0	0	0	0	0
33	0	0	51	0	0	0	0	0	0	0	0	0	0
34	0	0	60	0	0	0	0	0	0	0	0	0	0
35	0	0	-24	0	0	0	0	0	0	0	0	0	0
36	0	0	74	0	0	0	0	0	0	0	0	0	0
37	0	0	68	0	0	0	0	0	0	0	0	0	0
3	0	0	0	81	0	0	0	0	0	0	0	0	0
4	0	0	0	55	0	0	0	0	0	0	0	0	0
5	0	0	0	55	0	0	0	0	0	0	0	0	0
1	0	0	0	0	88	0	0	0	0	0	0	0	0
2	0	0	0	0	83	0	0	0	0	0	0	0	0
28	0	0	0	0	0	57	0	0	0	0	0	0	0
29	0	0	0	0	0	100	0	0	0	0	0	0	0
19	0	0	0	0	0	0	76	0	0	0	0	0	0
21	0	0	0	0	0	0	89	0	0	0	0	0	0
26	0	0	0	0	0	0	0	91	0	0	0	0	0
27	0	0	0	0	0	0	0	78	0	0	0	0	0
51	0	0	0	0	0	0	0	0	-15	0	0	0	0
52	0	0	0	0	0	0	0	0	-77	0	0	0	0
53	0	0	0	0	0	0	0	0	-32	0	0	0	0
54	0	0	0	0	0	0	0	0	-50	0	0	0	0
55	0	0	0	0	0	0	0	0	0	31	0	0	0
56	0	0	0	0	0	0	0	0	0	47	0	0	0
57	0	0	0	0	0	0	0	0	0	54	0	0	0
58	0	0	0	0	0	0	0	0	0	66	0	0	0
59	0	0	0	0	0	0	0	0	0	62	0	0	0
60	0	0	0	0	0	0	0	0	0	0	52	0	0
61	0	0	0	0	0	0	0	0	0	0	51	0	0
62	0	0	0	0	0	0	0	0	0	0	74	0	0
63	0	0	0	0	0	0	0	0	0	0	57	0	0
64	0	0	0	0	0	0	0	0	0	0	61	0	0
65	0	0	0	0	0	0	0	0	0	0	61	0	0
66	0	0	0	0	0	0	0	0	0	0	42	0	0
67	0	0	0	0	0	0	0	0	0	0	59	0	0
68	0	0	0	0	0	0	0	0	0	0	0	93	0
69	0	0	0	0	0	0	0	0	0	0	0	94	0
70	0	0	0	0	0	0	0	0	0	0	0	0	93
71	0	0	0	0	0	0	0	0	0	0	0	0	93

Note: Loadings are model parameters for reflective factors (IC, nAch, FS, AA, GA). For variable numbers see table A5.1.

Table A5.7. Total Effects and Correlations in Separate Industries

	A/M	EE	ED	ES	nAch	FS	PO	CA	AA
Perc	-4/-15	14/ 26	32/ 43		25/ 35				
Opp.	-12/-27	5/ 8	11/ 24		35/ 40				
	-5/-18	38/ 33	31/ 33		28/ 26				
	-8/-23	50/ 50	14/ 15		24/ 27				
Cog.	-38/-42		-6/ 4	-35/-45	22/ 36	-20/-14			
Att.	-19/-24		20/ 34	-21/-23	37/ 48	1/ 4			
	-23/-23		-1/ 0	-16/-16	30/ 32	16/ 15			
	-4/-14		34/ 31	-32/-35	24/ 24	-30/-26			
Aff.	-21/-30		-3/-16	-16/-25	30/ 36	-9/ 6		46/ 54	
Att.	-15/-31		9/ 16	-9/ 7	34/ 39	0/ -9		45/ 53	
	-15/-23		-1/ 2	-8/-23	29/ 31	8/ 8		53/ 57	
	-9/ -5		13/ 2	-12/-12	32/ 32	-11/ -8		38/ 44	
Gro.	-34/-41	4/ 1	3/ 6	-16/-27	24/ 35	-17/ -5	27/ 47	44/ 63	39/ 64
Asp.	-25/-32	2/ 25	9/ 26	-10/-26	29/ 49	-13/ -5	34/ 45	47/ 57	1/ 37
	-25/-30	3/ 12	-4/-12	-6/ -4	20/ 14	-15/-14	8/ 11	39/ 42	46/ 56
	-30/-33	2/ 18	14/ 23	-14/-14	17/ 21	-17/-18	5/ 19	44/ 50	22/ 40

Note: Coefficients are given only for pairs of factors which are specified as being causally related. Abbreviations are written out in table A5.1.

Order of Presentation

Column: Explanatory factor

Row:

Dependent	Total effect / Correlation	for Manufacturing sub-sample
Factor	Total effect / Correlation	for High-Tech sub-sample
	total effect / Correlation	for Repair Services sub-sample
	Total effect / Correlation	for Retailing sub-sample

6. Entrepreneurial Typology

6.1 Introduction¹

6.1.1 Relation to Previous and Following Chapters

This chapter is the first out of three which may be regarded as variations on a theme: the separation of the sample into more vs. less entrepreneurial small firms. Also indicators of entrepreneurship other than growth will be considered. The General Framework and its assumption of a specific causal structure will be held in the background, although causal interpretations and discussions will appear.

The focus is still on different kinds of intervening variables. The question is: Are there among the small firms and their managers groups that can be meaningfully interpreted and that behave differently? If such differences are found, this is likely to mean that policy measures or other changes of conditions at the macro-level will have differential effects depending on the intervening variables.

This chapter aims at identifying different "types" according to the variation over a fairly large set of characteristics of the firms and of their managers. Type itself, or some very clear characteristic of the type, is then the intervening variable. In Chapter 7, a single subjective characteristic, the need for Achievement, is used to define the groups. In Chapter 8, finally, small high-technology firms are contrasted with more conventional small firms.

6.1.2 Entrepreneurial Typologies

The great variability within the populations of small firms and small firm managers has led to attempts at classifying entrepreneurs into

more homogeneous subgroups (cf. section 2.3.4). These attempts include theoretical definitions, restriction of studies to certain industries, and empirical extraction of groups.

A special class of typologies comprises those that delineate groups empirically on the basis of several attributes of the firms and their managers. Four such typologies will be briefly reviewed here.

Smith (1967) developed two ideal types of small firm managers. He labeled these Craftsman-Entrepreneur and Opportunistic-Entrepreneur (C-E and O-E). The former are characterized by a) narrowness in education and training, b) low social awareness and social involvement, c) lack of flexibility and confidence in dealing with the economic and social environment, and d) time orientation circumscribed to the present and the past. Of course, the characteristics of the O-E is the mirror image of this - s/he has a wider frame of reference, is more flexible, and exhibits more change-oriented attitudes and behavior.

In a similar vein two ideal types of firms were developed. Those were called the Rigid and the Adaptive. The main differences between the firm types were their rate of change and geographical dispersion of production and customers.

Using a subset (52 cases, all manufacturing firms) of the unstructured interview data underlying "The Enterprising Man" (Collins et al, 1964), Smith examined these categories empirically. The results show that the cases were rather evenly distributed along the continua, i.e. there was no strong tendency for the cases to cluster around the mid-point of the scales. There was a fairly strong tendency for C-E's to be associated with Rigid firms and, accordingly, O-E's with adaptive firms. Furthermore, Adaptive firms showed much higher growth rates.

Stanworth and Curran (1973), who used interview data from a limited number of cases within two industries, apply a more dynamic perspective. They identify three entrepreneurial roles. First, there is the Artisan role. This role centers around intrinsic job gratifications. The authors give as examples personal autonomy and

independence and the satisfaction of turning out a "good" product, backed up by personal service, to the customer.

The second role is that of the Classical Entrepreneur. Here the main value is the maximizing of economic returns. This may or may not involve an element of growth. The third identity is that of the Manager, focusing on recognition for managerial excellence and long-term company interest.

Stanworth and Curran associate these roles with the development (growth) of the firm over time, with leadership styles, and with business ideology. Their view is that the individual may, but need not, develop through the roles as the firm develops and matures. Like Smith (1967) they point out that a match of individual and company characteristics is likely to exist. They also hold that successful continued development often requires a change of the entrepreneurial identity of the manager.

Focusing somewhat more on company characteristics, Filley and Aldag (1978, 1988) arrived at a similar typology. They identify three types of business operations labeled Craft, Promotion, and Administrative. This typology has been developed and used in a series of studies using samples from different industries. Factor analysis of standardized questions has been used as the basis for classification.

The Craft type does not grow and is strongly influenced by a chief executive who seeks comfort and survival objectives. S/he engages mainly in product- or production-related rather than administrative duties. The Promotion organization experiences rapid growth and is innovative and flexible. It is also highly dependent on a charismatic leader. The Administrative type of firm is often of larger size, grows at a more modest rate, and relies on formal planning and organization structure. It is less dependent on certain individuals for its continued existence.

One of the most important points in Filley and Aldag's work is that the Promotion (or "entrepreneurial") type represents a small minority of the organizations surveyed. The authors voice the opinion that to

continue their existence they have to change to more professional management, i.e. become "Administrative."

Finally, Dunkelberg and Cooper (1982) used a large sample (1805 cases from several industries) and factor analysis to extract three types. Again, there were the Craftsman-oriented, characterized by a desire for personal autonomy and being less comfortable with management issues.

The second group was the Growth-oriented. High growth aspirations and economic motives for going into business for themselves were characteristic of this type. The group strongly disagreed that "making a comfortable living is enough success."

The third group, which was much smaller than the other two, was labeled the Independence-oriented. Their primary characteristic was a strong emphasis on avoiding to work for others as a start-up reason. They also had low scores on formalization of the firm's activities and on "building a successful organization" as a goal.

Dunkelberg and Cooper used Filley and Aldag's typology as a starting point (although not their measuring instrument), but they were not able to discern a clear "Administrative" type.

The four typologies reviewed above are probably the most well-known attempts at categorizing small firms and small firm managers in the literature. The typologies seem to converge on some points. It must be stressed, however, that the samples and methods used to extract the groups differ considerably (cf. Woo et al, 1988). Several other typologies have also been proposed.²

6.1.3 The Purpose of this Chapter

The purpose of this chapter is to test the usefulness of Smith's (1967) typology of entrepreneurial groups on a new sample. The rationale for this approach is the following:

1. When there is prior knowledge to build on, doing so is generally more fruitful than employing a purely exploratory approach (cf. also note 2).
2. Also limitations of the method (cluster analysis) make the use of a pre-specified hypothesis advisable (cf. section 6.3).
3. Smith's typology is one which is comparatively well developed theoretically.
4. The typology has been used in a number of studies subsequent to Smith's original study. The results largely confirm the usefulness of the typology. Questions have also been raised as concerns under which conditions it is a reasonably valid description (see Lessner and Knapp, 1974; Peterson and Smith, 1986; Smith and Miner, 1983; Smith et al, 1987).
5. The data available in the present study is fairly well suited for a test of Smith's typology, whereas it is less well suited for evaluating typologies of a more dynamic nature. The limitations as regards size of firms and data collected in the present study make the identification of an "Administrative" type unlikely.

This study was not designed specifically for the purpose of evaluating Smith's typology. The variables used for testing the existence of and differences between Smith's proposed groups will therefore differ from Smith's operationalization. The variables used here are described below.

6.2 The Hypothesis

Smith's theoretical descriptions, operationalization, and results were studied in detail in order to single out from the available variables those that should discriminate between the groups. Cluster analysis (cf. sections 3.4.2 and 6.3) was then used to evaluate the following hypothesis:

Hypothesis: When the sample is clustered into two groups, the resulting groups may, with reasonable justification, be labeled C-E/Rigid and O-E/Adaptive and thus confirm Smith's typology. Operationally, this means that the O-E/Adaptive group will have the following characteristics, relative to the C-E/Rigid group:

The individuals:³

1. They are more likely to have run (an)other firm(s) prior to the selected one (NFF).
2. They are more likely to run more than one firm currently (MUL).

3. They are more likely to have had management experience as employees prior to going into business for themselves (MEX).
4. They are less likely to have had considerable experience from the specific industry prior to becoming the CEO of the selected firm (LEX).
5. They have a higher average level of general education (GED).
6. They have a higher average level of business education (BED).
7. They have a more internal Locus-of-Control (LOC; cf. section 2.2.5.1).
8. They have more self-confidence (SC).
9. That the firm does not become overly dependent on a small number of customers, suppliers, or external sources of finance is relatively less important to them (IND).
10. The possibility to control and survey the firm's activities personally is relatively less important to them (CON).
11. They rate ownership control as relatively less important (OWI).
12. They find recruiting easier (REC).
13. They are more likely to have their spouse as an employee (SPO).
14. They have a higher average need for Achievement (nACH; cf. section 2.2.5.1)
15. They have a more positive attitude towards growth (GAT).

The firms:

16. The firm is less likely to be wholly owned by the respondent, hence the O-E's own a smaller share of their firms on the average (OW%).
17. A smaller share of the firm's turnover is obtained from customers within the home county (CO%).
18. The share of turnover obtained from export markets is more likely to be above the industry average (REX).
19. The firms have grown faster in the past (PRG).
20. They have higher growth aspirations for the future (GRA).
21. A larger share of their turnover is generated by products that were developed "in house."
22. They are more likely to be active in new product development currently.

Further descriptions of the variables as well as the bases for selecting them are given in the chapter appendix.

The association between type of individual and type of firm is included in the hypothesis. This differs from Smith's method of first obtaining types of individuals and types of firms separately, and afterwards investigate the degree of association between the two.

6.3 Analysis Method

Cluster analysis is a multivariate statistical method which is used to extract from a broader material more homogeneous subgroups (see e.g. Norusis, 1986). In this particular case, the technique is used to

group cases on the basis of their standardized scores on the first 20 of the 22 indicators of categorical affinity.⁴

Variables 21 and 22 in the above list apply only to firms that, according to their owner-managers, produce goods as their main activity (Q6). Therefore these variables will be analyzed separately.

Although a suitable method for grouping cases, cluster analysis has its drawbacks. The analysis will always return some grouping, even if based on random variation. Results have in some cases been shown to be sensitive to rather small alterations as regards what cases or variables are included. In addition, there exist no straightforward statistical criteria for evaluating the appropriateness of a solution.

Having a pre-specified hypothesis for the characteristics of the clusters is therefore a major advantage. This allows for using the technique in a confirmatory sense.

Because data from the mail questionnaire are used and because the analysis program cannot handle missing data, the effective sample is down to 294 cases, or 58% of the full sample.⁵

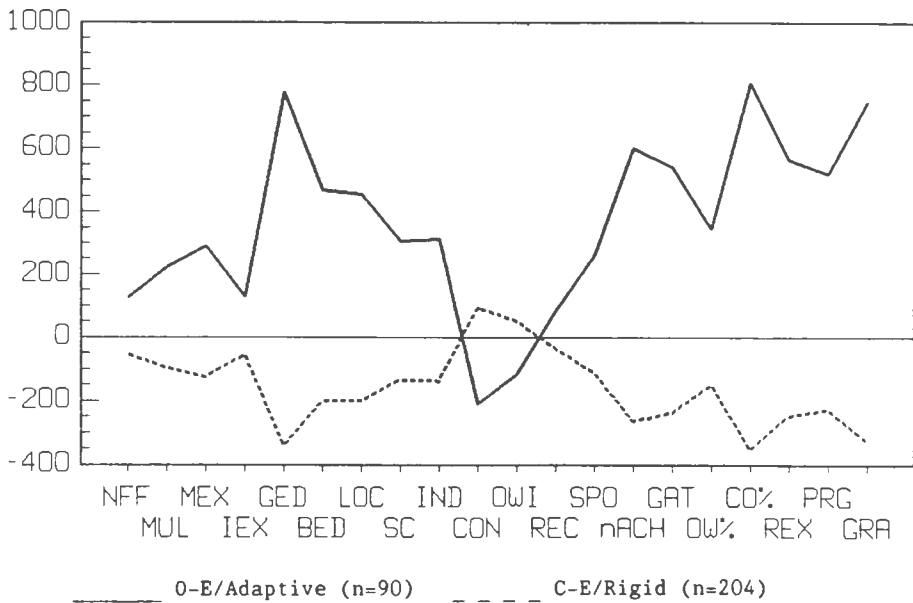
6.4 Results

6.4.1 Results as Regards the Hypothesis

The profiles from the two-cluster solution are displayed in figure 6.1. Reversed scoring has been used for the variables on which the O-E/Adaptive group is expected to score lower. Hence, the profiles should never intersect if the empirically established groups conform to the hypothesized ones.

For 18 out of the 20 variables, the differences are in the expected direction. The resulting groups thus resemble those described by Smith. The larger cluster, comprising 204 cases resemble the C-E/Rigid type description and the remaining 90 could be regarded as O-E/Adaptive.

Figure 6.1 Profiles for the "C-E/Rigid" and "O-E/Adaptive" Clusters
(standardized group centroids *1000)



The group differences are relatively large for all firm-related variables.⁶ The pattern is more diverse for variables concerning the individual. Among the latter, the most marked differences appear for education and the "entrepreneurial personality" dimensions (Locus-of-Control, self-confidence, and need for Achievement). Some of the other group differences may also be considered substantial, but for industry experience and recruitment the differences are negligible. The results that run counter to expectations will be reverted to later.

A more interpretable image of the group differences is given by the following examples:

1. 30% of the O-E's vs. 20% of the C-E's have run at least one other firm prior to the selected one.
2. 28% of the O-E's vs. 17% of the C-E's run more than one firm currently.
3. 62% of the O-E's vs. 41% of the C-E's claim they had at least some management experience prior to going into business for themselves.
4. 64% of the O-E's vs. 73% of the C-E's had considerable industry experience.
5. 20% of the O-E's vs. 3% of the C-E's have a university degree.

6. 73% of the O-E's vs. 48% of the C-E's have at least some formal business education.
7. 15% of the O-E's vs. 47% of the C-E's agree that the development of a firm is determined mainly by factors beyond the manager's control.
8. 41% of the O-E's vs. 17% of the C-E's agree that they are probably better at judging uncertain situations than are people in general.
9. 17% of the O-E's vs. 39% of the C-E's rate freedom from external dependence as "extremely important."
10. 57% of the O-E's vs. 49% of the C-E's rate personal supervisory control as "extremely important".
11. 23% of the O-E's vs. 19% of the C-E's rate ownership control as "extremely important."
12. 20% of the O-E's vs. 28% of the C-E's believe finding suitable applicants would be very difficult if recruitment were needed.
13. 27% of the O-E's vs. 45% of the C-E's have their spouse employed in their firm.
14. Mean scores on the four nAch items (original coding) are: O-E (4.08/1.83/4.27/1.73); C-E (4.00/2.80/4.08/2.64).
15. 63% of the O-E's vs. 26% of the C-E's view 100% increase in size as a very or extremely positive development.
16. 46% of the O-E's vs. 66% of the C-E's have full (100%) ownership.
17. Average turnover obtained within the home county is 40% in the O-E/Adaptive group vs. 81% in the C-E/Rigid group.
18. 53% of the O-E's vs. 18% of the C-E's run firms that have at least some exports to Scandinavian countries. The corresponding figures for exports outside of Scandinavia are 41% vs. 6%.
19. Mean (median) annual growth rate as regards employees is 20.6% (14.3%) in the O-E/Adaptive group vs. 5.4% (0.0%) in the C-E/Rigid group. For turnover growth, the corresponding figures are 35.8% (20.4%) vs. 17.1% (13.4%).
20. Mean (median) size aspired for, in terms of number of employees, is 16.8 (11) in the O-E/Adaptive group vs. 8.8 (7) in the C-E/Rigid group. In terms of turnover, the figures are SEK 15.9 (9.5) million vs. 7.5 (5) million (inflation disregarded).

Included in the hypothesis were also differences between the "goods-producing" firms in the two clusters as concerns own product's percentage of sales, and development of new products. Figures 6.2 and 6.3 show considerable group differences. As these variables were not used to define the groups and since they are not very much akin to variables that were so, statistical tests are meaningful.

By and large, the results support the hypothesis. The basic pattern is that we have one group that scores higher on all measures of entrepreneurial personality, attitudes, and behavior (firm foundation, expansion, innovation). This group is also characterized by lower ownership share on the part of the CEO. The (larger) second group is

characterized by low education and few signs of continued entrepreneurship or entrepreneurial inclination.

Figure 6.2 Share of Turnover Generated by Products Developed in House

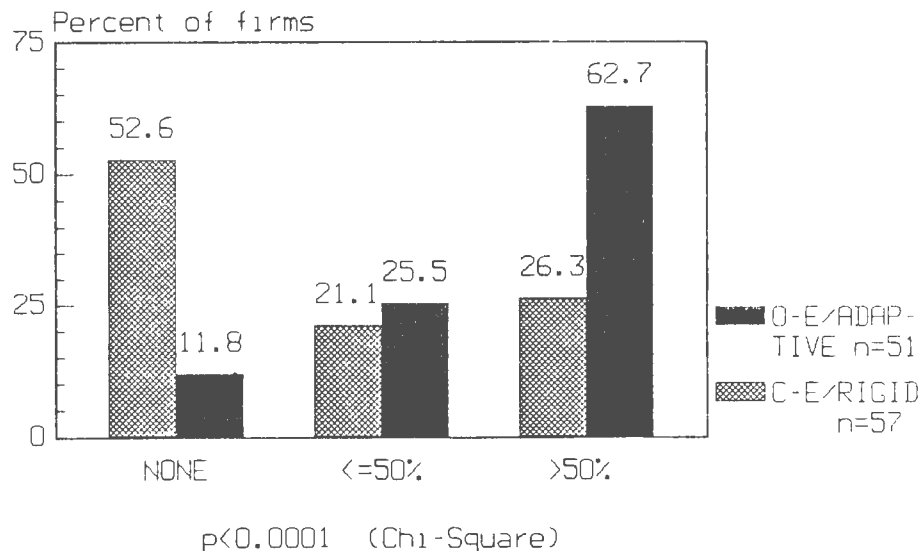
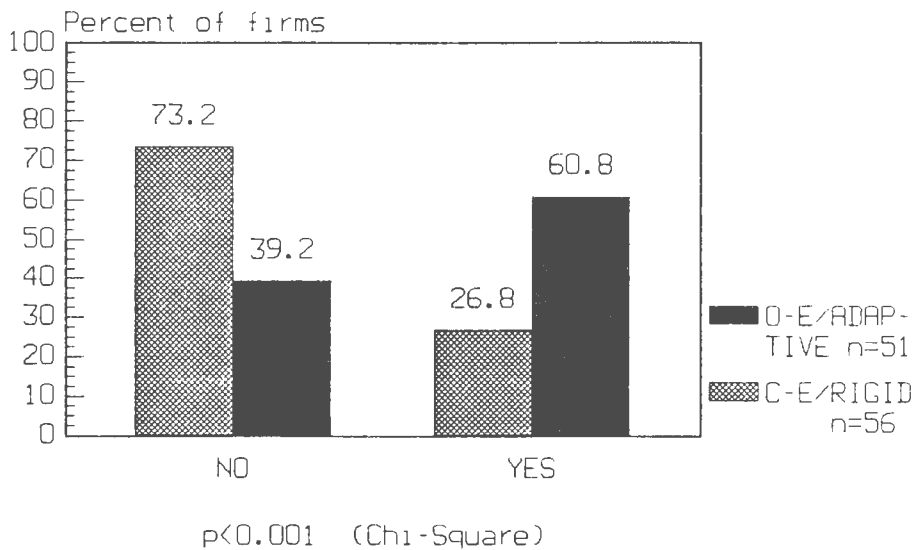


Figure 6.3 Current New Product Development



This pattern basically conforms to that proposed by Smith (1967). As regards the importance attributed to ownership and supervisory control, the results are not satisfactory from the perspective of confirming Smith's typology. While the group differences are not very substantial, the deviations from expectation are, since differences in the opposite direction were expected. These deviations are serious in the sense that the fear of control loss as a characteristic of the C-E is fairly central in Smith's description.

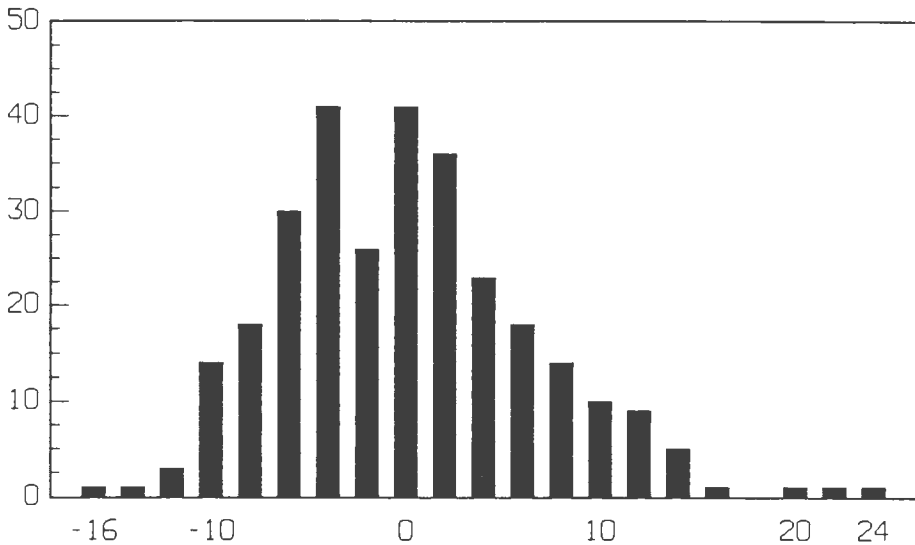
So is also, however, his stressing that the O-E has confidence in his ability to deal with the social and economic environment. The case may be that personal control is important to both groups, but that the subjectively perceived loss of control that would result from specific (objective) actions differ between them. The results for actual ownership, Locus-of-Control, and self-confidence point in that direction.

To a greater extent than suggested by the results in previous chapters, the manager's education appears to be a major factor underlying continued entrepreneurship. The way the results were presented may create the illusion that virtually all highly educated small firm managers are of the O-E kind. This is not the case. While only 3% percent of the C-E's have a university degree, it is also true that 29% of those having such education are classified as C-E's. This proportion may be even larger in a simple random sample of small firms.

On the whole, Smith's typology appears to be a meaningful way to distinguish conceptually between groups of small firm owner-managers. Whether "Craftsman" and "Opportunistic" are the most descriptive labels for these groups could be disputed. "change-orientation" or - why not? - "continued entrepreneurship" seems to be what discriminates between them as far as business behavior is concerned.

Do these "types" then really exist? Are the groups empirically distinct? One way of evaluating the distinctiveness is to form an index from the (standardized) clustering variables. If the groups were distinct, a bi-modal distribution for that index would be expected.

Figure 6.4 Distribution of Index Scores (midpoints)



If anything, the pattern resembles that of any randomly distributed variable with some sampling deviations. Skewness at the higher end may be observed; hence the unequal cluster sizes.

Thus, rather than being a description of actual, distinct empirical groups, the C-E/Rigid vs. O-E/Adaptive categorization appears to be a convenient way of splitting a normally distributed population. This result is not in conflict with Smith's original idea, albeit his results indicate a higher degree of distinctiveness than what is obtained here.

6.4.2 Additional Characteristics of the Clusters

Several group differences besides those predicted by Smith's type descriptions can be observed. These will be briefly summarized in this sub-section.

As regards the stratification variables it turns out that High-Tech firms are over-represented in the O-E/Adaptive cluster (48% vs. 13%)

while Repair Service firms are under-represented (10% vs 34%). The differences are significant ($\chi^2=48.3$, d.f=3, $p<0.0001$).

As to size-class, 41% of the O-E/Adaptive vs. 28% of the C-E/Rigid group are found in the largest size class ($\chi^2=5.5$, d.f=2, $p<0.10$).

These results appear logical. They also raise some questions as concerns the extent to which group membership is ultimately determined by characteristics of the individual or by structural factors. The theme in Smith (1967) is that different types of individuals build different types of organizations. The alternative that industry (and to some extent size-class) affects the attitudes and behavior of the manager is also easy to imagine, especially for a dimension like geographical dispersion.

In fact, it may be held that the operationalization used here pre-determined the results as regards the association between types and stratification variables. However, the question is subtle since different types of individuals are not randomly attracted to industries.

Additional background differences that deserve mentioning are that the median age of the firms is lower in the O-E/Adaptive group and that the managers have significantly shorter tenure as CEO of the sampled firm. The medians are 11 vs. 19 and 6 vs. 10 years. Both differences are significant at $p<0.01$ according to M-W U-tests. No significant difference as regards age of the manager appears (medians are 43.5 vs. 45 years). A possible explanation for this pattern is that the part of the group, for whom the selected firm also is the first firm, is larger in the C-E group.

The O-E's are more likely to have entered the population of small firm owner-manager's by founding a firm (Q44; 62% vs. 51%; $p<0.05$), while the proportion having parents that were self-employed is about the same in both clusters (Q46; 43 vs. 45%, n.s). In both clusters 7% are females. Hence, no signs of a gender difference appears.

Aside from background variables, most group differences are found for growth related issues. On all dimensions of expected outcomes of

growth (Q26-Q33; "Cognitive Attitude" in Ch. 5), the O-E/adaptive group is significantly more positive. Likewise, the groups differ significantly in the expected direction on all indicators of "Perceived Opportunity" used in Chapter 5 (Q62-Q66).⁷

Few other differences appear. For example, there are no differences concerning satisfaction with profitability and personal pay-off (Q19-Q20), tax attitude (Q78-Q85), or indicators of personality and personal values (Q34-Q39; Q86-Q96) aside from those which were included in the cluster analysis.

The few remaining differences that appear can in most cases be ascribed to the differences found for the stratification variables. A higher average is found in the O-E/Adaptive group as regards perceived need of capital for starting a similar firm (Q68). Likewise, the O-E's more often rate customers as an important source of ideas and advice (Q100; 80% vs. 65%), but this difference becomes smaller and not significant if only "goods-producing" firms are compared (75% vs. 68%).

6.4.3 Results of Further Splits

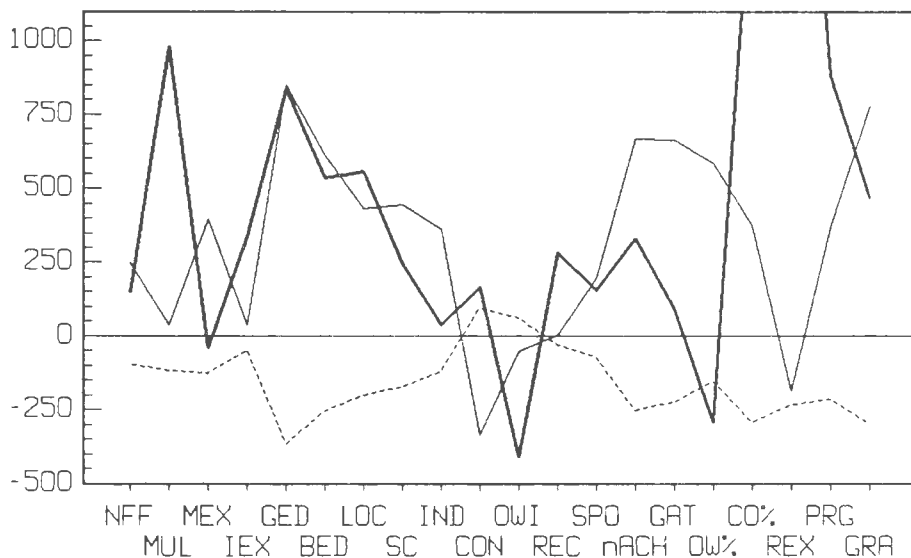
As was mentioned in the introduction to this chapter some authors have suggested three rather than two entrepreneurial types. Actually, Smith himself (pp. 87-88, 94-95) derived from his results the possible existence of a third category, tentatively labeled the "Inventor-Entrepreneur." Subsequent research applying the typology has also suggested that the "Scientist-Entrepreneur" may not be adequately captured by the original categorization (Smith et al, 1987).

It turns out that a three-cluster solution for the present sample yields a rather uninteresting result. What happens is basically that the C-E/Rigid group is split into those who have and those who do not have their spouse employed in the firm.⁸

The four-cluster solution is more interesting. Here, the O-E/Adaptive group is split into two subgroups with distinct characteristics. The resulting profiles are displayed in figure 6.5. As the two less

entrepreneurial clusters do not differ much on other issues than employment of spouse, they have been combined in the figure. The extreme values that are not displayed are 1616 for sales outside of the home county and 2761 for exports.

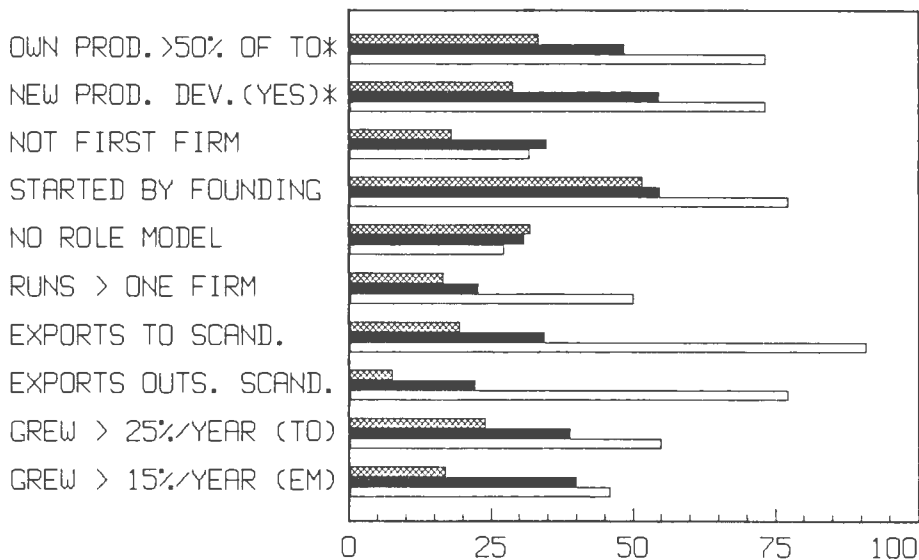
Figure 6.5 Profiles for the Modified Four Cluster Solution
(standardized group centroids *1000)



Thin = ENT1 (n=67) Bold = ENT2 (n=22) Dashed = NON-ENT (n=205)

Although the new cluster (ENT2) is small and although the solution is heavily influenced by geographical dispersion, it is still interesting. The new cluster differs from the other more entrepreneurial cluster (ENT1) in that they a) are more likely to run multiple firms, b) value freedom from external dependence more highly, c) are less concerned about supervisory control but d) more about ownership control, e) are much less dependent on the local market, f) own a larger share of their firm, and g) have grown faster but actually are less positive towards further growth and have lower growth aspirations.⁹ As is shown in figure 6.6, this cluster has the highest average on most indicators of entrepreneurial behavior included in this study.

Figure 6.6 Entrepreneurial Behavior in Different Clusters
(Percent of cases in each cluster sharing the characteristic)



Black = ENT1 White = ENT2 Grey = NON-ENT * = Only goods-producers

In all, this small cluster conforms very much to the idea of entrepreneurship as a one-man game performed by a successful, innovative and expansion-oriented individual. When reading through a large number of studies - American ones in particular - one cannot help getting the feeling that it is this group that some researchers have in mind when they are, actually, investigating quite ordinary small firms. These results, like those of Filley and Aldag (1978; 1988), indicate that the highly entrepreneurial firms constitute a small minority.

The category also has the highest proportion of managers with a university degree and the highest degree of satisfaction with profitability. Interestingly, the group is not made up of the youngest individuals or the youngest firms. This may seem odd, since with the growth rates they have they should pass the size limit faster.

The pattern in the profiles suggests an explanation. These managers do not seem to aim at building a large organization which they could not

manage without external dependencies. Instead, they may sell off or terminate certain activities, or start additional firms to handle them, firms which they own but do not manage in a very detailed manner, thereby being able to stay small and independent.

In relation to the General Framework, this group's entrepreneurship appear to be driven by Ability and Opportunity rather than by Need.

6.5 Discussion

Despite temporal, cultural, sampling, and operationalization differences, the groups that emerge in a cluster analysis of this new sample show considerable resemblance to the entrepreneurial groups suggested by Smith (1967). This result provides fairly strong support for the usefulness of his typology.

That the groups were found not to be empirically distinct is, in fact, not surprising and does not mean that grouping the cases is useless. All firms and all small firm-managers are in some way unique. To learn something about them, however, we need abstraction. What level of abstraction (i.e. what number and exactness of types) is needed varies with the purpose for which the theory is used.

As a two-group typology Smith's typology performs rather well, but when the diversity of the sample to classify and the requirements of exactness increase, it may be over-simplified. To get really distinct empirical groups, the number of groups as well as the number of dimensions to describe them would have to be expanded, so that all groups can be defined along those dimensions on which they actually constitute a meaningful group.

Smith's typology may also be overly complicated if a two-group typology is wanted. Although Woo et al (1988) voice concern that the same or similar labels have been used for quite different groupings, a common characteristic of virtually all typologies in the literature is that growth-orientation is one of the most important discriminating variables. A two-group typology based simply on growth orientation appears as a feasible alternative to Smith's types.

It has been hinted above that not only growth-orientation but the broader concept of continued entrepreneurship may be the prime divide. As the sample was split up further, it was not divided across different criteria of continued entrepreneurship. This upholds the idea that different entrepreneurial behaviors to some extent are manifestations of common underlying causes.

The delineation of more homogeneous subgroups may further even such abstract theory as economics proper. Even larger is the potential progress that the field of entrepreneurship and small business research itself could make if uniform concepts were developed and greater care taken as regards what kind of small firms results apply to. The diversity of methods, concepts, and samples used probably explains many of the conflicting results (cf. section 2.3) arrived at; results that may be found to be not conflicting at all if a more well-developed theoretical framework were developed.

Theoretical progress also has practical value. Better understanding of subgroups ultimately has the potential of helping society to get the most out of its active and latent entrepreneurial talent, and to prevent waste e.g. in the form of unnecessary deterrents to entrepreneurship or inadequately designed governmental action based on an inaccurate image of the probable behavioral effects of changes in external conditions for different types of small firms.

For the purpose of theoretical development as well as guidance for policy-making, there are certain areas in which there is a keen need for further research. The stability of type identity at the individual level over time and changed circumstances is one example. Stanworth and Curran's (1973) and Filley and Aldag's (1978; 1988) work has entered into this field, and some work in this direction using Smith's typology has also been presented (Smith and Miner, 1983). Much remains to be done, especially since the Stages-of-Development theories presented to date have in most cases lacked solid empirical backing.

Studies aimed at examining how different types of entrepreneurs are recruited to the entrepreneurial population would be valuable. Perhaps to an even larger extent, the macroeconomic significance of different

types is an interesting area for investigation. It may seem self-evident that the O-E/Adaptive group is more important to the economy, but it cannot be ruled out that the Craftsman-Entrepreneurs, because of their sheer numbers, are more influential in the aggregate.

An important issue in connection with this is whether a static or a dynamic perspective is used. C-E's may in the aggregate employ more people, but it is equally possible that the O-E's would contribute with the major share of the additional employment created in response to policy measures aimed at stimulating development. A very important research contribution would therefore be longitudinal studies with "type" as intervening variable during a period when external economic stimuli were changed, so that actual responses could be studied by type.

Notes

1 Davidsson (1988b) is an earlier version of this chapter. As the variable set has been altered somewhat in the present version, the "confirmatory" nature of the approach (cf. section 6.3) can of course be called in question. The alterations do not, however, bias the results in favor of the hypothesis.

2 Typologies arriving at 2 to 11 groups, on the basis of different approaches and with more or less of systematic empirical backing, may be found in: Beckérus and Roos (1985), Braden (1977), Carland et al (1984), Chell and Haworth (1988), Dubini (1988), Ettinger (1983), Gartner (1983), Kirsch (1983), Manimala (1988), Pleitner (1984), Ramström (1986), Routamaa and Vesalainen (1987), and Vesper (1980). Conclusion: adding another one would be superfluous.

3 The abbreviations in the list correspond to those used in figure 6.1.

4 The cluster analysis program used is Howard-Harris Clustering (University of Pennsylvania). The program clusters cases with a hierarchical divisive procedure. That is, the analysis starts with all cases in one cluster, which is then split into smaller groups step by step. That the procedure is divisive means that subsequent steps use the previous step as the starting point. The cases thus either remain in their previous cluster or are "recruited" to the cluster that is added. There is no other way their cluster affinity can be changed.

5 Only respondents who completed the mail questionnaire are included. Mean substitution has been used for a small number of cases (1-10) for most indicators, but not for measures of previous growth and growth aspirations.

6 It is of course dubious practice to call "growth aspirations" a "firm-related" variable. The rationale is that it was included as a substitute for Smith's "concrete plans for growth" in his operationalization of firm types (Smith, 1967, p.67).

7 It could be called in question whether the differences concerning growth-related issues really should be called "statistically significant" since growth variables were also included in the cluster analysis.

8 This illustrates the risk of including dummy variables. Since 100% of the variation on a dummy variable is taken care of by splitting the sample along that dimension, such variables are sometimes overly influential in a cluster analysis solution.

9 They also have a lower nAch score, but as detailed analyses showed that this difference is attributable to the two items that do not discriminate between more and less entrepreneurial individuals (cf. section 7.6) it should be interpreted with caution.

Chapter Appendix (6)

A. Description of Variables Used in the Cluster Analysis

1. Q42; mean substitution for internal non-response.
2. Q43; mean substitution.
3. Q45; mean substitution.
4. Q47; Dummy. 0=considerable; 1=else, mean substitution.
5. Q48; mean substitution.
6. Q49; mean substitution.
7. Q34; mean substitution. One of two possible indicators used, the other being Q37.
8. Q39; reversed; mean substitution. One of two possible indicators used, the other being Q36.
9. Q89/SUM(Q86 TO Q96); i.e. rel. importance. Reversed; mean subst.
10. Q90/SUM(Q86 TO Q96); i.e. rel. importance. Reversed; mean subst.
11. Q92/SUM(Q86 TO Q96); i.e. rel. importance. Reversed; mean subst.
12. Q70-(industry average for Q70); i.e. industry differences are controlled for. Mean substitution.
13. Q71; Dummy. (0 if Q71=1; else=1).
14. (Q110 rev.)+(Q112+(Q114 rev.)+(Q116)
15. Q22; mean substitution.
16. Q12. If Q12=non-response, Q57 has been used. Reversed; mean substitution.
17. Q53; Reversed; mean substitution.
18. Logarithm of Q55+Q56-(industry mean of Q55+Q56); i.e. industry differences are controlled for. Internal non-response on Q55 and Q56 have been set to the modal value, zero.
19. Logarithm of (the sum of the standardized values for annual previous growth rate in terms of employees and in terms of turnover, divided by 2). If one but not both growth measures was missing, the one available was used. Computed from Q13 -- Q18.
20. Computed as (19), but the rates for the 5-year period were used instead of annual rates. Computed from Q13 -- Q15; Q23 -- Q25.

Note: Qxx=variable number. See questionnaires; General Appendix 1.

B. Basis for Variable Selection (quotas from Smith, 1967)

Industry background/multiple firms (1,2,4): p.27 (C-E) "He does not consider going into other forms of business activity." p.39 (C-E) "He gets his work experience ... in one particular industry and feels forced to continue in the industry in starting a firm." p.33 (O-E) "...he can transcend industry borders." p.34 (O-E) "...not useful just in one type of industry." p.40 (O-E) "He gains success in varied endeavors..." p.51 (O-E) "...attuned to opportunities in many areas."

Management experience (3): p.16 (C-E) "His success (prior to going into business for himself), therefore, does not carry him outside the work plant." p.36 (O-E) "In a large number of cases, the O-E works as executive assistant..."

Education (5,6): p.32 (O-E) "He has more years of formal education than has the C-E..." p.14 (C-E) "...his education can be characterized as being narrowly limited to the technical areas." p. 33 (O-E) "The major theme in the O-E's educational strategy is one of choosing a combination of liberal arts or business courses and technical courses."

Locus-of-Control (7): Smith does not mention the concept (Rotter's paper was published in 1966 and had at the time not enjoyed such widespread readership as today). However, many of Smith's statements are in line with an internal-external distinction; see pp. 22, 27, 47.

Self-Confidence (8): Almost everything Smith has to say about the O-E breaths self-confidence. p.58 (O-E) "The O-E has high confidence in his ability to deal with his social environment" summarizes this characteristic (which may also be interpreted as indicating internal L-o-C; the boundary is not clear).

Freedom from external dependence (9): p.17 (C-E) "It also exhibits his fear of outside control, which we will see more evidence of later." p.27 (C-E) "The moral is clear. If you grow too rapidly, the banks can control you." p.46 (O-E) "...has less fear of outside control."

Control over the firm's activities (10): p.22 (C-E) "He holds tightly the reigns of control. He does not delegate authority and responsibility." p.45 (O-E) "He moves as quickly as possible to the point where he can turn over day-to-day activities to competent management personnel."

Importance of ownership/actual ownership (11,16): p.23 (C-E) "Usually he starts with one or two partners and they also put some money into the business. However, within a fairly short period of time he buys out these other partners and has control himself." p.46 (O-E) "...nor does he fear the resultant control if he sells out equity."

Recruiting/Spouse employed (12,13): Smith does not mention spouse but close relatives: p.23 (C-E) "There is considerable nepotism in his hiring practices. Many of his workers in the plant and in the office are relatives from both his immediate family and his extended kin group" p.55 (O-E) "The O-E wants to build an organization; he feels he can do this because he can evaluate the individuals working for him, and determine that they will be able to do an adequate job."

Need for Achievement (14): Surprisingly, since the study was published in 1967, Smith refers only once and very briefly to McClelland's work (p.51). Many indications of higher nAch among the O-E's appear in the text, e.g. as regards reasons for and ways of going into business for oneself (pp. 41-42). Also: p.42 (O-E) "He is not satisfied with the status quo. ... his pride is in the total company growth."

Growth attitude/aspirations/actual growth (15,19,20): p. 27 (C-E) "For a number of reasons, the C-E is not anxious for his company to grow or expand." p.55 (O-E) "...consciously and actively wants to grow." Previous growth in C-E/Rigid vs O-E/Adaptive subgroups pp. 89-92.

Geographical expansion (17,18): Follows directly from Smith's firm typology and his operationalization, see pp. 75, 77.

Product development (21,22): p.48 (O-E) "...active and innovative rather than passive approach to the market." p.52 (O-E) "...is capable of utilizing product development as a competitive strategy." Firm typology pp. 72, 76.

7. Some Elaborations on the Need for Achievement and Entrepreneurial Activity in Small Firms

7.1 Introduction¹

In previous chapters the need for Achievement has turned out to be related to some aspects of entrepreneurial behavior. In this chapter, the analysis of these relationships will be pursued in greater detail.

As an intervening variable, differences in Achievement Motivation can explain why in objectively the same situation some people merely try to maintain the status quo, whereas others pursue goals for further improvement. The reader is referred to Chapter 2 for a more elaborate treatment of the theory and results from previous studies.

7.2 McClelland's View

The world has seen few attempts to explain social phenomena at the macro-level by means of empirically supported psychological theory. The appearance of David McClelland's book "The Achieving Society" in 1961 was therefore quite sensational. It suggested that economic development was to a large extent determined by the level of Achievement Motivation (n_{Ach}) in the society and especially among its business people. The author was not exactly modest when attacking economic theory. An example:

"Here, at last, is evidence for what economists and others have so long and so inaccurately called the "profit motive". If we can assume, as all our evidence indicates, that western capitalists were actually motivated primarily by the achievement motive, we can now understand why they were so interested in money and profit, although, paradoxically, not for its own sake. Money, to them, was a measure of success. ...What gallons of ink and acres of paper might have been saved if economic and political theorists had understood this distinction sooner!" (McClelland, 1961 p. 236)

The research effort presented in the book is really an enormous one. Considering the complexity of the problem studied the empirical support for the importance of this single psychological dimension is impressive. But McClelland probably grossly overestimated the importance economic theorists would attribute to a distinction such as the one he emphasizes in the above quotation.

He was apparently right, though, in assuming that his contribution would attract much attention. Since then, nAch has been one of the most used and discussed psychological concepts in research on entrepreneurship, and reference to it is made also by economists (Baumol, 1983; Casson, 1982; Kent, 1982; Leibenstein, 1968).

It was mentioned in Chapter 2 that McClelland and his associates have regularly found support for their hypotheses in their continued work. Results in other studies, especially those focusing on the individual level, are less convincing.

7.3 Operationalization of Achievement Motivation

The lack of a stringent definition of nAch is a problem. McClelland defines nAch very loosely as "a competition with some standard of excellence" or some variation on that theme (Wärneryd, 1988b). This lack of a definition has led to a rather sloppy use of the concept, where anything measured in any way has been called "need for Achievement". While adding another measure in this study, the appropriateness of the nAch-label will be tested as far as possible.

McClelland favors projective techniques, such as the TAT or content analysis of symbolic behavior, for measuring nAch. In fact, he claims that nAch cannot be measured directly (McClelland, 1961, p. 44).

However, the projective techniques have been shown to entail several problems (Atkinson, 1964; Gasse, 1982). They are also impractical when nAch is but one among many independent variables to be studied.

Therefore, a more objective and "easy-to administer" measure is needed. Although attempts have been made (see e.g. Hornaday and Aboud,

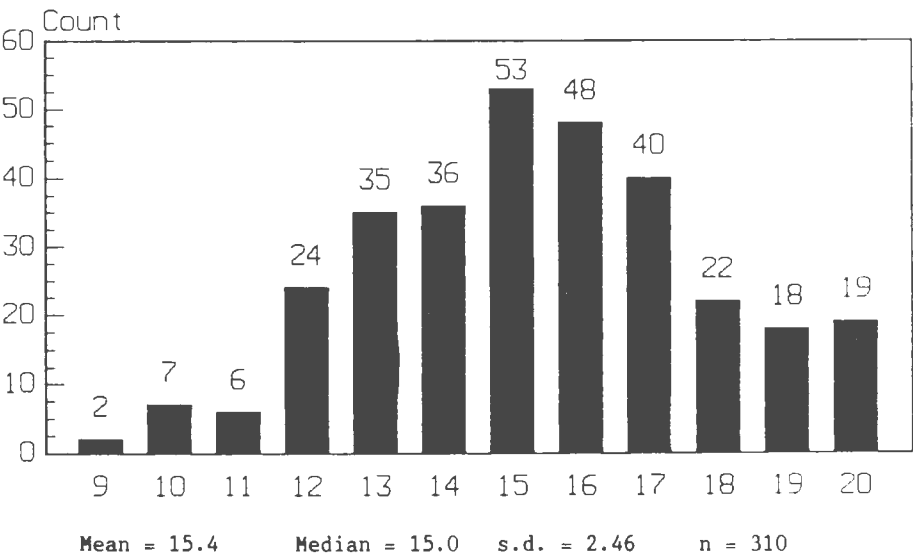
1971; Lynn, 1969) no agreement on an alternative to the projective techniques has been reached.

In this study, a four-item index of the author's creation was used. The items were:

- 1. I have always wanted to succeed and to accomplish something in my lifetime. (Q110; high n_{Ach})
- 2. I find it hard to understand people who always keep on striving towards new goals although they have already achieved all the success they could possibly have imagined. (Q112; low n_{Ach})
- 3. To face new challenges and to manage to cope with them is important to me. (Q114; high n_{Ach})
- 4. I am so satisfied with what I have achieved in my life, that I think I can now confine myself to keeping what I already have. (Q116; low n_{Ach})

The intercorrelations of those items, rescored so that a higher score means more higher n_{Ach} throughout, range from 0.13 to 0.38 and are thus not very high. The combined measure yields a Cronbach Alpha of 0.55, which is only moderately good. The distribution of the index scores and some statistics are given in figure 7.1.

Figure 7.1 Distribution of Achievement Motivation Scores



Apparently, the index discriminates among the respondents. But does it measure "need for Achievement according to McClelland"? There is no direct way to settle that matter, since TAT scores have not been collected. If the relationships between the index and other variables are in line with the theory, one could say with some confidence that this index measures nAch.

From various parts of "The Achieving Society" the following characteristics of individuals high in need for Achievement have been assembled:

1. They are moderate risk takers. They like to take some objective risks but are not attracted to games of chance.
2. Profit is important to them as a measure of success and not for its own sake.
3. Ownership control is not critical to them.
4. They prefer experts rather than friends as workmates/business partners.

These relations have been checked against data in the study, and in each case at least a tendency in the expected direction is found. When those above the median in nAch are contrasted with those below the median it turns out that the importance attributed to profitability (Q88) and "high private financial standard" (Q96), respectively, are higher in the "high nAch" group. Whereas the first difference is statistically significant ($p < 0.05$) the second difference is far from that figure ($p < 0.28$).² This provides some support for the "high" group being more inclined to use profit as a success measure.

The average actual ownership (Q12; Q57) is significantly lower in the "high" group ($p < 0.001$). No difference in ratings of importance of ownership control appears. Ratings of importance of different personal sources of advice (Q97-Q108) show a significantly lower rating for spouse/family for the "high" group ($p < 0.05$). Consultants and non-family board members get higher ratings in the "high" group, significantly so for board members ($p < 0.05$).

The pattern for risk preferences is especially interesting. Two "risk attitude" measures were included in the survey. Their wording make them suitable for the present purpose. They read:

1. I'd rather take a chance and face a loss now and then, than withdraw and afterwards realize that I missed a good business deal. (Q35)
2. I am always careful and do not take any great risks when doing business. (Q38)

The first item stresses chance and should therefore not be approved of by high nAch individuals. The other item suggests a passivity which would not go with high nAch. The responses reflect this: The degree of approval is lower in both cases in the "high" group in spite of the fact that the first item is pro risk and the second against. For the second item, the difference is significant ($p < 0.05$).

In all then, it seems that the nAch-index measures a psychological difference between subjects and that labeling this difference "need for Achievement" is reasonably well justified.

The nAch indicators were included in the mail questionnaire. This fact, and failure to respond to one or more of the nAch indicators, reduces the effective sample in analyses including the nAch index to a maximum of 310 cases (61% of the valid sample).

7.4 Hypotheses

7.4.1 Need for Achievement and the Entrepreneurial Decision

McClelland held that owning and managing a firm provides great opportunities for concrete feedback about success leading to achievement satisfaction. Therefore, the proportion of high nAch individuals should be high in the population of small business managers. In this study no comparison with other populations are possible. However, starting or buying a firm may be considered more entrepreneurial than merely inheriting an existing firm. If there is a relationship between nAch and entrepreneurial activity, the following should hold:

Hypothesis 1: Managers who have founded (or bought) their own businesses have higher nAch than those who have inherited existing firms.

If this hypothesis is supported, it would at the same time uphold the idea that nAch is to some degree a stable personality characteristic. Reversed causality is somewhat harder to imagine here than in the case of growth or success.

7.4.2 Need for Achievement and Expansion

Growth is one possible way of getting achievement feedback. It is easily measured and in a small firm very much attributable to its manager. However, a relation between nAch and growth is not self-evident.

First, existing empirical evidence is inconclusive. Second, from a theoretical perspective it is doubtful whether the pursuit of growth is in the long run compatible with the personal responsibility and concrete success feedback. To keep the close link between his/her own actions and the outcomes, the small business owner-manager might instead be better off striving for success in terms of percentage profitability and qualitative development.

In firms as small as in the present sample, growth would probably not severely disconnect the manager from direct responsibility for the outcomes. Therefore, the next hypothesis is:

Hypothesis 2: There is a positive relationship between nAch and growth aspirations.

If Hypothesis 2 holds true, that is still not evidence for a relation between nAch and actual growth. Accordingly:

Hypothesis 3: There is a positive relationship between nAch and previous growth.

In a strict sense, the failure to reject this hypothesis does not suffice either. Positive relationships between nAch and previous growth as well as growth aspirations would be supportive, but there is

no way to prove that high $nAch$ leads to growth rather than the reverse.

Another measure of expansion is the geographic market served by the firm. Irrespective of whether they aim for higher total growth or not, more entrepreneurial managers should be inclined to look for business opportunities also outside the local market. If high $nAch$ -individuals are more entrepreneurial, the following hypothesis emerges:

Hypothesis 4: There is a negative relationship between $nAch$ and the proportion of annual turnover obtained in the local market.

Expansion does not have to be manifested through growth within a firm. It could also lead to the starting and managing of additional independent ventures. This hypothesis follows:

Hypothesis 5: Managers with high $nAch$ are more likely to operate more than one firm than are those low in $nAch$.

7.4.3 Need for Achievement and Innovativeness

As was mentioned above, a need for concrete feedback about success does not have growth as the "single outlet." If growth is perceived as threatening the possibility to attribute success to one's own ability and effort, qualitative achievements would be safer. Also for those striving for growth, the successful development and marketing of new products would provide an extra source of achievement satisfaction. Accordingly:

Hypothesis 6: Firms with managers high in $nAch$ devote more effort to the development of new products.

If this hypothesis holds true it could of course also be interpreted as showing that new product development is one of the means used to create quantitative growth.

7.5 Results

Hypothesis 1: Table 7.1 displays the mean difference in $nAch$ scores between inheritors and buyers/founders.

Table 7.1. Mean nAch Scores for Inheritors and Founders/Buyers

	<u>n</u>	<u>Mean</u>	<u>s.d</u>	<u>t-value</u>	<u>sig. level</u>
Inheritors	45	14.3	2.6	-2.83	0.01
Founders/Buyers	256	15.5	2.4		

The mean difference is significant and Hypothesis 1 cannot be rejected. This result confirms earlier empirical findings indicating that inheritors are less entrepreneurial (Boswell, 1972; Brandstätter, 1988). The substantive meaning of the absolute size of the difference is hard to judge with this kind of measure.

Hypothesis 2: Annual growth rates aspired for as regards turnover and number of employees, respectively, were computed and serve as dependent measures for testing Hypothesis 2. The respondents were instructed to disregard inflation when stating turnover preferences. Here and in subsequent analyses the respondents have been split up into two groups, viz. those having nAch scores above the median, and all others. The results are displayed in table 7.2.

Table 7.2. Growth Aspirations in High and Low nAch Groups

Growth aspirations, annual rate (No. of employees)						
	<u>n</u>	<u>Mean</u>	<u>s.d.</u>	<u>t-value</u>	<u>t-test sig.</u>	<u>M-W sig.</u>
High nAch group	141	7.55	8.9	3.31	0.001	0.001
Low <u>nAch</u> group	157	4.59	6.0			
<hr/>						
Growth aspirations, annual rate (turnover)						
	<u>n</u>	<u>Mean</u>	<u>s.d.</u>	<u>t-value</u>	<u>t-test sig.</u>	<u>M-W sig.</u>
High nAch group	139	15.12	12.5	4.41	0.001	0.0001
Low <u>nAch</u> group	154	9.35	9.6			

The mean differences are relatively large and statistically significant. The result of the Mann-Whitney test shows that the

difference is not attributable to the fact that the distribution is skewed. Thus, Hypothesis 2 gets some support.

To check whether \underline{nAch} contributes significantly to explanatory power also when other important influences are controlled for, the regressions displayed in table 7.3 was run. The aspiration measures have here been standardized and combined. The independent variables added are an index of expected outcomes of growth (Q26-Q33; "Cognitive Attitude" in Ch. 5) and dummies for the stratification variables "smallest size class" and "high-tech industry." The \underline{nAch} index is here used as a continuous variable.

As the independent variables are measured on different scales, only the standardized coefficients are displayed. The magnitude of these may be interpreted as indicators of their relative importance.

Table 7.3. A Multivariate Analysis

Independent Variables	Full Sample		"Believers"		"Disbelievers"	
	Stand. Coeff.	Sign. Level	Stand. Coeff.	Sign. Level	Stand. Coeff.	Sign. Level
\underline{nAch}	0.153	0.01	0.247	0.001	0.011	n.s.
Exp. Outcomes	0.405	0.0001	0.294	0.0001	0.457	0.0001
Small (dummy)	0.115	0.05	0.255	0.0001	-0.006	n.s.
High-Tech (dummy)	0.214	0.0001	0.274	0.0001	0.184	0.05
	Adj. $R^2 = 0.30$		Adj. $R^2 = 0.33$		Adj. $R^2 = 0.23$	

The results for the full sample are shown in the leftmost columns. As can be seen, the influence of \underline{nAch} remains significant in the multivariate case. This holds true also if the eight expected outcome variables are entered separately. Thus, Hypothesis 2 cannot be rejected.

The unique contribution of the \underline{nAch} index to explanatory power is modest (but not negligible) both in absolute terms and compared with the expected outcomes index. In Chapter 5 it is shown that with the inclusion of more variables the influence of \underline{nAch} on Growth

Aspirations - albeit substantial in terms of total effect - is possible to explain entirely as indirect effects.

Separate analyses for those who do and do not expect financial gains to result from growth (Q29) are displayed in the columns further to the right. Interestingly, the positive relation between nAch and growth aspirations does not appear in a separate analysis of the 40% of the respondents who do not expect financial gains from growth ("disbelievers"). Among those who do believe in an improved financial situation ("believers") the influence of nAch comes close to that of expected outcomes.

This is in line with McClelland's suggestion that for individuals high in nAch, money serves as a measure of success. In the absence of financial reward, growth does not provide achievement satisfaction, and the positive relationship between nAch and growth disappears. While this speculation seems logical, the result may have additional explanations as well. The regression model fares better with the "believers" also in other ways.

Hypothesis 3: The differences between current turnover and number of employees, and the corresponding figures three years previously, expressed as annual growth rates, are the variables used to test the third hypothesis. The results are displayed in table 7.4.

The relationship between nAch and previous growth is quite firmly established. The significant result of the M-W test shows that the mean difference is not due to a few extreme cases in the high nAch group. Hypothesis 3 cannot be rejected.

Hypothesis 4: The proportion of the annual turnover falling within the home county (Q53) was used to test Hypothesis 4. Here too, the distribution is highly skewed and a Mann-Whitney test was therefore performed as a complement.

Again, data are in line with expectation, supporting the hypothesis. However, the mean difference is not very large. When the sample is broken down by industry, it turns out that the only subgroup in which

a significant difference is found is the Manufacturing industry. In the sample of Repair Service firms there is even a tendency in the opposite direction. In all, Hypothesis 4 cannot be rejected, but it is only partly supported by the data.

Table 7.4. Previous Annual Growth Rates in High and Low nAch Groups

Previous growth, annual rate (No. of employees)						
	<u>n</u>	<u>Mean</u>	<u>s.d.</u>	<u>t-value</u>	<u>t-test sig.</u>	<u>M-W sig</u>
High nAch group	135	14.3	23.0	3.00	0.005	0.001
Low nAch group	155	6.6	19.8			

Previous growth, annual rate (turnover)						
	<u>n</u>	<u>Mean</u>	<u>s.d.</u>	<u>t-value</u>	<u>t-test sig.</u>	<u>M-W sig</u>
High nAch group	133	28.1	32.6	3.20	0.005	0.001
Low nAch group	150	17.3	22.3			

Table 7.5. Proportion of Turnover Within Home County

Proportion of turnover within home county (percent)						
	<u>n</u>	<u>Mean</u>	<u>s.d.</u>	<u>t-value</u>	<u>t-test sig.</u>	<u>M-W sig</u>
High nAch group	144	61.0	37.6	-2.58	0.01	0.05
Low nAch group	161	71.5	33.0			

Hypothesis 5: The respondents were asked whether they owned/managed only the selected firm, a second, or more business operations (Q43). The pattern suggested by the hypothesis appears; 24 percent of the "high" group vs. 16.6 percent of the "low" group run at least one more firm. While the Chi^2 statistic does not reach significance, a Mann-Whitney test does ($M-W z = -1.69$; $p < 0.05$ single-tailed).

Hypothesis 5 thus cannot be rejected. Operating more than one business appears to be slightly more common among the high nAch managers.

Hypothesis 6: The managers who stated that the main activity of their firm was goods-production (as opposed to service or trade) were asked about to what degree their existing products were developed in house (rather than being standard products made to order; Q7), and whether they were at present developing any new products (Q8). These questions were used to test Hypothesis 6.

Four categories were used to code the proportion of annual turnover yielded by products developed in house. A contingency table test reveals that the pattern is in the expected direction, but the differences are not very large and do not reach statistical significance ($\chi^2=5.73$; $p<0.15$). However, the Pearson correlation coefficient between nAch scores and the proportion of own product turnover is as high as 0.26 and statistically significant ($p<0.005$).

Apparently the extreme ends of the nAch distributions differ substantially in this respect. This can also be seen in table 7.6, where the respondents have been regrouped into three levels of nAch and the proportions collapsed into only two categories (no vs. at least some turnover yielded by products developed in house). Here, the relation between nAch and the propensity to produce own products stands out quite clearly. Thus, Hypothesis 6 gets some support.

Table 7.6. Production of Own Products in Goods-Producing Firms with Low, Intermediate, and High nAch Managers

Count (Exp val)	<u>nAch</u>			Row Total
	Low	Inter- mediate	High	
No (0%)	18 (10.7)	12 (13.3)	5 (11.0)	35 32.4%
Yes (1-25%)+ (26-50%)+ (51-100%)	15 (22.3)	29 (27.7)	29 (23.0)	73 67.6%
Column Total	33 30.6%	41 38.0%	34 31.5%	108 100.0%
$\chi^2 = 12.43$ Sig. level = 0.005				

A more direct test of the hypothesis is given by a contingency table test of the answers to the question concerning new product development. Although in the expected direction, the difference is negligible (44.4 vs. 42.3 percent answering "yes" in the "high" and "low" groups, respectively). Recoding into three nAch groups does not alter this result.

In all, Hypothesis 6 gets only limited support. It might appear, then, as if nAch is more closely related to quantitative growth than to qualitative development.

There is a logic to such a finding. Quantitative growth is easily measured. It thus provides the manager with the concrete feedback he is supposed to need. The development of new products is often an undertaking with a considerable risk to it, and feedback appears only after a long period. Therefore, it might not be as well suited to the high nAch mind as a criterion of success. If based on these data alone such a conclusion would perhaps be a bit premature, since Hypothesis 6 was tested on a small subgroup of the sample.

7.6 Discussion

According to a number of authors referred to in Wärneryd (1988b) there is a decreasing interest in McClelland's notion of n achievement. This is in many respects sound development. Need for Achievement is an ill-defined concept, and more differentiated and dynamic theories may make possible studies that provide a much more detailed understanding of what really goes on in the entrepreneur's mind.

But detailed knowledge is not always needed - sometimes simplicity is a must. In particular if a study is aimed at covering also many other aspects, there is still a need for a simple measure of Achievement Motivation - or whatever we want to call it.

Although some of the relations found are weak, the results obtained with the simple measure used here generally show a positive relationship at the individual level between nAch and entrepreneurial activity in small firms. Moreover, the results imply that the respondents are

aware of their Achievement Motivation or at least that it can be measured in questionnaires. This is in sharp contrast with McClelland's view (cf. section 7.3).

Of course, measurement could be improved. This is not intended to say that there is an urgent need for new personality inventories with highly intercorrelated items. For there is, in fact, not much reason to believe that what McClelland measured is unidimensional. There may be at least three sub-dimensions to nAch.

First, there is the tendency to set high (initial) goals. Second, there is the tendency to adjust aspirations upwards on goal attainment. Third, there is the tendency to actually derive satisfaction from success and therefore get a taste for it. Although probably correlated these phenomena are not strictly the same and not likely to be captured by any index acceptable to classical measurement theorists. In PLS language (cf. section 3.4.3) nAch is perhaps best thought of as a formative factor while sub-dimensions of it should be measured by reflective indicators.

Of the indicators used in this study, items 1 and 3 may be regarded as measuring the first dimension. Items 2 and 4 refer mainly to the second dimension, since they both deal with "not settling down despite success." The third dimension was not covered.³ It has to do with learning from experience which can be seen as attributing outcomes to causes. Different attributions have different effects on subsequent motivation. This is dealt with in Attribution Theory (Weiner, 1985a; 1985b).

Closer examination reveals that all the significant results as regards the relationship between nAch and entrepreneurial behavior are entirely due to variation in items 2 and 4. So the results indicate that the important aspect of Achievement Motivation is the tendency to gradually shift aspiration levels upwards.

The items which yielded the results also have other characteristics in common. They are both reversal items, reflecting low nAch. They are

probably also less sensitive to social desirability, i.e. it is less clear which kind of answer projects the more favorable picture of the respondent. Finally, responses are more evenly distributed along the scale. Therefore, the other possible dimensions of nAch should not be ruled out as causes of entrepreneurial behavior.

The results of this chapter suggest that the need for Achievement has an effect on entrepreneurial behavior. They also suggest that nAch is possible to measure in a rather simple way. In Katona's language, it is a measurable intervening variable indicating willingness (cf. section 1.1).

It has further been argued that by defining sub-dimensions of nAch, measurement can be improved. This also makes possible a more precise definition of the need for Achievement.

Notes

1 Although several earlier versions of this chapter have been presented (e.g. Davidsson, 1987c) all analyses have been re-run for the present version because some cases previously included in the analyses were found not to belong to the target population (cf. section 3.3.1). Beside that, the contents of this version is quite similar to earlier versions and differs mainly as regards the concluding discussion.

2 All significance levels in this section refer to Mann-Whitney U-tests. T-test yielded very similar results.

3 A factor analysis of the items yields two factors with eigenvalues greater than one and with items 1 and 3 loading highly on one factor and 2 and 4 on the other.

8. Are the Small High-Tech Firms Different?

8.1 Introduction¹

8.1.1 A New Type of Small Firms and Small Firm Managers?

Despite Schumpeter's (1976/1943) prediction that entrepreneurship would become more and more institutionalized, small firms have not ceased to provide the economy with innovative solutions. Why is that? Have technological changes retained the feasibility of small scale? Is a new "type" of entrepreneur emerging?

Kets de Vries (1977, p. 43) discusses "the possibility that a new type of entrepreneur is emerging; an individual who is better educated, not as impulsive, less concerned about control and independence and more adaptive in his approach to the environment." It follows from the author's argument that he is convinced that such an entrepreneur would be more successful.

Kets de Vries also suggests that the description cited above may apply to high-tech entrepreneurs. Hence, changes in technology and in the make-up of entrepreneurs may come in one package.

The possibility that the small high-tech firms and their managers constitute a "new type" makes them especially interesting. Cooper (1973) gives some additional reasons for paying special attention to them:

1. They are important sources of innovation.
2. They add to the vitality of industry, serving as new sources of competition.
3. They offer alternative career possibilities for those engineers and managers who do not function most effectively in large organizations.

4. They have a potential for contributing to regional development at low cost in terms of noise and pollution.

Expressed in terms of intervening variables the response to economic stimuli within the high-tech category may be more forceful. This is likely if it is assumed that the opportunities for continued development are better for this category. As has been hinted above, the managers within the group may also be different, which may contribute to differential response to external stimuli.

8.1.2 Previous Studies on Small High-Tech Firms

A number of previous studies have focused on "small high-tech firms," "technical entrepreneurship," or "technology-based firms." In the variety of results some themes are recurrent (see Cooper, 1973; Cooper and Bruno, 1977; Doutriaux, 1984; Roberts, 1972; Roure and Maidique, 1986; Stuart and Abetti, 1986; Tyebjee and Bruno, 1982):

1. They are often started as spin-offs from larger firms or from universities.
2. The founder(s) has a much higher level of education than have small firm managers in general. A master's degree is the median level according to some studies.
3. Less concern for ownership control and a high frequency of entrepreneurial teams rather than sole entrepreneurs have been reported in several studies. Around 60% of the start-ups appear to have more than one founder.
4. The owner-manager(s) seems to be less concerned about personal control and more likely to delegate responsibility.
5. High-tech firms have lower failure rates but are more likely to be acquired by larger firms or merge with similar firms.
6. High-tech firms have considerably higher rates of growth.
7. In non-US studies, early dependence on exports seems to distinguish the high-tech firms from other manufacturing firms (e.g. Litvak and Maule, 1982; Utterback and Reitberger, 1982).

At least one Swedish study partly confirms this pattern. Beckérus and Roos (1985) found that entrepreneurs in the communications technology industry were more growth oriented than were owner-managers of small firms in other sectors. They were also less concerned about ownership and supervisory control.

Other Swedish studies indicate that the factors found to distinguish US high-tech entrepreneurs may not apply to their Swedish counterparts. Utterback and Reitberger (1982) found a widespread reluctance towards (substantial) growth, and Ahlén and Jonson (1982) claim that team formation is not as common in Sweden.

Thus, most studies indicate that the "high-tech entrepreneur" represents a new "type" of entrepreneur, but there is also some doubt.

8.1.3 The High-Tech Sample and the Comparison Groups

A problem concerning studies of high-tech firms is that the definitions of "high-tech" vary (and some prefer less pretentious terms). The results are also often based on samples that are likely to be highly biased, either "by intent" - especially interesting firms are selected - or as a result of low response rates.

As there is no code for "high-tech" in the SNI-code system, a very restricted definition of "high-tech" (see e.g. Shanklin and Ryans, 1984) cannot be applied here. Any "high-tech" sample based on this industry classification will include also firms for which the high-tech label is dubious. The following categories were originally selected as "High-Tech" because the average technological level in these categories was judged to be higher than in the other sub-samples:

1. **Manufacturing of computers and business machines** (SNI 3825)
2. Manufacturing of electrical engines, generators, and electrical machine equipment (SNI 3831)
3. **Manufacturing of tele-communications equipment** (SNI 3832)
4. Manufacturing of instruments, photographic and optical equipment (SNI 385).

For categories 2 and 4 the high-tech label is particularly dubious. Therefore, while "High-Tech" has been used in previous chapters as a summary term for all four categories, only categories 1 and 3 (**bold type**) are considered high-tech in this chapter. This leaves us with a

smaller high-tech sample (49 cases), but one for which the "high-tech" label is more justified.

The comparison group will not be the same in all analyses. Generally, all other firms will be used as the comparison group. When comparison with a subset of the "others" group is more appropriate, this fact has been considered. The group-sizes differ over analyses also because some of them concern questions asked in the mail follow-up. In the figures below, this is marked with a (#).

8.1.4 Areas of Investigation

The characteristics of small, independent high-tech firms and their managers will be contrasted with those of more conventional small firms. Comparisons with characteristics ascribed to high-tech firms in previous studies will also be made.

The analyses will cover four broad areas: a) Background characteristics of the firms and their managers, b) Dealings with the environment, c) Psychological characteristics, and d) Entrepreneurial origin and continued entrepreneurship.

8.2 Analysis

8.2.1 Background Characteristics of the Firms and Their Managers

Previous studies suggest that the high-tech firms tend to cluster in areas which are (or which they make) economically active and growing. Proximity to universities is often mentioned.

The results for this sample confirm this pattern. The high-tech sample differs significantly in the expected direction along all but one of the indicators of "Geographic Characteristics" used in chapters 4 and 5 (see table A4.1, var. No. 21-29). Thus, high-tech firms are more likely to be located in an environment with high population density and a large and growing population. For example, 43% of the high-tech firms are located in Greater Stockholm.

As to proximity to universities, 69% of the high-tech firms have a major university within their home county; 43% within the community. The corresponding figures for the others are 46% and 22% ($\chi^2=9.21$, d.f=1, $p<0.01$). Existence of a minor university in the community is not more common in the high-tech group. Of the high-tech firms, 20% have a minor university in their community. The corresponding figure for the "others" is 24%.²

All these differences appear also if only other manufacturing firms are used as the basis for comparison.

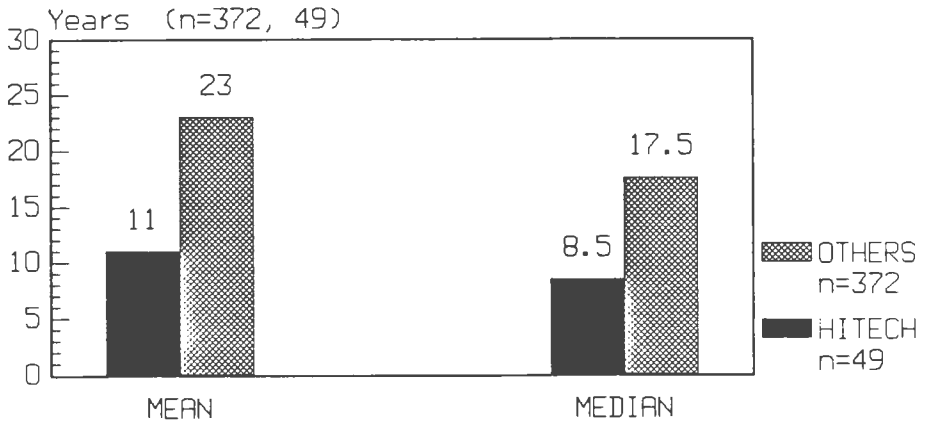
Figure 8.1 shows that the high-tech firms are younger on the average. This is hardly surprising. It seems logical to presume also that their managers are younger and have shorter average tenure as CEO. It turns out that the median age of the managers is 43.5 years for high-tech and 45.5 for others. Median tenure as CEO is 6.5 and 9.5 years, respectively. These differences are smaller than the age-of-firm difference and only marginally significant ($p<0.10$; M-W U-test).

One reason for the smaller difference may be that a higher level of education is needed before starting a high-tech firm. Figure 8.2 shows that high-tech managers have a considerably higher average level of formal education than the others.

A surprise is that even in the high-tech category, only 16.3% have completed a university education. As a basis for comparison, a study by Wärneryd et al (1987) shows that 19.1% of all gainfully employed Swedish males between 20 and 65 years of age have a university degree, but only 9.7% of the self-employed. Apparently, Swedish small firm managers do not have a very high level of formal education. This applies also to high-tech managers although they are better educated than small firm owner-managers in more conventional industries.

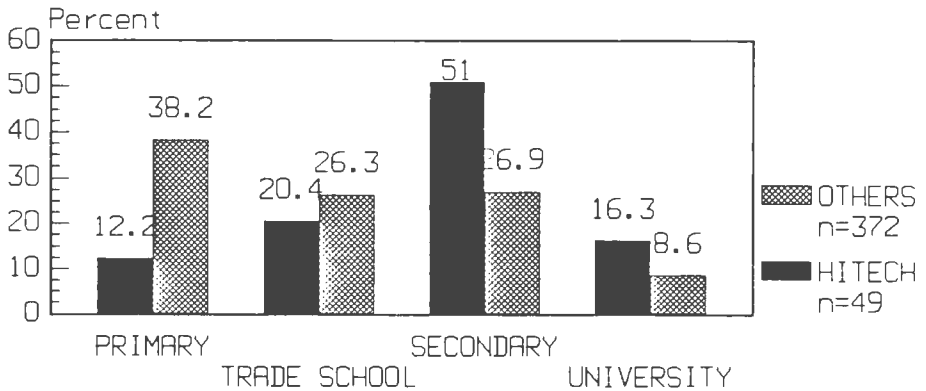
Since technical expertise no doubt is needed in a high-tech firm one could wonder how this relatively low level of education is possible. One possibility is that many of the managers never finished their university studies but nevertheless gained expertise within certain fields or learned enough to be able to gain expertise on their own.

Figure 8.1 Firm Age (09)



$P < 0.001$ (M-W U-TEST)

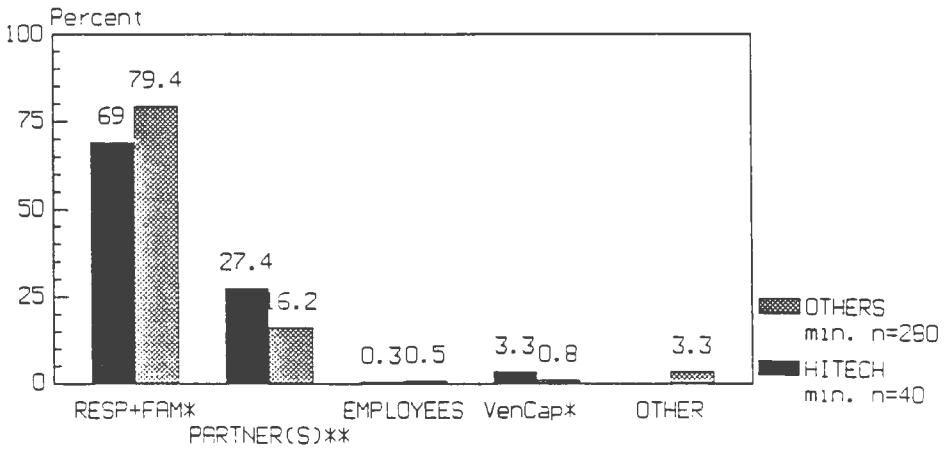
Figure 8.2 Level of Education (Q48)



$P < 0.001$ (CHI-SQUARE)

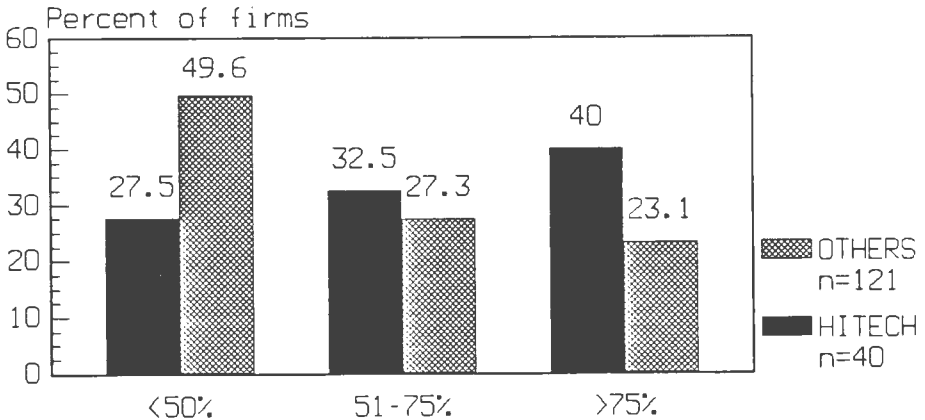
Another explanation is that a reluctance among the highly educated to go into business for themselves leaves room for less well educated "general opportunity spotters." These may acquire the needed competence outside of the educational system. Alternatively they get access to it by finding the right partners and/or employees. That is, the technical expert does not have to be the CEO.

Figure 8.3 Ownership, Group Averages (%)



* = $P < 0.05$, ** = $P < 0.01$ (M-W U)

Figure 8.4 Turnover Generated by the Firm's 3 Largest Customers (Q52#)
(Retailers and Repair Service Firms excluded)



$p < 0.05$ (Chi-Square)

A higher frequency of team leadership and less concern for ownership control have been found to be characteristic of the high-tech category. With 50% of the high-tech firms and slightly less than 30% of the others being partnerships, this study confirms that finding.

Although the absolute level for the high-tech firms is somewhat lower than what is commonly reported in US studies, the group difference is substantial and statistically significant according to a χ^2 test ($p < 0.05$). Thus, whether or not team formation is as common among Swedish as among North-American high-tech firms, it certainly appears to be more common in the high-tech group than among more conventional small firms.

The absolute differences for average percentage owned by different categories (Q57-Q61) are not very substantial (Figure 8.3). Behind the low average for venture capital is found a "zero" in most cases and a larger share in a few. The results indicate that VenCap firms direct their interest almost entirely to the high-tech sector when dealing with firms as small as those investigated here.

Figure 8.4 shows that the high-tech firms more often depend on a small number of customers. Retailers and repair service firms are excluded from this analysis in order to make the comparison more relevant.³

The dependence on a small number of customers is understandable considering the small number of potential customers there would exist for highly specialized products within a restricted geographical area. While high buyer concentration may make a firm vulnerable it may also be a strength. Previous studies are in conflict on this issue (cf. Roure and Maidique, 1986; Tyebjee and Bruno, 1982).

8.2.2 Psychological Characteristics and Motivation

8.2.2.1 Psychological Profile

There seem to be few studies that focus on psychological characteristics of high-tech entrepreneurs. In particular, comparisons with managers of other types of small firms are lacking.

In a series of (fairly small) studies, Smith and Miner (1984; 1985; Smith et al, 1987) found higher "task motivation," which includes "self-achievement" and "risk-avoidance," among managers of small high-tech firms than among non-entrepreneurs.

Komvies (1972) compared managers of small high-tech firms with the general population. According to his results, they score high on theoretical orientation, need for Achievement, and aesthetic values. Interestingly, the high-tech entrepreneurs were low on practical-mindedness, goal orientation, and economic values. This appears to be a pattern that both resembles and in important ways deviates from the characteristics usually ascribed to entrepreneurs.

Here, four psychological "dimensions" will be investigated. Those are Locus-of-Control (LOC), risk attitude (RISK), self-confidence (SC), and need for Achievement (nACH); cf. sections 2.2.5 and 2.3.3. Fairly simple indicators, which may or may not be valid measures of the concepts, were used.⁴ These were:

- LOC1: "How a firm develops is actually determined mainly by factors that the manager cannot control" (low; Q34)
- LOC2: "A capable enterpriser can always run his/her firm at a profit, even if the industry at large has problems" (high; Q37)
- RISK1: "I'd rather take a chance and face a loss now and then, than withdraw and afterwards realize that I missed a good business deal" (high; Q35)
- RISK2: "I am always careful and do not take any great risks when doing business" (low; Q38)
- SC1: "One of my weaknesses is that I sometimes misjudge my capacity" (low; Q36)
- SC2: "I am probably better than most people at making judgements in uncertain situations" (high; Q39)
- ACH1: "I have always wanted to succeed and to accomplish something in my lifetime" (high; Q110)
- ACH2: "I find it hard to understand people who always keep on striving towards new goals although they have already achieved all the success they could possibly have imagined" (low; Q112)
- ACH3: "To face new challenges and to manage to cope with them is important to me" (high; Q114)
- ACH4: "I am so content with what I have achieved in my life, that I think now I can confine myself to keeping what I already have" (low; Q116).

Higher nAch, more internal Locus-of-Control, and more self-confidence should be expected if high-tech managers are more entrepreneurially inclined than other small firm managers. Risk attitude has generally failed to discriminate between groups in previous studies (cf. section 2.3.3.2).

Figure 8.5 Psychological Profile (nAch = #)
(Higher value = more entrepreneurial)

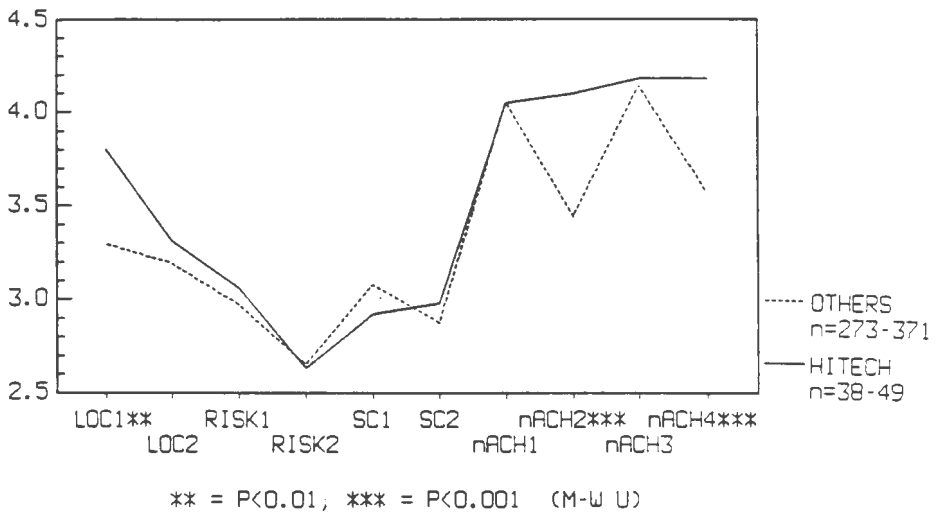


Figure 8.5 displays the results. The answers have been rescored so that a higher value means higher nAch, more internal Locus-of-Control, more self-confidence, and more favorable attitude towards risk-taking.

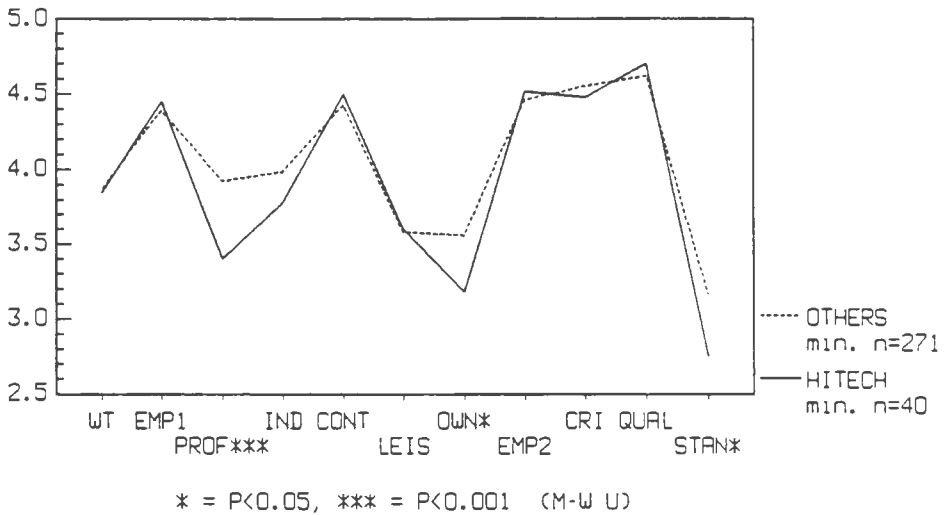
The general form of the curve is the same for both groups, except for the notable difference on two of the nAch indicators. In previous chapters these two indicators were found to relate to various aspects of entrepreneurial behavior. A significant difference is also found for the first Locus-of-Control item.

The statistical tests indicate that the differences are unlikely to be due to chance. A careful conclusion is that high-tech managers have a somewhat more entrepreneurial personality - nothing said about cause and effect.

8.2.2.2 Factors Contributing to Satisfaction

Data on the importance of different factors to the over-all satisfaction of the respondent in his/her role as a small firm manager were collected in the mail follow-up. The factors to rate (Q86-Q96) were:

Figure 8.6 Factors Contributing to Over-All Satisfaction (#)
(Higher value = more important)



- To be able to work with the kind of tasks you like best (WT)
- That your employees have a feeling of well-being and are motivated (EMP1)
- That the firm yields high profits (PROF)
- That the firm is not overly dependent on a small number of customers, suppliers, or lenders (IND)
- To be able to control and survey the firm's operations (CONT)
- To have enough time left for family and leisure activities (LEIS)
- To have ultimate decision power through ownership (OWN)
- To have good relations with employees (EMP2)
- That the firm is stable and can survive crises (CRI)
- That the firm's products and services are of high quality (QUAL)
- That the firm makes possible a high standard of living for you and your family, in financial terms (STAN).

Figure 8.6 displays the results. Again, the two curves follow each other pretty closely. Both groups value quality, crisis survival ability, control, and employee issues very highly. The respondents appear to be rather "anti economic man" - financial outcome and ownership control rank lowest among the dimensions investigated.

The high-tech group - believed to be more entrepreneurial - in fact scores significantly lower on these items. One reason may be that this group is better educated and has less reason to enter entrepreneurship out of (perceived) economic need. There are also studies which show

that more highly educated people tend to stress intrinsic rewards and have a less instrumental view on work incentives (e.g. Strumpel, 1974). Apparently, this applies also to small firm owner-managers. Since Komvies (1972) and Allen et al (1986) also found a low degree of economic motivation in the high-tech category, this result cannot be presumed to be due to chance variation.

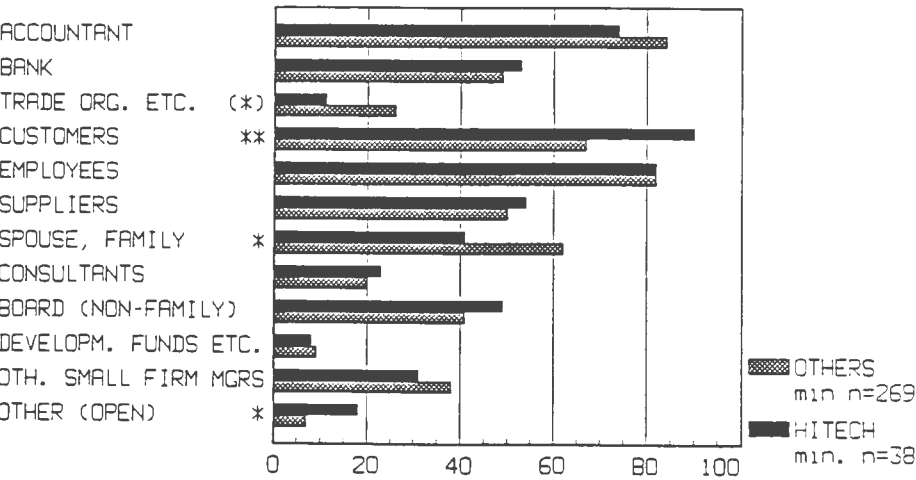
It is not the case with this sample that the high-tech managers stress the importance of (supervisory) control to a lesser degree than others. For ownership control the result is consistent with the lower actual ownership reported above.

8.2.3 Dealings with the Environment

8.2.3.1 Sources of Ideas and Advice

The respondents were asked to rate, for different (personal) contacts they might have, their importance as sources of ideas and advice (Q97-Q108). The results indicate that high-tech managers differ somewhat as regards the make-up of their personal networks.

Figure 8.7 Sources of Ideas and Advice (#)
(Percent rating as fairly/very important)



(*) = p<0.10 * = p<0.05 *p<0.01 (Chi²-test)

Both groups emphasize the importance of the very close sources: employees, customers, suppliers, family, accountant, and bank contact. Many of the differences may be attributed to characteristics of the industry as such. If only other manufacturing firms are used for comparison all but one of the significant differences disappear.

The one that remains is the very high average importance attributed to customers by the high-tech managers. This adds to the picture of the small high-tech firm as one that exists in close symbiosis with one or a few large customers (cf. fig. 8.4).

8.2.3.2 Access to Finance and Labor Force

Previous studies have indicated that access to external financing may be a more severe problem for the high-tech category than for other small firms (cf. section 2.3.2.1). There is no evidence for that in this study. In fact, 85% of the high-tech managers and 87% of the others claim that it would be fairly easy or even very easy to get loans for an important investment.

While no definite conclusion should be drawn on the basis of this simple indicator (Q69), the result at least shows that difficulty of getting needed loans is not the every-day problem in most small firms.

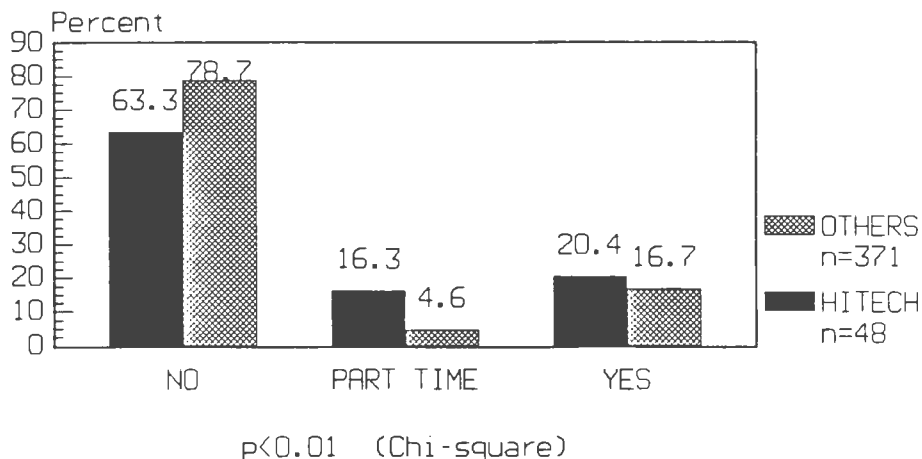
As a contrast, a majority in both groups (63% vs. 71%; n.s) state that it would be difficult to find suitable applicants if they needed to recruit (Q70). To a majority then, this appear to be a more severe problem than is obtaining external finance.

8.2.4 Entrepreneurial Origin and Continued Entrepreneurship

8.2.4.1 Foundation of Firms

High-tech managers, despite their slightly lower average age, are more likely to have run another firm prior to the selected one (Figure 8.8). In particular, they are more likely to have started on a part-time basis.

Figure 8.8 Prior Experience of Running One's Own Firm (Q42)



The analyses in figures 8.9 and 8.10 address the question of the "entrepreneurial origin" of the respondents. In both groups, a majority had a "role model" before they became small firm owner-managers. This has also been the case in many other studies (cf. Cooper, 1973).

Although "role model" in a majority of cases means parent, this does not imply that the respondents inherited their first firm. On the contrary, a majority in each group founded their first firm by themselves (figure 8.10).

These analyses show that the high-tech group is more entrepreneurial in the sense that being the founder of a firm, in particular being so in the absence of close role models, is more common in that group. They are also somewhat more likely to have been involved in more than one venture. They are not, however, more likely to run multiple firms in parallel (Q43). In both groups, slightly more than 20% run multiple firms.

The results in figure 8.10 may seem self-evident. Probably there do not exist many high-tech firms to inherit or acquire. But an existing firm may well become high-tech (and be re-classified in the register).

Figure 8.9 Role Model Prior to Start? (Q46)
(Collapsed from 3 original categories)

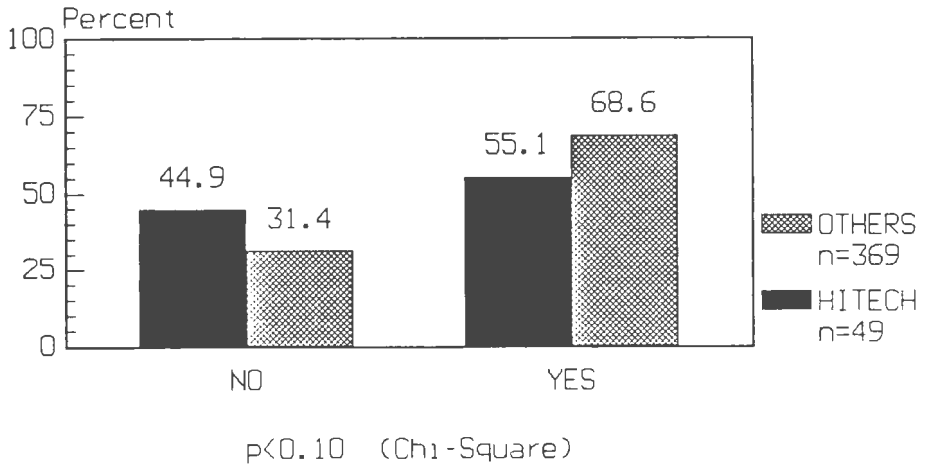
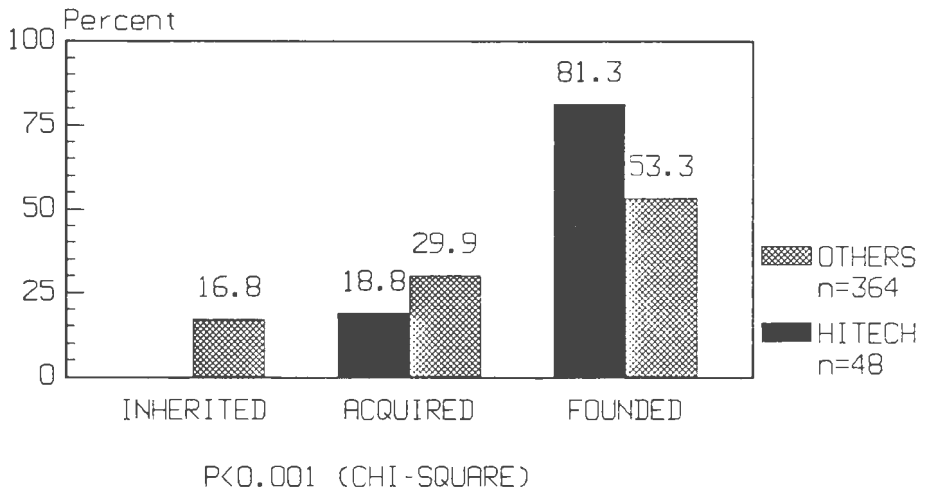


Figure 8.10 Way of Becoming a Small Firm Owner-Manager (Q44)



Also, the question concerns the respondent's first firm, which was not necessarily a high-tech firm. As shown in figure 8.8, 37% of the high-tech managers had run at least one firm prior to the selected one.

8.2.4.2 Growth Issues

In figures 8.11 and 8.12 data on previous growth and growth aspirations are displayed. In both cases annual rates have been computed.

Figure 8.11 Previous Growth Expressed as Annual Rates

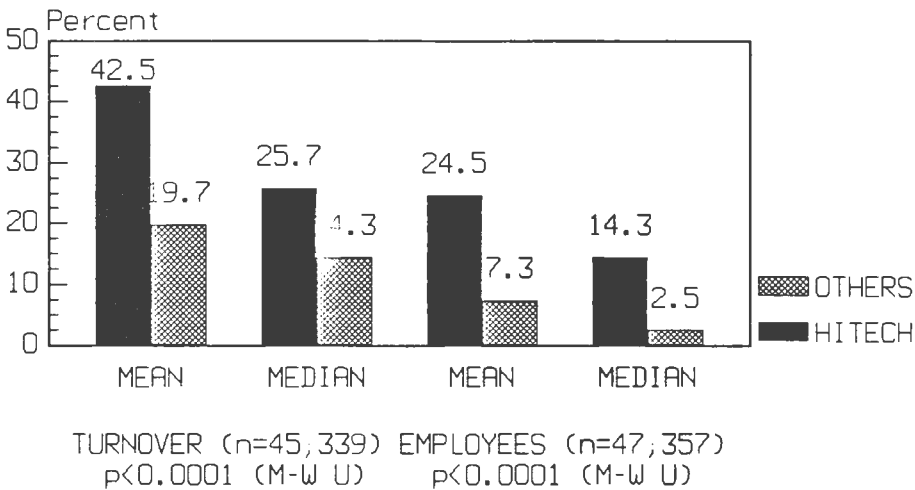
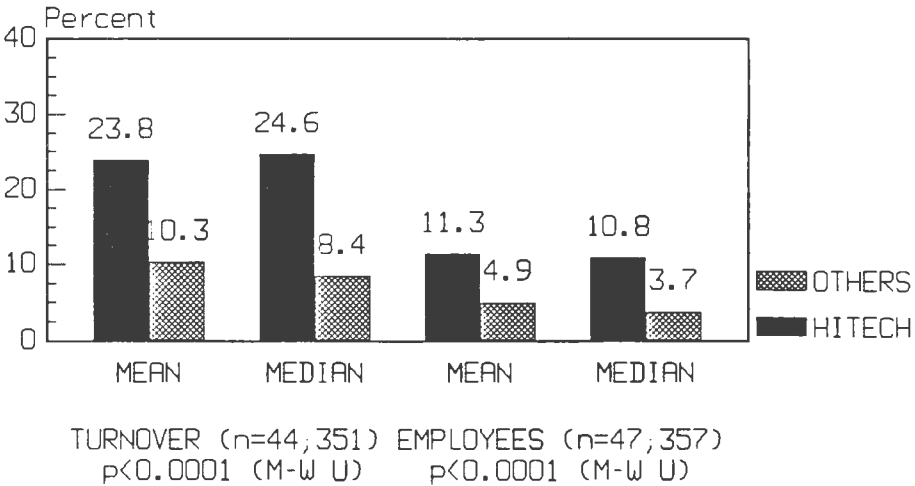


Figure 8.12 Growth Aspirations Expressed as Annual Rates



The results are very clear: high-tech firms grow faster and their managers intend to continue to do so. The growth rates for the high-tech group may look fairly impressive at first glance, but it should be remembered that we deal with very small firms. A firm which has grown from 2 to 5 employees in three years is clearly above the group average. It does not take a large absolute number to get a high rate.

Moreover, previous turnover growth has not been adjusted for inflation (whereas the respondents were instructed to disregard inflation when stating preferred size five years ahead). As to aspirations, even among the high-tech managers few wish to more than double the firm's size in terms of number of employees. Although they have higher growth aspirations on the average, a majority in the high-tech group seems to prefer to remain managers of small firm in the foreseeable future.

Given higher growth and growth aspirations, results from previous chapters would suggest that high-tech managers are likely to perceive more growth opportunity and to have more favorable attitudes towards growth. this will be addressed next.

It turns out that according to Chi² tests there is no statistically significant difference between the groups as regards the expected future profitability of their respective industries (Q62). Nor is there a significant difference between the groups as regards the perceived room for increasing sales without adding more products/services to the assortment (Q63).

The tendency is, however, that high-tech managers are more optimistic. In the high-tech group, 76% expect very good or fairly good profitability as compared to 69% of the "others." Room for expansion with existing products definitely exists according to 26% of the high-tech managers, whereas only 14% of the others think so.

Figures 8.13 and 8.14 display the results for perceived room for expansion without additional employees, and without additional physical resources (premises, machinery).⁵ The difference is significant ($p < 0.05$) for additional physical resources. For the employee question

a significant difference is obtained only if the non-manufacturing firms are excluded.

As a whole, high-tech managers seem to perceive more opportunity for expansion, but the differences are not very large.

Figure 8.13 Room for Expansion without Additional Personell (Q64#)
(Possible increase expressed as percent of present sales)

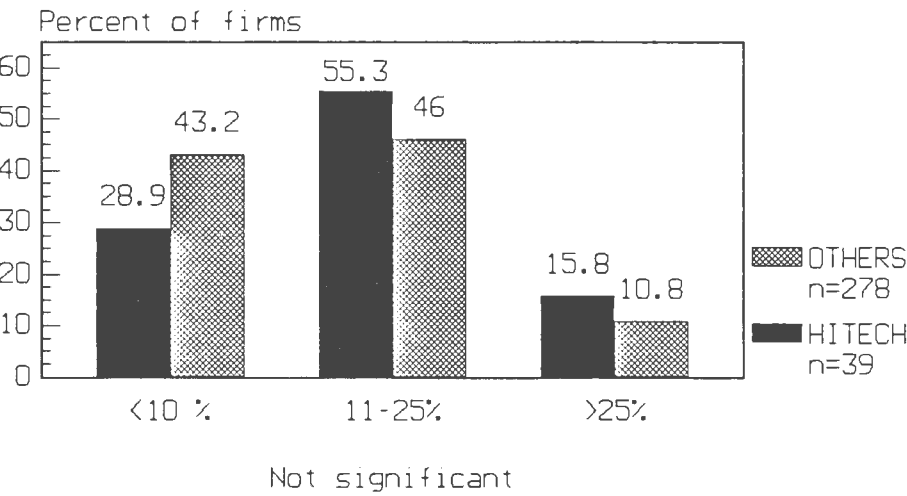
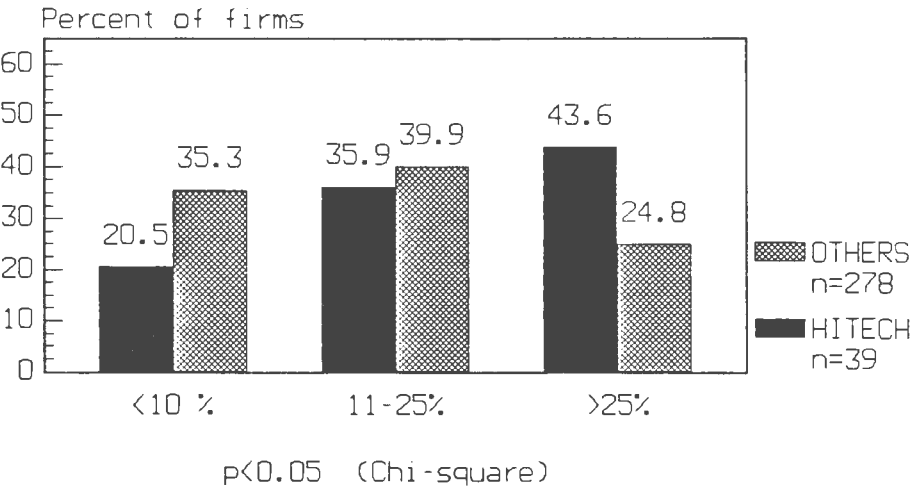


Figure 8.14 Room for Expansion without Additional Physical Resources (Q65#)
(Expressed as percent of present sales)



As regards attitude towards growth the results for the "over-all attitude" questions (Q21-Q22; "Affective Attitude" in Ch. 5) are that the group means are 5.18 for high-tech and 4.86 for others (n.s.) on the 25% growth question (Q21). On the second question, which concerned 100% growth, a significant difference emerges (5.12 vs. 4.19, $p < 0.01$). Both questions were measured on balanced 7-point scales with 7 meaning "very strongly positive."

Thus, high-tech managers seem to have a more positive attitude towards substantial growth, and no preference for moderate over substantial growth appears in the group.

Figure 8.15 Expected Outcomes of Growth
(Higher value = more positive)

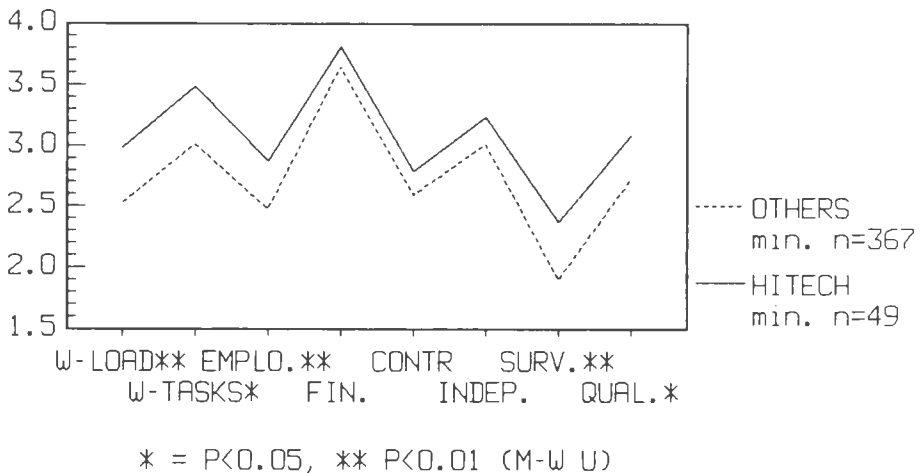


Figure 8.15 reveals that the high-tech managers are more positive on all dimensions regarding the expected consequences of growth (Q26-Q33; cf. "Cognitive Attitude" in section 5.2.1 and table 5.4). Perhaps the most interesting result of this analysis is the stunning similarity between the two curves. Although high-tech managers are more positive towards growth, the fears and hopes connected with the issue appears to be the same in both groups. Also many high-tech managers have negative expectations on several dimensions, i.e. the group average is near or even below 3 (indifference).

It is also interesting to compare the expectations in figure 8.15 with the importance ratings for the corresponding dimensions in figure 8.6. For example, there are no group differences as regards the importance attributed to the possibility "to work with the kind of tasks you like best" or "to get enough time for family and leisure activities." Figure 8.15 clearly shows that the high-tech managers have more positive expectations as concerns the effect of growth on workload and work tasks.

This indicates that the high-tech managers to a higher degree consider the possibility of delegation and are more favorable towards a transition into a more purely managerial role. On the other hand, the differences on the "control" dimension is small and insignificant in both analyses, which seems to contradict such a conclusion.

To sum up the section on growth issues, the results show that the high-tech group is more growth-oriented. Results concerning all investigated aspects of growth point in that direction.

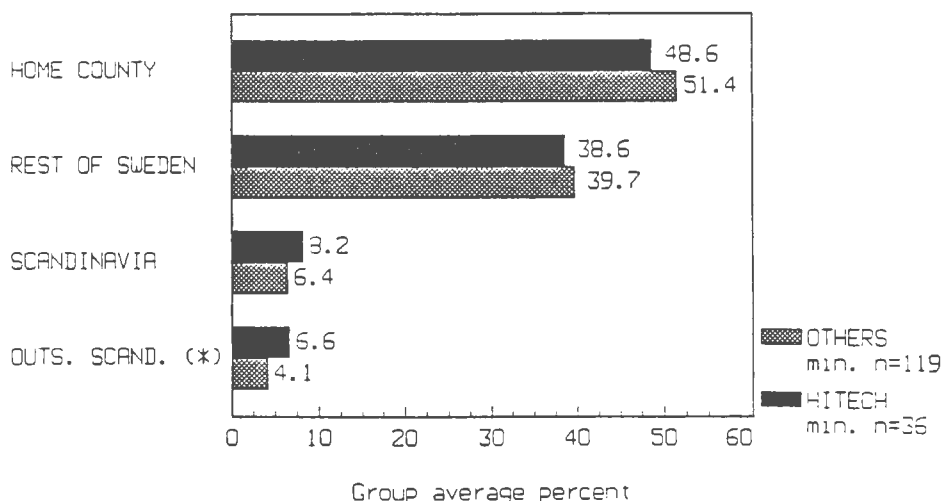
8.2.4.3 Geographic Market Dispersion

Figure 8.16 shows the within group average percentage of turnover obtained in different geographical markets. For obvious reasons retailers and repair service firms were excluded from this analysis.

The differences, albeit in the expected direction, are not very large. Of the high-tech firms, 58% have some exports. This should be compared with 42% of the other manufacturing firms. According to a χ^2 test, the difference is not statistically significant.

One reason for the failure to establish significant differences between the groups is that the high-tech sample is small, but it is still a bit surprising. Partly it is explained by the fact that the high-tech firms because of their location have a more attractive market within their home county (cf. section 8.2.1). It may also be the case that the high-tech firms which do engage in exports outgrow the sampling frame size limit faster and thus are more likely to be excluded from the sample.

Figure 8.16 Percent of Turnover Obtained on Different Markets (%)
(Retailers and Repair Service Firms Excluded)



(*) = $p < 0.10$ (M-W U-test)

8.2.4.4 New Product Development

High-tech firms should be more active in developing new products. The high-tech managers may even feel to a greater extent that this is necessary for the firm's survival. The latter issue was covered in a question concerning whether the respondent felt that development and marketing of new products or services within the next five years was essential for the survival of the firm. The response categories used were "yes" or "no" with arguments "probably" or "definitely" so. The results are displayed in figure 8.17.

As expected, a clear majority (80 %) of the high-tech managers chose one of the "yes" categories. Not a single one of them was convinced that new products would not be necessary. This is quite logical. In many cases a small high-tech firm has to stay high-tech to be a feasible unit of production. Once their products become standard and widely used, larger firms can take full advantage of scale economies.

Two questions directly or indirectly dealing with new product development were posed to managers who stated that their firm's major line of

business was goods production (as opposed to service or trading; Q6). Thus, the analyses in figures 8.18 and 8.19 are based on smaller - but as a basis for comparison more relevant - samples.

Figure 8.18 shows that nearly three quarters of the high-tech firms were developing new products at the time of the interview, which is a significantly larger share than the 38% of the other goods producers which did the same.

Figure 8.19 indicates that despite the high buyer concentration the group has (cf. figure 8.4), the high-tech firms are less likely than other goods producers to be "pure sub-contractors," i.e. producers of products which were not developed within the company. Half of the high-tech firms get at least 50 % of their turnover from products of their own creation. According to the χ^2 test, however, the difference is not statistically significant.

In all, the image of high-tech firms as more active developers of new products is supported.

Figure 8.17 New Products/Services Essential for Future Survival? (Q66#)

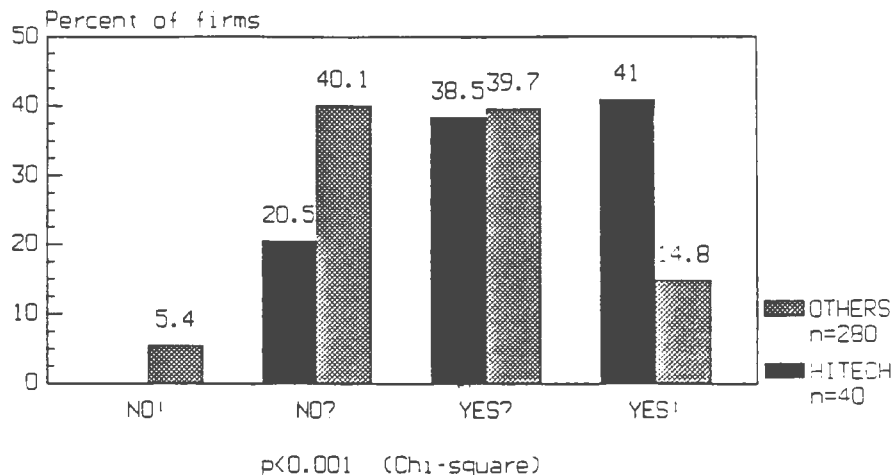


Figure 8.18 Engages in New Product Development at Present? (Q8)
 ("Goods-Producers" only)

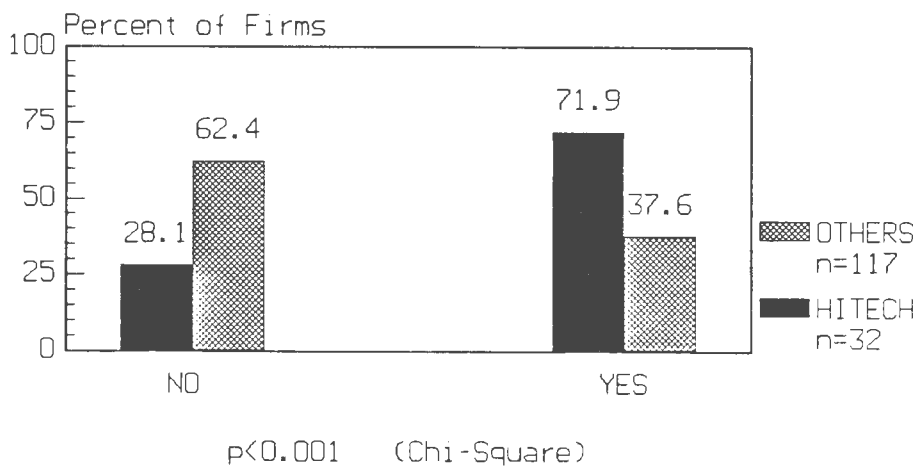
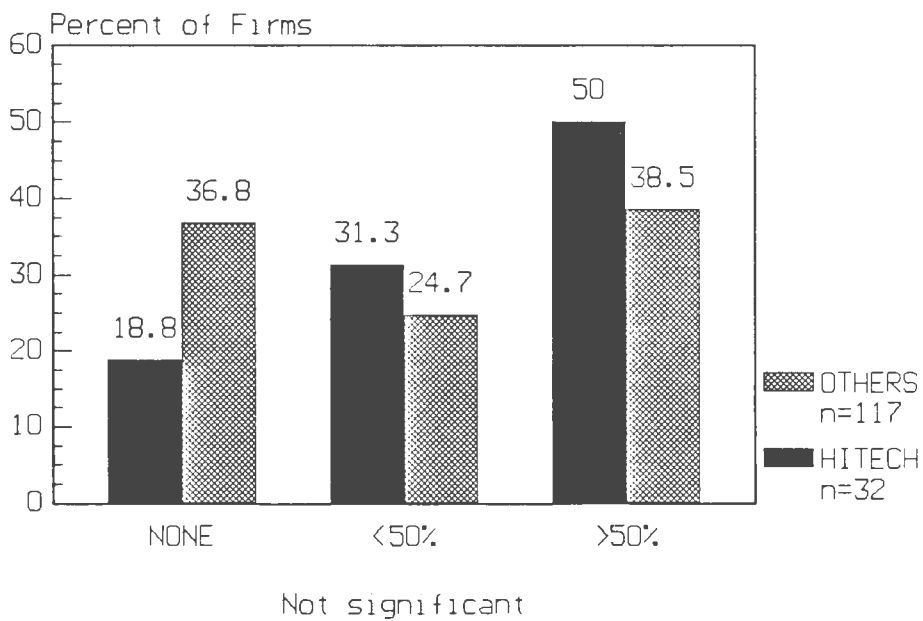


Figure 8.19 Percent of Turnover Obtained Generated by Products Developed in House (Q7)
 ("Goods-Producers" only)



8.2.5 A Multivariate Analysis

In the above analyses a number of differences between "high-tech" and "other" small firms have been established. The variables have been tested one by one, with different methods, and sometimes for different sub-samples. This makes it difficult to assess which differences are the most distinguishing.

To make such comparisons somewhat easier, a stepwise discriminant analysis was performed. In this analysis, only other manufacturing firms (according to the sampling frame) were used as the comparison group. That is, categories 1 and 3 of those originally sampled as high-tech (see section 8.1.3) are compared to those sampled as Manufacturing firms plus categories 2 and 4 of those originally sampled as high-tech.

This restricts the sample to 203 cases. Due to internal non-response for some cases on at least one of the variables in the analysis (in most cases because the mail questionnaire was not completed) the discriminant function is based on only 122 cases. In the classification in table 8.3, all 203 cases are used (mean substitution is used for missing values during classification).

To arrive at a manageable number of explanatory variables, the focus is limited to results concerning issues relating to entrepreneurship and/or finding support in previous studies. In all, 17 simple or summary (index) variables were used. Since their inclusion would reduce sample size too much, the variables analyzed in figures 8.18 and 8.19 were not included. For the same reason, employee rather than turnover growth measures (previous and aspired growth rates) were used. Geographic location, being a characteristic at the industry level rather than at the individual (firm) level, was not included.

Of the variables included, nine contributed significantly to the discriminant function's ability to predict categorical affinity. These variables and their standardized coefficients are listed in table 8.1 (in decreasing order of explanatory power).

Table 8.1 Variables Included in the Discriminant Function

<u>Variable</u>	<u>Stand. coeff.</u>	<u>Note</u>
Attitude towards growth	0.45	Index of vars. in fig. 8.15 (Cronbach's alpha = 0.71)
Economic motives	-0.43	Items 3+11 in fig 8.6 (r=0.52)
Partnership	0.41	Dummy (yes=1; else=0)
Prior firm experience	0.35	Dummy (yes=1; else=0) fig. 8.8
Buyer concentration	0.35	See figure 8.4
Formal education	0.29	See figure 8.2
Role model	-0.28	Dummy (yes=1; else=0) fig. 8.9
Exports	0.28	Dummy (yes=1; else=0)
Previous growth rate	0.24	Employees; see figure 8.11

According to this analysis, the most distinguishing characteristics of small high-tech firms/managers are that they a) have more positive attitudes towards growth, b) to a lesser degree are driven by economic motives, c) have a higher buyer concentration, d) are more likely to be partnerships, e) are less likely to be the manager's first own firm, f) are better educated, g) are less likely to have had a role model, h) are more likely to engage in exports, and i) grow faster.

Again, this refers to a comparison with other manufacturing firms. As may be noted, some variables which yielded significant results in the bivariate analyses do not turn up as significant in the discriminant analysis, whereas others which were only marginally significant in the bivariate analyses do. Partly this is explained by the fact that the samples are not exactly the same.

Another major explanation is that the explanatory variables are inter-correlated while it is the unique contribution to explanatory power that counts in the multivariate analysis. Table 8.2 displays the simple correlations between the discriminant function and each variable entered in the discriminant analysis. These correlations may be regarded as measures of each variable's strength as a substitute for

the function in classifying cases correctly. They complete the picture as regards relative importance.

From the results in tables 8.1 and 8.2 it feels safe to state that among the factors here investigated, growth orientation, relative absence of economic motivation and a higher level of formal education are the three most distinguishing factors for the high-tech group. Personality - as here measured - does not appear to be the major issue for this distinction. New product development and geographic location were not entered in the discriminant analysis. Among excluded variables, these two are the ones which are most likely to add to explanatory power.

Table 8.2 Correlations Between the Discriminant Function and the Explanatory Variables

<u>Variable</u>	<u>Correlation</u>	<u>Note</u>
Attitude towards growth	0.53	* Index of vars. in fig. 8.15
Growth aspirations	0.44	Employees; see fig 8.12
Formal education	0.43	* See figure 8.2
Previous growth rate	0.38	* Employees; see figure 8.11
Economic motives	-0.37	* Items 3+11 in fig. 8.6
Age of Firm	-0.31	See figure 8.1
Prior firm experience	0.28	* Dummy (yes=1; else=0)
Partnership	0.26	* Dummy (yes=1; else=0)
Perceived growth opport.	0.26	Index; vars. in fig 8.13+8.14
Buyer concentration	0.24	* See figure 8.4
Exports	0.23	* Dummy (yes=1; else=0)
Prod. developm. essential	0.23	See figure 8.17
Resp+fam. ownership share	-0.21	See section 8.2.1
Locus-of-Control	0.20	LOC1 in figure 8.5
Need for Achievement	0.20	Index of nAch-indicators in fig. 8.5. Alpha=0.55
Founder	0.16	Dummy; (yes=1; else=0)
Role model	-0.12	* Dummy; (yes=1; else=0)

* = included in the discriminant function. See table 8.1

Finally, table 8.3 displays the total discriminatory power of the discriminant function. In the version shown, cases not used for determining the function are also classified. Relative group sizes have not been specified. If group sizes are specified, the correctness rises above 80%.

Table 8.3. Classification Results

<u>Actual Group</u>	<u>Predicted Group</u>	
	OTHERS	HIGH-TECH
OTHERS	116 (75.3%)	38 (24.7%)
HIGH-TECH	17 (34.7%)	32 (65.3%)

Percent of cases correctly classified: 72.9 %

There is no established measure available to assess whether a correct classification rate of 73% is "good" or not, but the function performs much better than a random guess. While the group differences in some of the bivariate analyses were judged to be smaller than expected, this analysis shows that information on a number of dimensions in conjunction ascribes a certain degree of distinctiveness to the high-tech category.

8.3 Discussion

In the analyses it has been demonstrated that the managers of small high-tech firms in this sample to some degree conform to Kets de Vries (1977) ideas about a "new type of entrepreneur." For example, the high-tech group has a higher level of education and are more likely to form teams. There are also indications that they appreciate more the possibility to delegate.

In all, the high-tech group shows more entrepreneurship. This holds true for behavior such as firm formation, growth, and new product development, as well as for entrepreneurial personality and attitudes.

Except perhaps for the results concerning economic motivation, the factors found to distinguish high-tech firms from other small firms hardly come as a surprise. In fact, the similarities are more surprising. The differences appear to be a matter of degree.

The high-tech managers are better educated and are more oriented towards growth, but the absolute levels are not very impressive. The typical high-tech firm in this study is not led by a highly educated

super-entrepreneur with empire-building ambitions. This picture contrasts with the image built up by descriptions based on very selective samples or spectacular case studies.

It may of course be argued that the sampling procedure used leads to a biased picture and that therefore the entrepreneurial power and economic significance of those firms are underestimated. The claim could be made that it is not the "real" high-tech firms that have been studied here.

Such remarks are no doubt justified to some degree. The sampling procedure leads to under-representation of firms that grow very fast and it has been shown that the high-tech firms are younger and grow faster. High-tech firms may also start at a larger size and therefore pass the size limit faster for that reason also if growth rates did not differ.

The sampling frame also excludes firms in which a larger firm holds a majority stake. At the same time, fairly simple independent production units which act as sub-contractors of the "real" high-tech firms are not necessarily excluded. Finally, small high-tech firms may certainly be found within other industries (SNI-classes) than the selected ones, even though more mingled with firms applying less advanced technology.

Yet, even with the broader definition of "High-Tech" used for sampling (see section 8.1.3), the register - which should be complete - contained in all 585 such firms which were independent and had 19 or less employees. Only 105 had between 10 and 19 employees. The number of high-tech firms according to the definition actually used in this chapter would be about half of these figures.

Thus, the sample covers a substantial share of them (especially of the somewhat larger ones), and if there were a large number of very innovative and expansive firms among them, this would have been detected. If the "real" high-tech firms are found in other industries it is certainly not among the other industries studied here, as indicated by e.g. the (close to) non-existence of venture capital funding in these categories.

It appears that one alternative is to accept a fairly permissive definition of "high-tech" and conclude that the small, independent high-tech firms and their managers are different, but on the average not very different, from more conventional small firms. A second alternative is to maintain that they constitute a specifically distinct category and admit that their number is very small indeed. One would in that case also have to admit that investigating how they differ from other small firms is an awkward task because they are not defined as "high-tech" until they have been found to differ along a number of dimensions for which information is not available until the firms actually have been investigated.

No matter how we define them, the small, independent high-tech manufacturers are not a major component in the economy. For comparison, the register contained 3663 manufacturing firms, 2532 repair service firms, and 5350 retailers of the kinds and sizes specified. The total number of independent small firms in these size classes is approximately 85 000 (cf section 3.3.1).

The great interest in the high-tech sector may therefore seem unjustified. Some recent studies have pointed in that direction; the small high-tech firms may neither be that very different nor the venture capitalists' primary cash-cow nor the key to regional development (cf. Allen et al, 1986; Dennis, 1988; Stuart and Abetti, 1986).

To conclude that they do not matter much would, however, be a bit premature. On a per capita basis small high-tech firms are more important than conventional small firms. The way of viewing and doing business within that category also appears to resemble the "business administration textbook" version to a somewhat higher degree. For good or bad, this is something which might spread to other kinds of small firms. Possibly, such a development will be brought about by investors and other business administration professionals who were attracted first to the small high-tech firms when they eventually find out that there is money to be made also in the development of small firms in less glamorous industries.

Finally, a substantial share of the seeds which have the potential for becoming economically significant entities (either as independent firms or - perhaps more often - within larger corporations) are likely to come from this group.

Therefore, the small high-tech firms as a group are worthy of special attention. Most of the firms may not be that much different from conventional small firms, but the category may lead an important development in the small business sector, and the probability that a small firm will eventually make an important contribution is likely to be considerably higher within this group.

This should not divert all interest from the more conventional small firms. Such firms, because of their sheer numbers, are likely to create more employment than small high-tech firms also in the foreseeable future.

Notes

1 See Brynell and Davidsson (1988) and Davidsson and Brynell (1988) for earlier versions of this chapter. In the former, the sampling High-Tech category is analyzed (cf. section 8.1.3). The latter employs the high-tech definition used in this chapter, although additional analyses and comparisons with previous studies have been added here. In all three versions, this author has conducted and is responsible for all statistical analyses as well as the over-all discussions. Miss Brynell wrote substantial parts of the first version and although she has not been involved with the other two versions and thus should not be held responsible for any of their flaws, her review of the literature as well as some suggestions for analyses and interpretations has had a positive influence also on the present version.

2 Existence of "major" or "minor" university are mutually exclusive categories. This study does not lend much support to the belief that minor universities provide a fertile ground for small high-tech firms. In communities with a major university 26% of the sampled firms are "high-tech." In communities with only a minor university the corresponding figure is 11%, and in communities with neither a major nor a minor university 9%.

3 A vast majority (88.5%) of the remaining "others" group state that they have other firms as customers (other options being "consumers" and "very mixed"), which should make that group comparable to the high-tech group (92.5%).

4 Ideally, psychological characteristics should be measured with carefully developed and validated instruments. Since this study was designed to cover also a lot of other aspects such an approach was not possible. As concerns the validity of the nAch (need for Achievement) measure, see section 7.3.

5 See chapter 5, note 5.

9. Conclusions and Implications

9.1 Introduction

The main question addressed in this book is: Why do some firms continue to expand and develop, whereas others remain small and behave conservatively? Explanations are sought for in terms of intervening variables, i.e. micro-level variables that lead to differential responses to macro-level structure and change. Because of differences at the individual level, relationships that can be observed at the macro-level may not hold within subgroups (and conversely). If so, knowledge at some disaggregate level is needed.

Under conditions of relative affluence and less than perfect competition, the economic behavior of small firms is to a considerable extent discretionary. If behavior is not forced in a certain direction by external pressure, not only objective conditions but also subjective factors become important.

In this chapter conclusions and implications of the study will be discussed, with a special emphasis on the role of intervening variables. Only a few of the results of the study will be repeated. More detailed results and interpretations can be found in the empirical chapters (Ch. 4-8).

9.2 Conclusions: Some Major Points

The first conclusions are:

- * Most existing small firms are not characterized by being very entrepreneurial; neither do they grow to any considerable extent. Using the term "entrepreneur" for "small firm owner-manager" can thus be quite misleading if we associate entrepreneurship with innovativeness, change-orientation, and alertness to new business opportunities.

- * The results suggest that the main reason for this is not that continued development of the firms would be impossible.

To many a reader these "conclusions" are hardly surprising, and their obverse was certainly not a starting point for the author. The reason for stating them here is twofold: First, most theories in economics and business administration explicitly or implicitly presume, on the part of economic agents, if not entrepreneurship at least a very clear orientation towards economic goals and exploitation of business opportunity. Second, the label entrepreneur has in fact been used interchangeably with "small firm owner-manager" or "business founder" in many previous studies. Determinants or correlates of entrepreneurship may as a consequence have been misinterpreted.

With some degree of confidence, it can also be claimed that the study has shown the following:

- * The multitude of underlying causes of observed entrepreneurial action can be meaningfully reduced to three higher-order factors: Ability, Need, and Opportunity.
- * Objective measures of Ability, Need, and Opportunity are capable of explaining a substantial share of the variation in past growth rates. Need factors appear relatively more important than the other two. The results also leave considerable room for explanations based on the manager's subjectively perceived Ability, Need, and Opportunity.
- * Objective and perception-based measures of Ability, Need, and Opportunity can explain a considerable share of the variation in motivation towards growth (attitudes and aspirations). Again, Need-related factors appear more important than Ability and Opportunity, especially where relationships with attitudes are concerned.
- * The effects of objective measures tend to be similar in the analyses of previous growth and those of growth motivation. This supports the idea that subjective measures of growth motivation have predictive value for subsequent growth.
- * The results also suggest that subjective perceptions contain growth-relevant information that is not captured by objective measures. That is, subjective factors have objective effects of their own.
- * Some signs of direct effects of objective factors on observed entrepreneurship were also found. In particular, the results suggest that Ability may have a stronger positive effect on growth than would be predicted from the effect on growth motivation (attitudes and aspirations).

- * As to growth aspirations, a case can be made that they are primarily based on the expected outcomes of growth (which in turn, to the extent that they can be explained, are influenced mainly by Need factors). The specific dimensions that appear to be most important are the expected consequences of growth for a) private finances, b) employee well-being, c) freedom from external dependence, and d) the manager's ability to keep full supervisory control over the firm's operations.
- * Smith's (1967) delineation of two basic "entrepreneurial types" (Craftsman vs. Opportunistic), who build different kinds of organizations (Rigid vs. Adaptive), found reasonable support in these data. The results of this and other studies dealing with "entrepreneurial typology" suggest that the major differences distinguishing between the two groups can be expressed in a simpler way. Growth orientation or - which this study suggests - continued entrepreneurship or its absence, appears to be the primary divide.
- * The high-tech category differs in the expected manner from the samples of more conventional small firms. That is, the category shows more signs of entrepreneurial activity and attitudes. In absolute terms the high-tech group is not characterized by a spectacular level of entrepreneurship. Rather, the differences between this and the other categories are a matter of degree.
- * Achievement Motivation - as measured here - shows a remarkably consistent positive relation to entrepreneurship issues. Although not being the major explanation of entrepreneurial behavior, the current trend in entrepreneurship research of regarding nAch more or less as a non-issue is clearly refuted by these results.
- * In terms of concrete, easily assessed explanatory variables rather than more general theoretical constructs, this study has, by and large, confirmed earlier findings concerning the following correlates of entrepreneurship (cf. sections 2.3.2 and 2.3.3.1): a) age of firm, b) industry structure and dynamics, c) founder/non-founder, and d) ownership dispersion (partnerships), and to a somewhat lesser degree, or with less consistency, also e) manager's age, f) firm size, and g) education. All these variables were shown to relate to growth and/or growth motivation in the expected way. Many of them also distinguish between more and less entrepreneurial groups in chapters 6 and 8.

In all, the core of the matter appears to be the subjectively perceived situation and its relation to personal goals. A majority of the studied small firm managers seem to have reached a condition where they feel they can choose rather freely whether or not continued development should be pursued.

To many, retaining the status quo is satisfactory. Growth (and possibly other aspects of continued entrepreneurship) is perceived as no longer serving, or even as threatening, important personal goals. This

category of small firm operators - I would say the majority of all small firm owner-managers - thus are relatively conservative in their business attitudes and behavior. Continued entrepreneurship should not be expected from them unless they happen to stumble over a very attractive opportunity or changes in external conditions make the status quo alternative less feasible. As Mandeville (1732) puts it in "The Fable of the Bees:"

All Arts and Crafts neglected lie;
Content, the Bane of Industry,
Makes'em admire their homely Store,
And neither seek nor covet more.

It must be emphasized again that their being satisfied with maintaining the status quo does not mean that easy living is characteristic for them. What it means is that neither external nor internal pressures necessitate anything more than working hard on what they are currently doing.

To others the expected (monetary and non-monetary) gains of continued entrepreneurship exceed the expected costs, and the choices they make therefore favor entrepreneurship. This may be the result of higher initial aspirations or a tendency to shift them upwards over time, which increases the subjective (and possibly objective, because of search) value of the gain side.

Some do not feel that they can choose freely. This is more common when the firm is young and small and thus does not ensure a satisfactory standard of living. Competitive pressure may also force towards continued development because it makes the status quo a non-feasible alternative.

Continued entrepreneurship is thus likely to come about among those for whom this is the preferred or the "only feasible" alternative. The results for the Need factors included in this study concern the question of when such is likely to be the case.

Whether or not the status quo is regarded as satisfactory, Ability and Opportunity also push in the entrepreneurial direction because the merits of the expected outcomes are perceived as higher or obtainable at lower "cost" or risk. In particular, the results in Chapter 6 suggest that a small group that shows a comparatively high degree of continued entrepreneurship is driven more by Ability and Opportunity than by Need.

9.3 Implications for Policy-Making

The purpose of this study has not been to arrive at remedies for very specific practical problems. Rather, it is part of an on-going process of building more general knowledge. For policy-making purposes such knowledge can be used in two ways: a) as the best tentative knowledge available to guide decisions, or b) as suggestions for what specific questions are worthy of closer investigation before decisions are made.

The discussion below is restricted to a policy-making perspective, although the results also has implications for other practitioners with an interest in the development of small firms, such as bankers and venture capital firms. The implications build on results from other studies as well as on this particular one. It must also be emphasized that the implications are inferred from results that did not deal directly with the effects of different policy-measures.

One thing is clear from this and other studies: There is great variety within the small business sector, and this variety is not random. Because of differences between industries, firms, and individuals, differential response to policy measures should be expected. This suggests that selective measures are preferable. If general measures are used, they must be designed so that the response of different groups do not cancel out. This point will be reverted to later.

Support is more likely to pay off if tailored for and directed at those individuals who create and manage firms which survive, grow, and vitalize the market with innovative solutions. The problem is: (How) do we find those individuals? (How) can they be influenced?

While identification of target groups and adaption of policy measures are issues that should be further investigated, some ideas may be drawn from this study.

With respect to support for start-ups the following observations can be made:

- * The average employment (and "market vitalization") created by a new firm within a certain period of time after its initiation is far from independent of its line of business. Neither are, according to other studies, failure rates (cf. section 2.3.2.1). In both cases, high-tech and manufacturing firms appear to be better prospects than retailers.
- * Apparently, relatively few people with higher education go into business for themselves. While their low level of formal education may not be a problem for existing small firm owner-managers, the lack of highly educated people in the group may be a problem for society. Especially the results in Chapter 6 suggest that support for entrepreneurship should aim at stimulating more highly educated people to found their own firms.
- * The results for objective Need suggest indirectly that support is more likely to be effective during national or local recessions or, at the individual level, if directed to people who have lost their jobs or run the risk of doing so (cf. Shapero & Sokol, 1982). The implication of this should be interpreted with caution since it is conceivable that those who are attracted to self-employment for negative reasons are less "entrepreneurial."

There thus seem to exist some easily assessed objective criteria that can be utilized for making support to start-ups more selective and therefore more effective. There are also a number of problems connected with the support to start-ups:

- * There are as yet no good tests that can pick out the best entrepreneurial talents before they have actually proven entrepreneurial.
- * A large proportion of firms started fail.

This indicates that considerable waste of resources may be unavoidable when start-ups are promoted. Worse than that:

- * Business founders may be subject to an optimism bias, i.e. take risks that they would not take if they knew the objective chances of success (cf. sections 2.2.5.2 and 2.3.3.4).
- * It is not unlikely that for the economy, a few great successes

make up for a larger number of small losses (a "small" loss to the economy as a whole possibly meaning disaster for the individual).

Thus, to support start-ups may be "profitable" at the societal level while the most likely outcome for those supported is a loss. This constitutes a moral dilemma. Entrepreneurs must assume some risk, but society should not necessarily encourage their "committing financial suicide."

Those who have founded a firm have shown some entrepreneurship and some ability to manage a firm. Therefore, avoiding the problem of considerable societal and individual loss should be easier when the support concerns existing firms.

As growth issues are what has been dealt with most thoroughly in this study, the discussion of support to existing small firms will focus mainly on the question of continued growth. Two questions will be addressed:

1. Can continued growth of small firms be stimulated?
2. If such is the case, what groups should be approached, and with what kind of measures?

With respect to the first question, it is not self-evident that the answer is a clear yes. This is so for a number of reasons:

- * It is known from this and other studies that for the manager growth may not accord with personal goals of control, independence, and close relations with customers and employees. Rather than risking what they already have for some uncertain and not very important improvement, they may prefer to maintain the status quo if this is a feasible alternative. Support may be appreciated but not have the intended effects.
- * A number of studies suggest that as a firm develops, its manager has to take on new, often managerial, roles. S/he may not be able to make that transition (cf. sections 2.2.3 and 6.1.2).
- * It is known that many people who go into business for themselves value autonomy highly. They may not want support. Furthermore, to the extent that entrepreneurship is an achievement game, general support may actually have a de-motivating effect on those who would be entrepreneurs in the absence of support. If the game is viewed as too easily won, the high achiever is not interested. In

the extreme case, support to "entrepreneurship" breeds a cadre of "entrepreneurs" who expect society to solve all their problems, while the number of "real" entrepreneurs declines (cf. McClelland and Winter, 1969).

These points hardly render every form of support for continued growth inherently non-productive, but they have two implications. First, and again, selective support is likely to be more effective than general support.

Second, active support is a subtle matter. If society wants to promote growth, perhaps passive means should be its major contribution. For example, unnecessary obstacles to growth caused by unintended effects of taxes and legislation could be removed. Business consultants and education/training could be made available at low cost, and bases for network building created.

The policy measures that are most likely to affect a large part of the small firm population are, after all, probably those that make growth more profitable. When taking such measures it is crucial that they are so designed that only those benefit from them, who respond in the intended manner. If designed so that those who prefer to maintain the status quo also get the benefit, responses that run counter to the intended effect may occur.

As concerns selection, this study suggests some groups where it is more likely to find managers having the Need, Ability, and Opportunity characteristics that promote the pursuit of continued growth. Two such (partly overlapping) groups are the "Opportunistic-Entrepreneurs" (Ch. 6) and the "high Achievers" (Ch. 7).

Unfortunately, these labels are not found as titles in any directory. These people are thus not easily spotted or reached, but knowledge about their characteristics can still be used:

- * Knowledge about subjective factors can be used in order to influence self-selection. If societal support for entrepreneurship should be mainly passive, self-selection is a major grouping criterion. Measures can be designed so that they appeal to people who have the sought for subjective characteristics.

- * Such objectively defined groups can be selected that have an over-

representation of managers who share the sought for subjective characteristics.

As to groups defined on objective criteria, industry differences have important implications for growth:

- * For the high-tech group, there is more market opportunity for growth. As the managers in the group are better educated and seemingly less concerned about full ownership and supervisory control, they are also more likely to perceive the available opportunities and to be able to take on a managerial role. The situation for small high-tech firms is also different in that unlike many other types of small firms, they may need to increase size in order to create career possibilities for their employees. Finally, growth of individual firms in this category is more likely to bring societal gain by means of innovation.
- * In contrast, there are other types of small firms that serve non-growing markets, where the rate of innovation is low, and where most managers are unlikely to be willing and/or able to become full-time managers. Low entry barriers and indivisibilities that make growth risky and difficult to bring about in incremental steps may further reduce the willingness to pursue goals for growth.
- * Another objective criterion that could be used for selection is the age of the firm. Clearly, if a firm has existed for more than a decade with the same manager and still is very small, it is not very likely that it would suddenly start to grow. Promotion of entrepreneurship does not necessarily mean changes of real conditions. Whether we like it or not, it is probable that business attitudes can be influenced directly. For this purpose, young firms are an interesting target.
- * The last conclusion in section 9.2 summarizes some additional criteria that are objective but not as easily applied for selection at a central level.

With a local organization for support, more detailed assessments of objective and subjective characteristics can be made. At this level then, not only information about groups but possibly also about specific individuals can be used, and creatures like the "Opportunistic-Entrepreneur" and the "Craftsman" can be distinguished with some degree of confidence. At the very least, those who have a record showing that they are highly entrepreneurial can be fairly easily spotted.

The entrepreneurial talent of such individuals may be taken better care of by encouraging their taking part - e.g. as board members, consultants, or lecturers in courses offered to small firm managers - also in ventures other than those that they initiate by themselves. From a societal point of view it is actually to be regretted that highly entrepreneurial people are preoccupied with the management of firms. People who are capable of running a firm are not very rare. The "real entrepreneurs" may be much more valuable as experts and role models.

Four basic types of support that may encourage small firm growth have been mentioned above:

- * General measures that are likely to have some effect on large parts of the population and a strong effect on sub-parts of it. Examples are adjustments of taxes and legislation that induce economic incentives and reduce the perceived risk associated with growth. Such measures should be designed so as to avoid the possibility that the response of some groups run counter to intentions, i.e. that they actually grow less than they would have otherwise.
- * Provision of resources that are made available to those who select themselves as growth aspirants. Finance, consulting, and education or training may be examples of this kind. These measures should be designed so that they appeal to entrepreneurial individuals.
- * Selection of certain groups that are more likely to respond to stimulation towards growth and to which more direct and specific support could be provided. One example would be to help small high-tech firms getting started on export markets.
- * Influence on attitudes towards growth. To the extent that misconceptions that have a negative influence are widespread, mere information be effective. As to persuasion, young firms are a possible target and personal sources, i.e. repeatedly successful entrepreneurs are credible enough to have an impact.

It must be emphasized again that these suggestions are not based on an evaluation of effects of actual policy-measures used. Instead, they were derived from correlates of actual growth and growth motivation in the sample (and some results from previous studies). Their validity and suitability are not empirical facts, at least not on the basis of this study.

9.4 Suggestions for Research

9.4.1 An Evaluation of the General Framework

Entrepreneurship research suffers from the fact that the phenomena we try to investigate are very complex. When a large number of variables (possibly) have an influence on the studied phenomenon, capturing or controlling the complexity is crucial. This can be done either by restricting the sample to more homogeneous groups or by including them as explanatory or control variables.

Both approaches were applied in this study. The sample was stratified, and a large number of explanatory variables were included. To further reduce the complexity, a conceptualization at a higher level of abstraction was used. I will here attempt to assess the fruitfulness of this approach.

In the analyses of growth and growth motivation, support was found for the General Framework outlined in chapters 1 and 2. The higher-order concepts appeared to be meaningful abstractions and were - with the exception of the measure of Perceived Ability - shown to have substantial separate effects on growth and/or growth motivation.

But already in Chapter 5, and even more so in the remaining empirical chapters, where intervening variables were viewed in a different way, the various explanatory variables appear much more intertwined than suggested by figure 1.1.

Whether or not this greater complexity should be added to the framework depends on for what purpose it will be used. The results do, however, suggest some additional thoughts that might be general enough to deserve inclusion. These are:

- * At least in this sample, Ability and Opportunity are correlated. This may be interpreted in several ways: a) those with more Ability are attracted to Opportunity, e.g. to dynamic industries, b) where there is Opportunity, more Ability on the part of the managers is required, e.g. because the environment is more dynamic and/or the technical complexity higher, or c) where there is Ability, Opportunity is created.

- * In addition to affecting entrepreneurial motivation directly, Need/Perceived Need and Ability appear to have effects on motivation via the perception of Opportunity. These relations are also theoretically reasonable. With more knowledge more opportunity is perceived, and when need is high search for opportunity is triggered. As regards ability this may be the main link to entrepreneurial motivation.

In all, the analyses show strengths as well as weaknesses of the conceptualization in the General Framework. With the bivariate and even with the more conventional multivariate methods used in chapters 6-8, some factors appear to have a stronger and more direct influence than they really have. Chapters 4 and 5 show that systematic analysis of a vast number of direct and indirect relations at the manifest level is made feasible by the use of a framework at a higher level of abstraction and the application of a suitable analysis method.

This is something worth considering in future studies. While the framework guiding the analyses does not have to be this particular one, more abstract reasoning will in many cases add meaning and understanding to established results. Establishing that a relation is significant or not is just a start. Why does the result appear? What does it mean? These are the important questions.

9.4.2 Some Additional Ideas for Future Research

The ideas presented in this sub-section are based not only on the results of the empirical study, but also on what the author thinks he learned in the process of conducting it. In addition to these ideas, also other parts of this chapter may be regarded as implications for future studies.

As regards the definition of entrepreneur/entrepreneurship the author does not have any great hope of moving the "entrepreneurship research community" towards a consensus. Others have tried that. Nevertheless, I would suggest that:

- * It may not be fruitful to associate the terms "entrepreneur" and "entrepreneurship" only with new venture creation, i.e. to use being or not being the founder of a (surviving) small firm as the only measure of entrepreneurship.

* It may not be fruitful to associate these terms only with very spectacular, unexpected events that have a major impact on the economy.

The rationale behind the first point is two-fold: First, a majority of business founders do not remain "entrepreneurial" (cf. section 9.2). Second, concerning explanations for the individual's decision to become a small firm owner-manager, there is one that probably beats every other: Study after study shows a very clear over-representation of people who, although not being inheritors of existing firms, have parents that were self-employed. As to inheritors of firms, they may have made just about the least "entrepreneurial" choice of occupation they possibly could. Their degree of entrepreneurship will have to be established on other grounds.

As regards the second point, Baumol (1983) discusses the "analytic intractability" of (the spectacular form of) entrepreneurship:

"Indeed, we can define entrepreneurial activities residually as those economic acts that are not subject to standardization and obey no systematic and persistent principles. ... One can, of course, discuss particular entrepreneurial acts retrospectively - but if history is not our main concern, how can one analyze or teach acts whose nature is not yet known and whose effectiveness relies to a considerable degree on the difficulty others have in foreseeing them?" (Baumol, 1983, p.30)

Clearly, finding explanations that could have any considerable predictive value for spectacular forms of entrepreneurship is unlikely.

Instead, for the purpose of empirical studies of the underlying causes of entrepreneurial behavior, I would suggest that entrepreneurship is best conceived of as a matter of degree. If founding a firm is "entrepreneurship", founding one that is more innovative, or one that grows large, or founding more firms, is "more of entrepreneurship."

Also, and equally important, it is a multi-faceted phenomenon. For example, in the analyses of "entrepreneurial types" in Chapter 6 the more entrepreneurial cluster(s) has higher scores on all indicators of entrepreneurial behavior, and also on dimensions that are commonly used as explanatory variables in causal analyses. This suggests that repeated start-ups, innovation, and growth are (in part) alternative

manifestations of common underlying causes. The results in Chapter 7, showing at least some positive relation between nAch and the entrepreneurship criteria used, also point in that direction. Therefore:

- * To arrive at any considerable degree of explanatory power in empirical studies, sufficient effort has to be devoted to the measurement of the dependent variable. Preferably, this variable should be composed of several indicators of different aspects of entrepreneurship, such as foundation of (a) firm(s), growth, and innovativeness.

Another issue is the extent to which explanations for entrepreneurial behavior should be sought for in terms of characteristics of the person or of the situation. I would, of course, say both: in the situation as subjectively perceived.

A fairly large number of studies have focused on entrepreneurial personality. In relation to the research efforts, little of general value has been found. There are three characteristics of business founders that in my opinion have some general validity: higher need for Achievement and a more internal Locus-of-Control than the general population, and the fact that they are not characterized by having favorable attitudes towards taking risks (although they may actually be more prone than people in general to take risks as judged by an outside observer). Within the group, nAch and L-o-C also appear to be positively related to performance.

A pure "personality trait" approach is unlikely ever to carry us much farther than that. For good reasons, Low and MacMillan (1988) compare the personality trait approach in entrepreneurship research with the earlier, largely unfruitful, search for general "leadership traits" in the field of organizational behavior. Instead, I would suggest that the knowledge that has been gained so far can be used or further developed in two ways:

- * Simple (i.e. few item), standardized measures of nAch, and L-o-C, or whatever we like to call the psychological realities behind these labels, could be developed and used in future studies as explanatory or control variables (along with other variables that may be the main focus of the study). The results of this study suggest that this is not an impossible task.

* Weiner's (1985a) version of Attribution Theory (Heider, 1958) captures important aspects of nAch, L-o-C, and risk-taking within a more dynamic framework. Therefore the use of that theory may prove helpful for getting further (cf. Bellu, 1988).

A corollary to saying that personality traits may not be the major issue is that situational factors may. This perspective can be utilized more explicitly than has been the case in this book.

One implication is that the subjects in an empirical study of entrepreneurship need not necessarily be practicing "entrepreneurs." If all people have some entrepreneurship, it is the situation that should be manipulated. This perspective also opens up possibilities for experimental and simulation (business games) approaches.

For example, existing or specially designed multi-period computer based business game simulations such as Markstrat could be used (cf. Miller et al, 1982). Between decisions, data on e.g. interpretations of past results, aspirations, risk assessments, and changes in those could be collected and analyzed from a Prospect Theory/Attribution Theory perspective (cf. Davidsson, 1988a). Thus, an artificial longitudinal study with detailed data on objective and subjectively perceived situation could be set up. In addition, a relatively high degree of control over alternative influences would be achieved. This allows for truly causal analyses and examination of dynamics. Personality measures could be included as well.

The main problem of the described approach is the external validity or the theories from experimental research. Therefore, carefully designed longitudinal studies are needed as well. Rare as they are such studies have some important advantages to cross-sectional surveys. They do not, however, circumvent the causality problem altogether. The explanatory variables still cannot be manipulated by the researcher. In addition, mortality (failures, acquisitions, and a growing group of non-participants) reduce the possibilities of arriving at valid results about causality in longitudinal studies.

9.5 On Choices and Their Consequences

In the course of a research process there are, by necessity, a considerable number of choices to be made. I am content with some of those choices. In hindsight, I am less content with other choices and the study would in certain respects be carried out differently if I were to do it all over again. Finally, like in all studies there are certain limitations that little can be done about.

I consider the following as signs of my having made appropriate choices:

- * The use of theory, earlier studies, and a pilot study for arriving at a theoretical framework at a higher level of abstraction, i.e. sufficient emphasis on the early stages of the research process.
- * The sampling frame and the response rates obtained. Compared with most other empirical studies this study is characterized by a better controlled sample.
- * The inclusion of data on possible influences at different levels and collected from different sources.
- * The use of analytical methods, primarily PLS, which permit systematical analysis of this richness of variables in relation to the theoretical framework.
- * The use of several angles of approach and different methods to analyze the same data. While this partly obstructs the possibility of arriving at a clear-cut simplification of the complexity, it also serves as a safeguard against making ill-founded simplifications and makes more probable the detection of unexpected empirical relations.
- * The rich possibilities that the above points give for comparison: with theory, with results of earlier studies, between the effects of different (types of) variables, and between groups.

As to what I would have done differently, the following observations can be made:

- * The study concerns very small firms. The upper size limit leads to exclusion of cases that show more of continued entrepreneurship, i.e. those that outgrow the sampling frame. The fact that managers who run multiple firms have a higher probability of being included in the sample as well as the over-sampling of "high-tech" firms "biases" the sample in the opposite direction relative to a simple random sample of all owner-managers of firms. While the sampling criteria thus have effects in both directions, I would today have included a category of somewhat larger firms.

- * Compared with the richness of dependent and explanatory variables related to growth, the investigation of other aspects of entrepreneurship has been cursory. Data could have been collected with the explicit purpose of making possible a causal modeling approach (e.g. PLS) with "continued entrepreneurship" as the dependent variable.
- * Besides growth (size) aspirations, data on concrete plans for growth would probably have been of value.
- * Other measures could also be improved. As an example, perceived ability is perhaps better captured by questions concerning specific skills (administrative, leadership, negotiating, marketing etc.). A better measure of profitability could also be wished for, than the rather distant proxy used here.
- * Employing the high-tech definition used in Chapter 8 for stratification would have yielded a larger high-tech sample and therefore more reliable results as regards their characteristics.

Some limitations that little could be done about are:

- * The study is cross-sectional. This is a choice that had to be made for practical reasons. It could be argued that a more ideal approach would have been to follow the development of a large number of start-ups over time. Compared with such an approach, firms that discontinue and those that grow very fast have been under-sampled in the present study.
- * The fact that no performance measures could be collected after the interviews and thus not are included also means that every causal interpretation of the results - as regards the causal nature of the relation as well as its direction - can be challenged.
- * The study is exploratory and eclectic in the sense that the general approach has been to use a multitude of theories and results from previous studies to arrive at some more general ideas. These ideas have not been exposed to an acid test. Instead, theory and data have been used in interaction to build from the general ideas more specific knowledge. While results based on tests of very specific hypotheses that are derived from a particular theory may be regarded as more trustworthy, a different approach was chosen because it accords better with the state of knowledge concerning the problem studied.
- * Comparisons with earlier studies are partly obstructed because this field of research relies on some not very well defined concepts, e.g. "high-tech" and - indeed - "entrepreneurship."

To my mind, these are the main limitations of the "necessary" kind. For practical reasons it is also necessary to delimit the areas to cover in questionnaires. This leads to some simplifications. For example:

- * The crudeness of some of the measures. For example, it is not possible to assess personality in a comprehensive way in a study where personality is considered to be but one among many important factors.
- * The assumption that entrepreneurship/small firm management is a "one-man-game." This simplification would be more serious if somewhat larger firms were investigated.
- * Insufficient treatment of the manager's opportunity set in a broader sense, i.e. what s/he could do to achieve his/her personal goals outside of the closed universe of the selected firm.

9.6 A Final Word

In addition to the choices referred to above there were some additional choices that I did not make, but which nevertheless had important consequences. Most important of these is the following: I never chose to become a researcher and not to become an entrepreneur. As subjectively perceived, it just happened. Perhaps this, too, should be regarded as an implication for research and policy-making.

What then is the implication? Is individual behavior determined solely by chance factors and inherently impossible to predict? Is social science research futile?

As Bandura (1982) rightly points out, chance events are in a sense the most important causes of individual behavior. He therefore takes the position that what psychologists should study is the preparedness people have to respond in a certain way to chance events: "Chance favors the prepared mind" (Louis Pasteur, cited from Bandura, 1982).

Predicting my becoming a researcher is asking too much. Six years ago, nobody - including myself - could have done that. However, by assessing my personal characteristics (e.g. "Perceived Need" and "Ability/Perceived Ability") it could have been concluded that I shared many of the characteristics of those people who are likely to become researchers if they happen to face the right Opportunity.

As most people sharing my characteristics do not become researchers, the "correct" individual prediction to make would still be one that turned out to be false in my case. To arrive at a high degree of

accuracy for individual prediction of careers, broadly defined occupational categories would have to be used.

So what social science research can do is to arrive at valid statements about e.g. who is more and who is less probable to exhibit some not too narrowly defined behavior, continued entrepreneurship being one example. This is useful knowledge. That unforeseen situational factors are so important that accurate predictions of very specific individual behavior are generally not possible to make is, to me, a relief. Most of us like it better that way.

General Appendix 1

A. TELEPHONE INTERVIEW QUESTIONNAIRE

(Address Tag) No _____

READ: Hello, my name is from the Economic Research Institute in Stockholm. I would like to talk to the general manager of the firm.....
(If uncertain; the person who "mostly" functions as CEO.

IF NOT AVAILABLE:// Suitable time to call back? Name of target respondent? //

WHEN CONTACT WITH TARGET RESPONDENT HAS BEEN ESTABLISHED:

(write down name) **READ:** Hello, my name is from the Economic Research Institute in Stockholm. I work as an interviewer for a scientific survey concerning small firms. We have sent you a letter concerning this survey. Do you remember receiving it? (has not received = improvised short information). As we wrote in the letter, your firm is one of those included in our random sample. It is essential for the quality of the results that everybody who can participates in the interview. Is it possible for you to answer the questions now?

NO OR UNCERTAIN ----> //- Argue that the survey is important for the diffusion of knowledge about the situation of small firms and about their economic significance AND/OR

(Q1) ZIP _____

(Q2) ARC _____ - Stress anonymity AND/OR

(Q3) LEGF _____ - If suitable - suggest another time for calling back OR

(Q4) INDC _____ - If all else fails - suggest that we mail the questionnaire instead//

(Q5) SIZE _____

YES -----> P.T.O AND START INTERVIEW

TO BE FILLED IN AFTER THE INTERVIEW

NOTES

Your name _____

Resp. name _____

Date of interview ____ / ____ 1986

Appointed time _____

Length of completed int. ____ min.

Alt. telephone No. _____

No. of calls _____

NON-RESPONSE REASON: 1. Refusal 2. Phone No. unknown 3. Discontinued

4. No contact despite 15 calls 5. Unavailable until ____ / ____

6. Other; What? _____

READ: Then we can start the interview. To begin with, I will ask a few questions about the firm and its development.

1. The first question concerns your line of business. Is the firm mainly a goods-producing, a service producing, or a trade firm?

The firm is mainly.....

1. Goods-producing	
2. Service producing ----> GO TO 4!	(Q6)
3. Trade firm -----> GO TO 4!	

QUESTIONS 2 AND 3 CONCERN GOODS-PRODUCERS ONLY!

2. As of today; does the firm produce any products which you have developed yourselves (wait for answer - explanation when needed: production which is not sub-contracting). If yes: About how large a share of your annual turnover is generated by your own products?

1. No (0%) 2. 1-25% 3. 26-50 % 4. 51-100% (Q7)

3. Are you currently developing any new product(s) that you will be able to start selling within the next two years?

1. No 2. Yes (Q8)

4. Do you remember what year this firm was founded? (appr.) Year _____ (Q9)

5. (The questions concerns specific legal forms of companies. Over 90% are limited companies). (Q10)

6. Since when have you been the top manager of this firm? Since _____ (Q11)

7. How large a share of the firm is owned by you and your family?
(If shares with different voting power exist: share of capital;
NOT voting power)

appr. _____ % (Q12)

- 8a. How many employes does the firm have today, if we include owners who work for the company? (wait for answer) Are any of those employed on a part-time or seasonal basis? /In that case: try to estimate the corresponding number of full-time employees on an annual basis!/
appr. _____ people (Q13)

- 8b. About how large do you expect your turnover will be this year?
(Specification if needed: in next annual report)

appr. _____ thousand SEK (Q14)

OR appr. _____ million SEK (Q15)

IF THE FIRM IS YOUNGER THAN ONE YEAR, GO TO 11!

9a. Do you remember how large turnover the firm had 3 years ago; i.e. in 1983? /If the firm didn't exist - ask for turnover the first year in operation./

appr. _____ thousand SEK (Q16)

OR appr. _____ million SEK (Q17)

9b. About how many employees did the firm have 3 years ago, if we include owners who worked for the company? (wait for answer). Were any of those employed on a part-time or seasonal basis? /If so: try to estimate corresponding No. of full-time employees on an annual basis! /If the firm did not exist in 1983 - ask for No. of employees first year in operation! /

appr. _____ people (Q18)

10a. Would you say that the firm's profitability over the last three years has been satisfactory or unsatisfactory? / If the firm is younger than 3 years: since start-up. /

1. Very satisfactory
 2. Rather satisfactory
 3. Neither satisfactory nor unsatisfactory
 4. Rather unsatisfactory
 5. Very unsatisfactory
- (Q19)

10b. Would you consider your own financial pay-off from the firm during the last three years as satisfactory or unsatisfactory? /If younger than 3 years: since start-up. /

1. Very satisfactory
 2. Rather satisfactory
 3. Neither satisfactory nor unsatisfactory
 4. Rather unsatisfactory
 5. Vert unsatisfactory
- (Q20)

READ: I will now turn to some questions about the future and the size of the firm.

11a. Let's imagine that over the next 5 years your firm grows until it has about 25 percent more employees than today, and generates profits that are reasonable considering its size. Would you find such a development mainly positive or mainly negative? (wait for answer) Somewhat, rather strongly, or very strongly XX?

Very strongly negative	Rather strongly negative	Somewhat negative	Neutral	Somewhat positive	Rather strongly positive	Very strongly positive	
1	2	3	4	5	6	7	(Q21)

- 11b. Let's imagine instead that the firm over the next 5 years grows to double its present size (in number of employees), and yields profits that are reasonable considering its size. Would you find such a development mainly positive or mainly negative? (wait for answer) Somewhat, rather strongly, or very strongly XX?

Very strongly negative	Rather strongly negative	Somewhat negative	Neutral	Somewhat positive	Rather strongly positive	Very strongly positive
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1	2	3	4	5	6	7	(Q22)
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12. If the firm develops the way you would like it to, how many employees and how large turnover would the firm have 5 years ahead? As for turnover, we may for the sake of simplicity assume that there will be no inflation.

No. of employees: appr. _____ people (Q23)

Turnover: appr. _____ thousand SEK (Q24)

OR appr. _____ million SEK (Q25)

READ: Try to imagine that your firm already has twice as many employees as today, regardless of whether or not you consider such a development likely or something worth striving for. Of course, running a firm of that size would be different in many respects. I will now ask some questions concerning what you think your situation would be like if the firm were twice as big.

- 13a. The first question concerns workload. Do you think that you, being the manager, would have to work more, less, or just as much as today? (wait for answer) somewhat XX or considerably XX.

Considerably more	Somewhat more	No Change	Somewhat less	Considerably less
----------------------	------------------	-----------	------------------	----------------------

1 2 3 4 5 (Q26)

- 13b. Do you think your work tasks would be different so that you would devote a larger or lesser share of your time at work, as compared with the present, to the kind of work tasks you like best?
(wait for answer) somewhat XX or considerably XX.

Considerably larger	Somewhat larger	No Change	Somewhat lesser	Considerably lesser
1	2	3	4	5

1 2 3 4 5 (Q27)

- 13c. Do you think that your employees would experience a greater or a lesser sense of well-being at work, if the firm were twice as big?
(wait for answer) somewhat XX or considerably XX.

Considerably greater	Somewhat greater	No Change	Somewhat lesser	Considerably lesser
1	2	3	4	5

1	2	3	4	5	(Q28)
---	---	---	---	---	-------

13d. Do you think that you personally would get more, less, or the same amount of "income" and other economic benefits? (wait for answer) somewhat XX or considerably XX.

Considerably more	Somewhat more	No Change	Somewhat less	Considerably less	
1	2	3	4	5	(Q29)

13e. As regards your possibility of keeping full control and surveillance over the firm's operations, do you think they would be greater, lesser, or unchanged? (wait for answer) somewhat XX or considerably XX.

Considerably greater	Somewhat greater	No Change	Somewhat lesser	Considerably lesser	
1	2	3	4	5	(Q30)

13f. Do you think you would experience more or less independence in your relations to customers, suppliers, and lenders? (wait for answer) somewhat XX or considerably XX. /If the respondent spontaneously thinks the effects are different for different categories, try to get the respondent's idea of in which direction "total" independence would be influenced/.

Considerably more	Somewhat more	No Change	Somewhat less	Considerably less	
1	2	3	4	5	(Q31)

13g. Do you think it would be easier or more difficult for the firm to survive a severe crisis if it were twice as big? (wait for answer) somewhat XX or considerably XX.

Considerably easier	Somewhat easier	No Change	Somewhat more diff.	Considerably more difficult	
1	2	3	4	5	(Q32)

13h. Do you think it would be easier or more difficult to keep a high quality of products and services if the firm were twice as big? (wait for answer) somewhat XX or considerably XX.

Considerably easier	Somewhat easier	No Change	Somewhat more diff.	Considerably more difficult	
1	2	3	4	5	(Q33)

READ: I am now going to switch to another kind of questions. They consist of statements which I want you to evaluate. I will read one statement at a time, and then you answer how well or badly the statement accords with your own opinion. (short pause) Here, then, is the first statement:

14a. "How a firm develops is actually determined mainly by factors that the manager cannot control." Does this accord with your opinion? I would like to know whether you think it accords very well, rather well, rather badly, or very badly?

Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
1	2	3	4	5	(Q34)

14b. "I'd rather take a chance and face a loss now and then, than withdraw and afterwards realize that I missed a good business deal." /From now on: read response alternatives when needed only./

Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
1	2	3	4	5	(Q35)

14c. "One of my weaknesses is that I sometimes misjudge my capacity."

Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
1	2	3	4	5	(Q36)

14d. "A capable enterpriser can always run his/her firm at a profit, even if the industry at large has problems."

Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
1	2	3	4	5	(Q37)

14e. "I am always careful and do not take any great risks when doing business."

Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
1	2	3	4	5	(Q38)

14f. "I am probably better than most people at making judgements in uncertain situations."

Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
1	2	3	4	5	(Q39)

READ: I will now turn to the last part of the interview. It concerns yourself and your background.

- (15. Sex; DON'T ASK!!!) 1. Male 2. Female (Q40)
16. What year were you born? In _____. (Q41)
17. Had you been running any other operation of your own prior to founding/taking over this firm (=the selected firm)?
1. No 2. Yes, part-time 3. Yes, full-time (Q42)
18. At present, do you own and manage any other firm beside this one?
1. No 2. Yes, one more 3. Yes, more than one more (Q43)
19. When you went into business for yourself for the first time, did you buy, inherit, or found the firm? /Takeover of family business including payment=inherited (1)./
1. Inherited 2. Bought 3. Founded 4. Other (Q44)
20. Did you have any experience of business management tasks through earlier employment prior to going into business for yourself?
1. No, not at all 2. Yes, to some degree 3. Yes, definitely (Q45)
21. Before yourself, was anybody in your family or any close friend or yours an independent small firm manager?
1. No, nobody 2. Yes, parent 3. Yes, other (Q46)
22. Prior to becoming the manager of this firm, did you have any professional experience from your present industry?
1. No, not at all 2. Yes, to some degree 3. Yes, to a high degree (Q47)
23. What level of education do you have? (completed education)¹
1. Elementary/Primary 2. Trade School etc. 3. Secondary/College 4. University degree (Q48)

¹ The education levels are not possible to translate in a straightforward way. "Elementary/Primary" means 6-9 years of formal education, "Trade school etc." 9-11 years, "Secondary/College" 11-13 years, and "University" a minimum of 13 years (more likely 15 years or more) of formal education.

24. Have you completed any kind of business education or courses in business administration?

- | | | | | |
|-------|----------------------|--------------------------|--------------------------------|-------|
| 1. No | 2. Yes,
course(s) | 3. Yes, college
level | 4. Yes,
university
level | (Q49) |
|-------|----------------------|--------------------------|--------------------------------|-------|

READ: That was the last question. Before closing this call I would of course like to THANK YOU very much for spending the time and participating in the interview - and I would also like to ask for a small additional favor. We would very much like to ask some further questions in a questionnaire which we will send by mail. It will not take very long to complete. Beside questions like the ones I have just asked, that questionnaire deals with your opinions on taxes and labor market legislation, among other things. Do you think you could do us that favor too? //(wait for answer and "use your skills" if needed. After this we will not bother the respondent any more. Valid also for the mail questionnaire is that no written documentation such as annual reports etc. are needed for answering the questions)//.

READ: The questionnaire will arrive by mail within the next few weeks. Please complete and return it as soon as possible - otherwise it easily happens that it will just remain lying somewhere!

Once again THANKS for your co-operation!

TO BE FILLED IN AFTERWARDS:

Completed mail questionnaire?

- | | | | |
|-------|--------|---|-------|
| 0. No | 1. Yes | 2. Answered <u>all</u> questions by mail. | (Q50) |
|-------|--------|---|-------|

B. THE MAIL QUESTIONNAIRE

No _____

QUESTIONNAIRE

(to be completed and returned in the enclosed envelope)

FIRST A FEW QUESTIONS CONCERNING THE CONDITIONS UNDER WHICH THE FIRM OPERATES:

1. Are your firm's customers other firms or individual consumers?
1. Only or nearly only individual consumers
2. Very mixed
3. Only or nearly only other firms. (Q51)
2. About how large a share of the firm's annual turnover is generated by the three largest customers taken together?
1. Less than 25% 2. 25-50% 3. 51-75% 4. More than 75% (Q52)
3. About how large a share of the firm's annual turnover is generated by customers within...
- your home county? appr _____ % (Q53)
- Sweden except home county? appr _____ % (Q54)
- Nordic countries except Sweden? appr _____ % (Q55)
- The rest of the world? appr _____ % (Q56)
- Total 100 %
4. Here is a question about ownership that is more detailed than the one asked in the telephone interview: How large a share of the firm is owned by each of the categories below? (OBS! If there are shares with different voting power: state share of capital; NOT voting power!)
- Yourself and your family (appr.) _____ % (Q57)
- Partner(s) outside family (appr.) _____ % (Q58)
- Other employees; not family (appr.) _____ % (Q59)
- Venture Capital firms and the like. (appr.) _____ % (Q60)
- Others. Who/what? (appr.) _____ % (Q61)

5. What do you think about the profitability of firms in general in your industry in the next few years? Do you believe in high or less high profitability?
1. Very high profitability
 2. Rather high profitability
 3. Rather low profitability
 4. Very low profitability
- (Q62)
6. As the market looks today, would you consider it possible, without adding to your assortment new products or services, to profitably increase the firm's turnover?
1. Yes, definitely
 2. Yes, probably
 3. No, probably not
 4. No, definitely not
- (Q63)
7. Suppose there was room in the market for increased sales (at current prices) of the products/services you sell today, and that you wished to increase sales. How much would you think sales could be increased without increasing the number of employees?
1. None
 2. <10%
 3. 11-25%
 4. 25-50%
 5. >50%
- (Q64)
8. Suppose again that there was room in the market and that you wished to increase sales (at current prices). How much would think that sales could be increased without new premises and/or new machinery?
1. None
 2. <10%
 3. 11-25%
 4. 25-50%
 5. >50%
- (Q65)
9. In the longer run - say 5 years - do you think it will be necessary for the firm's survival, that you develop and launch any new products/services?
1. Yes, definitely
 2. Yes, probably
 3. No, probably not
 4. No, definitely not
- (Q66)
10. Is it common or uncommon in your type of firm that employees "leave the ship" and found their own, similar firms?
- | Very common | Rather common | Neither nor | Rather uncommon | Very uncommon | |
|-------------|---------------|-------------|-----------------|---------------|-------|
| 1 | 2 | 3 | 4 | 5 | (Q67) |
11. About how much capital - equity and borrowed - do you think a person who knows the trade would need to be able to start a small but viable firm in your industry?
- | Less than 50 000 SEK | 50 000- 250 000 | 250 000- 1 million | 1-3 million | More than 3 million SEK | |
|----------------------|-----------------|--------------------|-------------|-------------------------|-------|
| 1 | 2 | 3 | 4 | 5 | (Q68) |

12. Do you think it would be easy or difficult to get loans at present, should your firm need money for an important investment?

Very difficult	Rather difficult	Neither nor	Rather easy	Very easy	
1	2	3	4	5	(Q69)

13. Do you think it would be easy or difficult to find suitable applicants at present, should your firm need to recruit?

Very difficult	Rather difficult	Neither nor	Rather easy	Very easy	
1	2	3	4	5	(Q70)

14. Does your spouse share in the work in your firm? (OBS! Here too, mark just one alternative)

- 0. No, I'm single.
- 1. Yes, s/he works as an employee in the firm.
- 2. Yes, s/he assists at times, when needed.
- 3. Yes, s/he assists indirectly, since s/he does more of the household work, so that I can devote more time and effort to the firm. (Q71)
- 4. No, s/he does not assist; neither directly nor indirectly.

15. It is sometimes suggested that labor market laws, the employment protection law (LAS) in particular, causes problems for firms. Would you say that LAS has caused problems for you as an independent small firm manager?

- 0. No, LAS has not caused any problems for me ----> GO TO 18! (Q72)
- 1. Yes, I have had problems due to LAS ----> CONTINUE 16!

16. Has it ever happened that you have refrained from hiring personnel specifically because of LAS, despite the fact that more personnel was needed?

- | | | | |
|-------|---------------------------------------|--------------------------------------|-------|
| 1. No | 2. Yes, LAS was a contributing reason | 3. Yes, LAS was a determining reason | (Q73) |
|-------|---------------------------------------|--------------------------------------|-------|

17. LAS may cause different kinds of problems. Four examples are given below. Mark with (1) what you consider as the most serious problems with LAS, a (2) for the second most serious, then a (3) and finally a (4) for what you think is the least serious problem.

_____	That LAS and other legislation taken together add up to so many cumbersome rules that you never really know what you may and may not do.	(Q74)
_____	That you cannot fire employees who do not do their job in an acceptable way	(Q75)
_____	That you have to let an employee stay for up to 6 months even when lay-offs are permitted, i.e. when you cannot find work for them.	(Q76)
_____	That possibilities of taking on employees for a trial period are too restricted.	(Q77)

18. And now a question on taxes. We are interested in but one aspect of the tax issue, namely in which way you think taxes affect your willingness to pursue growth of your company. Consider carefully how the taxes and fees below affect your way of doing business. For each of them, try to answer the following question: Would you put more effort, less effort, or just as much/little as today on growth, if this tax were reduced by one fourth? OBS! Encircle one figure on each line!

	Consider- ably more	Somewhat more	No change	Somewhat less	Consider- ably less	
- Employers' fee	1	2	3	4	5	(Q78)
- Inheritance tax	1	2	3	4	5	(Q79)
- Corporate tax (on profits)	1	2	3	4	5	(Q80)
- Property tax	1	2	3	4	5	(Q81)
- Gift tax	1	2	3	4	5	(Q82)
- Income tax	1	2	3	4	5	(Q83)
- Value added tax	1	2	3	4	5	(Q84)
- Profit sharing tax	1	2	3	4	5	(Q85)

AND NOW A FEW QUESTIONS CONCERNING THE ROLE AS SMALL FIRM OWNER-MANAGER:

19. Many things may influence whether or not a small firm owner-manager is satisfied with his situation or not. Some suggestions concerning this are given below. Please mark how important each of the factors below is to you. OBS! Encircle one figure on each line.

	Extremely important	Very important	Rather important	Not very important	Rather un- important	
- To be able to work with the kind of tasks you like best.	1	2	3	4	5	(Q86)
- That your employees have a feeling of well-being and are motivated.	1	2	3	4	5	(Q87)
- That the firm yields high profits.	1	2	3	4	5	(Q88)
- That the firm is not overly dependent on a small number of customers, suppliers or lenders.	1	2	3	4	5	(Q89)
- To be able to control and survey the firm's operations.	1	2	3	4	5	(Q90)
- To have enough time left for family and leisure activities.	1	2	3	4	5	(Q91)
- To have ultimate decision power through ownership.	1	2	3	4	5	(Q92)
- To have good relations with employees.	1	2	3	4	5	(Q93)
- That the firm is stable and can survive crises.	1	2	3	4	5	(Q94)
- That the firm's products and services are of high quality.	1	2	3	4	5	(Q95)
- That the firm makes possible a high standard of living for you and your family, in financial terms.	1	2	3	4	5	(Q96)

20. Among other things, managing a firm means coming up with new ideas, gathering information, and making decisions. In doing this it is sometimes required that various advisors within and outside the firm be contacted. Some examples of such advisors are given below. Please mark how important you think that each of them is as a source of ideas and advice before making important decisions! OBS! Encircle one figure on each line!

1 = Very great importance;
 2 = Rather great importance;
 3 = Neither/nor;
 4 = Rather little importance;
 5 = Very little importance;

0 = No such contact

- Chartered accountant	1	2	3	4	5	0	(Q97)
- Bank contact etc.	1	2	3	4	5	0	(Q98)
- Trade organization and other organizations of co-operation	1	2	3	4	5	0	(Q99)
- Customers	1	2	3	4	5	0	(Q100)
- Employees	1	2	3	4	5	0	(Q101)
- Suppliers	1	2	3	4	5	0	(Q102)
- Spouse; family	1	2	3	4	5	0	(Q103)
- Consultants	1	2	3	4	5	0	(Q104)
- Board (non-family)	1	2	3	4	5	0	(Q105)
- Development funds; other governmental agencies	1	2	3	4	5	0	(Q106)
- Other small firm managers	1	2	3	4	5	0	(Q107)
- Others.	1	2	3	4	5	0	(Q108)

Who/what? _____

21. Finally, there are some statements that I would like you to evaluate. Please mark for each of the statements how well you think it accords with your own opinion. OBS! Encircle one figure on each line.

	Accords very well	Accords rather well	Neither/ nor	Accords rather badly	Accords very badly	
- A growing firm is a continuous chaos and its manager is totally overburdened with work most of the time.	1	2	3	4	5	(Q109)
- I have always wanted to succeed and to accomplish something in my lifetime.	1	2	3	4	5	(Q110)
- That a firm is growing is a sign of capable management.	1	2	3	4	5	(Q111)
- I find it hard to understand people who always keep on striving towards new goals although they have already achieved all the success they could possibly have imagined.	1	2	3	4	5	(Q112)
- A person who leads a growing firm will at the same time develop as a human being and thus gain a richer life.	1	2	3	4	5	(Q113)
- To face new challenges and to manage to cope with them is important to me.	1	2	3	4	4	(Q114)
- One of the most important reasons why firms go bankrupt is that they grow too fast.	1	2	3	4	5	(Q115)
- I am so content with what I have achieved in my life, that I think now I can confine myself to keeping what I already have.	1	2	3	4	5	(Q116)

* * *

Once again THANKS! for your participation. I would finally just like to ask you to glance through the questionnaire once more, checking that you have not forgotten any questions. When you have answered all the questions you can/want to, please mail the return envelope as soon as possible.

General Appendix 2

1. The Sample

The sample was drawn from Statistics Sweden's register of all commercial organizations in Sweden ("Centrala Företagsregistret"). Restrictions were imposed to make sure that only independent, commercial firms were selected. The total sample drawn comprises 540 firms.

Three size strata were specified: 2-4, 5-9, and 10-19 employees, respectively. This size measure in the register is based on pay-roll taxes.

Four industry strata were specified. The industry selection is based on SNI-codes, the Swedish standard for industry classification. The specified industries are:

<u>Industry:</u>	<u>SNI-code</u>	<u>Description:</u>
"Manufacturing"	SNI 381	Manufacturing of metal products
	SNI 382	Manufacturing of machines
	except SNI 3825	Manufacturing of computers and business machines
	SNI 38292	Repair of machines except household appliances.
"High-Tech"	SNI 3825	Manufacturing of computers and business machines
	SNI 3831	Manufacturing of electrical engines, generators, and electrical machine equipment
	SNI 3832	Manufacturing of tele-communications equipment
	SNI 385	Manufacturing of instruments, photographic and optical equipment.
"Repair Services"	SNI 38292	Repair of machines except household appliances
	SNI 38394	Repair of electrical products except household appliances
	SNI 951	Repair of household goods and vehicles.
"Retailing"	SNI 6231	Retail in clothing
	SNI 6232	Retail in home equipment.

In chapter 8, only SNI 3825 and 3832 are considered as "high-tech."

Random samples of equal size were drawn from each size-class/industry stratum. Thus, 12 random sample of 45 cases each were drawn.

External data on industry characteristics and dynamics were collected for subgroups (4- or 5-digit level codes) within each industry stratum. The number of subgroups ("SNI-classes") at the 4- or 5-digit level for which such data were collected is:

Manufacturing:	11
High-Tech	5
Repair Services	7
Retailing	8

2. Frame Sizes, Sample Sizes, and Response Frequencies

Frame size, sample size, and response frequency for the telephone interview and the mail questionnaire, for each stratum are given below.

NUMBER OF EMPLOYEES				
<u>Legend:</u>				
Frame size				
Sample size				
Tel. resp. rate (%)	<u>2-4</u>	<u>5-9</u>	<u>10-19</u>	<u>Total</u>
Mail resp. rate (%)				
INDUSTRY				
Manufacturing	1648	1186	829	3663
	42	44	42	128
	83	84	90	87.5
	67	75	57	66
High-Tech	298	182	105	585
	40	42	40	122
	80	86	67.5	78
	67.5	69	60	65.5
Repair services	1665	668	199	2532
	44	45	44	133
	84	82	79.5	83.5
	57	64	64	62
Retailing	3471	1424	455	5350
	41	43	43	127
	80.5	86	81	83
	61	60.5	56	59
Total	7082	3460	1588	12130
	167	174	169	510
	82	86	81	83
	63	67	59	63

3. Non-Valid Cases

A total of 30 cases have been excluded from all analyses as they do not belong to the target population. Reasons for exclusion were:

	<u>Number of Cases</u>
Firm not independent:	16
Changed line of business	5
Discontinued	6
Not in operation	2
Never existed (error in register)	1
	==
Total	<u>30</u>

4. Reasons for Non-Response

	<u>Number of Cases</u>
Refusal	63
No contact/No telephone	16
Unavailable during interv. per.	3
Wrong person interviewed	5
	==
Total	87 (= 510 - 423)

5. Some Background Data From Interview/Questionnaire Responses:

	<u>Mean</u>	<u>Median</u>	<u>Min</u>	<u>Max</u>
Firm Age (Q9; year founded)	1964	1970	1832	1986
Tenure as CEO (Q11; since year)	1975	1977.5	1938	1986
Resp. (+family) ownership share (Q12; Q57; percent)	75	100	0*	100
Manager's Age (Q41; born year)	1940.5	1942	1909	1963
No. of employees 1983 (Q18)	6.5	5	1	30
No. of employees 1986 (Q13)	8	7	1	40

* Included cases with zero ownership are e.g. prospective inheritors who have already taken over management but not ownership.

Gender (Q40)	Male: 385	Female: 34	Not recorded: 4
Education (Q48)	Elementary	148	35.0%
	Trade School etc.	108	25.5%
	Secondary/College	125	29.5%
	University	40	9.5%
	No answer	2	0.5%

General Appendix 3

DESCRIPTIVE STATISTICS

1. Growth Aspirations

Q23: Size aspired for (5 years ahead); employees	Mean: 10.9 empl. Median: 9.0 s.d. 9.4 min: 0.5 max: 80.0
Q25: Size aspired for (5 years ahead); turnover	Mean: 9.6 MSEK Median: 6.5 s.d. 12.6 min: 0.1 max: 160.0

Computed variables:

Annual growth aspired for; employees	Mean: 5.7% Median: 4.6% s.d. 8.8% min: -31.2% max: 151.6%
Annual growth aspired for; turnover	Mean: 12.8% Median: 9.6% s.d. 23.0% min: -27.5% max: 509.6%

2. Previous Growth (computed variables)

Annual growth rate; employees	Mean: 9.3% Median: 4.0% s.d. 19.8% min: -49.7% max: 225.0%
Annual growth rate; turnover	Mean: 22.3% Median: 14.7% s.d. 28.8% min: -49.9% max: 325.4%

3. Attitude towards Growth

Q21; moderate (25%) growth	1. Very strongly negative	6.2%
	2. Rather strongly negative	8.8%
	3. Somewhat negative	9.3%
	4. Neutral	9.3%
	5. Somewhat positive	19.6%
	6. Rather strongly positive	24.2%
	7. Very strongly positive	22.2%
Q22; substantial (100%) growth	1. Very strongly negative	13.7%
	2. Rather strongly negative	10.8%
	3. Somewhat negative	14.6%
	4. Neutral	10.1%
	5. Somewhat positive	13.2%
	6. Rather strongly positive	18.9%
	7. Very strongly positive	18.7%

Expected outcomes (see General Appendix 1 for exact questions and labels of response categories)

	Very negative	Somewhat negative	Neutral	Somewhat positive	Very positive
Q26	24.6%	15.9%	42.9%	11.1%	5.5%
Q27	15.7%	18.1%	23.4%	30.1%	12.8%
Q28	16.2%	32.9%	38.2%	8.7%	4.1%
Q29	1.7%	2.4%	37.4%	45.6%	12.9%
Q30	13.6%	25.6%	51.0%	5.0%	4.8%
Q31	6.0%	18.1%	48.2%	21.4%	6.3%
Q32	49.4%	24.9%	12.0%	8.9%	4.8%
Q33	11.7%	29.2%	38.5%	13.6%	6.9%

4. Percent of Turnover Obtained in Different Geographical Markets

Home county (Q53)	Mean:	66.8%
	Median:	80.0%
	s.d.	35.5%
	min:	0.0%
	max:	100.0%
Rest of Sweden (Q54)	Mean:	27.1%
	Median:	14.0%
	s.d.	30.0%
	min:	0.0%
	max:	100.0%
Scandinavia except Sweden	Mean:	4.3%
	Median:	0.0%
	s.d.	9.6%
	min:	0.0%
	max:	70.0%
Outside Scandinavia	Mean:	3.0%
	Median:	0.0%
	s.d.	10.2%
	min:	0.0%
	max:	82.0%

5. Other Entrepreneurship Indicators

Q42; Has run other firm(s) prior to the selected firm?

1. No	76.9%
2. Yes, part time	6.0%
3. Yes, full time	17.1%

Q43; Runs multiple firms?

1. No	79.0%
2. Yes, one more	16.0%
3. Yes, 3 or more	5.0%

Q44; Way of becoming small firm manager.

1. Inherited	14.6%
2. Bought	28.2%
3. Founded	55.7%
4. Other	1.4%

Q46; Role model prior to start?

1. No	33.0%
2. Yes, parent(s)	43.3%
3. Yes, other	23.7%

6. Opportunity Perception (see General Appendix 1 for exact questions and labels of response categories)

<u>Question:</u>	<u>Response category:</u>				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
Q62	3.2%	66.2%	28.7%	1.9%	---
Q63	15.4%	44.2%	37.0%	3.4%	---
Q64	11.7%	29.7%	47.2%	8.5%	2.8%
Q65	7.6%	25.9%	39.4%	13.2%	13.9%
Q66	18.0%	39.6%	37.7%	4.7%	---

7. Means/Medians for Stratification Sub-samples

<u>Legend:</u>	M = Manufacturing	s = 2-4 employees
	H = High-Tech	i = 5-9 employees
	S = Repair Services	l = 10-19 employees
	R = Retailing	

Annual (median) growth rates:

	<u>M/s</u>	<u>M/i</u>	<u>M/l</u>	<u>H/s</u>	<u>H/i</u>	<u>H/l</u>	<u>S/s</u>	<u>S/i</u>	<u>S/l</u>	<u>R/s</u>	<u>R/i</u>	<u>R/l</u>
Prev. growth; employees	7.6	6.9	5.2	7.6	14.3	12.1	0.0	0.0	5.7	0.0	4.5	1.9
Prev. growth; turnover	15.3	14.5	17.2	18.4	20.4	22.0	14.7	15.6	12.6	12.1	14.3	12.4
Growth aspir.; employees	2.1	3.4	4.0	9.9	5.9	6.4	5.5	1.6	4.6	4.6	2.4	3.7
Growth aspir.; turnover	8.4	7.9	7.4	17.3	14.9	16.0	10.8	7.2	8.4	10.8	10.1	8.4

Attitudes towards growth and perception of growth opportunity (mean scores):

	<u>M/s</u>	<u>M/i</u>	<u>M/l</u>	<u>H/s</u>	<u>H/i</u>	<u>H/l</u>	<u>S/s</u>	<u>S/i</u>	<u>S/l</u>	<u>R/s</u>	<u>R/i</u>	<u>R/l</u>
Q21	4.3	4.6	4.8	5.2	4.9	4.6	4.5	4.6	4.9	5.4	5.2	5.6
Q22	4.2	3.9	4.1	4.5	4.9	4.0	4.0	3.8	4.5	5.1	4.2	4.7
Q26	2.5	2.4	2.4	2.8	2.6	3.1	2.3	2.3	2.5	3.0	2.5	2.7
Q27	3.0	3.0	2.9	3.0	3.0	2.6	3.1	2.8	3.5	2.6	2.6	3.1
Q28	3.4	3.9	3.8	3.1	3.5	3.5	3.3	3.8	3.6	3.0	3.4	3.5
Q29	2.2	2.3	2.5	2.5	2.2	2.3	2.6	2.4	2.4	2.2	2.2	2.3
Q30	3.1	3.6	3.4	3.2	3.6	3.4	3.3	3.5	3.5	3.0	3.4	3.3
Q31	2.7	3.3	3.3	2.8	3.1	2.7	3.0	3.1	3.1	2.6	2.7	2.9
Q32	4.2	4.3	4.3	4.1	4.1	3.4	4.1	4.5	3.9	3.8	3.8	4.1
Q33	3.3	3.6	3.2	3.0	3.2	3.0	3.4	3.6	3.2	2.9	3.1	3.3
Q62	2.3	2.3	2.2	2.2	2.1	2.3	2.4	2.2	2.4	2.3	2.7	2.2
Q63	2.5	2.4	2.2	2.1	2.3	2.0	2.6	2.5	2.2	2.2	2.4	1.9
Q64	2.6	2.3	2.4	2.4	2.6	3.1	2.3	2.4	2.4	3.2	2.8	3.0
Q65	3.3	2.7	2.6	3.0	3.6	3.3	2.3	2.6	3.0	3.4	2.9	3.4
Q66	2.3	2.3	1.9	2.1	2.0	2.0	2.4	2.4	2.5	2.6	2.5	2.4

Turnover on different markets (medians):

	<u>M/s</u>	<u>M/i</u>	<u>M/l</u>	<u>H/s</u>	<u>H/i</u>	<u>H/l</u>	<u>S/s</u>	<u>S/i</u>	<u>S/l</u>	<u>R/s</u>	<u>R/i</u>	<u>R/l</u>
Q53	75	80	50	63	10	25	100	80	90	90	98	90
Q54	20	15	40	25	55	55	0	20	9	8	1	10
Q55	0	0	5	0	0	5	0	0	0	0	0	0
Q56	0	0	0	0	0	1	0	0	0	0	0	0

Other Entrepreneurship Indicators:

	<u>M/s</u>	<u>M/i</u>	<u>M/l</u>	<u>H/s</u>	<u>H/i</u>	<u>H/l</u>	<u>S/s</u>	<u>S/i</u>	<u>S/l</u>	<u>R/s</u>	<u>R/i</u>	<u>R/l</u>
Q42 (mean)	1.5	1.4	1.3	1.4	1.5	1.4	1.2	1.3	1.3	1.8	1.2	1.6
Q43 (mean)	1.3	1.2	1.5	1.3	1.2	1.4	1.2	1.2	1.3	1.1	1.2	1.4
Founder? (Q44=3; % with- in group being)	71	61	47	81	69	88	41	57	44	52	30	39
Role model? (Q46=1; % with- in group not having had)	31	34	26	41	39	44	43	41	31	21	29	18

References

- Abelson, R.P., E. Aronson, W.J. McGuire, T.M. Newcomb, M.J. Rosenberg and P.H. Tannenbaum (eds.), 1969, *Theories of Cognitive Consistency: A Sourcebook*, Chicago: Rand McNally & Co.
- Adelman, I., J.-B. Lohmöller and C. Taft-Morris, 1987, "A latent variable regression model of nineteenth century economic development," paper presented at the symposium "PLS Model Building: Theory and Application," Frankfurt am Main, Sep. 23-25, 1987.
- Ahlén, A. and M. Jonson, 1982, *Entreprenörskap i Sverige Silicon Valley (Entrepreneurship in Sweden - Silicon Valley)*, Malmö: Liber.
- Aiginger, K., 1987, *Production and Decision Theory under Uncertainty*, Oxford: Basil Blackwell.
- Alderin, R., 1986, *Nyckeln till familjeföretagen. En studie om familjeföretagens ekonomi, skatter och dispositioner (The key to family businesses. A study on finances, taxes, and dispositions of the family businesses.)*, Familjeföretagens Skatteberedning (stencil).
- Allen, D.N., E.J. Bazan and J. Hendrickson-Smith, 1986, "Gritty and flashy entrepreneurship in the Atlanta metropolitan area," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.
- Arrow, K.J., 1983, "Innovation in large and small firms", in: J. Ronen (ed.), *Entrepreneurship*, Lexington, MA: Lexington books, D.C. Heath, pp. 15-28.
- Atkinson, J.W., 1964, *An Introduction to Motivation*, New York: American Book/Van Nostrand/Reinhold.
- Atkinson, R.L., R.C. Atkinson and E.R. Hilgard, 1983, *Introduction to Psychology*, San Diego: Harcourt-Brace-Jovanowich.
- Bagozzi, R., 1984, A prospectus for theory construction in marketing, *Journal of Marketing*, 48, 11-29.
- Bamberger, I., 1986, "The Stratos Project: theoretical bases and some first descriptive results," paper presented at the 4th Nordic Research Conference on Small Business, Umeå/Vasa, June 4-6, 1987.
- Bandura, A., 1982, The psychology of chance encounters and life paths, *American Psychologist*, 37, 747-755.

- Baumol, W.J., 1968, The entrepreneurship in economic theory, *American Economic Review*, 63, 64-71.
- Baumol, W.J., 1983, "Toward operational models of entrepreneurship," in: J. Ronen (ed.), *Entrepreneurship*, Lexington, MA: Lexington Books, D.C. Heath, pp. 29-47.
- Beckérus, Å. and B. Roos, 1985, "Från myt till människa - en socio-psykologisk studie av småföretagarens arbets- och livssituation" (From Myth to Human Being - A Socio-Psychological Study on the Work and Life Situation of the Small Business Manager). Working Paper from the Swedish Council for Management and Work Life Issues (FA-Rådet).
- Begley, T.P. and D.P. Boyd, 1987, Psychological characteristics associated with performance in entrepreneurial firms and smaller businesses, *Journal of Business Venturing*, 2, 79-93.
- Bellu, R.R., 1987, "A behavioral explanation of the differential economic development of the center-north and mezzogiorno of Italy," Working Paper, Kingsborough College of the City University of New York.
- Bellu, R.R., 1988, "Entrepreneurs and managers: are they different?," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Bentler, P.M., 1978. "The interdependence of theory, methodology, and empirical data: causal modeling as an approach to construct validation," in: D.B. Kandel (ed.), *Longitudinal Research on Drug Use: Empirical Findings and Methodological Issues*, Washington D.C: Hemisphere Publications Co, 267-301.
- Berle, A.A. and G. Means, 1932, *The Modern Corporation and Private Property*, New York: Commerce Clearing House.
- Birley, S., 1985, The role of networks in the entrepreneurial process, *Journal of Business Venturing*, 1, 107-117.
- Bolton, J.E., (chairman), 1971, *Small Firms. Report of the Committee of Inquiry on Small Firms*. London: Her Majesty's Stationary Office.
- Borgatta, E.F. and G.W. Bohrnstedt, 1980. Level of measurement - once over again, *Sociological Methods and Research*, 9, 147-160.
- Borland, C., 1974, Locus of control, need for achievement, and entrepreneurship, unpublished doctoral dissertation: University of Texas.
- Boswell, J., 1972, *The Rise and Decline of Small Firms*, London: Allen & Unwin.
- Braden, P., 1977, *Technical Entrepreneurship*. Ann Arbor: University of Michigan.
- Brandstätter, H., 1988, "Becoming an entrepreneur - a question of personality structure?" in: P. Vanden Abeele (ed.), *Psychology in Micro & Macro Economics*, Leuven: IAREP.

- Brockhaus, R.H. Sr., 1980a, Risk taking propensity of entrepreneurs, *Academy of Management Journal*, 23, 509-520.
- Brockhaus, R.H. Sr., 1980b, "Psychological and environmental factors which distinguish the successful from the unsuccessful entrepreneur: a longitudinal study," paper presented for the Academy of Management meeting, 1980.
- Brockhaus, R.H. Sr., 1982, "The psychology of the entrepreneur," in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 39-57.
- Bruno A.V. and T.T. Tyebjee, 1982, "The environment for entrepreneurship," in: C.A. Kent, D.L. Sexton and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 288-316.
- Brynell, K. and P. Davidsson, 1988, *Det nya småföretagandet? En empirisk jämförelse mellan små high-tech företag och konventionella småföretag (The New Type of Enterprising? An Empirical Comparison between Small High-Tech Firms and Conventional Small Firms)*, Stockholm: EFI/Stockholm School of Economics (Research Report).
- Carland, J.W., F. Hoy, W. Boyton and J. Carland, 1984, Differentiating entrepreneurs from small business owners: A conceptualization, *Academy of Management Review*, 9, 354-359.
- Casson, M., 1982, *The Entrepreneur: An Economic Theory*, Oxford, UK: Martin Robertson.
- Cantillon, R., 1756, *Essay sur la Nature du Commerce en Général*, London and Paris: R. Gyles.
- Chell E. and J.M. Haworth, "Explorations of the entrepreneurial personality: a latent class analysis," paper presented at the 2nd Workshop on Recent Research on Entrepreneurship, EIASM, Vienna, Dec. 5-6, 1988.
- Chou, 1974. *Statistical Analysis*, London: Holt, Rinehart & Winston.
- Churchill, N.C., and V.L. Lewis, 1983, The five stages of small business growth, *Harvard Business Review*, 61, 30-51.
- Cliff, N., 1983. Some cautions concerning the application of causal modeling methods, *Multivariate Behavioral Research*, 18, 115-126.
- Coase, R.H. 1937, The nature of the firm, *Economica*, 4, 386-405.
- Cole, A.H., 1965, "An approach to the study of entrepreneurship," in: H.G.J. Aiken (ed.), *Explorations in Enterprise*, Cambridge, MA: Harvard University.
- Collins, O., D. Moore, and D.B. Unwalla, 1964, *The Enterprising Man*, East Lansing: Michigan State University.
- Cooper, A.C., 1973, Technical entrepreneurship: What do we know?, *R & D Management*, 3, 59-64.

- Cooper, A.C., 1982, "The entrepreneurship - small business interface," in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, 193-208.
- Cooper, A.C. and A.V. Bruno, 1977, Success among high-technology firms, *Business Horizons*, 20, 16-22.
- Cooper, A.C., W.C. Dunkelberg and C.Y. Woo, 1986, "Optimists and pessimists: 2994 entrepreneurs and their perceived chances for success," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.
- Cooper, A.C. and W.C. Dunkelberg, 1987, Entrepreneurial research: old questions, new answers, and methodological issues, *American Journal of Small Business*, 11, 1-20.
- Cyert, R.M. and J.G. March, 1963, *A Behavioral Theory of the Firm*, Englewood Cliffs, NJ: Prentice-Hall.
- Darlington, R.B., 1968, Multiple regression in psychological research and practice, *Psychological Bulletin*, 69, 161-182.
- Davidsson, P., 1986, Tillväxt i små företag: en pilotstudie om tillväxtvilja och tillväxtförutsättningar i små företag (Small Firm Growth: a Pilot Study on Growth Willingness and Opportunity for Growth in Small Firms), Stockholm: EFI/Stockholm School of Economics (Research Report; Studies in Economic Psychology No. 120).
- Davidsson, P., 1987a, "Small business managers' willingness to pursue growth: the role of beliefs about outcomes of growth for attitudes towards growth and growth aspirations," in: P. Davidsson, *Growth Willingness in Small Firms: Entrepreneurship - and After?*, Stockholm: EFI/Stockholm School of Economics (Research Report).
- Davidsson, P., 1987b, "Entrepreneurship - and after?: an inquiry into the psychology of small business growth," in: P. Davidsson, *Growth Willingness in Small Firms: Entrepreneurship - and After?*, Stockholm: EFI/Stockholm School of Economics (Research Report).
- Davidsson, P., 1987c, "Need for achievement and entrepreneurial activity in small firms," in: P. Davidsson, *Growth Willingness in Small Firms: Entrepreneurship - and After?*, Stockholm: EFI/Stockholm School of Economics (Research Report).
- Davidsson, P., 1988a, "On the psychology of continued entrepreneurship in small firms," paper presented at IAREP's 13th annual colloquium on economic psychology, Leuven, Belgium, Sep. 28-30, 1988.
- Davidsson, P., 1988b, "Type of man and type of company revisited: a confirmatory cluster analysis approach," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Davidsson, P., 1989, Entrepreneurship - and after?: a study of growth willingness in small firms, *Journal of Business Venturing* (forthcoming issue).

- Davidsson, P., and K. Brynell, 1988, "Small high-tech firms and conventional small firms: similarities and differences," paper presented at the 2nd Workshop on Recent Research on Entrepreneurship, EIASM, Vienna, Dec. 5-6, 1988.
- Deeks, J., 1976, *The Small Firm Owner-Manager: Entrepreneurial Behavior and Management Practice*, New York: Praeger.
- Demsetz, H., 1983, "The neglect of the entrepreneur," in: J. Ronen (ed.), *Entrepreneurship*, Lexington, MA: Lexington Books, D.C. Heath, pp. 271-280.
- Dennis, W.J. Jr., 1986, "Explained and unexplained differences in comparative state business starts and start rates," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.
- Dennis, W.J. Jr., 1988, "Is there life outside high technology? Industries that lead economic development," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Donckels, R., L. Bragard, B. Dupont, P. Michel and M.-P. Demarche, 1987, "New entrepreneurship in Belgium," paper presented at the Workshop on Recent Research on Entrepreneurship in Europe, EIASM, Brussels, May 14-15, 1987.
- Doutriaux, J., 1984, "Evolution of the characteristics of (high-tech) entrepreneurial firms," in: *Frontiers of Entrepreneurship Research 1984*, Wellesey, MA: Babson College.
- Doutriaux, J., 1987, Growth pattern of academic entrepreneurial firms, *Journal of Business Venturing*, 2, 285-297.
- Dubini, P., 1988, "Motivational and environmental influences on business start-ups: some hints for public policies," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Dunkelberg, W.C., and A.C. Cooper, 1982, "Entrepreneurial typologies," in: *Frontiers of Entrepreneurship Research 1982*, Wellesey, MA: Babson College.
- Dunkelberg, W.C., A.C. Cooper, C.Y. Woo, and W.J. Dennis Jr., 1987, "New firm growth and performance," in: *Frontiers of Entrepreneurship Research 1987*, Wellesey, MA: Babson College.
- Egge, K.A., 1987, "Expectations vs. reality among founders of recent start-ups," in: *Frontiers of Entrepreneurship Research 1987*, Wellesey, MA: Babson College.
- Eichner, A.S., 1980, "A general model of investment and pricing," in: J. Nell (ed.), *Growth, Profits & Property*, Cambridge: Cambridge University Press, pp. 118-133.
- Elliott, J.E., 1983, Schumpeter and the theory of capitalist economic development, *Journal of Economic Behavior and Organization*, 4, 277-308.
- Ettinger, J.C., 1983, Some belgian evidence on entrepreneurial personality, *European Small Business Journal*, 2, 44-56.

- Ettinger, J.C. and M. van Weereld, 1988, "The training of entrepreneurs: a key to the success of the creation of business ventures," paper submitted to the 2nd Workshop on Recent Research on Entrepreneurship, EIASM, Vienna, Dec. 5-6, 1988.
- Etzioni, A., 1987, Entrepreneurship, adaptation and legitimation. A macro-behavioral perspective, *Journal of Economic Behavior and Organization*, 8, 175-189.
- Evans, D.S., 1987, Test of alternative theories of firm growth, *Journal of Political Economy*, 95, 657-674.
- Fama, E.F., 1980, Agency problems and the theory of firms, *Journal of Political Economy*, 88, 288-304.
- Fama, E.F. and M.C. Jensen, 1983a, Separation of ownership and control, *Journal of Law and Economics*, 26, 301-325.
- Fama, E.F. and M.C. Jensen, 1983b, Agency problems and residual claims, *Journal of Law and Economics*, 26, 327-349.
- Filley A.C. and R.J. Aldag, 1978, Characteristics and measurement of an organizational typology, *Academy of Management Journal*, 21, 578-591.
- Filley A.C. and R.J. Aldag, 1988, "Venture age and growth within organization types," paper presented at Babson Research Conference on Entrepreneurship, University of Calgary, May 1988 (summary in: *Frontiers of Entrepreneurship Research 1988*, Wellesley, MA: Babson College).
- Finison, L.J., 1976, The application of McClelland's national development to recent data, *Journal of Social Psychology*, 98, 55-59.
- Fishbein, M., and I. Ajzen, 1975, *Belief, Attitude, Intention, and Behavior: an Introduction to Theory and Research*, New York: Addison-Wesley.
- Fleming, M., 1979, The cultural determinants of entrepreneurship and economic development: a case study of Mendoza Province 1861-1914, *Journal of Economic History*, vol. 39, No. 1.
- Ford, J.L., 1983, *Choice, Expectation, and Uncertainty*, Oxford, UK: Martin Robertson.
- Fornell, C., and F.L. Bockstein, 1982, Two structural equation models: LISREL and PLS applied to consumer exit-voice theory, *Journal of Marketing Research*, 19, 440-452.
- Fornell, C., 1986. Multiple Regression (unpublished manuscript).
- Fornell, C., 1987, "A Second generation of multivariate analysis: classification of methods and implications for marketing research," in: M. Houston (ed.), *The Review of Marketing 1987*, American Marketing Association.

- Foxall, G., 1984, Evidence for attitudinal-behavioural consistency: implications for consumer research paradigms, *Journal of Economic Psychology*, 5, 71-92.
- Frey, B.S., 1988, "An ipsative theory of human behavior," paper presented at the Bellagio Conference on Efficiency, Internal Organization and Comparative Management: a Critical Appraisal of the X-Efficiency Paradigm, May 2-6, 1988 (also to appear in *Journal of Economic Psychology*, 1989, forthcoming issue).
- Gartner, W.B., 1983, "An empirical model of the business startup, and eight entrepreneurial archetypes," *Dissertation Abstracts International*, 43, 3374A.
- Gasse, Y., 1982, "Elaborations on the psychology of the entrepreneur," in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 57-61.
- Gibb, A.A., 1986, "Entrepreneurship, enterprise and small business: state of the art?" paper presented at the 4th Nordic Research Conference on Small Business, Umeå/Vasa, June 4-6, 1987.
- Gibb, A.A., 1987, "Entrepreneurship and intrapreneurship: exploring the differences", paper presented at the Workshop on Recent Research on Entrepreneurship in Europe, EIASM, Brussels, May 14-15, 1987.
- Gilad, B., S. Kaish and J. Ronen, 1986, "The entrepreneurial way with information," paper presented at SABE/IAREP International Conference on Economics and Psychology, Kibbutz Shefayim, Israel, July 9-11, 1986.
- Golby, C.W., and G. Johns, 1971, *Attitude and Motivation. Committee of Inquiry on Small Firms, Research Report No. 7.* London: Her Majesty's Stationary Office.
- Hagen, E.E., 1962, *On the Theory of Social Change: How Economic Growth Begins*, Homewood, IL: Dorsey.
- Hartikainen, A., 1986, "Bakgrunder för framgångsrik tillväxt i ett litet eller medelstort företag" (Prerequisites of successful growth of small or mid-sized firms), paper presented at the 4th Nordic Research Conference on Small Business, Umeå/Vasa, June 4-6, 1987.
- Harwood, E., 1982, "The sociology of entrepreneurship", in: C.A. Kent, D.L. Sexton and K.H. Vesper (eds), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 91-98.
- Heider, F., 1958, *The Psychology of Interpersonal Relations*, New York: John Wiley.
- Henkel, R.E., 1976, *Test of Significance. Sage University Paper Series on Quantitative Applications in the Social Sciences*, Beverly Hills and London: Sage Publications.
- Herzberg, F., 1966, *Work and the Nature of Man*, New York: The World Publishing Co.

- Hoad, W.M. and P. Rosko, 1964, *Management Factors Contributing to the Success or Failure of New Small Manufacturers*, Ann Arbor, MI: University of Michigan.
- Hornaday, J.A., 1982, "Research about living entrepreneurs," in: C.A. Kent, D.L. Sexton and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 20-38.
- Hornaday, J.A. and J. Aboud, 1971, Characteristics of successful entrepreneurs, *Personnel Psychology*, 24, 141-153.
- Hull, D.L., J.J. Bosley, and G.G. Udell, 1980, Renewing the hunt for the Heffalump: Identifying potential entrepreneurs by personality characteristics, *Journal of Small Business Management*, 18, 11-18.
- Jackson, J.E. and D.J. Brophy, 1986, "The environment for entrepreneurship," in: *Frontiers of Entrepreneurship Research 1986*, Wellesley, MA: Babson College.
- Jensen, M.C., and W.H. Meckling, 1976, Theory of the firm: managerial behavior, agency costs and ownership structure, *Journal of Financial Economics*, 3, 305-360.
- Johannisson, B., 1986, "Mot en handlingsteori för entreprenörskap" (Towards an action theory for entrepreneurship), paper presented at the 4th Nordic Research Conference on Small Business, Umeå/Vasa, June 4-6, 1987.
- Johannisson, B., 1988, Business formation - a network approach, *Scandinavian Journal of Management*, 4, 83-99.
- Jones, W.D., 1982, Characteristics of planning in small firms, *Journal of Small Business Management*, 20, 15-26.
- Jöreskog, K-G. and D. Sörbom, 1984, LISREL VI. Analysis of Linear Structural Relationships by Maximum Likelihood, Instrumental Variables and Least Square Methods, Uppsala: University of Uppsala.
- Kahneman, D., and A. Tversky, 1979, Prospect theory: An analysis of decisions under risk, *Econometrica*, 47, 263-279.
- Kahneman, D. and A. Tversky, 1984, Choices, values and frames, *American Psychologist*, April, 39, 341-350.
- Katona, G., 1974, Psychology and consumer economics, *Journal of Consumer Research*, 1974, 1, 1-8.
- Katona, G., 1975, *Psychological Economics*, New York: Elsevier.
- Kayser, G., 1987, "Growth problems of young firms," paper presented at the Workshop on Recent Research on Entrepreneurship in Europe, EIASM, Brussels, May 14-15, 1987.
- Kent, C.A., 1982, "Entrepreneurship in economic development - Stage theories," in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 247-262.

- Kent, C., D.L. Sexton and K.H. Vesper, 1982, *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall.
- Kets de Vries, M.F.R., 1977, The entrepreneurial personality: a person at the crossroads, *Journal of Management Studies*, 14, 34-57.
- Kets de Vries, M.F.R., 1985, The dark side of entrepreneurship, *Harvard Business Review*, 63, 160-167.
- Khan, A.M., 1986, Entrepreneur characteristics and the prediction of new venture success, *Omega*, 14, 365-372.
- Kihlstrom, R.E., and J.J. Laffont, 1979, A general equilibrium entrepreneurial theory of firm formation based on risk aversion, *Journal of Political Economy*, 87, 719-748.
- Kirchhoff, B.A., and B.D. Phillips, 1987, "Examining entrepreneurship's role in economic growth," in: *Frontiers of Entrepreneurship Research 1987*, Wellesey, MA: Babson College.
- Kirsch, W., 1983, "Fingerspitzengefühl und hemdsärmeligkeit bei der Planung im Mittelstand," in: W. Kirsch and W. Roventa (eds.), *Bausteine eines strategischen Managements*, Berlin and New York, pp. 399-422.
- Kirzner, I.M., 1979, *Perception, Opportunity, and Profit*, Chicago,: University of Chicago Press.
- Kirzner, I.M., 1982, "The theory of entrepreneurship in economic growth," in C.A. Kent, D.L. Sexton and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 272-276.
- Kirzner, I.M., 1983, "Entrepreneurs and the entrepreneurial function: a commentary," in: J. Ronen (ed.), *Entrepreneurship*, Lexington, MA: Lexington Books, D.C. Heath, pp. 281-290.
- Klofsten, M., P. Lindell, C. Olofsson, and C. Wahlbin, 1988, "Internal and external resources in technology-based spin-offs: a survey," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Knight, F.H., 1921, *Risk, Uncertainty, and Profit*, New York: Houghton Mifflin Co.
- Komvies, J.L., 1972, "A preliminary study of personal values of high technology entrepreneurs," in: A.C. Cooper and J.L. Komvies (eds.), *Technical Entrepreneurship: a Symposium*, Milwaukee: Center for Venture Management.
- Krasner, O.J., 1986, "Australian entrepreneurs: perceptions of problem severity, risk propensities and social responsibility attitudes," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.

- Krasner, O.J. and D. Ray, 1984, "Entrepreneurs in robotics and biotechnology: perception of problems and of risks," paper presented at Babson Research Conference on Entrepreneurship, Georgia Institute of Technology, April 1984.
- Kumar, M.S., 1984, Growth, Acquisition, and Investment. Occasional Paper 56, Department of Applied Economics, Cambridge, UK: University of Cambridge.
- Lamont, L., 1972, What entrepreneurs learn from experience, *Journal of Small Business*, 10, 254-260.
- Langer, E.J., 1975, The illusion of control, *Journal of Personality and Social Psychology*, 32, 311-328.
- Leech, D., 1987, Ownership concentration and the theory of the firm: a simple game-theoretic approach, *Journal of Industrial Economics*, 35, 225-240.
- Leibenstein, H., 1968, Entrepreneurship and development, *American Economic Review*, 63, 72-83.
- Lemar, B., 1982, "Tillväxtvallar i små och medelstora företag" (Growth thresholds in small and mid-sized firms), in: G. Andersson (ed.), *Uppsatser om småföretag (Essays on Small Firms)*, Växjö: Högskolan i Växjö.
- Lessner, M. and R.R. Knapp, 1974, Self-actualization and entrepreneurial orientation among small business owners, *Educational and Psychological Measurement*, 34, 455-460.
- Lewin, K., T. Dembo, L. Festinger and P.S. Sears, 1944, "Level of Aspiration," in: J. McHunt (ed.), *Personality and Behavior Disorders*, Vol. 1, New York: Ronald Press Company, pp. 333-378.
- Litvak, I.A., and C.J. Maule, 1982, "Successful Canadian entrepreneurship and innovation," in: *Frontiers of Entrepreneurship Research 1982*, Wellesey, MA: Babson College.
- Lohmöller, J.-B., 1984, LVPLS 1.6 Program Manual. Forschungsbericht 81.04, Fachbereich Pädagogik. Munich: Hochschule der Bundeswehr.
- Lorrain, J. and L. Dussault, 1988, "Relation between psychological characteristics, administrative behaviors and success of founder entrepreneurs at the start-up stage," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Low, M.B., 1988, "Entrepreneurial commitment: persistence versus obstinacy," paper presented at Babson Research Conference on Entrepreneurship, University of Calgary, May 1988 (summary in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College).
- Low M.B. and I.C. MacMillan, 1988, "Entrepreneurship: past research and future challenges," Working Paper, the Wharton School, University of Pennsylvania.

- Lynn, R., 1969, An achievement motivation questionnaire, *British Journal of Psychology*, 60, 529-534.
- MacCrimmon, K.R. and D.A. Wehrung, 1986, *Taking Risks: The Management of Uncertainty*, New York: The Free Press.
- Maidique, M.A., 1980, Entrepreneurs, champions and technological innovation, *Sloan Management Review*, 21, 59-76.
- Manimala, M.J., 1988, "Strategic management in entrepreneurial ventures: a comparison between the pioneering-innovative (PI) and ordinary entrepreneurs," paper submitted to the 2nd Workshop on Recent Research on Entrepreneurship, ELASM, Vienna, Dec. 5-6, 1988.
- Mandeville, B., 1732, *The Fable of the Bees* (reprint: 1934), London: Oxford University Press.
- Mansfield, E., 1979, *Microeconomics: Theory and Applications*, New York: Norton.
- March, J.G. and G. Sevon, 1988, "Behavioral perspectives on theories of the firm," in: W.F. van Raaij, G.M. van Veldhoven and K.-E. Wärneryd (eds.), *Handbook of Economic Psychology*, Dordrecht, the Netherlands: Kluwer, pp. 368-402.
- Marris, R., 1964. *The Economic Theory of Managerial Capitalism*, London: MacMillan.
- Marris, R., and D.C. Mueller, 1980, The corporation, competition and the invisible hand, *Journal of Economic Literature*, 18, 32-63.
- Marris, R. and A. Wood, 1971, *The Corporate Economy, Growth, Competition and Innovational Potential*, Cambridge, MA: Harvard University Press.
- Martin, A., 1982, "Additional aspects of entrepreneurial history" in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 15-18.
- Maslow, A.H., 1954, *Motivation and Personality*, New York: Harper and Row.
- Mayer, C.S., and S. Goldstein, 1964, "Manual workers as small businessmen," in: A.B. Shostak and W. Gomborg, (eds.), *Blue Collar World*, Englewood Cliffs, NJ: Prentice-Hall.
- McClelland, D.C., 1961, *The Achieving Society*, Princeton, NJ: Van Nostrand.
- McClelland, D.C., 1965, *n* Achievement and entrepreneurship: a longitudinal study, *Journal of Personality and Social Psychology*, 1, 389-392.
- McClelland, D.C., 1966, "That urge to achieve" (reprint: 1975) in: C.M. Baumbach and J.R. Mancuso, (eds.), *Entrepreneurship and Venture Management*, Englewood Cliffs, NJ: Prentice-Hall, pp. 3-10.

- McClelland, D.C. and D.G. Winter, 1969, *Motivating Economic Achievement*, New York: The Free Press.
- McNeil, M.D., S.G. Parker, H.C. Sox Jr. and A. Tversky, 1982, On the elicitation of preferences for alternative therapies, *New England Journal of Medicine*, Vol. 306, No. 21.
- Michell, J., 1986, Measurement scales and statistics: a clash of paradigms, *Psychological Bulletin*, 100, 398-407.
- Miller, D., M.F.R. Kets de Vries and J.-M. Toulouse, 1982, Top executive locus-of-control and its relationship to strategy-making, structure, and environment, *Academy of Management Journal*, 25, 237-253.
- Mill, J.S., 1848, *Principles of Political Economy with Some of Their Applications to Social Philosophy*, London: John W. Parker.
- Miron, D. and D.C. McClelland, 1979, The impact of achievement motivation training on small business, *California Management Review*, 21, 13-28.
- Mok, A.L. and H. Van den Tillart, 1987, "Farmers and small businessmen: a comparative analysis of their careers and occupational orientation," paper presented at the Workshop on Recent Research on Entrepreneurship in Europe, EIASM, Brussels, May 14-15, 1987.
- Morlock, H., 1967, The effect of outcome desirability on information required for decisions, *Behavioral Sciences*, 12, 296-300.
- Mugler, J., 1987, "Entrepreneurship and the theory of the firm," paper presented at the Workshop on Recent Research on Entrepreneurship in Europe, EIASM, Brussels, May 14-15, 1987.
- Murray, H.A., 1938, *Explorations in Personality*, New York: Oxford University Press.
- Musgrave, A., 1981, Unreal assumptions in economic theory: the F-twist untwisted, *Kyklos*, 34, 377-387.
- Nelson R.R. and S.G. Winter, 1982, *An Evolutional Theory of Economic Change*, Cambridge, MA:: The Belknap Press of Harvard University Press.
- Norusis, M.J., 1986, *SPSSx Advanced Statistics Guide*, New York: McGraw-Hill.
- Olofsson, C., 1985, Riskkapitalet och de mindre företagen (Risk Capital and Small Firms), Malmö: Liber/Statens Industriverk (SIND 1985:4).
- Panday, J. and N.B. Tewary, 1979, Locus of control and achievement values of entrepreneurs, *Journal of Occupational Psychology*, 52, 107-111.

- Pennings, J.M., 1982, "Elaborations on the entrepreneur and his environment," in: C.A. Kent, D.L. Sexton, and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 307-312.
- Penrose, E.T., 1959, *The Theory of the Growth of the Firm*, Oxford: Basil Blackwell.
- Peterson, R. and N.R. Smith, 1986, "Entrepreneurship: a culturally appropriate combination of craft and opportunity," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.
- Pfeffer, J., and G.R. Salancik, 1978, *The External Control of Organizations*, New York: Harper and Row.
- Pickle, H.B., 1964, *Personality and Success: An Evaluation of Personal Characteristics of Successful Small Business Managers*, Washington D.C: Small Business Administration.
- Pieters, R.G.M., 1988, "Attitude-behavior relationships," in: W.F. van Raaij, G.M. van Veldhoven and K.-E. Wärneryd (eds.), *Handbook of Economic Psychology*, Dordrecht, the Netherlands: Kluwer, pp. 144-204.
- Pieters, R.G.M., and W.F. van Raaij, 1988, "The role of affect in economic behavior," in: W.F. van Raaij, G.M. van Veldhoven and K.-E. Wärneryd (eds.), *Handbook of Economic Psychology*, Dordrecht, the Netherlands: Kluwer, pp. 108-142.
- Plaschka, G., 1987, "Characteristics of successful and unsuccessful entrepreneurs. A theoretically guided empirical investigation of personrelated and microsocial factors," paper presented at the Workshop on Recent Research on Entrepreneurship in Europe, EIASM, Brussels, May 14-15, 1987.
- Pleitner, H.J., 1984, "Beobachtungen und Überlegungen zur Person des mittelständischen Unternehmers," in: H. Albach and T. Held, (eds.), *Betriebswirtschaftslehre mittelständlicher Unternehmen*, Stuttgart, pp. 511-522.
- Pondy, L.R., 1969, Effects of size, complexity, and ownership on administrative intensity, *Administrative Science Quarterly*, 14, 47-61.
- Ramström, D., 1986, "Bilden av småföretaget - igår, idag, imorgon" (The image of the small firm: yesterday, today, tomorrow), in: S. Stensson (ed.), *Småföretagen - tendenser inför 90-talet* (Small Firms: Tendencies for the 90's). Malmö: Liber.
- Ray, D.M., 1986, "Perceptions of risk and new enterprise formation in Singapore: an exploratory study," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.
- Reynolds, P.D., 1986, "Organizations: predicting contributions and survival," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.

- Ricketts, M., 1987, *The Economics of Business Enterprise*. New Approaches to the Firm, Sussex: Wheatsheaf Books Ltd.
- Robbins, S.P., 1984, *Essentials of Organizational Behavior*, Englewood Cliffs, NJ: Prentice-Hall.
- Roberts, E.B., 1972, "Influences upon performance of new technical enterprises," in: A.C. Cooper and J.L. Komvies (eds.), *Technical Entrepreneurship: a Symposium*, Milwaukee: Center for Venture Management.
- Rogers, E.M. and J.K. Larsen, 1984, *Silicon Valley Fever. Growth of High Technology Culture* (reprint: 1986), New York: Basic Books.
- Ronen, J., 1983, "Some insights into the entrepreneurial process," in: J. Ronen (ed.), *Entrepreneurship*, Lexington, MA: Lexington Books, D.C. Heath, pp. 137-173.
- Ronen, J. (ed.), 1983, *Entrepreneurship*, Lexington, MA: Lexington Books, D.C. Heath.
- Ronen, J., 1986, "Individual entrepreneurship and corporate entrepreneurship: a tentative synthesis," Working Paper, New York University.
- Rotter, J.B., 1966, Generalized expectancies for internal versus external control of reinforcement, *Psychological Monographs: General and Applied*, 80, 609.
- Roure, J.B. and M.A. Maidique, 1986, Linking prefunding factors and high-technology venture success: an exploratory study, *Journal of Business Venturing*, 1, 295-306.
- Routamaa, V., and J. Vesalainen, 1987, Types of entrepreneur and strategic level goal setting, *International Small Business Journal*, vol. 5, No. 3.
- Sandburg, W.R. and Hofer, C.W., 1987, Improving new venture performance: the role of strategy, industry structure, and the entrepreneur, *Journal of Business Venturing*, 2, 5-28.
- Scheinberg, S. and I.C. MacMillan, 1988, "An 11 country study of motivations to start a business," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Scherer, F.M., 1980, *Industrial Market Structure and Economic Performance*, Boston: Houghton Mifflin Company.
- Scherer, F.M., 1984, *Innovation and Growth: Schumpeterian Perspectives*, Boston: The MIT Press.
- Schumpeter, J.A., 1934, *The Theory of Economic Development. An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*, Cambridge, MA: Harvard University Press.
- Schumpeter, J.A., 1976 (1943), *Capitalism, Socialism, and Democracy*. London: Allen & Unwin.

- Sexton, D.L. and N. Bowman, 1985, The entrepreneur: a capable executive and more, *Journal of Business Venturing*, 1, 129-140.
- Sexton D.L. and R.W. Smilor (eds.), 1986, *The Art and Science of Entrepreneurship*, Cambridge, MA: Ballinger.
- Shackle, G.L.S., 1979, "Imagination, formalism, and choice," in: M.J. Rizzo (ed.), *Time, Uncertainty, and Disequilibrium Exploration of Austrian Themes*, Toronto: Lexington Books.
- Shanklin, W.L. and J.K. Ryans Jr., 1984, Organizing for high-tech marketing, *Harvard Business Review*, 62, 164-171.
- Shapero A. and L. Sokol, 1982, "The social dimensions of entrepreneurship," in: C.A. Kent, D.L. Sexton and K.H. Vesper (eds.), *Encyclopedia of Entrepreneurship*, Englewood Cliffs, NJ: Prentice-Hall, pp. 72-90.
- SHIO, 1986, "Småföretagen skapar framtidens sysselsättning" (Small firms create the employment of the future?), Press Release from SHIO-Familjeföretagen and Sveriges Föreningsbankers Förbund, April 30, 1986.
- Simon, H., 1955, A behavioral model of rational choice, *Quarterly Journal of Economics*, 69, 99-118.
- Simon, H.A. and A.C. Stedry, 1972, "Psychology and economics," in: G. Lindzey and E. Aronson (eds.), *The Handbook of Social Psychology* Vol. 5, 2nd ed., Reading, pp. 269-314.
- Simyar, F., J. Doutriaux and K. Argheyd, 1988, "Characteristics of founders and the growth of entrepreneurial high-tech canadian manufacturing firms," paper presented at the Conference of Small High-Tech Firms in Small Countries, EIASM, Brussels, June 27-29, 1988.
- Slovic, P., 1966, Value as a determiner of subjective probability, *IEEE Transactions in Human Factors in Electronics HFE-7*, 22-28.
- Smith, A., 1976 (1776), *The Wealth of Nations*, Chicago: The University of Chicago Press.
- Smith, N.R., 1967, *The Entrepreneur and his Firm: the Relationship between Type of Man and Type of Company*, East Lansing: Michigan State University.
- Smith, N.R. and J.B. Miner, 1983, Type of entrepreneur, type of firm, and managerial motivation: implications for organizational life cycle theory, *Strategic Management Journal*, 4, 325-340.
- Smith, N.R., and J.B. Miner, 1984, "Motivational considerations in the success of technologically innovative entrepreneurs," in: *Frontiers of Entrepreneurship Research 1984*, Wellesey, MA: Babson College.
- Smith, N.R., and J.B. Miner, 1985, "Motivational considerations in the success of technologically innovative entrepreneurs: extended sample findings," in: *Frontiers of Entrepreneurship Research 1985*, Wellesey, MA: Babson College.

- Smith, N.R., J.S. Bracker, and J.B. Miner, 1987, "Correlates of firm and entrepreneur success in technologically innovative companies," in: *Frontiers of Entrepreneurship Research 1987*, Wellesey, MA: Babson College.
- Solow, R., 1971, "Some implications of alternative criteria for the firm," in: R. Marris and A. Wood (eds.), *The Corporate Economy. Growth, Competition and Innovational Potential*, Cambridge, MA: Harvard University Press.
- Stanworth, M.J. and J. Curran, 1973, *Management Motivation in the Smaller Business*, Epping, Essex: Gower Press.
- Statens Industriverk, 1985, *Mindre företags ekonomiska utveckling (Financial Development of Small Firms)*, Malmö: Liber/Statens Industriverk (SIND 1985:6).
- Stevens, S.S., 1946, On the theory of scales of measurement, *Science*, 103, 667-680.
- Strumpel, B., 1974, "Economic well-being as an object of Social Measurement," in: B. Strumpel (ed.), *Subjective Elements of Well-being*, OECD.
- Stuart, R.W., and P.A. Abetti, 1986, "Field study of start-up ventures -- part II: predicting initial success," in: *Frontiers of Entrepreneurship Research 1986*, Wellesey, MA: Babson College.
- Suppes, P., and J.L. Zinnes, 1963. "Basic measurement theory," in: R.D. Luce, R.R. Bush, and E. Gerlauer (eds.): *Handbook of Mathematical Psychology Vol. 1*, New York: Wiley, pp. 3-76.
- Teach, R.D., Tarpley, F.A. Jr. and R.G. Schwartz, 1985, "Who are the microcomputer software entrepreneurs?" in: *Frontiers of Entrepreneurship Research 1985*, Wellesey, MA: Babson College.
- Thaler, R., 1980, Toward a positive theory of consumer choice, *Journal of Economic Behavior and Organization*, 1, 39-60.
- Tyebjee, T.T., 1987, Behavioral biases in new products forecasting, *International Journal of Forecasting*, 3, 393-404.
- Tyebjee, T.T., and A.V. Bruno, 1982, "A comparative analysis of California startups from 1978 to 1980," in: *Frontiers of Entrepreneurship Research 1982*, Wellesey, MA: Babson College.
- Unni, V.K., 1987, "Risk considerations among French entrepreneurs and non-entrepreneurs," in: *Frontiers of Entrepreneurship Research 1987*, Wellesey, MA: Babson College.
- Utterback, J.M. and W.J. Abernathy, 1975, A dynamic model of product and process innovation, *Omega*, 3, 639-656.
- Utterback, J.M., and G. Reitberger, 1982, "Technology and Industrial Innovation in Sweden: A Study of New Technology Based Firms," Stockholm: Center for Policy Alternatives/Styrelsen för teknisk utveckling.

- Vanden Abeele, P., 1988, "Economic agents' expectations in a psychological perspective," in: W.F. van Raaij, G.M. van Veldhoven and K.-E. Wärneryd (eds.), *Handbook of Economic Psychology*, Dordrecht, the Netherlands: Kluwer.
- Van de Ven, A.H., R. Hudson and D.M. Schroeder, 1984, Designing new business startups: entrepreneurial, organizational and ecological considerations, *Journal of Management*, 10, 87-107.
- Van Raaij, W.F., 1981, Economic psychology, *Journal of Economic Psychology*, 1, 71-83.
- Van Veldhoven, G.M., 1981, "Economic psychology: a new discipline", in: W. Molt, H.A. Hartman and P. Stringer (eds.), *Advances In Economic Psychology*, Heidelberg.
- Vesper, K.H., 1980, *New Venture Strategies*, Englewood Cliffs, NJ: Prentice-Hall.
- Vroom, V.H., 1964, *Work and Motivation*, New York: John Wiley.
- Wahlund, R., 1988. Perception of and Unreasonableness of Marginal Tax Rates When Income Tax Rates Are Reduced, Stockholm: EFI/Stockholm School of Economics (Research Report).
- Wärneryd, K.-E., 1981, "The individual and the economy," in: W. Molt, H.A. Hartman, P. Stringer (eds.), *Advances in Economic Psychology*, Heidelberg.
- Wärneryd, K.-E., 1988a, "Economic psychology as a field of study" in: W.F. van Raaij, G.M. van Veldhoven and K.-E. Wärneryd (eds.), *Handbook of Economic Psychology*, Dordrecht, the Netherlands: Kluwer, pp. 2-41.
- Wärneryd, K.-E., 1988b, "The psychology of innovative entrepreneurship", in: W.F. van Raaij, G.M. van Veldhoven and K.-E. Wärneryd (eds.), *Handbook of Economic Psychology*, Dordrecht, the Netherlands: Kluwer, pp. 404-447.
- Wärneryd, K.-E., P. Davidsson and R. Wahlund, 1987, Some Characteristics of Swedish Self-Employed, Stockholm: EFI/Stockholm School of Economics (Research Paper).
- Watkins, D.S., 1973, Technical entrepreneurship: A cis-Atlantic view, *R & D Management*, 3, 65-70.
- Weber, M., 1930, *The Protestant Ethic and the Spirit of Capitalism*, London: Allen & Unwin.
- Weiner, B., 1985a, "Spontaneous" causal thinking, *Psychological Bulletin*, 87, 74-84.
- Weiner, B., 1985b, An attributional theory of achievement motivation and emotion, *Psychological Review*, 92, 548-573.

- Weiner, B., I. Frieze, A. Kukla, L. Reed, S. Rest, and R.M. Rosenbaum, 1972, "Perceiving the causes of success and failure," in: E. Jones, D. Kanouse, H. Kelley, R. Nisbett, S. Valins and B. Weiner (eds.), *Attribution: Perceiving the Causes of Behavior*, General Learning Press, pp. 95-120.
- Welsch, H.P. and E.C. Young, 1982, The information source selection decision: the role of entrepreneurial personality characteristics, *Journal of Small Business Management*, 20, 49-57.
- Williams, E.E., 1983, Entrepreneurship, innovation and economic growth, *Technovation*, 2, 3-15.
- Williamsson, O.E., 1975, *Markets and Hierarchies*, New York: The Free Press.
- Wold, H., 1965, A fixed-point theorem with econometric background, I-II, *Arkiv för Matematik*, 6, 209-240.
- Wold, H., 1982. "Models for knowledge." in: J. Gani (ed.), *The Making of Statisticians*, New York: Springer-Verlag, pp. 189-212.
- Wold, H., 1986, "Introduction to the second generation of multivariate analysis." Preliminary manuscript for: *Theoretical Empericism: A General Rationale for Scientific Model-Building*, Washington and New York: Paragon House Publishers.
- Woo, C.Y., A.C. Cooper and W.C. Dunkelberg, 1988, "Entrepreneurial typologies: definitions and implications," in: *Frontiers of Entrepreneurship Research 1988*, Wellesey, MA: Babson College.
- Ylinenpää, H., 1988, *Företagstillväxt: en studie av orsaker till tillväxt i små och medelstora tillverkande företag i en perifer region*, (Company Growth: a study of underlying causes of growth in small and mid-sized manufacturing firms in a peripheral region), Luleå: IES Centre for Business Studies, Högskolan i Luleå.

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