New Venture, Survival, Growth

Continuance, Termination and Growth of Business Firms and Business Populations in Sweden During the 20th Century

Marcus Box
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Till Maria och Alva
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Marcus Box
1. Introduction

Entrepreneurship and small business research has become an established international and multidisciplinary field of research. Several studies about market conditions for survival and growth of existing firms as well as newly-founded firms have been carried out from particularly the last decades of the past century and onwards. Both scientifically and politically, (new) small businesses are being given increasing attention. A view that often dominates is that small new businesses are important economic players since they create the main share of genuinely new job opportunities. Thereby, increasing new firm-formation and improved growth conditions for small businesses has come to be a cornerstone in economic policy. The rise of the multidisciplinary field of entrepreneurship and small business research has been regularly explained by economic and structural crises in the 1970’s and 1990’s – new venture creation and small firm growth was perceived as one way of coming to grips with macroeconomic problems. In that respect, much debate has been about barriers to and driving forces of enterprising, firm growth and firm survival. Empirical research has ranged from studies on societal and sectoral levels down to micro level studies on businesses and entrepreneurs.¹

The Dissertation: Aim, General Setting, and Delimitations

The aim with the present study is to analyze change and development in and between populations of firms. I intend to study change or development on both aggregate levels as well as at the micro, or firm level. The concept ‘development’ includes a rather wide spectrum of definitions: it concerns upturns and downturns in populations of firms, the founding of new populations, as well as the selection of firms in those business populations. It also embraces internal processes or events over the life of the business such as organizational change as concerns ownership and management. And, fur-

¹ See for instance Landström (2005) for a historical-doctrinal review of the development of the research field.
thermore, it involves growth processes and behaviors – or lack of such processes – on both the firm and aggregate level.

Within the context of this study, development refers to the growth of firms, as well as their ability to continue as business units or to survive. These two conceptions constitute the cornerstone of the dissertation’s general setting. In the first case, how and when firms grow, stagnate or contract; in the second case how long firms survive and when they cease operations or are terminated. Even though these conceptions at first may seem to be two rather opposite phenomena – i.e. growth (‘success’) and termination (‘failure’) – they are not in my point of view mutually exclusive. Nor is the one conception, growth, at all times a prerequisite for the fulfilment of the other, survival. Business organizations do not necessarily have to grow in order to survive. Surviving firms can, moreover, be viewed as ‘failures’ even though they continue operations. And so on.

We can therefore – perhaps in many ways depending on research traditions – think of or define the business organization from different points of view, such as economic, social, cultural, or institutional. An analysis of the entry, development and – if so is the case – the fall of firms can without doubt be performed with different methodological and theoretical approaches. The research that has evolved around the dynamics of enterprising activity, growth and failure bears witness to the existence of quite a vast body of scientific production. In that respect the growth and survival of business organizations is a thoroughly studied area, especially if we here assume a broad perspective and include research performed in economics, economic history and business administration, including adjacent disciplines such as sociology.

A basic yet much-debated subject in this branch of research is why firms and organizations – or at least why some of them – grow, why some are terminated, as well as when in time or when in a firm’s life cycle these events take place.2 The fundamental research question and aim in my study is therefore in what way it is possible to identify a relationship between, on the one hand, the development of individual businesses and business populations, and, on the other, what we broadly speaking could label structural and environmental conditions, events or phenomena. Therefore, my ambitions are not only confined to an analysis of the relationship between the micro and aggregate behavior of firms (or to the research objects) as such: events or phenomena that occur ‘outside’ the scope or beyond the influence of business firms, and their effects on the development of those businesses, is additionally an integral part of the dissertation. Here have macro or aggregate events

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2 Nonetheless is it, as for instance pointed out by Reynolds (2005), nearly impossible to speak of a ‘universally accepted’ indicator as concerns firm development over the business life course (or life cycle); the basic stages – such as initiation, entry, growth and death – perhaps remain appealing merely as general concepts.
or structures in theory a plausible effect on the growth and survival possibilities of firms.  

In that respect, the connection between firm/micro level and aggregate level phenomena is to some extent twofold. One part involves the interrelatedness between, on the one hand, an individual firm’s development and continuation and, on the other, its development on more aggregate pattern on the population or, rather, the generation level. Another part concerns whether and to what extent events and factors which we normally conceive of as structural as well as exogenous or external to the individual business coincide or are related to the development of businesses and business populations.

Researching the Growth and Survival of Firms

This rather broad or general setting discussed above is a research topic frequently discussed in the fields of entrepreneurship, (small) business, and business history in general. A central, classical question in the social sciences concerns the relationship and interaction between, on the one hand, the scope and possibilities of the individual human being, or a distinct organization, and, on the other, what we broadly speaking could label as the environment or structure and how the latter affect the former. Thus, micro and macro perspectives are considered to be of different importance and valued differently within as well as between different social science disciplines. In some cases they are considered almost incompatible.

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3 I would like to point out here that the conceptions ‘micro’ and ‘macro’ (or aggregate) are not the actual objects of investigation but rather the development of firms and populations of firms. The conceptions of micro and macro are furthermore quite difficult to define and delimit, and they rather stand as general concepts in a loosely held theoretical world. Generally speaking refers ‘micro’ in this particular circumstance to the firm-level while ‘macro’ bears reference to a more aggregate level, which of course could embrace the aggregate behavior or pattern of a population of micro units or, for that sake, markets, institutions, or a national economy.

4 Another focus would naturally be to what extent single individuals or groups of them – humans as well as organizations – affect the aggregate, macro development or other courses of events such as institutions. This is discussed to some extent below even though this particular research approach is not in focus in the present study. It is nonetheless reasonable to assume that particularly large corporations or organizations can exert an influence on the institutional and economic environment, e.g. legislation. In a general sense, however (for example as concerns the ‘average’ small business), is the situation probably the opposite. Starbuck has described the relationship between the organization and the environment as: “…organizations drift along, perceiving that they are succeeding in stable environments, until they suddenly find themselves confronted by existence-threatening crises”; Starbuck (1983), p. 100.

5 Modern (neoclassical) theory in economics can here perhaps serve as an example. Micro behaviors and phenomena cannot simply be aggregated up to the macro level. Thereby, even if it is reasonable – this is at least my own opinion – that the ‘sum’ of micro events and behaviors represent the macro picture, lies the difficulties here in determining how to sum up these micro behaviors.
In other traditions, the micro and macro perspectives have been viewed as complementary. For example, in business history, economic history, and for some economists, a ‘merger’ between the micro and macro perspectives has been regarded as a desirable yet difficult research goal. The overall paradigm is that there is an interaction between individual businesses and their environment, or a relationship between the actions and behaviors of micro units and changes in aggregates.6

Similarly, researchers in entrepreneurship and small business have called for an increased integration of different perspectives and approaches regarding how, why, to what extent, and under what particular conditions firms are founded, developed and terminated. In theoretical circumstances it is regularly asserted here that the environment – often quite loosely described in terms of economic stability, industry-specific characteristics, and socio-cultural and political factors – imprint and affect the actions and behaviors of micro units, and (which partly follows from above) therefore that there is an evident interaction or relation between micro and macro events. Studies over the post-entry performance of firms have nevertheless to a lesser extent considered the relation between firm survival and growth and aggregate conditions and fluctuations.7

But firms, new or old, do not exist in a vacuum – they are subjected to the pressures and constraints of their environments. Simplistic conceptions of venture outcomes that classify them as successes and failures can have different implications for more aggregate levels of analysis. Success on the firm level – for instance survival and growth – may under certain circumstances, or during specific periods, result in negative outcomes on more aggregate levels and vice versa. Thus firm success could translate into economic regress as well as success on a societal level. From an evolutionary approach, the phenomena of process and context (strategy, behaviors, and environment) are interacting and drive the outcome of entrepreneurial efforts. Therefore an integration of context and process is considered as a major challenge.8

6 This is as an example discussed by Dahmén (1992) and Ullenhag (1992). See also Schön (1995). Another example is the perspective advocated by Gunnar Eliasson; see for instance Eliasson (2005).

7 Even if there has been much research carried out as concerns aggregate determinants, such as innovative activity, market concentration or ‘industry behavior’, when it comes to business growth and survival, cyclical or macroeconomic factors have received less attention. Often rather short time-periods are studied, which e.g. do not cover a full business cycle. For a discussion, see Boeri and Bellmann (1995).

8 See for instance Aldrich and Martinez (2001) p. 44. Furthermore, Per Davidsson has addressed this issue: e.g. a failure at the firm-level (say, an early termination) can in some circumstances drive market processes and inspire followers; hence the entrepreneurial process is not completed, in Davidsson’s words, but this specific firm as such contributes, perhaps, to the entrepreneurship phenomenon. Davidsson (2004), pp. 12-14. For a discussion, see also Baumol (1990).
This particular issue has to some extent also been addressed from two sides: one that takes a starting point in venture level events and outcomes and the effects or gains of such events at a macro or societal level, for instance which types of (new) firms that create new jobs;\(^9\) another that rather departs from a macro-environmental, or more aggregate, level and directs attention towards the consequences for micro level events and behavior.\(^{10}\)

This does not imply that entrepreneurship and small business research (or, for that matter, business history) depreciates the role and actions of individual business owners/managers or entrepreneurs, or that there has been a balance between micro and macro/aggregate approaches. On the contrary, there has been a tradition of strong emphasis on the micro or firm level as well as on the individual. In that respect, the individual business firm and the entrepreneur – the two are also often mixed in both empirical and theoretical circumstances – are dominating objects of investigation. Thus, the actions, motives and traits of the entrepreneurs have frequently been studied in this research field, and this tendency in the main body of research could perhaps explain why attention has been drawn towards the need for alternative methods and new perspectives.

Behaviors, patterns or causal links that seem obvious when observed on the micro level or when particular types of empirical data are employed in the analysis – for instance the use of interviews and questionnaires – may with an aggregate or macro approach, or with the use of alternative data (or when we address the issue from a longer perspective of time) give a different or even contradictory picture. Such contradictions, or, rather, such complexi-
ties can also lead to the formulation of new research questions and a necessity for considerations of research designs.\textsuperscript{11}

Behind observed courses of events – for instance aggregate new firm-formation and firm terminations, or for that matter the success, survival or discontinuance of individual businesses – lie rather complex phenomena and interrelationships. This acknowledged complexity has lead to a call for more empirically oriented studies that address such issues. Theoretical assumptions of the interrelatedness between the environment and the firm(s) must, it has been stated, be counterbalanced by empirical results. Thus, multi-level designs are identified as one key element for advancements in entrepreneurship and small business research. Here are both micro (firm) and macro – population, societal – aspects viewed as significant components in the analysis.\textsuperscript{12} It does however seem that there has been a tendency towards an increasing share of micro-oriented studies over past years while aggregate research has diminished. At the same time, the body of studies with a micro-to-macro approach has stagnated.\textsuperscript{13}

Moreover, the time-dimension as such has received increasing recognition. One pertains to research designs and how change in aggregates and in individual micro units generally is studied. Particularly longitudinal studies are here identified as fundamental for advances in the area of entrepreneurship and small business. Collecting empirical data over multiple time-periods – which would distinguish the longitudinal method – is inherently more time consuming than gathering cross-sectional data. Even so many studies have used cross section data which often are considered to be entirely unsuitable in many instances – for instance as concerns causal analyses explaining business growth.\textsuperscript{14}

Nonetheless, even if there is rising awareness as regards both the relationship between the business and its environments (and structures), and the necessity of longitudinal studies, have another – and perhaps somewhat deviating – body of research recognized a research agenda dominated by youth and smallness. This is an observation that I to some great extent agree with and which also at least partially concurs with the focus or setting in economic history and business history, namely the longer perspective of time.

\textsuperscript{11} For instance did Starbuck and Mezias (1996) review a larger number of empirical studies of the accuracies of managers’ perceptions of their environment (in interview/questionnaire research). Seldom were there in most of the research any discussions about validity although it was clear that the objective reality might not always go hand in hand with the (managers’) subjective reality. Thus, people’s perceptions may be unrealistic, and if perceptions contain errors then research describes errors. Furthermore, people tend to miscollect when in time an event took place, or forget them. Thus, retrospective studies might not give the best data for analyzing causes and effects. See for instance Taris (2000).

\textsuperscript{12} Such an approach has been called for by for example Shane (2003), see pp. 145-160.

\textsuperscript{13} See Davidsson and Wiklund (2001) for a research review.

\textsuperscript{14} For a discussion, see Chandler and Lyon (2001) and Davidsson and Wiklund (2000), pp. 27-28.
Research on small old businesses, or research that follow new and/or small firms over a longer period of time, is rather scarce in entrepreneurship and small business. Alternative research questions are at least partly neglected in a research environment that concentrates mainly on start-ups, infancy and early termination, leading to a disregard of the continued stagnation and failure of older small businesses. The rather short period studied in most research does not, according to its critics, take into account surviving firms that exhibit growth, decline and re-growth, or businesses that have been in a steady state for years and then start to grow. By this, little research has put a somewhat longer perspective on the development of firms than only a few years. This has implications for definitions and measurements on firm ‘success’ and ‘failure’. While much knowledge over the history of commercial and industrial life as well as of the history of firms has come from decades of research in business history, much research has however been based on the histories of (very) large businesses and corporations.

A Demographic and Population Approach

Thus, it is here not only a question of a closer integration of micro and macro (or aggregate) perspectives, or the necessity for multi-level designs. The time-dimension – both as regards empirical and methodological considerations and the perspective of time as such – has an equally important role

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15 This is also occasionally emphasized in entrepreneurship research. One issue here concerns debate on the contribution to economic well being from entrepreneurship and business venturing activity. Factors that drive changes in the rate of entrepreneurship and business dynamics are not likely to be manifest over short time periods. Therefore, among others, Gartner and Shane (1995) have seen it as necessary to adapt another and longer time perspective than research usually does.

16 The dictating philosophy in mainstream research, according to critics, is that innovations and new ideas mainly are connected with new and young firms. It is furthermore assumed in mainstream research that aging managements, associated with old-fashioned attitudes, prevent growth of smaller firms. Therefore, one view has been that new small businesses have, in economic policy, obtained favorable economic and political subsidies, whereas older small firms have been ‘discriminated’ – both in policy and in research. See for instance Bosworth and Jacobs (1989), p. 31. See also Bridge et al. (1998), p. 171, and Vinell and Hamilton (1999), pp. 5-6.


18 See for instance Gratzer (1995) for a description and overview regarding research on small businesses in economic history/business history and the economic disciplines (there are naturally also exceptions in economic history; particularly at Lund, economic historians have produced data and empirical material on firm populations in different sectors and so on – see for instance Dahmén, 1950; Jörberg, 1961). In the field of entrepreneurship and small business research (and closely related fields), observers have identified a similar picture. It is usually claimed through ‘casual observation’ that old firms have survived due to their trademarks (newspapers, simple consumer goods), trademarks that have no requirements of organizational continuity. An opinion has therefore been that alternative fields, such as ‘organizational geriatrics’, or the history of small business, generally have received little attention. For a thorough research overview, see Caves (1998).
for the analysis of the growth and survival of business organizations. From an economic historian’s point of view the research field in entrepreneurship and small business has addressed central issues from a quite short period of time and, perhaps, not sufficiently addressed is the question of micro and aggregate relationships. From the viewpoint of entrepreneurship and small business, it might be claimed that economic history and its special branch business history have not focused on small business to any great extent.

My ambitions with the present dissertation concur with the types of research settings and designs that have been discussed in entrepreneurship and small business studies. When starting with this research project it became quite clear to me that I wanted to use an alternative approach and employ other or alternative types of methods and sources. This does not imply that I here present a dissertation that constitutes a pure, ideal, combination of micro and macro perspectives or, for that sake, that I here suggest an entirely alternative research agenda that opposes or contradicts results and assumptions generated in the ‘mainstream’ research field. Rather, my dissertation lies within the fields of entrepreneurship and small business and economic history, a study that with the use of historical methods and sources has as its aim to analyze the development, growth and termination of firms and firm populations. The traditional method of working in economic history – source and archive research and the longer time-perspective – can, when combined with the research questions and focuses in research in entrepreneurship and small business, contribute with new perspectives and generate new knowledge about the behavior of, and conditions for, business organizations.

The dissertation embraces in many respects a demographic and population approach to the problem of firm growth and survival. It uses mainly longitudinal empirical data (other types of material are nonetheless also used in the dissertation) and employs – or rather tries to combine – methods, definitions and approaches commonly used in demography, entrepreneurship and small business research, and economic history. The principal empirical material is constituted by a longitudinal database consisting of totally seven birth cohorts of joint-stock companies founded during different years in the first half of the 20th century. The empirical database is mainly constructed on archival, unprinted sources and amounts to nearly 2,200 business units that are traced from their birth to their termination.

Outline of the Dissertation

Chapter 2 describes and discusses on a broad level the methodological setting and basis for the dissertation. It also gives an account for the source materials and data employed in the study. More detailed accounts and descriptions of procedures, methodological choices and definitions are included in each of the chapters that comprehend the empirical investigations.
Chapter 3 is an outline over a field of research that, in my eyes, is fairly extended or wide, namely the survival and growth of business organizations. Focus here is on previous research findings in mainly the economic sciences – first and foremost economic history, economics and business studies/business administration. It is without doubt difficult to clearly define or delimit ‘economic sciences’ since for instance economic sociology etc. could very well be included in such a conception (which they in fact are in the chapter). A study that moves over several academic fields cannot however fully cover all research. I, nevertheless, attempt to identify the development (or trend) in this social science tradition that now for a considerable time more or less explicitly has researched the growth and survival of firms and the causes thereof. An overview and discussion regarding research focus(es) in economic history, economics and business administration is also included in this chapter.

A problem that has been in the center of attention in economic disciplines is the shape of and development of the size structure – or size distribution – of businesses, particularly the causes to change of this size structure over time. This problem (or certain aspects of it) – using series of Swedish size distribution data that run over one hundred years – is considered in Chapter 4. By assuming a longer perspective of time, new research results are hopefully produced that can shed light on the development of the size distribution and the conditions for firm growth.

Chapters 5 to 8 embrace the above-mentioned firm generations or cohorts, assuming a longitudinal research setting. In Chapter 5 is the development of the seven birth cohorts of firms in focus, birth cohorts that were founded during different years during the first half of the 20th century. Their macro biographies and development in terms of firm survival, with respect to structural and external, or aggregate/environmental conditions, is the main issue in that chapter. This is followed in Chapter 6 by a study of long-term survival and growth, more specifically an investigation of the firms in these seven generations that managed to survive for a long period of time. One central question regards the growth, or non-growth, of those survivors. Another question (with some reference to the topic in Chapter 4) addresses the survivors’ empirical size structure, or size distribution.

Chapters 7 and 8 both contain a more detailed or micro-level oriented study of two of the seven birth cohorts. I have here – to the extent it has been possible – re-created each individual firm’s development from birth to their (prospective) death, or at most over a thirty year-period. Chapter 7 focuses on firms’ growth over time, assuming a longer time-perspective – and addresses the question of firm age, size and the significance of environmental variables and events. Here, micro behaviors are assumed to add up to an aggregate or generational behavior, and environmental variables are assumed to affect the behavior of individual businesses over time with respect to growth.
Chapter 8, the last empirical chapter in the dissertation, deals with a problem that has been frequently researched in business studies, namely the question of succession of ownership and management in firms and firm performance. Finally, Chapter 9 intends to summarize and discuss the research results of the dissertation.
The study of the entry, development and growth of business organizations has been carried out from a quite wide range of perspectives and methods. This chapter describes the general methodological setting that constitutes the basis for the dissertation. It furthermore gives an account of the source materials and other empirical data.

A Longitudinal Method

Although empirical data and sources characterized by a cross-sectional design is employed in the study (see source description, below), its main approach is to employ a longitudinal study in analyzing the development of firms as regards their survival ability and growth. The purpose of a longitudinal study is often described as the analysis of patterns of change, and as a method to establish the direction of as well as the magnitude of causal relationships. Longitudinal methods have been used in fields such as demography, sociology and economic research.\footnote{See Newell (1988). The cohort method as concerns business demographies has previously been used in Gratzer (1996), Box (2001), and in Gratzer and Box (2000; 2002; 2004).} Longitudinal research can be said to deal with the change of an individual or a unit, or perhaps more accurately, of a population of individuals/units over (a certain period of) time. The concept ‘period of time’ – or rather, the length of the study – can depending on the purpose of the investigation as well as the characteristics of the individuals/units that are studied be both long and short.\footnote{Humans, for example, have a longer life expectancy than fruit flies, but a shorter one than a joint-stock company that in principle (all other things being equal) can have an infinite life length. Similarly, a city or a community has a life expectancy than widely exceeds the one for humans. Therefore, the purpose of a longitudinal study as well as the characteristics of the unit(s) of investigation is in many cases determining if the time perspective (the length of the study) is ‘long’ or ‘short’.}

Different types of research design can be viewed as longitudinal if they fulfill some necessary requirements. With a \textit{broad} definition, a longitudinal analysis contains information that can be ordered in sequences in time, which means that several types of methodological designs can be applied.\footnote{For an overview, see Menard (1991), pp. 4 ff.}
One of them is the prospective study, which follows the same individuals/units over two or more distinct periods of time right at those periods of time – for instance to follow a set of individuals from a certain point in time and onwards.

Retrospective studies are generally carried out on a group of individuals by a certain period for several earlier periods. Taris (2000) states that a prospective design nearly always will lead to better data than a retrospective one.\textsuperscript{22} For example, interviews that ask questions about the past have a built-in risk that can affect the collected data, such as the memory of the respondents – or rather the lack of memory of a particular event – or misrecollection of when in time the event in question took place. However, with a retrospective design, research that is not based mainly on interviews can also be afflicted with potential problems in comparison to the prospective method, such as survival bias which has the risk of selecting only parts of a population when tracing observation units backwards in time. Additionally, a design with repeated cross sections (sometimes called the trend study) involves data that is gathered on the same set of variables for, and possibly at, two or more periods. The repeated cross section method includes nonidentical but comparable cases in each period. The typical, pure cross section is carried out for a single occasion (and is not longitudinal), but the repeated cross section method implies that it is cross-sectional at the level of the sampling units but longitudinal at the level of the research units.\textsuperscript{23}

A more narrow definition of a longitudinal study is that it must contain diachronous/historical data on the same set of individuals/units, and that it is necessary that it comprise more than one individual (or more than only a few). The last implies that non-comparative case studies – as an example, the history of a single business, or (auto)biographies – cannot be defined as longitudinal according to this approach. Nor would the repeated cross section design be included in this more narrow definition. Carl-Gunnar Janson has described longitudinal studies as:

\begin{quote}
In the longitudinal study in which each unit is represented by diachronous data, one can analyse change or development on the level of the units. If the units are individuals, the analysis can be made on the individual level. In addition it can also be held on aggregate levels. The units may be other micro units than individuals, such as families, farms, enterprises or neighborhoods…

(Janson, 2000, p. 30)
\end{quote}

\textsuperscript{22} Taris (2000), pp. 8-11.

\textsuperscript{23} Taris lists seven different designs for collecting and analyzing longitudinal data, including e.g. panel studies (relationships across time rather than relationships at one point in time) and time series analysis; Taris (2000), pp. 5-14. Other longitudinal designs can be viewed as ‘not-quite-longitudinal designs’, for instance a series of cross sections in which the same variables are measured repeatedly but where the cases are not identical (as in a repeated cross section), and, additionally, not comparable between periods. Menard (1991), p. 22 ff.
Accordingly, a longitudinal study should therefore be able to analyze both populations/groups, such as birth cohorts, that contain several individuals as well as the single individuals. Janson further states that a larger, more long-term study (i.e. more than two or only a few observation periods) of a population or of several ones is a design that most clearly implements the longitudinal perspective. The advantages with a longitudinal design is therefore often stated as its capacity to measure change at both the population and individual level, and that assumptions of causality can be controlled for in a higher degree than in cross section investigations. The disadvantages are, among other things, that it is usually a time-consuming method.24

The Cohort method can be viewed as a special case of the longitudinal method where (individuals/units in) one or several cohorts are followed over time. A cohort is an aggregate of individuals with a shared attribute. It can be persons born the same year, or persons that began elementary school a certain year or at the same age. (In the following, however, the concept of cohort will have the meaning of a birth cohort.) A cohort is consequently an aggregate of individual units, although it is only so in a statistical sense. Hence, all units do not automatically interact: humans from the same generation might know or interact with others from their own generation, but surely not with all of them. The units in a birth cohort are theoretically exposed to the same risk during the same time or at the same age. ‘Risk’ is here a concept that denotes not only hazard but also the probability that a certain event has taken place. The individual units experience events – such as marriages or deaths – in their life history in the same chronological interval. Events could be exogenous to the birth cohort, for instance an outbreak of a war or a major macroeconomic upswing. Events could also be related to a specific cohort or age group, which for instance is dependent on the age of the cohort. The risk of retirement (as an event) is smaller for a cohort of 25-35 year olds, but higher for an older cohort of 55-65 year olds at a certain point in time. Over time, consequently, and all other things being equal, the younger cohort’s risk (probability) for retirement increases.

Therefore, the concepts Cohort, Age and Period (time) are central in this special case of longitudinal analysis. In comparison to cross section designs it hopefully becomes less difficult to measure the causes of events that are age-related (Age), historically related (Period) and, perhaps, related to generation (Cohort). Age, Period and Cohort are not entirely possible to separate from each other, which must be emphasized. The effects of each variable depend on the other two variables. However, if we are aware of the

24 Long-term longitudinal projects can be risky since they over time may come to have a fading relevance at the end of the project. Furthermore, there may be a need for new, complementary (and extensive) data during the course of the project. Janson (2000), pp. 33, 37-41. See also Janson (1978).
(theoretical) effect that the variables can cause, it is possible to take this into consideration. *Cohort, Age* and *Period* are linearly dependent. If we know how old a person is (*Age, A*) at a certain period of time (*Period, P*), then it is easy to calculate when the person was born (*Cohort, C*), i.e. $P - A = C$.25

Figure 1. Lexis’ diagram.

The Cohort method, and how it differs particularly from cross-sectional methods, can be illustrated in a *Lexis’ diagram*, as in Figure 1.26 The vertical axis in the figure measures the age of a number of individuals or units, and the horizontal axis measures time (as in time points or periods, for instance years). If the same time-scale is used, it is possible to follow a single individual’s development in a 45-degree angle. An increase of variable *Time* with one unit will result in an equal increase in the variable *Age*. Three different *birth cohorts* are included in the figure, founded during different points in time on the horizontal axis. Each line within each cohort represents a single unit of investigation, say a business firm. The lines are furthermore of different lengths, which signifies that the firms display different life-lengths; some can be traced throughout or beyond the observation period, some disband/exit within that period. The uppermost cohort is the oldest

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26 The example is in large parts derived from Janson (2000), p. 31 ff.
A single, ‘pure’ cross section at time the point in time, \( t_1 \) – represented by the dashed vertical line at \( t_1 \) – would include the firms in the two older cohorts but not the ones in the youngest since that cohort has not been founded before \( t_1 \). Here for instance it is possible to measure the age and the number of firms in these two cohorts at that particular time. At \( t_1 \), the surviving firms in the oldest cohort had reached an age of \( a_2 \) years, and the ones in the second oldest an age of \( a_1 \) years (represented by the dashed horizontal lines). As can be observed, no firm that had ended its business (exited) before the cross section at \( t_1 \) are included in the sample, thereby the notion of that only surviving firms at \( t_1 \) will be a part of the sample (survival bias).

A second cross section can, additionally, be carried out at another point in time, \( t_2 \). This can be said to be a repeated cross section. Between these two cross sections, the third and youngest cohort of firms has emerged, having an age of zero years at a point in time somewhere between the first and the second cross section. At \( t_2 \), the members of the youngest cohort have reached an age of \( a_1 \) years, while the second oldest cohort has now reached an age of \( a_2 \) years (at \( t_1 \), it had an age of \( a_1 \) years), and the oldest one an age of \( a_3 \) years. Partly the same, partly new units – firms – are included in this second cross section. Since new, younger firms have been added to the sample (the youngest cohort), and since some firms from the older cohorts have exited between the two observation periods, it is not unthinkable that, on an aggregate level, the average business age or the number of firms in the two samples has changed.

A retrospective study, based on a cross section, is also possible to realize on the same data material. Let’s say that we start from the cross section at \( t_2 \) and go ‘backward’ in time. By this, the development for each single firm that is included in the cross section can be unfolded (given that this is allowed by the empirical material), but also – at least with some reservation – the development of each of the three cohorts. In this example, the age of each single firm at \( t_2 \) is known, and thereby it is not difficult to calculate when in time each firm was founded, i.e. their birth cohort \((P - A = C)\). It is however not certain that, for a number of reasons, there is a possibility to study or to trace firms in each cohort that disbanded or exited before the cross section at \( t_2 \) was made. Such a particular retrospective study would then only include firms from the three cohorts that, at \( t_2 \), had reached an age of \( a_1 \), \( a_2 \), and \( a_3 \) years, but not firms from the two oldest ones that for example merely reached an age of \( a_1 \) (second oldest cohort), alternatively only an age of \( a_1 \) or

\[27\text{ As can be seen, the oldest cohort is founded at a point in time that is situated to the left, beyond the horizontal axis. This is not displayed in the figure.}\]
a; years (oldest cohort). Thus, it would be survival bias in the study: only surviving firms at the specific point in time $t_2$ would be included.\(^{28}\)

A prospective study follows, in this example, one or several birth cohorts and their individual members over time from when they are born to the time of their death (or up to a certain point in time). If possible – given the availability of sources and data – every firm from each cohort can thereby be included in the analysis. It is possible to control for the age of each firm at any point in time, as well as when it (perhaps) exits. The potential problems that may arise in a retrospective design and in using the repeated cross section method can hopefully be avoided. Both of the latter methods can be afflicted with survival bias; in the case of repeated cross sections it is not even certain that the same firms are studied, and assumptions of causality furthermore become uncertain.

In employing multiple birth cohorts, as in this dissertation, and in constructing databases that in several respects facilitate analyses of the life, growth and death of firms from a longitudinal perspective, new knowledge can be generated. From the source material described below a database on joint-stock companies has been created. Seven birth cohorts of joint-stock companies, founded in Stockholm in the years 1899, 1909, 1912, 1921, 1930, 1942 and 1950 are included in this database and the companies are traced from birth to termination. Totally, the database of the birth cohorts consists of some 2,200 joint-stock companies in its basic form.\(^{29}\)

### Source Materials

As mentioned previously the empirical material in the dissertation is based on both printed and unprinted sources. The material that constitutes the foundation for the longitudinal investigation is for the greater part based on unprinted sources at various archives. In a general sense, available empirical material for historical studies of firms and enterprising is better and more comprehensive for joint-stock companies than for other legal forms of business. From the end of the 1890’s, and especially from 1912 and onwards, government authorities in Sweden did organize information and material about joint-stock companies that facilitates the tracking of individual companies over time. Materials or information as regards other forms of enterprises – such as private businesses or partnerships – are usually missing or

\(^{28}\) It is not unlikely that much research on firm dynamics, such as business growth, is characterized by survival bias. Samples of firms of different ages that exist at a certain point in time are followed backwards in time, unfolding their development over time (perhaps even from their birth). Firms from each of the (theoretical) birth cohorts that have disbanded before the cross section is made are inevitably not included in the study.

\(^{29}\) Cohorts 1899, 1909 and 1921 are from Gratzer (1996); the author has constructed the four other cohorts.
are less ample, especially the further back in time we go. For such enterprises has there been less systematic registration compared to joint-stock companies.  

The capital required to start a joint-stock company around 1900 was 5,000 Swedish Kronor (kr.) in nominal values, which was a rather significant sum of money at that time. It is therefore likely that especially small firms or self-employed persons were running a business in other legal forms than the joint-stock company – something quite common also today. It is as a result thinkable that a study such as this tends to be biased towards somewhat larger businesses although it is difficult to control for this in the analysis.  

Databases have been constructed from the source material, and these are further described below.

Unprinted Source Materials

The major source material comes mainly in unprinted form from the Swedish Patent and Registrations Office (Patent- och registreringsverket, PRV). This authority was from 1897 responsible for registration and supervision of joint-stock companies. Each company was assigned with a registration (identification) number, a number that each firm maintained throughout its active time irrespective of changes in ownership, line of business and so on. Via this number each individual company can thus be tracked over time. It is the chronologically held register of joint-stock companies (aktiebolagsregistret) that is the foundation for the Database on Joint-stock Companies. The information contained here is diverse and quite summarized. Yet it contains data on the companies name (firma), line of business, the company board (styrelse) and the size of the stock capital (aktiekapital). This register covers up to 1972, thus for subsequent years other archives must be used.

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30 For instance regional authorities (county boards; län styrelserna) had the responsibility for trading firms and private businesses for a long period of time. The less comprehensive source situation for these types of firms does not mean that there has not been any research of such enterprises. But the possibility to obtain aggregate pictures of other firm populations over time is due to the source situation quite meager.

31 This does not necessarily mean that firms in legal forms other that joint-stock companies were small; several mills and factories with a considerable number of workers were continued as private businesses long after that the joint-stock company had been introduced in Sweden in 1848. See for instance Jörberg (1961). A discussion regarding firm-formation and related question takes place in Chapter 5.

32 For some time is the section at PRV that dealt with enterprising, or rather joint-stock companies (PRV bolag) called Bolagsverket (Swedish Companies Registration Office). I generally bear reference to both institutions when PRV is discussed or mentioned in the text. Most of PRV’s older materials are preserved at the National Archives (Riksarkivet, RA). However, it should be pointed out that some sources – mainly annual reports from larger companies – actually are printed/published. Some of these reports are preserved at the Royal Library (Kungliga biblioteket, KB) as uncatalogued material (okatalogiserat tryck, OKAT).
More detailed information as regards each individual companies development is also possible to extract from preserved documents. First and foremost here Annual accounts, or Annual books (räkenskapshandlingar), are the most significant ones. Each company was from 1912 by law bound to report its financial situation to PRV. Profit and loss accounts (resultaträkning) – which in theory can embrace a large number of items such as purchases, expenditures, salaries, write-offs, etc. – are included here, as well as their balance sheets (balansräkning), the latter containing information on assets and liabilities and debts. In this annual material is also occasionally included other types of source information such as the report of the board of directors. If the annual books and the balance sheets can be viewed as more or less quantitative information as regards individual companies it is, on the other hand, the last-mentioned source consisting of the board of directors’ reports that is of a qualitative or narrative nature that gives the (annual) position of the company in question. It must be pointed out that it is quite uncommon with extensive reports in these circumstances. These source materials are very heterogeneous. Some companies were quite careful and precise in reporting rather detailed items, and the ‘narrative’ part (the report of the board of directors) could be long and comprehensive.

Pertaining to the majority of businesses in the study, other companies were reporting less information, often not more than required by law. Simply put, most of the statements are simple. This has some consequences. The usefulness as well as measures on firm growth and size becomes somewhat limited. For instance employee figures would be valuable in this circumstance, but such information is hardly ever reported in this source material. Rather, financial data has been a common measure since all companies were obliged to report their annual statement to PRV. Although the above-mentioned source materials are the main sources of the investigation, nonetheless closely related sources from PRV have additionally been employed in constructing the databases in question, even if these have mostly had a more secondary role in the data collection.

33 These annual statements are preserved at RA with reference to firms that had ceased operations before 1960. After that year other archives must be used – for instance if we want to trace all firms in a cohort prospectively and thus avoid survival bias. It is at the Swedish Companies Registration Office (Bolagsverket) where these files and statements are preserved. The availability and possibilities to conduct research at this particular institution are quite meager compared to RA.

34 Documents of registration of a single company (Certificates of Incorporation; registrerings-handlingar); covers the very initial formation of a company, while the Memorandum of Association (stiftelseurkund), and the Subscription List (teckningslista) contain information of the structure of the board, etc. The (intended) line of business/industry, the nominal value of the stock and the number of votes per stock, as well as the total value of the stock capital is also information included in these documents. Furthermore, there are also in such registration documents records from the Constituent Stockholders’ Meeting (konstituerande bolagsstämma), during which the formal decision is taken to start up the company. In these documents is also reported the corporate domicile (styrelsens säte), and – sometimes – the
source material from PRV in most cases probably constitutes the only preserved artifacts about the businesses investigated in the dissertation; most of them did not survive for any longer period of time and they remained unknown throughout their lifetimes.

Since this unprinted source material is an important empirical base for the dissertation a final remark is necessary concerning above all the investigation’s validity. Public accounts and books and other statements from businesses, or for that matter from other organizations, are perhaps too often assumed to represent factual data or an objective reality. It is still essential to bear in mind that such records also may be more or less ‘political’ documents. They may tell a story that differs quite significantly from the actual course of events or the real situation of the individual business, particularly regarding financial indicators. This has for instance been shown regularly in business histories, and therefore can we sometimes run the risk measuring something else than what was actually intended. On the other hand are the employed sources often the only remnants available to researchers, and even if the ideal situation would be to have multiple indicators of business size is this at most times not possible.35

Printed Sources and Other Data

Although a large part of the source material has been unprinted material other sources also have been employed. This material can be partially considered to be from printed sources – or at least comprise public or official material. Data from credit-rating firms concerning more present-day information of a company’s postal address. The Articles of Association (bolagsordning) are also included here. The Annual Report of the Board, and the Report of the Directors (styreseberättelse and förvaltningsberättelse) constitute additional sources. In the reports, we sometimes can find data of more ‘qualitative’ nature, e.g. descriptions of the development of the firm, as well as its market situation. The quality and usefulness of these statements and reports vary a great deal from case to case. However, the possibility to receive an annual picture of the firm’s economic and financial situation other than in only financial terms (as in the accounts and sheets) is in my opinion useful. The yearly Statement by Auditor (revisionsberättelse, later revisorsberättelse) is of course also included, but is in my opinion not as useful as the other sources. RA. PRV, bolagsbyrå.

35 See Hildebrand (1989), p. 1-3. Hildebrand takes several examples from Swedish business histories and argues that the advantage of a business historian is the opportunity to work with internal company records, protocols and correspondence. These have often differed significantly from ‘official’ published documents – ‘external sources’ as Hildebrand calls them – both for companies as well as for banks, and these discrepancies seem to be more of a rule than an exception. The employed sources in the present study are, as mentioned, commonly the only remnants available to the researcher. In an ideal situation we would have the choice of multiple indicators of business size and development, something often advocated by researchers; see e.g. Delmar et al. (2003). This is further discussed in Chapter 3.
mation as regards companies have been employed. Furthermore, other sources have been used, or at least examined, in the search for information or to trace the companies in the cohorts. I have furthermore employed other sources and databases that embrace both business data and other (statistical) material.

Data from the National board of trade (Kommerskollegium) and Statistics Sweden (SCB) – included in the statistical series of BISOS and SOS – is comprised by industrial statistics and censuses of enterprises, and is used in the dissertation for constructing longer series and data (cross-sectional) as concerns the number of firms in the Swedish economy on an aggregate level. At least partially developments or tendencies can be analyzed here. Additionally, data on price series and macroeconomic data have been employed – both from public statistics and previous research – in a rather wide extent in the dissertation. This is first and foremost historical national accounts, and interest rate data. Such information is used in a supplemen-

36 This data comes from UpplysningsCentralen (UC) and Affärsdata, which contain credit information and other data on companies. In this respect has such data mainly been employed in tracking the surviving companies from the seven birth cohorts.

37 There are actually rather comprehensive printed sources available that can be used in the historical study of (mainly) joint-stock companies. This is more thoroughly described in Box (2001), but it can here shortly be mentioned that Sveriges handelskalender (Sweden’s Trade Directory) and a similar one from Sveriges industriförbund, the Federation of Swedish Industries, (1918-) – Svensk industrikalender, Swedish Industrial Directory – published information on firms – particularly the latter one was quite comprehensive as concerns data, but included on the other hand less firms. Furthermore, during the period 1900-1933 financial and other information on joint-stock companies were published in the series Svenska aktiebolag och enskilda banker: aktieägarens uppslagsbok (Swedish companies and private banks: the stockholder’s directory) but first and foremost financial data from the 1920’s is available here; see Åberg (1900-1933). The selection of companies is nonetheless rather biased since a minimum amount of stock capital was required for inclusion in the series. This amount was also raised over time (probably due to the increasing number of small joint-stock companies in the economy). These series were continued from 1933 up to 1977 under the title Svenska aktiebolag: aktieägarens uppslagsbok. I went through these publications in an early phase of my research project, but found that this type of data did not correspond with my objectives. Nonetheless should it be pointed out that the data in these series are quite useful.

38 BISOS: Bidrag till Sveriges officiella statistik (older series), and SOS: Sveriges officiella statistik.

39 This data is mainly used in Chapter 4. The material embraces publications and series that mostly concern manufacturing statistics and are published in Statistik årsbok and in the series Industri, mainly from 1913 and onwards. Earlier publications are however available (BISOS). Additionally, censuses of enterprises were conducted in 1931, 1951, and 1972, which also embraced the entire economy and not only the manufacturing industries. Regarding more current information the business database from SCB has been employed (SCB: CFAR/Företagsdatabasen).

40 This data mainly comes from Krantz (1997). Edvinsson (2005) has published newer revised historical national accounts that differ from earlier data, although I do not think that this has any consequences as concerns results in my own investigations.

41 Data mainly from Persson (2001); furthermore have data from SCB as concerns various price and inflation measures been employed.
tary manner as well as integrated variables and phenomena in the various analyses.

Established Databases

From both unprinted and printed sources different databases have been established. From the above-mentioned material based on public (printed) statistics – mainly from *Komerskollegium* and SCB – figures over the number of firms and aggregate business structure from the late 1800’s and onwards were combined and established into a coherent database. This data is cross-sectional and not further described here (a more thorough description as regards data considerations and methods is given in Chapter 4).

As for as the longitudinal database(s) is concerned there is however reason for a more detailed account. Considering the rather vast population of businesses in Sweden already at the turn of the last century a population of 2,200 firms might appear as rather small. Yet, the material in PRV’s archives is to say the least widespread and comprehensive, and to build a database with supplementary databases is a reasonably extensive work. The fundamental database for the study, Database on Joint-stock Companies, reports basic data on those 2,200 businesses, founded in Stockholm 1899, 1909, 1912, 1921, 1930, 1942, and 1950. Stockholm has here constituted a delimitation due to the large source material. The database’s main source is here PRV’s archives with supplementary archives. All firms in the database are traced longitudinally from their founding to their termination. Included here are a number of basic variables. One is the companies’ *birth year*, which in this case is synonymous to *cohort*. Another variable is the way of closure or *termination* (of so were the case; some of them are still active today – or were until recently – as economic units). Liquidation was the by far most common way to seize operations, followed by bankruptcy.42

Since firms are followed longitudinally from their birth to their termination, or at most to 1999, *firm age* is also a central variable in the investigation. *Firm size* is, as concerns Database on Joint-stock Companies, measured as each company’s stock capital at start. Only in some exceptions have I made any investigations of changes in the firms’ stock capital over time. Generally this capital did vary between (in nominal figures) 5,000 Kronor – the smallest capital allowed up until mid-1970 – up to 34 million Kronor. The characteristics of the source material regarding this particular database does not allow for any alternative measurements of firm size.43 The compa-

42 Other, less common ways to terminate were through e.g. merger. As concerns some of the businesses there are indications that they had been terminated but not how, or alternatively, exactly when termination took place.

43 For this, annual reports for each individual company must be used, a much more time consuming and demanding procedure.
nies’ boards furthermore specified the (intended) line of business at registration. It should be pointed out here that this did not correspond to any standardized sectoral or industrial classification. These variables that are included in this particular database on joint-stock companies have in my opinion an extensive usefulness while I am of course aware of its limitations. By using this database as a foundation can analyses of the life-length of businesses be performed as well as new, supplementary databases be created.

Two supplementary longitudinal databases were furthermore built from the seven-cohort Database on Joint-stock Companies. One database was constructed with a specific purpose to trace or follow up those companies that survived for a long period of time. Another was established with the purpose to chronologically follow individual companies over time in order to study their growth. The first, Database on Surviving Companies, contains a follow-up of around 350 (of some 2,200) companies that still were active at the end of the 1990’s. On the whole only a small number of firms per cohort did survive for such a long period of time. Thus, we deal here with firms that were active for some fifty to one hundred years. These have been traced through available databases, and variables here that were of main interest were various size-measures in order to assess if the firms had grown.

The latter database constitutes a ‘re-construction’ of the development of businesses on the firm level, more specifically the development of two out of seven cohorts. Here, the companies in Cohort 1912 and Cohort 1930 are followed (Cohort 1912 and 1930 Database). Measured in the number of observations, this database is the by far largest one. Totally there are nearly 6,600 observations – or rather, observation years – for the totally 420 companies that are included and followed for at most thirty years per firm.

Classifications of sectors etc. have been changed over the decades by the National board of trade (Kommerkollegium) and SCB. In 1969 for example the first SNI code was introduced, and the current system of classification is very detailed. It is questionable whether it is possible (or for that matter meaningful) to retain information as regards the actual – or rather, ‘official’ – line of business of the firms in the birth cohorts.

Another aspect hard to control for is the case in which companies in the database were periodically inactive. This could generally be viewed as a quite important aspect since a business that temporarily ceases its activities on the market might be less exposed to a risk of termination – at least for the moment. The source material used here (the PRV records) do not generally tell if and in what respect the companies had stages of ‘hibernation’ during their life-courses. More modern databases indicate that this is a rather common phenomenon for particularly small firms. Naturally may this become problematical – how should we value or assess such a business? Must we define it as terminated (or periodically terminated) and so on? My assessment of this state of affairs as concerns the longitudinal database in question is that this does not seem to constitute any large problem. The few number of companies that informed PRV that they had ceased operations or been inactive for the past one to two years commonly did not resume their business but closed down.

Mainly UC and Affärsdata.

Source material from PRV bolag, preserved at RA, as well as from the Swedish Companies Registration Office (Bolagsverket), was here used.
Mainly unprinted sources (yearly accounts; see above) constitute the foundation for this database. In this case it has – with some exceptions – been possible to track each company over time and to observe if, when, and in that case to what extent they grew. In this database it has furthermore been possible to employ a wider range of definitions or measures of firm size. Apart from these measures additional variables have been included; variables that concern the companies’ directors or managers – mainly when in the businesses’ life-course and to the extent there was leadership succession. In that respect this database is also a longitudinal record over managements and directors. A considerably large number of running meters of source material were employed in constructing Cohort 1912 and 1930 Database; I estimate that some 10-15 meters of material at various archives were used here – nearly 6,600 observation years are in this case equivalent to the same number of annual statements.

Concluding Remarks

Several types of source materials are used in studying the growth and development of firms. For the most part, unprinted sources and data are employed in the dissertation and from this, databases have been established in order to address various problems of firm growth and survival. In that respect we are here dealing with a unique historical record of businesses. To my knowledge, similar datasets are not available in public (or secondary) statistics or publications. The overall method for the analyses of growth and survival is the longitudinal approach, or rather, the cohort method that is a special case of the longitudinal method. Longitudinal studies are powerful in the sense that they make it easier – if not entirely possible – to investigate causality. If, for instance, cross section data is used it then actually becomes complicated to explore cause and effect since, as been shown here, we do not know which business units grow, decline or terminate, etc. I employ cross section data in my dissertation, and with several (repeated) cross sections, trends or tendencies can be discerned. Yet, the main approach and method is longitudinal.

There are in fact quite a lot of definitions of the longitudinal method. Generally we can, when speaking of this subject, state that it concerns the change of an individual unit as well as a population of units over a certain period of time. Actually this dissertation is in much sense approaching the more narrow definition of a longitudinal study. It contains diachronous – historical – data on the same set of units; it comprises a fairly large set of observations (or a large population); it assumes a long-term perspective, and, finally, the

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48 A negligible number of annual statements was actually nonetheless printed/published, mostly by larger companies with a larger number of stockholders.
characteristics of the data – or the design of the database – makes it possible to study both populations or groups, as well as individual observation units since the aggregates (or cohorts) are built on observations of individual business units. This dissertation is mainly prospective and avoids in many respects survival bias since we here deal with birth cohorts that are followed forward in time. The cohort method, furthermore, makes it possible to separate (at least it increases the awareness of) effects of cohort, age and period. Therefore, in analyzing the development of joint-stock companies – represented by, as regards growth and survival of business firms, seven birth cohorts – new knowledge and new perspectives can be generated.
3. Growth and Survival of Firms in Research

Introduction

In the economic sciences the problem of the growth and survival of business organizations has been a thoroughly researched area. Different research traditions as well as shifting focuses over time have resulted in an ample body of research that consists of different theoretical, methodological and empirical perspectives. This chapter intends to visualize and discuss research results with a specific focus on identified causes and determinants as regards firms’ growth and survival. Here I shall try to apply a rather broad perspective, which means that I have included research that ranges from quite macro-oriented and aggregate studies (mainly in economics), as well as research in the field of business history, to the more ‘traditional’ entrepreneurship and small business research literature. Therefore this chapter consists of research from different disciplines – research that moreover has had both a more explicit and implicit focus on growth and survival. Some delimitations or reservations must be made here regarding the large body of research that theoretically could be included. Only general results, conclusions and broader methodological concerns will be discussed in this chapter. The studies included are in some respects biased towards Swedish research and findings.

Different Disciplines, Shifting Focus Over Time

When examining various studies in business administration (business studies), economics and economic history that have approached the problem of business growth and survival, it is evident that research settings, methodology and definitions or conceptions differ significantly. This is also true of the field of entrepreneurship and small business research; this research branch has undoubtedly displayed the keenest interest in studying the growth and survival of firms, particularly when it comes to elaborating and thorough discussions as regards definitions and measurements.

Especially research in business administration that focuses on small business performance has regularly approached the research problem from rather
exhaustive viewpoints as concerns measurements and definitions.  

49 This field came from especially the 1970’s and onwards to have an increasing interest in small businesses.  

50 Economists, on the other hand, have often been criticized for not considering and discussing the concept or definition of the (small) firm and related problems such as firm growth and failure to a sufficient extent but rather seen the firm as a black box.  

51 Nonetheless, theories and methodological concepts from economics have been widely influential and applied in other economic disciplines, and, additionally, research on industrial organization has often contributed to discussions about measurements and definitions. There has also been a keen interest in novel or new (small) firms in both traditions, especially in business studies. Even if there is no clear-cut line, business studies perhaps have asked more questions about the individuals who start businesses and make those businesses grow (or fail), while economists commonly have developed an interest in net and gross effects – e.g. job generation effects – of (new) business activity. Therefore, what might separate studies in business administration that address (small) business growth and survival from economics research could be the research focus and the object of investigation: in the former the entrepreneur or business owner-manager commonly is the center of attention regarding his or hers traits, behavior and strategies, whereas the field of economics have perhaps researched structural attributes such as industry differences, regional variations, and the like, to a greater extent – thus with a more macro or aggregate approach.  

While extensive debate has evolved around measurements and definitions of the business organization and of firm size and growth in the research field of entrepreneurship and small business, as well as in much economics research, it seems that economic history – or rather its special branch, business history – has put less focus on such issues. Business history has to a greater extent than other disciplines researched ‘existing’ firms, or individual (large) businesses, with a rather one-sided focus on large as well as successful ones.  

49 Such questions relate to how to measure firm size and growth and so on; Davidsson (1989), and Wiklund (1998) are examples of studies with elaborate discussions of measurements and definitions.  


51 This critique is mainly directed at mainstream theory that, according to critics, is built on price theory and static equilibrium; see for instance Kirchhoff (1994), p. 9f., for a discussion.  


53 See Caves (1998) for an overview. For examples see, among others, Audretsch (1995), Audretsch et al. (1999), and Evans (1987a)  

54 Söderberg (1995), p. 22f. There are nonetheless naturally examples of research that do not apply to the one-firm, case study approach in the business history tradition, see for instance Glete (1987) and (1994).
Here, a long-standing research debate has been if the ‘traditional’ business history – the monographic, and in many instances descriptive approach – leaves any room for generalizations and theoretical connections. Methodological issues that deal with appropriate measurements of size and growth (or for that matter termination) of firms as such – as is often discussed in small business research – do not seem to have played an equally important role. It seems rather to be the expansion on existing and new markets, as well as the diffusion of fields of activities etc. that have engaged the attention of economic historians. Here, the expansion of the business(es) has mainly been in focus – new markets, new products, increase of an already considerably large work force, and so on – while growth (or growth rate) of firms has been the main interest in economics and business administration where yearly increases or decreases in sales, turnover, revenue, or employment have been important indicators on the performance of firms. In addition, business historians have additionally applied a longer time perspective as

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55 Lindgren (1998) has as for example claimed that theoretical competence amongst business historians (in the Scandinavian tradition) must be raised. Galambos stated for instance that a synthesis between the individual-oriented approach and the business-oriented approach was needed, and that it was necessary to stress the evolution of the business unit: “This does not mean that the individual would be ignored; it merely proposes that monographic research and in particular biographical studies should address themselves to a coherent body of questions about business organizations” (p. 5.). Particularly sociological theory of complex organizations and the theory of the growth of the firm were ways of stimulating ideas; Galambos (1966), p. 4-6. Karl-Gustaf Hildebrand (1989) has defended the more traditional view of business history.

56 Consequently, less research in economic history/business history has had an explicit aim to study firm growth and survival as in the fields of business administration and economics. It is, just as in the case of research in business administration or economics, almost an impossible task to study all previous scientific production. The following studies with focus on expansion/growth have been examined: Hassbring (1978), Lindgren (1979), Ullenhag (1970), and Wikander (1977). With exception of Ullenhag’s study, these studies analyze the expansion, strategies and operations of Swedish Match and Ivar Kreuger during the interwar years. The differences are however quite large compared to how the problem of growth/expansion has been treated in business administration. Business growth as a conception can therefore be defined in many ways and does not have to translate into variables such as the number of employees: Palmer (2001), for instance, studied the growth of foreign linkages of several large Swedish corporations between the 1890’s and 1990’s. Westberg (2002), furthermore, has investigated engineering company AGA’s innovative activities during various phases over a nearly 60-year period. Thus, business growth per se may not be the main objective in these studies even if they nonetheless deal with the expansion and development of businesses.

This implies that there are some differences between disciplines as regards growth and expansion. Growth and expansion are both concepts generally seen as a change of the business into bigger premises. These concepts usually stand for more employees, expanding on the market with new concepts or products, etc. However, the growth stage as such is seen as the first considerable boost in central firm-specific variables such as employment or sales, turnover, etc. On the other hand, expansion could be said to constitute a more controlled development and growth, for example in a new or within an existing market; Bridge et al. (1998), pp. 119-120. Hence, there are also differences between how the very concepts of growth, expansion and development of firms have been dealt with in the three academic disciplines. We can therefore ask ourselves whether or not quite two different processes are studied when we compare Business Administration and Economics with Economic History.
other fields have had a considerably shorter one. What may be viewed as a common denominator in business studies, entrepreneurship and small business research, and in business history, is rather a focus on managers and owners as regards their backgrounds, behavior and decision-making. Furthermore, in both economic history as well as in business administration there has been a more pronounced tradition of analyzing business behavior in line with the business environment.

It is no exaggeration to claim that the bulk of research that has a focus on small business growth and survival has emerged since the 1980’s onwards. As stated earlier this increased attention towards small businesses can be partly explained by structural, macroeconomic, crises in the 1970’s that brought academic and political attention on smaller businesses. And it does seem that the research field has changed over time regarding focus and determinants. The focus on the individual or on the entrepreneur has most likely become more pronounced over time. Even though there are exceptions it seems that previous research has put less attention on the individual business and/or on the individual business owner-manager. Research generated roughly between the 1960’s and –70’s seem to have been directed more towards aggregate change in firm populations and towards statistical relationships between structural attributes amongst firms such as age and size. A large part often involved discussing stochastic processes regarding the growth and survival of businesses or (industrial) concentration. Later decades have witnessed a rising focus on other factors. One of these factors is, as stated earlier, individual-oriented determinants, while another relates to institutional phenomena and economic policy on small business activity. Moreover, a focus on small businesses has naturally emerged over the years.

57 Influences here have come from several directions, and the perhaps the most important ones are in new institutional theory (New Institutional Economics); Schumpeterian theory (in which micro or firm growth arises due to entrepreneurial and strategic adaption/interaction to new environments and situations – here markets, technology and institutional setting are influential for firm growth; see for instance Ullenhag 1992 and 1993) and by Alfred D. Chandler’s theoretical model of longer changes and historical stages of management and ownership in capitalism; see Chandler (1977). See also Lindgren (1998).


59 Examples of such studies are Wedervang (1964); Ijiri and Simon (1964); Engwall (1970), and Birch (1979).

60 As concerns institutional determinants and economic policy, see for instance Henrikson and Johansson (1999c). Even though economic history has to a great extent adopted the institutional approach (see Lindgren, 1995), business history is perhaps a field of exception in which managers and owners for a long time have been considered to have a crucial role.
Firm Growth and Survival: Measures and Approaches

Firms’ ability to survive is a problem that has engaged researchers and theorists to a considerable extent. There are several definitions at hand that relate to the exit or termination of firms. While an exit – of some sort – from the market or from a population of firms in its simplest way may be regarded as a business failure, ‘failure’ can nonetheless as a concept embrace several causes and have different meanings. Bankruptcy is for instance a common measure even if in that there is the risk of excluding other business exits that are in fact failures. Furthermore, not all bankruptcies are necessarily ‘real’ failures.61 Nevertheless, some studies have employed bankruptcies as indicators when measuring firm survival and termination, for instance in analyzing business populations or aggregate data, while others have used a broader perspective and defined all types of business termination as exits and used them to measure the ability of an economic organization to survive (and not necessarily seen them as failures). It is therefore in some respects a question of what is being studied that should determine what measure to use in considering firm survival and termination.62

As stated in the earlier section researchers have frequently focused on size-measures and the growth process as such. For instance it was acknowledged above that growth and expansion might represent two different aspects of firm growth. Nonetheless, two main issues pertaining to growth and size are commonly considered crucial in this respect. One concerns growth as it pertains to whether the individual firm’s relative growth from one point in time to another is preferable, or if absolute measures should be employed. Another problem concerns the size variable(s) as such and appropriate indicators to measure both size and growth. In considering growth it has been recognized that absolute measures – i.e. absolute change in size between two or more periods of time – differ widely from relative measures. This can in turn have measuring effects; firms that are initially very small – or small at a certain point in time – can appear to have higher growth rates than firms that are larger, although the larger firm may have grown more in absolute figures.

Additionally, growth as a phenomenon can also manifest itself as either organic or internal growth, or growth through mergers and acquisitions. Depending on the research questions and focus some scholars have viewed organic growth as ‘real’ growth while mergers and takeovers more are con-

61 For instance has Baumol (1990) discussed various outcomes of business and entrepreneurial activities; (economic) success or failure at the micro or firm level does not have to imply that this is transferred into economic failure on the macro or societal level. Thus, bankruptcies and other terminations – or exits – may to a great extent be caused by other factors that do not translate into the common perception of business failure; Gratzer (2001b).
62 This is further discussed in Chapter 5.
sidered as a more stable phase for an expanding business. Furthermore, concerning the growth process as such several models or theoretical assumptions have been presented. Such models pertain to how the growth process of the individual business develops. Some scholars have proposed models or theoretical constructs in which the business grows or declines in a smooth manner between two or more periods while others have suggested that it should rather be seen as a stepwise progression, or, alternatively, as an evolutionary and more uncontrolled (or unpredictable) process. Life cycle theories have furthermore been common and relate to a great extent to such models, in which the business evolves – grows – through various stages. Others have asserted that it is more or less fruitless to use such constructs of growth and processes since businesses are heterogeneous in their growth process – if they grow at all – and that life cycle models might be too reductionistic since these stages may not be evident even in a small fraction of firms.

Secondly, the problem of size has other dimensions. Even if a firm is small measured in terms of number of employees, it can even so be large in terms of for instance market share. Hence, given the problematic nature of the definition of size it is clearly seen that comparison of size whether among firms or industry is not easy to achieve. Some measures are for instance considered to be more appropriate than others depending on industry affiliation and the organizational size has been viewed as multidimensional, even if it has also been maintained that various definitions or indicators of size are mutually exclusive, or rather highly correlated. Both in research and in official statistics, the number of employees is one of the most common indicators of size. There are however other definitions that have been regularly used in research on firms, such as assets, profits and sales. Sales have for instance been a popular indicator for growth in small business research.

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63 For a discussion see Delmar et al. (2003).
64 Various aspects on the growth process and how growth can be looked upon are discussed in e.g. Wiklund (1998). See also Rylander (1995) for the more ‘evolutionary’ or rather ‘unpredictable’ approach to firm growth. Carstedt and Isaksson Pérez (1974) found more fluctuations and variations during the start-up phase as well as during the termination phase of businesses.
65 Examples are here Adizes (1988) and Garnsey (1998).
66 Vinell and Hamilton (1999), and Weinzimmer et al. (1998).
68 It is stated here that there is a rather strong correlation between e.g. the number of employees, assets and turnover of a firm. Agarwal, N. (1979). The observed relationship between measurements are furthermore on an aggregate level and do not by necessity tell us anything of any ‘ideal’ measurements for the single firm: the development of a firm over time can appear very differently depending on the definitions chosen.
69 See Steindl (1945), or Delmar (1997); Delmar examined several recent studies of firm growth. Delmar found that both employees as well as other variables such as turnover and assets are used as indicators of growth. The most common definition in totally 55 studies was
Furthermore, the time dimension is added size-and-growth problem. For example, employment figures may not have to be adjusted for inflation, as do financial variables. But even this measurement can aggravate matters since it might be assumed that surviving businesses have a tendency to become more efficient over time by substituting capital for labor – at least firms in capital intense sectors such as the manufacturing industries.  

Hence, a firm that in terms of market share, turnover and assets for instance is as equally as large today as thirty years ago may not necessarily have maintained the same number of employees. The question is thus posed, has this particular firm decreased in size or not? There is no clear answer to the question, and depending on the perspectives and definitions a firm may have grown, stagnated or contracted.

**Causes and Determinants to Firm Growth and Survival in Previous Research**

Just as researchers have often noted the heterogeneity of size and growth measures, they have similarly asserted that there exists no ‘common’ theory about entrepreneurship as well as about firms’ growth in entrepreneurship and small business research – the discipline is fragmented and heterogeneous as concerns theoretical questions. In research surveys the determinants of growth and survival are commonly divided into positive or negative factors as well as regularly divided into internal and external conditions. We therefore can observe a wealth of explanations as to why firms grow, and why some survive while others terminate. Furthermore, theories on the growth of business firms have emerged over the decades, as have naturally theories of the firm. I will not here carry out any particularly extensive discussion on the matter. Several theories that discuss the existence and behavior of firms are at hand, but it is beyond the scope of this dissertation to fully address them.

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70 Of course, labor and human capital is heterogeneous and changes (e.g. grows) over time if we compare an industrial worker in 1905 with an industrial worker in 1995. And even if there is an observable correlation between various measurements of size it is more likely that industrial firms will ‘behave’ like this if they manage to survive. Small firms in the retail or trade businesses that survive do not however by necessity have to substitute labor for capital.

71 Gandemo (1996), pp. 88-92, discusses for instance some theoretical cases.

72 While this might be true others have questioned this often-identified weakness and rather seen it as a strength; Steyaert and Hjorth (2003), p. 5-6.


74 See for instance Machlup (1967); Foss (1995), and Loasby (2002) for interesting discussions.

turnover (33%) and employees (33%). 20 percent were using multiple indicators. Delmar (1997), p. 5f. Similar conclusions were drawn by Weinzimmer et al. (1998), which found that sales were a common indicator.
Yet, problems of firm size, growth and survival in the markets can be traced back to classical economics. The neoclassical theory of the firm postulates that firms grow until they reach the size corresponding to minimum average cost and there is no incentive to grow beyond this size. Firms that cannot cope with competition leave the market. One explanation as to why smaller firms exhibit higher growth rates – which most studies have acknowledged – could be successful attempts to reach minimum efficient scale as soon as possible. Nonetheless, there have been doubts to this explanation of faster growth of smaller firms. In empirical data and in reality, it has been proposed, institutional influences on firms' growth must probably be more important – thus neoclassical forces can be outweighed by other factors. One such factor would be market imperfections such as economies of scale. A more realistic approach is to assume that there exists firms of widely different sizes that run above the minimum efficient scale and that produce much at the same average cost (assuming constant returns to scale). Thus the individual firms' growth is determined by the demand for its particular product rather than by cost conditions, and for this reason there have been theoretical arguments to include the impact or importance of environmental conditions on the behavior of firms.

Criticism against neoclassical theory has generally considered basic foundations and assumptions. Economists have therefore for instance tried to develop alternative interpretations of the firm. One standpoint is competence-based and evolutionary in which it is accentuated that firms exist because they constitute supreme institutional arrangements that can accumulate and coordinate knowledge and learning. There have consequently been attempts to more or less abandon the static approach, and to address internal processes such as the capabilities and behavior of management.

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75 For John Stuart Mill and for Karl Marx, for example, small businesses were predestined to disappear as capitalism evolved; Phillis (1979).
76 Other theories have a stochastic view on the growth of firms, as well as contractual or resource-based views. See Hart (2000) for an overview and discussion. The transaction cost perspective furthermore introduces the problem of firm growth and size in neoclassical theory. Transaction costs are here mainly considered to be information costs and costs for upholding and enforcing contracts. The existence of transaction costs explains both the existence of firms, as well as how (optimally) large they become. Economic activity can be less costly within an administrative, centralized organization (i.e. the firm) compared with a market solution. This explains the existence of firms. Furthermore, when the net profit for arranging economic activity within the framework of a firm is no longer larger than doing it outside the firm – i.e. on the market – the firm will stop growing. See Coase (1937 and Nelson (1991).
77 Nelson and Winter (1982) is one example.
78 Edith Penrose (1959) brought attention towards the internal processes of growth (similar to the evolutionary approach) in industrial firms, with an explicit managerial or entrepreneurial approach. One chief explanation to firm growth according to Penrose is ‘Entrepreneurial capabilities’, where growth must be planned and resources acquired. Firms can grow almost infinitely, and there are but a few real limitations to the growth of firms; Penrose (1959), especially pp. 9-64, 161-164, and 194-196.
As regards empirical research results, identified and acknowledged determinants of business growth and death can in a simple way be categorized into internal/individual, structural, and external (or exogenous) factors; these are discussed below.

Individuals and Internal Conditions: Traits, Competencies, Behaviors

The business owner/manager or entrepreneur has been widely accepted in a large research body as a key determinant to business growth and success, and a keen interest in such questions seems to have evolved in particularly the field of business studies. Much literature has for instance explained failed businesses with individual-oriented variables. The works and theories developed in the 1960’s as regards the entrepreneur’s motives and need for achievement has inspired researchers with a management orientation to address the problem of firm growth and performance from a behavioristic perspective, in which also the business owner’s social skills, background and competence are important factors. There has been a general profile of the small business manager as a middle-aged, middle-class man that is fairly conservative and reluctant to change and towards bureaucracy. He values on the other hand his freedom and independence. Such circumstances can, according to a considerable body of research, explain why most firms do not grow, since growth implies expanding the existing organization and increasing risks for failure. In the light of the above, therefore, there is nothing particularly remarkable in the fact that most small firms do not grow.

Nonetheless, studies with fairly large population samples have found variation in growth rates and in different types of managers and firms. New and small businesses are viewed as having more entrepreneurial orientation as regards management and owners; observed growth and performance of firms have been found to be intimately related to the individual’s competence, decisions, goals, needs as well as their perceptions and expectations. Individuals with an entrepreneurial orientation are, it is claimed, prone to be engaged in expanding and growing businesses. Furthermore, other, assessment or judgment-related problems are considered to be influential – individuals’ propensity to underestimate initial capital needs are for instance a key factor as to why small firms fail or fail to grow, as well as succession events in firms ownership and management. Another field related to indi-

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79 Gratzer and Box (2002).
80 See for instance Landström (2005) for an overview.
83 Much research in organization and management has studied organizational outcomes (firm performance; growth and termination) in relation to changes in ownership and management in
individual-oriented explanations is the entrepreneurial capacity phenomenon. Sometimes seen as a ‘black box’, or as a gift or a talent, this factor is thought of as determining the long run size of a firm. Factors such as time for monitoring; the value of factors of production; the firm’s spatial dispersion,84 as well as the entrepreneur’s or manager’s knowledge (i.e. human capital) about the firm’s basic elements are here seen as determining entrepreneurial capacity. Such knowledge or skills can only be acquired at cost. Therefore, it is more expensive to run a larger business with many elements: this explains why firms cannot grow indefinitely, and it also explains why firms do not break up. Learning, knowledge, is here a key element, a non-tradable externality.85

Thus individual-oriented variables have been identified as key determinants of failure or success of firms. This can be seen in markets where some business owners or entrepreneurs adopt more successful behaviors or strategies.86 These are considered to constitute predictors to venture performance.87 Similar lines of thought, but for larger, established businesses, have been a central theme in business history research – managers and owners have traditionally been ascribed important roles in managing business expansion and guiding them through times of prosperity as well as crises.88

Beyond question, competency, goals and strategies are some important factors to consider in researching the growth of firms. Such an approach can nonetheless become too reductionistic. The failure or poor performance of a specific business does not have to translate into entrepreneurial failure; a business owner can run a profitable business parallel with failing ones.89 Firm and individual-specific models that are short-term, or that assume that firms are in a stable environment (or ignore the environment) are considered to have predictability for business success when there is little change in the environment in question but not when it undergoes more significant changes, small as well as in large businesses – see Grusky (1961a, 1961b); Beatty and Zajac (1987) and Boeker and Goodstein (1991) for overviews and discussions. Some have for instance maintained that the continued success or growth of a business demands that the initial owner is replaced by a professional leader (Willard et al., 1992), while other have played down the role of boards of directors etc. (see for instance Bennet and Robson, 2004).

85 See Otani (1996).
86 See Reynolds et al. (1998); Davidson (1989), especially pp. 51-65; 78-81; Delmar (1996); Wiklund (1998), as well as Dahlqvist et al. (2000); Wiklund et al. (2003); Landström (1987), Utterback and Reitberger (1982), and van Gelderen et al. (2000).
87 Cooper and Gimeno Gascón (1992), pp. 314-318; Cooper et al. (1994), and Delmar and Davidson (1998).
88 This pertains to business monographs as well as to those on banks; see for instance Anell (1993) on the role of corporate managers in Sweden. See also Hassbring (1978), Gärdlund et al. (1973) and Lindgren (1988).
89 Gratzer (1996) re-created entrepreneurial careers and found such patterns. See also Rosa and Scott (1999), and Storey et al. (1987), p. 315f.
such as macroeconomic fluctuations. 90 Furthermore, research designs intended for interview or for study of existing businesses and entrepreneurs, and that compare variances or occurrences in a population, have difficulties in applying the same design to those firms that were successful in achieving growth in an earlier phase but failed at a later stage. Thus, while this body of research asserts that variables that describe owner-managers’ or entrepreneurs’ characteristics and behaviors as important, previous research results are also fragmented – for instance, survival bias can risk obstructing or distorting empirical results. 91 Other, structure-related variables are nonetheless frequently identified – variables that by some are considered to be effective regardless of time or place.

Structural Factors: Age, Size, Industry-Specific Conditions

While ‘structure’ as a concept or phenomenon is rather hard to define and comprehend with a single, trouble-free definition – it is used in a variety of ways in the social sciences – research nonetheless has identified key factors or structural attributes that are associated with the growth and death of firms. 92 Studies that have not explicitly directed attention towards individual-related phenomena have often acknowledged that structural attributes that are both internal and external to the business are highly correlated to firm performance for as their growth and survival are concerned. Here I shall concentrate mainly on some key structural factors – firm age, firm size, and industry-specific conditions – that have been identified in previous research even if other phenomena related to business growth and survival also could be defined as structural. 93

91 For a discussion related to this problem, see Wiklund and Sheperd (2005).
92 ‘Structure’ may for instance from an economic-historical perspective be related to long-term structural cycles and change that run over several (in this respect) shorter business cycles; these cycles are not merely short-term economic fluctuations but rather contain significant change in business life, production and consumption (Schön, 2000a). But it may also naturally translate into social structures (class, ethnicity) or, as in demographic circumstances, into a population’s age structure and so on. According to Kimberly the structuralist perspective in the study of organizations has had three separate but related questions: The relationships among the structural characteristics of organizations; the determinants of variability of those structural characteristics, and the consequences of structural variability for variability in organizational outcomes. Kimberly (1976), p. 571.
93 Access to external capital (bank loans etc.) is more difficult for small and new firms. Gender or ethnicity could constitute other barriers to growth and survival. Small firms are generally believed to be treated with disbelief on capital markets in relation to larger or more well established businesses. This in turn affects firms’ possibilities for growth or survival and could just as well be defined as structural variables (or in some cases as structural discrimination); Hall (1988), p. 39f, and Storey et al. (1987), p. 323f. The various factors that affect firm growth, firm performance or firm survival can probably be disaggregated further. However, the main factors influencing firm growth and survival are in previous research generally considered to be firm age, firm size, as well as industry-specific differences.
Even if results and focus vary to some extent, overall research results maintain that the age and size of firms in particular have explanatory power or, at least, are related to growth and survival. Age and size of firms could be thought of as structural factors in the meaning that several studies have identified that the growth rates of businesses systematically vary with size and age. Additionally other structural-related phenomena, such as industry differences and/or innovation rates, have been identified in explaining (aggregate) differences in growth and survival rates of firms. Even if they are not entirely separable from individual-oriented factors, especially when it applies to start-ups and new firms, these variables are thought of as having much explanatory power as well as having implications for economic policy.

Regarding firm growth is it acknowledged in a large body of research that low business age and/or small size have a negative relationship with firm survival while they have a positive relationship with firm growth. New ventures are in general small at start, irrespective of size-definition. Small and young businesses’ relative advantages and disadvantages as concerns both scale and scope are therefore generally recognized in many circumstances: they generally seem to grow more and faster than other firms (even if the societal effects regarding for instance their job-generation effect is debatable), but they possess generally less economic and political power. Small, new ventures often display higher growth rates than older and larger firms. If they manage to survive their growth rates will consequently decline with age (and with increasing size). Others have viewed the problem as more complex since this commonly regards businesses in the smaller size classes but not large or very large corporations, and it has also been suggested that the patterns of expansion and contraction can be viewed as more unstable and fluctuating during a firm’s start-up phase or termination phase, but not when in a ‘normal’, operative stage. Nonetheless a general pattern of small and

94 Industry affiliation, for example, can be seen as a decision on the micro level (individual) for a new venture in a certain industry, or to develop and exploit a concept or a business idea. This suggests that the background, personality and competence of the owner-manager plays a certain role in explaining differences in growth rates and survival rates between industries. Firms in manufacturing or technological industries often display higher growth rates and usually perform better compared to firms in the retail or trade industries. In this case, the studies from Davidsson (1989) and Wiklund (1998) can also serve as examples of research identifying industry-specific differences. See also Birch (1979), p. 36. Several more studies could of course be included here as examples.
95 One view is that if small and young firms grow faster or more than other businesses, and if they generate more jobs, policy measures should be directed towards these firms. See for instance Almus and Nerlinger (1999).
96 See Evans (1987a).
young firms’ propensity to grow faster than others has generally been acknowledged in most research.

Small and young firms do however tend to have a higher risk for termination – or failure – than older and larger businesses.\(^9^9\) Few firms in a given population of new ventures survive for any longer period. The risk of termination during the first, uncertain years appear in most empirical studies to be high. This risk tends to decrease significantly for firms that actually do survive. Both the age and size variables as concerns terminations are commonly known as liability of newness, and liability of smallness, respectively.\(^1^0^0\) It is however hard to find studies that analyze survivors from a given population of firms for a longer period of time.\(^1^0^1\) On the whole, studies that take into consideration the impact of structural variables usually analyze a given population of firms for approximately three to five years (although there are exceptions). To my knowledge, fewer studies regarding long-term survival and growth have been carried out, using quantitative population data.\(^1^0^2\) Even if firms manage to survive in a somewhat longer run – more than two to five years – do they not by necessity have to grow; it is probably more accurate to maintain that a small share of surviving firms exhibit growth or high growth. Thus, growth – at least during the first couple of years – does not appear to be a general prerequisite for survival.\(^1^0^3\)

\(^9^9\) Termination and failure are often used synonymously. The term failure (business failure, entrepreneurial failure etc.) may nonetheless indicate that something quite opposite to ‘success’ has occurred. But how should a surviving yet stagnating or shrinking business be evaluated in comparison to ‘real’ failures such as business bankruptcies? And if personal wealth or economic gains are generated through a business bankruptcy due to for instance institutional conditions, is it still a failure? See for example Gratzer (2001b).

\(^1^0^0\) For studies on firm survival as regards firm age and size, see for instance Audretsch and Mahmood (1994); Brüderl and Schüssler (1990); Carroll and Hannan (2000); Dunne et al. (1988; 1989), Storey (1990), and Wagner, J. (1994). For discussions concerning the age and size liabilities, see for instance Starbuck (1971).

\(^1^0^1\) For an exception, see Vesterlund et al. (1998). Here, a follow up study of Swedish medium-sized manufacturing firms 1988-1997 was performed.

\(^1^0^2\) As regards Sweden, results show that the ten to fifteen of the largest (and to that the oldest) companies are those who have exhibited better or higher growth rates relative younger and smaller businesses. The largest companies have survived and been active for a long time – in many cases during the entire 20th century – and one major reason for this is, put simply, because they have been large. This is because research and development (R&D) is considered to have a significant role in many studies when it comes to growth and survival. R&D has generally taken place within the large companies, partly since the large companies almost from the very beginning have had a favorable market position. Finally, large companies also possess financial economies of scale, which smaller and medium-sized firms do not. It has been easier for large businesses to obtain (own) capital or funding for growth and survival. Jagrén (1988), pp. 242-247, 258-261, and 267-273. See also Glete (1995), and Davidsson and Delmar (2001).

\(^1^0^3\) That only a small number of firms exhibit strong growth in a given population is well supported; see for example Davidsson and Delmar (1997). See also Du Rietz (1975), and Jagrén (1988).
Industry differences have furthermore often been identified. Firms in innovative industries or environments, for example, show higher average growth rates than other industries such as retail or trade. At the same time innovative businesses are exposed to a higher termination risk. Even if this risk tends to decrease as for businesses in general as they age – with diminishing liability of newness – it appears that innovative and dynamic industries also constitute a factor that reinforces the termination hazard.\textsuperscript{104}

In sum, there seems to be common agreement on the systematically higher growth rates of young and small businesses, as well as the higher risk for termination for those firms. Low age and insignificant size are thereby structural factors that influence firms’ growth and survival probabilities. In spite of this, survival is not conditional upon growth; many surviving firms do not seem to grow even if other structural conditions such as industry differences affect the rate of growth and termination in firm populations. There is little, or rather, less, knowledge as regards firms’ development and survival ability in the longer run or over longer periods of time; most studies have been rather short. Mostly, our knowledge on long-standing businesses has come from business histories or casual observation.

The Environment: Economic Change and Fluctuations, Institutions and Business Climate

While there is a large body of research that has a focus on either the traits, expectations and behavior of the individual business owner-manager, or in the age-size (and other structural) relationships, a smaller body has addressed the issue of (real) economic external or exogenous factors and how they affect the growth and termination behavior of business firms. A reasonable explanation to this could partly be the entrepreneurial paradigm or focus as such in much research in which the individual is thought of as having a central role, partly due to research designs and the nature of available or employed data.\textsuperscript{105} Judging from the literature, environmental factors range from overall, national ‘business climates’ and institutional settings, to economic aggregate fluctuations and cycles. Here, two approaches stand out in empirical research: one that addresses the overall climate for entrepreneurship and small business activity; another that investigates the impact and relationship with economic change over time. Even if it seems reasonable to assume that business behavior is related both to aggregate or macroeconomic fluctuations, as well to the institutional setting in an economy such a one-sided approach can become reductionistic in the sense that it assumes a common or general behavior of business organizations that degrades the

\textsuperscript{104} See Audretsch (1995), and Agarwal and Audretsch (1999).

\textsuperscript{105} It is not unusual that ‘secondary’ databases are employed, which have short time-spans and are cross-sectional rather than longitudinal.
actions and decisions of individual human beings. Yet, an overall impression is that this is a more under-researched area than are other fields, and micro-to-macro (or to-aggregate) approaches have been called for.\textsuperscript{106}

Research that focuses on the last-mentioned factors has frequently discussed the institutional setting’s impact on firm growth and survival, as well as entrepreneurial activity, often measured as the rate of start-ups in an economy. One part of research has frequently employed managers’ or entrepreneurs’ attitudes or perceptions as indicators of the overall business climate.\textsuperscript{107} Comparative studies, focusing on e.g. the tax system and legislation and regulations of markets have furthermore investigated how such institutions affect business behavior, often with the character of aggregate (macro) research. Organizational ecologists have as an example maintained that new businesses and their development over time are imprinted with institutional and macro conditions at founding – most new businesses do not succeed in gaining legitimacy on their markets and are terminated (which of course also relates to the influence of structural variables).\textsuperscript{108} Furthermore, particularly empirically oriented economists have acknowledged institutions as key determinants for firm growth and survival – this ascribes particularly to the tax system and regulation of markets. In Sweden, there has been debate on the development of the size and employment distribution of firms over time.\textsuperscript{109} It is here therefore assumed that individuals’ – or rather business owners’ and

\begin{footnotesize}
\textsuperscript{106} Aldrich and Martinez (2001).
\textsuperscript{107} See Wikström (1993), or Hult et al. (2000) on how small firm owner-managers experience as societal attitudes or ‘the climate’ for entrepreneurship and business activity. Such measurements also seem to have an important role in the shaping of economic policy and are concerned to be significant indicators on the effectiveness of government policy; see Vikström (2005). Others (see for example Shane and Kolvereid, 1995), have suggested a rather opposite pattern – less benign environments select the most efficient firms, thus firm performance (growth) can be higher for firms in economies with more unfavorable national environments.\textsuperscript{108} There is in fact more to say about the theoretical and empirical framework in Organizational Ecology. For an overview of the general theoretical framework, see Hannan and Freeman (1989), pp. 23-28 and 115-120 as well as the various contributions in Carroll and Hannan (1995).
\textsuperscript{109} Here it is stated that the self-employment rate has decreased since the late 1960’s and furthermore that the number of small firms has increased significantly. This has been put in connection to deteriorated incentives for small businesses to grow since legislation and taxes have favored larger plants in Sweden. See for instance Henrekson (1996), especially pp. 35-62 and 76-85; Johansson (1997), Henrekson and Johansson (1998), and Davis and Henrekson (1999). See in addition the \textit{Global Entrepreneurship Monitor}, GEM, for an overview covering different countries. It is here stated that constraints such as negative attitudes towards entrepreneurship and high corporate and personal tax rates, among other things, are significant for the Swedish economy; Reynolds et al. (2000), p. 43. In an economic-historical study by Jan-Erik Pettersson on the development of Swedish industrial firms during World War II it was demonstrated that the heavily regulated economy did increase the firms’ chances of survival and did in fact cause expansion in some industries. This indicates that the institutional environment – even if this particular period is extraordinary in many respects – is important for the growth and survival of firms; Pettersson (1980), pp. 174-175.
\end{footnotesize}
entrepreneurs’ – macro-institutional arrangements and environments determine incentives and behaviors.110

Even though the relationship between firm growth and survival and real economic conditions have been disputed – some claim that it translates into a rather weak correlation – nonetheless factors such as economic cycles and change and financial conditions have been considered to some extent. Such research demands, just as in the case of institutional conditions on business activity, a longer time perspective than only a few years – for instance in order to cover a full business cycle. To my knowledge such factors have played a less important role in empirical research.

Concerning the specific topic of economic fluctuations and business growth and survival, two different streams of research can be identified. One regards general measures or universal patterns of correlations between business growth and termination and economic change – measured as for instance macroeconomic growth, aggregate employment rates, interest rate fluctuations, etc. – which has been a common way to address the issue of exogenous factors in entrepreneurship and small business research and industrial organization. Another has a more real-historical approach, such as in business history in which specific (or unique) crises and events over the course of time are thought of as affecting the development of the individual business organization.

Business monographs often have had a real-historical approach as concerns the interplay between the environment, economic change and the firm. Economic fluctuations and crises over time and institutions have traditionally been viewed as providing both opportunities as well as barriers to growth and expansion.111 As for the first-mentioned research body it is acknowledged by some that there is a discernable relationship between firm growth as well as business termination rates in population data and changes

110 It is reasonable to assume that institutional setting – taxation, economic policy, labor market legislation, etc. – de facto is shaping the overall conditions for businesses or for firm growth or survival. A heavy increase in corporate taxation and other related taxes, for example, could lead to growth problems or failure for many small or medium-sized firms. However, not only entrepreneurs or small firm owner/managers in the society desire more freedom of action or increased resources. Various interest groups – e.g. employers’ organizations, labor unions, or authorities such as the police force – could also serve as examples. Furthermore: Does, for instance, a relaxation in certain tax rates automatically lead to increased total firm growth or more positive rules of the game (i.e. institutions)? This line of reasoning has a risk of more or less being based on a priori assumptions: lower taxes will give us growing firms, since the taxes at present are too high. And even in economies with lower taxes or ‘better’ rules of the game than in Sweden – I here willingly refrain from an attempt to define these ‘better’ institutions – a greater share of newly founded or small firms fail or stagnate, when at the same time a lesser proportion is surviving and growing. Thus, the structural factors discussed above are probably quite influential. I here refer to the section covering the importance of structural factors. Many studies, e.g. Evans (1987a) or Audretsch (1995), are using (actually the same) data on American firms.

111 See for example Gärdlund et al. (1973).
and fluctuations in economic aggregates, even if individual studies place different importance to different variables. In general, a body of literature with focus on economic change, or changing environmental conditions, has come to the conclusion that termination rates in firm populations decrease when the macro economy is improving and that the conditions for firm growth also improve under such circumstances.\textsuperscript{112}

**Concluding Remarks**

What I have suggested here is that the growth and survival of business organizations is a frequently studied research field in the economic sciences but that different fields are emphasizing different factors, phenomena or variables in the study of under what conditions firms emerge, grow, contract or terminate. Operationalizations and measurements – or for that sake definitions – vary to a great extent.

As regards business growth and death, the last two to three decades have mostly been in focus in empirical research – i.e. from the 1970’s and onwards – often with a short time-period studied (two to maybe five years although there are exceptions). There is little knowledge about small firm growth and survival historically, and there has also been a shift in the research ‘paradigm’, i.e. from viewing the development of firms as a more or less random process or from aggregate perspectives in testing different theories and statistical connections on aggregate levels, towards a more explicit

\textsuperscript{112} A long-term structural-economic perspective as regards firm growth and termination is found in Dahmén (1950): Older businesses – founded before the first World War – displayed more growth than businesses founded in the inter-war period, during which a larger number of firms became stationary/non-growing. See Dahmén (1950), p. 192; 382f. Lennart Jörberg identified related tendencies in which economic fluctuations affected the size distribution of firms 1872-1912. During periods of economic expansion larger firms could grow more than smaller ones; Jörberg (1961), p. 151f.

Similar lines of thought are found in Wedervang’s (1964) study, in which changes in the size distribution of firms over time and firm growth and survival over a period of nearly 20 years (1930-1948) were investigated. Here, the business cycle exhibited influence on growth rates in firms positively: a recession led to low average growth rates while expanding markets facilitated firm growth. The survival of firms also depended on the business cycle and crises – terminations of firms increased during recession years; Wedervang (1964), p. 157f; and p. 203f. In David Birch’s often-cited study (1979), we find similar albeit unclear patterns when it comes to the importance of the business cycle. It is here stated that the rates of loss and replacement of jobs “are somewhat sensitive to the business cycle”, but there is however no discernible pattern (p. 24).

For research that has tested the relationships between economic fluctuations and business terminations as regards small firms, see Audretsch and Mahmood (1995); Everett and Watson (1998), and Ilmakunnas and Topi (2000). For studies that have investigated larger firms’ survival rates and fluctuations in aggregates, see Goudie and Meeks (1991) and Bhattacharjee et al. (2002). As concerns studies that have tested the relationship between firm growth and economic fluctuations, see Davidsson and Delmar (2001), Kangasharju (2001); Boeri and Bellmann (1995); Gratzer and Box (2002), and Wagner (1995).
focus on the micro units and the social and psychological factors of the owner-manager/entrepreneur. Furthermore, the institutional setting and policy measures have become a growing research interest. The upswing of entrepreneurship and small business research from the 1980’s and onwards, with focus on the individual, is quite obvious.

Different fields have, as mentioned, different perspectives. Business administration – or business studies – differs in some respects from economics, especially concerning the unit of investigation. In the first case the individual, in the latter the business or businesses on a more aggregate level. Measurements and other definitions of growth and growth processes have on the other hand been frequent in these disciplines while economic history and business history has put less focus on such issues. Here, the growth and expansion of individual corporations (or banks) is a central theme. Yet, as in much entrepreneurship and small business research, business historians attach great importance to managers’ and owners’ behaviors and decisions.

There also seems to be in most fields of economic research a tendency to research the performance of growing and surviving businesses, rather than failing or contracting ones. It must be acknowledged that empirical material and data – or for that sake research designs – often do not allow for researching failed businesses, failed owners and so on. A problem thus arises that the exclusion of failed firms, or those that may have grown before a sample is drawn, most likely biases the research results. Thus, a study of the dynamics and development of business life in a market economy is in many cases compromised if only surviving (or successful) firms are studied. The long-run perspective is also absent in much research. Measured in time, most studies are short. In particular, micro-oriented studies of the characteristics of entrepreneurs as well as of firms have often been short-term. Naturally, there are also exceptions here, but in most cases the longer time perspective is applied by business historians. Nonetheless, if general conclusions are to be drawn from the development of rather atypical organizations – large and old ones – then results and knowledge as regards smaller businesses may become distorted.

The multitude of explanations to the growth and survival of firms that were discussed in this chapter came perhaps as no surprise; to some extent we can explain this particular situation with different traditions and approaches in different disciplines. Some research has recognized a strong relationship between external/institutional factors and firm growth and survival, while other studies focus on structural variables such as firm age or size, alternatively structural variables such as industry or innovations. Many other studies have put the spotlight on the characteristics of the owner-manager/entrepreneur, and differences between education, background, motivation etc. Of course, this description is more or less a simplification, since several studies address many of these questions simultaneously. As shown here, factors such as managerial competence and motivation, structural vari-
ables and external variables, for instance institutions and – presumably, but to my knowledge not empirically tested on larger populations of firms to a greater extent – crises, shocks or business cycles are most likely to affect growth and survival opportunities. The question is, however, to what extent all of these factors here discussed are influencing firm growth and survival, and – of course – what factor is the most influential of them all. Depending on the level of analysis that is chosen – macro, meso, micro – and depending on what type(s) of data or sources that are employed, the answer to these questions can – as we have seen – be quite different.
4. Development of the Size Distribution of Firms in Sweden: A Centennial Perspective

Introduction

The size distribution of firms has frequently been analyzed in economic research. Even if there are differences, most economies and nearly all industries are characterized by a skewed size distribution, meaning that small firms dominate relative to larger units. Explanations of this asymmetric distribution have ranged from random processes to institutional determinants. In this chapter, the development of the Swedish size distribution of firms over a long perspective of time will be studied. A central research question is here connected to previous research results that have discussed changes in the size structure of businesses related to general conditions for firm growth.

When addressing the question of the size distribution of firms, a general problem that arises relates to the definition of firm size and classifications of size. What we commonly regard as ‘small’, ‘medium’ and ‘large’ firms can vary substantially given time, place, perspective and source. For instance, according to present-day definitions, intermediate-sized firms are considered to have 10-199 employees while small and medium enterprises (SMEs) have less than 250 employees. Broad class-intervals may therefore mix a small business with a quite large one. Older classifications and the diffi-

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114 See Chapter 3; see also for example Simon and Bonini (1958), Hart (1962), Wedervang (1965), Engwall (1970), Carstedt and Isaksson-Pérez (1974), Lucas (1978), and Storey (1994). For more recent (Swedish) research, see below.
116 For discussions regarding measures of firm size and related problems see Andersson (1978), and Gratzer (1988) and (1996). Size of firms can also be measured by other criteria than the number of employees. In the European Union, the definition of a micro firm is 0-9 employees, and a small firm has 10-49 employees. Medium-sized firms employ 50-249 persons, while large firms have 250 or more employees. In Sweden, a small firm has traditionally been defined as having zero to 200 employees, and a large business as 500 or more; Lundström, A. et al. (1998), pp. 25-27. However, as an example, the label ‘solo entrepreneur’ (zero employees) has also been introduced (although not as an official classification), stating that there in fact is a difference even amongst small firms (see Hult et al., 1998). Consequently,
culty in combining different statistical materials additionally magnify problems in studies that want to make comparisons over longer periods of time. Therefore, the study of the development of the size distribution can be further aggravated by the aggregate nature of available data. On the other hand it would probably demand much effort to produce entirely new material. Yet another problem in analyses of size distributions regards cause and effect. Since the empirical material used in the present study is cross section data, it may become problematical to speak in terms of firm growth as well as causes for growth. Rather, changes in the size composition of businesses can only partly be related to the question of firm growth. Methodological issues are further discussed below, but it must be kept in mind that comparisons over even shorter periods of time can become complicated.

Concerning Sweden, shifts in the Swedish size distribution of firms have been identified by empirically oriented economists for the latter half of the 20th century. Here, it is claimed, firms of medium or intermediate size have diminished in numbers while especially small firms have increased significantly. This shift is explained by institutional change in the macro economy from the 1960’s and onwards. The conclusions drawn from this observed structural shift is that (new) small firms cannot grow to at least medium or intermediate size. Thus, firms in the ‘middle class’ have stagnated in numbers since the number of growing (small and new) firms has decreased. Shifts in the size distribution of firms were however recognized earlier, for previous periods. Earlier observers saw for instance a tendency of small firms to increase during the interwar period. Furthermore, explanations other than institutional determinants have been proposed as regards why there are movements in the aggregate size relationship between firms. Therefore, by addressing the question of the development of the size distribution of firms over a long period of time, new and complementary research results can hopefully be generated.

Explanations to the Changing Size Distribution of Firms

Earlier research has often recognized that the Swedish economy is dominated by large corporations, since long rooted in the old industrial society. The domination of large firms has here been viewed as quite outstanding in the very size classes of firms in official statistics have, as can be observed, a different span. Statistics Sweden nowadays utilizes the size classes of 0, 1-4, 5-9, 10-19, 20-49, 50-99, 100-199, 200-499 and 500 or more employees (SCB: CFAR/Företagsdatabasen). It is obvious that a firm with twice as many (or more) employees than another firm might be included in one and the same size class. Consequently, this reveals that comparisons over time and across economies can become challenging.
international comparisons. Few businesses established during the post-war period have, according to this view, reached a position similar to the old industrial companies. In that respect, this research has recognized that the inflow of new, growing firms has been less significant during the second half of the last century. Thus, smaller (and possibly more stagnating) firms have come to dominate the economy.117

Three main tendencies, related to each other, have been recognized by the body of research that has studied recent developments in Sweden (e.g. Henrekson, 1996; Henrekson and Johansson, 1999a-c). One concerns self-employment. Here it is stated that Sweden has a comparably low share of self-employed persons relative other economies. The problem of self-employment is not the subject of investigation in the present study, even if there are reasons to believe that this rate has decreased over time.118 A second tendency, closely related to the first, has also been identified. It is here acknowledged that the employment distribution resembles a snapps-glass. Whether this is significant for Sweden only has on the other hand been debated; it has been proposed that also other countries exhibit a similar employment distribution.119

Finally, the size distribution of firms as such has been under scrutiny. The hypothesis here is that medium firms – or, rather, intermediate-sized firms – have decreased in numbers from the latter part of the 1960’s to the early 1990’s when at the same time the number of small firms (measured in both absolute and in relative figures) has risen significantly.120 The primary explanation for this aggregate change is interpreted as policy-determined. Such institutional change has been increasing taxation of households and businesses (especially small and/or family-owned ones), wage policies, labor and credit market regulations, and the size of public sector employment. During these years, and especially during the 1980’s, the conditions for small and family businesses were poor. It was not until after the tax reform in the early

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118 See for instance Henrekson (1996) and GEM – Reynolds et al. (2001) – concerning the low level of self-employment. See also Lindh and Olsson (1997) and (1998) concerning the falling rate of self-employment over the last century. Small business research has further proposed that small firms gradually have acquired a more important position, and that the era of big business has passed. See for instance Carlsson (1992) and Pettersson (2004).
119 Jagrén (1992), p. 17, or Lodin (1999), p. 355. The shape of the employment distribution here means that large shares of the work force are employed in either small or large firms, while a smaller part is employed in firms of intermediate size (10-199 employees). See Henrekson and Johansson (1999a and b).
120 For an overview and research results on the size and employment distribution of firms in Sweden during the latter part of the 1900’s, see Henrekson and Johansson (1997; 1999a; 1999b), Lodin (1999), and Davidsson och Delmar (2001). For a further discussion see also Johansson (2002).
1990’s that the rules of the game for especially small business activity improved.\textsuperscript{121}

Tendencies similar to the transformation above, but for earlier periods, were discovered by Erik Dahmén (1950) in his study of Swedish entrepreneurial activity during the interwar period, 1919-1939. In comparison to businesses founded prior to World War I, new firms in the interwar era were to a greater extent smaller as well as more stationary (non-growing).\textsuperscript{122} Therefore, today’s observations of a trend for a smaller number of medium firms over the last decades of the 1900’s – and consequently more small businesses – could be a part of a more long-term tendency or movement in the economy. For instance the Federation of Swedish industries, Sveriges industriförbund, noted in the early 1960’s that the shift in the size distribution had been noteworthy over the past decades. Medium-sized firms had declined in numbers. Small firms, meaning businesses with 11-50 workers, had increased their share of the total number of firms in the economy while the largest ones – those firms with over 1,000 workers – also had increased. Medium firms, consequently those with 51-1,000 workers, had thus diminished. Accordingly, on the whole it was recognized that there had been a general increase of smaller businesses, mostly due to technological advances that improved the conditions for small-scale production.\textsuperscript{123}

Other contemporary observers saw here tendencies of concentration. C.H. Hermansson (1959) was of the opinion that concentration towards larger production units within all industries of the economy at least partially had intensified during the first half of the century. Within most industries firms

\textsuperscript{121} This is discussed in Henrekson (2001) and in Davidsson and Henrekson (2002), p. 82 ff. See also Lundström, R. (2001) for a discussion regarding taxes and corporate structure in Sweden and the effects thereof. Based on figures emanating from this body of research it can be observed that firms with 0-9 employees constituted some 89 percent of the entire population of Swedish businesses in 1968 – this regards firms of all legal forms in all industries – while the corresponding figure in 1993 was a little more than 94 percent. For manufacturing industries specifically the numbers were nearly 70 percent in 1968 and close to 85 percent in 1993. At the same time firms with 10-199 employees had diminished extensively. This size-group added up to some ten percent of all firms in the economy in 1968 while in 1993 the figure was around five percent (for manufacturing industries 28 and 14 percent, respectively). Firms with 200 employees or more had also experienced decreasing shares: for the entire population of firms around 0.5 percent had 200 employees or more, and a full 0.3 percent in 1993; manufacturing industries at the same time had decreased from 2.2 to 1.3 percent. My own calculations based on Johansson (1997), p. 14. This particular data is calculated on the number/share of firms in different size-groups per 1,000,000 inhabitants.

\textsuperscript{122} See also Dahmén (1953).

\textsuperscript{123} The very wide definition of medium firms could naturally be questioned, at least from today’s measures. Furthermore, it was also recognized here that the share of the smallest industrial firms of 0-10 workers had steadily diminished from 1940’s and onward. As can be seen, this observation opposes to some extent the notion that small firms had increased; Sveriges industriförbund (1961), pp. 117-119. Politically small firms – particularly in handcrafts and small-scale industries – were viewed as important. They were also ascribed important roles also in the future; see e.g. SOU 1959:7, p. 35 ff.
in the ‘middle-class’ had diminished relative to small and large ones. Hermansson meant, differently from others who suggested an increasing importance of small firms, that concentration in ownership had increased over time. Therefore, the role of smaller firms had weakened, and economists during this period of time had a keen interest in issues related to concentration. There were therefore here two different standpoints during the 1950’s and –60’s: one that identified tendencies of concentration and increased domination of large corporations and owners. This in turn increased the number of small firms and large. Another standpoint held that technological progress had improved conditions for small firms, which thereby could increase in both numbers and in importance (consequently countering the movement towards concentration in some respects).

A closely-related interpretation of the standpoint that saw technological change as a determinant has also been proposed in research on firms’ size: technological specialization and progress has brought about a larger number of small firms in modern economies since large size per se has become less significant. International comparisons have acknowledged that average firm size generally has decreased and that small businesses in a relative sense have increased in numbers from the 1970’s and onwards in different economies – including Sweden. For instance Traù (2003) has proposed that a similar pattern of diminishing average firm size can be identified for several major industrial economies from the 1960’s and onwards. Traù’s conclusion is that the ‘Golden Age’ of industrial economies in the postwar period favored large plants. Exceptional macroeconomic conditions made large firms increasingly larger through horizontal and vertical concentration of production. Exogenous shocks, such as the breakdown of the Bretton Woods system and greater uncertainty in markets around the end of the 1960’s, how-

124 Hermansson (1959), esp. pp. 13-15. Hermansson here opposed Eli F. Heckscher’s view that small businesses had become more important. Axel Iveroth observed the same tendency during the 1940’s: the ability of small firms to generate job opportunities had diminished considerably since the 1930’s. Nonetheless, they had according to Iveroth still an important role due to the increased standard of living in Sweden as suppliers of goods and services. Iveroth (1943), pp. 162-165.

125 Maurice Dobb for instance claimed that it was important to take into consideration the increasing concentration of capital and production in modern capitalist economies. Supposedly small business groups can still dominate an entire industry, thus giving small firms the role of subcontractors or more or less subjects to large business groups. In that respect, small firms continue to exist but their role as such were diminished. See Dobb (1963/1973), pp. 280-285.

126 Also in Glete’s (1994) investigation it is claimed that the influence from the largest groups of owners have increased during the 1900’s.

127 Carlsson (1992), pp. 6ff. See also Schwalbach (1994).Audretsch has classified the postwar era in western economies as a period in which “small firms and entrepreneurship were viewed as a luxury, perhaps needed by the west to ensure a decentralization of decision making; but obtained only at a cost to efficiency [...] Systematic empirical evidence, gathered from both Europe and North America documented a sharp trend towards a decreased role of small firms during the post-war period”; Audretsch (2005), p. 6.
ever, have had significant effects on the size structure of firms over the remain-
ing century – here, there has been less division of labor within firms, and an increasing division between them. Consequently, the number small firms increased and the relative relationship between firms of different sizes changed during the century’s last quarter. Vianen (1993) has proposed similar tendencies of the shifting size distribution of Dutch firms, and moreover that the presence or ‘domination’ of small firms during distinct periods were fluctuating – in a counter-cyclical way – with the business cycle: they played a greater role in the economy during recessions and a lesser one in upturns.

In that respect, Traù and others address the issue to some extent from something that could be labeled as a ‘real-historical’ or period-specific perspective. Particular conditions and events have determined or shaped the evolution of the size distribution of firms over time in advanced economies. Additionally, Sweden’s transformed size distribution under the last quarter of the century seems to have coincided with other economies. The last decades of the 20th century have, it seems, witnessed an increase of small firms. In that case an explanation to the relationship(s) between firms of various sizes or size-groups could lie in different periods or phases in the economy.

Economic historians have also observed such developments for earlier periods. For instance Lennart Jörberg (1961), in his study of Swedish industrial growth 1872-1912, came to the conclusion that small firms in the period’s early stage had a reduced importance while the somewhat larger ones increased. Here, there were different phases in the industrialization in which successively new small firms were founded. Aggregate industrial production was dispersed over a steadily increasing number of new (small) businesses. Relatively larger businesses stagnated but started to regain their positions during the 1880’s. Gradually, the (absolute) number of new firms increased – and these were commonly smaller – which diminished the relative importance of larger businesses. Jörberg claimed that small firms with limited economic and technical resources could expand or compete with larger ones (thus survive) during periods of economic expansion and high demand. However, when economic conditions worsened – such as during the 1880’s – firms of (somewhat) larger size became more important than small ones.

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128 Traù (2003), see esp. p. 119ff. See also Traù (2000).
130 Jörberg (1961), pp. 118-120; 151-152; 157. Jörberg’s data differs in some parts from public statistical material from Statistics Sweden (SCB) and the National board of trade (Kommerskollegium). This has some consequences when different sources are compared. Jörberg deliberately excluded businesses that were in handicrafts, which had the result that many small firms were not reported. Additionally, the very principles for statistical reporting changed; particularly there was a vast shift between 1889 and 1897 that should be read with care. According to Jörberg, the deflation period in the 1880’s often made it impossible for small firms with less than five workers to reach an output value of 10,000 and they were excluded from the public statistical reporting since this was a minimum limit. In 1872, the
Organizational ecologists hold a similar dynamic view. Here it is assumed that small and large firms can outcompete medium-sized organizations: large firms pose a competitive threat to medium firms but hardly any threat to small ones. An increasing number of large firms might even increase the survival chances of small ones. Thus, medium-sized firms are trapped in competition with both small and large businesses.\(^{131}\)

For Jörberg was therefore the overall economic development and conditions, or specific periods, influential when it came to the observed changes in the size distribution of firms. For later years (1919 and 1939), further data from Dahmén’s investigation can support this notion.\(^{132}\) Nonetheless, even if period-specific conditions have explanatory power, a steadily increasing business activity in the economy over a long period of time as a whole can therefore have brought about an inflow of small firms. This has in turn changed the size structure of firms, even if comparisons over time are aggravated by re-classifications and reforms in statistical reporting.\(^{133}\) Additionally, concerning the industrial (manufacturing) sector as such earlier studies have claimed that the inflow of new firms measured as the share of new businesses in relation to the total number of firms have decreased rather steadily over the 20\(^{th}\) century. The rate of new-firm formation was rather high from the interwar period up until the postwar period, and diminished price level was high, which made it easy for small firms to reach a high output value. Therefore it is very likely that this (statistical) limitation overestimates the shift between size groups 1872-1889. Jörberg (1961), pp. 119-120.

\(^{131}\) Therefore, the assumption is that the two ends of a size distribution – that is, small and large firms – can outcompete the middle ones; Carroll and Hannan (2000), p. 275ff.

\(^{132}\) Manufacturing firms with less than 20 workers had increased from around 60 percent in 1919 to 66 percent in 1939. Firms that had 20-99 and 100-499 workers had correspondingly diminished while the largest group (500 workers or more) had increased slightly. Dahmén’s thesis was that the interwar period was signified by a major change in business life. More stationary firms were founded. This altered the size structure of business in which small firms became more dominant. Even if Jörberg’s and Dahmén’s data are not fully comparable, we can nonetheless conclude that the Swedish economy from the turn of the century (1897/1903) up until the outbreak of World War II (1939) might have been signified by a general increase of smaller firms. In that case, there were even from this point in time increasing numbers of small businesses in the economy. Dahmén (1950), Appendix (volume II), own calculations.

\(^{133}\) In 1968 there were 27,120 firms per one million inhabitants in Sweden, and in 1993 the corresponding number was 53,806. This concerns all types of firms in all industries etc. The figures should, however, be read with care since changes in statistical reporting have been carried out. See Johansson (1997), p. 8. Later figures show furthermore that this figure had increased to 94,125 firms in 2002. Reforms and re-classifications of (public) statistical data however make such facts rather uncertain. Firms have ‘entered’ the economy due to new criterions and limitations in reporting (i.e. rather than a real increase of firms) both historically and during our times. See SCB, \textit{Företagsdatabasen}. For a discussion regarding definitions of industries etc. as well as how public reporting has changed due to real structural change in manufacturing and service industries over time, see for instance Braunerhjelm (1992). Various reforms and changes in statistical reportings are further discussed below.
from the 50’s and onwards, although there were fluctuations over individual years.134

Thus, while it has been claimed that institutional determinants – as regards Sweden – have had substantial effects on firms’ growth possibilities and the evolution of the size distribution as such during the last quarter of the last century, other explanations have also been proposed. Others, including earlier observers, recognized the same tendency towards a growing importance – or rather domination – of small businesses, but had other explanations to this shift (technological change, concentration of ownership). Another body of researchers has, as we have seen, identified a common tendency also in other economies from the late 1960’s and onwards that, on the whole, seem to resemble the Swedish development pattern: a growing number of small businesses. Furthermore another trend has been identified, in close relation to the one above, namely that distinct phases or periods have affected the shaping of the distribution of businesses.

Objectives and Methodological Considerations

Complementary data and a longer perspective of time can provide new research results. On the whole is it however rather complicated to receive a complete picture of the inflows and outflows in the entire population of businesses and in different industries. Structural societal and economic change as well as adjustments in statistical reporting have affected available (public) size distribution data – particularly over long periods of time. There are therefore several reservations that must be made in such a study.

A main proposition in this particular study is that the empirical material suggests that especially the relative relationship between firms of various

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134 Braunerhjelm and Carlsson (1993), esp. p. 323ff. In Gunnar Du Rietz’ study (1980) of some manufacturing industries between 1954 and 1970, it was established that the rate was positive up until the middle of the 1960’s but fell thereafter; see esp. pp. 22; 83ff. To this it should be added that the Swedish self-employment rate seems to have diminished rather steadily since around 1910. There have been periods of exception; periods characterized by economic crisis such as the interwar period and the early 1990’s in which the rate of self-employment has increased (calculated as the number of self-employed persons relative to the total work force. See Lindh and Ohlsson (1998), p. 32). Yet, this generally weakening trend nonetheless speaks partially against the notion of increasing business activity, at least concerning self-employment and/or the manufacturing industry specifically. Economic structural change over long periods of time and the rise of new industries might have some value of explanation here. It is however not unlikely that firm formation and new enterprising also can be regarded as period-specific or cyclical phenomena; phenomena that in turn might have effects on the distribution and structure of businesses. Data regarding new firms in manufacturing during earlier periods – roughly from 1850 until the early 1900’s – show for instance an increasing trend of new firm formation that is undisputable yet fluctuating around periods of economic upswings and downswings; see Dahmén (1950), pp. 77-84. As Dahmén points out, his data is somewhat biased and does not include the entire rate of new firm formation in the Swedish economy 1850-1909.
size classes over time can have an explanation in period-specific conditions. During periods of economic prosperity and growth, small firms (or firms of smaller size) have decreased in importance during which larger units have increased. The position between firms of different sizes has therefore shifted. In times of economic upswings there have been better opportunities for existing (and new) firms to grow. There are as mentioned above complementary (or excluding) explanations to such a hypothesis; among other things it would be likely that self-employment increases during downswings or depressions. In that case, even if institutional explanations for this structural change under recent decades might be reasonable, the study suggests that similar movements have been at hand earlier, meaning that earlier periods have shown similar tendencies (or fluctuations) of increasing numbers of small businesses and decreasing numbers of medium or intermediate-sized ones. Therefore, distinct macroeconomic conditions under certain periods may affect the growth possibilities for firms.

This does not exclude that the total (absolute) number of firms in the economy successively has increased in the long run. The study also proposes that the Swedish case – transforming to fewer medium-sized firms and larger numbers of small, stagnating businesses during the last three to four decades of the past century – might have to be viewed from another perspective, namely that the observed increase of smaller units can be a part of a process that has characterized also other economies during the same period of time, and vice versa.

Yet, to speak of or to measure growth of firms with cross section data may be hazardous. Data on firms’ size distribution(s) are by its very nature cross-sectional. This means that a cross section typically includes firms of all ages, i.e. firms that doubtless are in different stages of their life cycle. Old firms are mixed with young or new ventures. Therefore, between two (or more) cross sections – particularly if a longer period has elapsed – there is no information on firms that possibly are included in the first but not in the second observation. Hence, firms that have failed in the time between are excluded in the second one. Firms founded as well as terminated between observation years are not included at all. Thus, using cross sectional data may involve some serious interpretation problems, particularly regarding cause and effect. Consequently, does an increase or decrease in a particular size group indicate that firms are growing/shrinking (migration of existing firms from one size group to another in the statistics), or does this imply that there are generally more (or fewer) firms in that particular group due to increased new-firm activity (or more failures) in that size group as well as/or in other size groups? Or is it a combination of the two?135

Furthermore, all firms may not grow in the same way. Large businesses are for instance assumed to grow externally to a greater extent than small firms.

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135 See discussion in Chapter 2.
A decrease of small firms may indicate that larger units are acquiring smaller ones, thus possibly increasing the number of firms in larger size groups (or it could also indicate that small firms are growing organically). A large firm can also, if necessary, at first try to downsize (to a certain limit) while a smaller unit might have to exit the market: one firm exits, and an already existing larger firm migrates to the size group of the former.\textsuperscript{136}

Therefore our conclusions regarding the growth and expansion of both older and newer firms, as well as concerning changes of the number of firms in various size groups (more or fewer) over time, may run into problems of interpretation when using cross section data. Nonetheless, such data can give information over patterns of change over time, or trends – especially if there are several repeated cross sections available.

Sources and Data in the Study

Even though different studies have investigated the size distribution for different periods, and in spite of generally available historical data on Swedish economy and business life,\textsuperscript{137} there are nevertheless extensive gaps concerning data availability. Industrial statistics (manufacturing) is covered in a greater depth than other industries such as services or trade – particularly from a historical perspective. The National board of trade (\textit{Kommerskollegium}) and Statistics Sweden (\textit{SCB}) were from 1913 and onwards publishing information about the number of establishments in mainly the manufacturing industries. Data on earlier years (from 1896) is however available.\textsuperscript{138}

From this, and with some exceptions, more or less ‘coherent’ series over Swedish manufacturing can be obtained. Principles for reporting and inclusion of businesses were however significantly changed over time, and it is beyond the scope of this investigation to fully address this issue. It is however clear that this has some consequences for an analysis, particularly the

\textsuperscript{136} Commonly, organic growth has usually been viewed as ’real’ growth while external growth is more of a reallocation of resources from one business to another. See for instance Penrose (1959/1995), and Davidsson and Delmar (2001). Gunnar Du Rietz (1975) found that a large number of the firms that were merged with other firms in the 1960’s were closed down shortly thereafter. Few small businesses exhibit any considerable growth. As e.g. Brauerhjelm asserts, it is very difficult to come up with a clear answer to such questions; Brauerhjelm (1993), p. 322.

\textsuperscript{137} As an example, there is much empirical material to use from public/official statistics. Such data on e.g. production, number of workers and so on has also been developed by economic historians; see for instance Schön (1988).

\textsuperscript{138} Within the framework of SOS (\textit{Sveriges officiella statistik}) and BISOS (\textit{Bidrag till Sveriges officiella statistik}) – the precursor series – were such data published. The material in the latter one differs from SOS in many parts considering limitations for inclusion and classification. Data that is comparable with later periods (i.e. from 1913 and onwards) were published from the late nineteenth century. See \textit{BISOS: D. Fabriker och handverk, 1858-1910}. 
study of change over time. Between 1920 and 1955, data were published every fifth year. Thereafter, annual series were published.\textsuperscript{139}

According to more current information, the statistical limitations for reporting seem unclear. It has for instance been stated that firms with fewer than ten employees (or, rather, workers) were not reported in publications between 1913 and 1946. This does not however seem likely.\textsuperscript{140} Firms with fewer than five workers were excluded in the statistical reporting in 1950 (in reality from 1946) up until late 1960. This furthermore means that the total number of firms in the publication from 1945 that consisted of around 22,100 diminished to a little more than 17,000 in 1950.\textsuperscript{141} There have been more significant changes in principles of reporting over time. Therefore, the consequences for using public statistical material can be substantial. For instance, such statistics are most likely afflicted by a large number of missing cases.\textsuperscript{142}

During the 1970’s was also the reporting in number of employees changed significantly. Previous statistics had mainly reported the number of workers (thus excluding other personnel). Later on, other employees, including workers, are incorporated in the data. This naturally obstructs comparisons over time to a great extent. Moreover, the reporting of various size-groups/classes has often been modified – more specifically, the very class-

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\textsuperscript{139} Data was first and foremost reported in the series Industri and Statistisk årsbok.

\textsuperscript{140} In Industri 1990, p. 9, it can be read that the limit for inclusion was set to at least five employees in 1946, and that the limit previously had been ten employees. Thus, this can be interpreted as statistical reporting excluded firms with less than ten employees prior to 1946. This is not however clear in the very publications from 1913-1945. These publications consistently have size-classes consisting of “establishments with a number of workers up to 10; 11-50; 51-100…” , and so on, Industri 1945. Also older editions denote the smallest size-class as “10 workers or less” (Industri 1925, p. 15). Other, more contemporary observers (Hermansson, 1959, p. 49) do however claim that firms with ten workers or less regularly were excluded. Thus, we might have reasons to in some parts exclude the smallest size group in some calculations – at least when comparing data over longer periods of time. It should further be noted that also other limitations were applied, such as monetary ones and certain product values for individual businesses. Considering the ‘jump’ (or rather, the fall) in the industrial statistics between 1945 and 1950 – in which the number of firms with 0-10 workers are diminished heavily – I would like to question the correctness in the notion that this smallest group only consisted of ten workers, but no less. This seems unreasonable.

\textsuperscript{141} See Industri 1940, and Industri 1950, p. 10ff. The principles for reporting – or, rather, for classification – have differed. Partly depending on source of information, partly due to the fact that the publications were currently and constantly revised over time. As mentioned above, firms with fewer than five employees were excluded from 1950. Other (strange) re-classifications were for instance that during one single year of publication (1945), the smallest group of 0-10 was divided into 0-3 and 4-10 workers, respectively. The next edition (1950) again used the older classification.

\textsuperscript{142} As an example did Carstedt and Pérez base their investigation on such statistical information. In 1954 did SCB incorporate some 2,000 firms that previously had not been included. In 1964, another 2,000 firms were included. These firms were ‘discovered’ when different registers were matched; Carstedt and Pérez (1974-V), pp. 34-35. A thorough discussion concerning this problem is also found in Hermansson (1959), pp. 45-52, and in Braunerhjelm (1992).
intervals of firm size. And, additionally, statistics prior to the 1970’s regularly defined firms as the (physical) establishment, not the legal unit. Thus it is evident that a business that consisted of more than one establishment was included multiple times and was also possibly considered to have fewer employees or workers than in reality. All together, such discrepancies make it difficult to produce consistent and coherent series. More present-day data, as mentioned earlier, has similarly gone through vast changes. One major item regarding statistics produced from 1968 and onwards is for instance often-changed limitations for inclusion of individual businesses in the registers based on taxes (value-added tax, VAT). This has affected the reporting of the number of firms for individual observation years. No statistical source moreover accounts for (or adjust for) corporate groups, subsidiaries and so on. Therefore, each firm/establishment is reported ‘independently’ in the source material, even if they belong to a larger group.\footnote{The business register at SCB has thus gone through several reforms. Between 1968 and 1976 public business activity and enterprising were excluded (counties, municipalities and the state church), compared to later years. This increased the number of large production units. Furthermore, in 1979, a new criterion was introduced. All firms that had reported employer’s declaration (arbetsgivaruppgift) and/or taxable earnings (VAT) to the local tax authorities were now included. This increased the number of firms in the statistics. In 1987, however, the criteria again changed. The limit for taxable earnings was raised, thus lowering the (official) number of firms. This limit was raised again in 1991, whereby there was an extensive deregistration of a large number of businesses. Yet in 1994 new limitations were introduced. Here, the criteria for taxable earnings etc. were removed. It was now sufficient to be registered for preliminary tax (F-skatt). Hereby some 40,000 firms were (re-)included in the statistics. Two years later (1996), new rules were applied and another 200,000 firms were included for the year 1997. Most of them were small businesses with zero employees. Thus, to use the public statistics without a critical notion regarding the pitfalls can significantly compromise the research results. SCB, Företagsdatabasen.}

Consequently, while it can be concluded that the possibility to study changes of the size distribution of firms over even longer periods of time is at hand, it must also be concluded that larger reorganizations have made different materials difficult to compare – for instance materials published before and after the 1970’s. In addition to that comparisons even within different series/materials that at a first glance seem to have been subjected to a consistent method for reporting occasionally are aggravated by the fact that limitations and other criterions were modified.

Yet, even if manufacturing statistics contain the most extensive data, other materials concerning the size structure of firms are available. Three censuses of enterprises were for instance conducted in 1931, 1951 and 1972, with the aim covering all sectors of the economy. The censuses differed from each other as regards definitions and measurements etc., but are in my opinion to some extent comparable with each other. Since all lines of business were included in the censuses, the total number of firms was also considerably larger than for the manufacturing industries. In the census of 1931, for example, there were some 240,000 units. Thus, it is possible to compare the
change of the size distribution on a broader level during three different occasions with a 20-year interval. With some reservations, these censuses can also be compared with more coherent statistics over the entire business life that was produced from the late 1960’s and onwards.\textsuperscript{144}

The development of the size distribution in manufacturing can thus be analyzed from mid-1890 to the present, using the public statistical material. Additionally, an investigation of all sectors can be performed from the early 1930’s and onwards. In the following, the analysis will mainly be based on the relative development of the size distribution over the course of time, for instance if firms in a particular size-group increased or decreased relative to others over time.

Furthermore, it is clear that the actual number of firms reported a specific year does not necessarily include all firms that were actually in operation. It is thereby on the whole probably precarious to link different series and compare various levels in an absolute sense over the course of time – especially over longer periods. Rather, I think the patterns of change as such (the ‘trend’) can be of interest in this context, not any absolute change per se. The data can to some extent be viewed as repeated cross sections that are compared over time.

The Swedish Size Distribution of Firms over Time

As stated earlier, two ‘main’ materials are used in the analysis – one that covers manufacturing industry over a century; another that includes all sectors in the economy. The latter material is less comprehensive, yet it can shed further light on changes in the Swedish size structure of businesses over a longer period of time.

\textsuperscript{144} Other material has additionally been produced. Series over Swedish enterprises’ profits and expenditures (\textit{Företagens intäkter, kostnader och vinster}; Income, expenditure and profits of business enterprises) were published for the first time in 1953 (and concerned the year 1951). This material covers the period 1951-1964. The first edition for 1951 included some 4,000 businesses in manufacturing as well as in wholesale and retail trade, particularly larger units. Generally, the small firms (or smaller firms) were not included in the series – at least, they cannot probably be said to be representative for the economy as a whole. The series were continued from 1965 with the title \textit{Företagen} (Enterprises). Successively, these series have come to include an increasingly larger number of industries and enterprises. Also here vast reforms in reporting have taken place. As far as I can judge, it does not seem feasible even to attempt to create coherent series and data from these sources, particularly not the later ones. For example the edition from 1980 (\textit{Företagen 1980}) is quite useless in this particular respect since the possibility to extract data comparable to earlier periods is close to zero. Later editions suffer from the same tendency – for instance they report incorporated firms (such as joint-stock companies) but not private businesses, which biases the material considerably. See for instance \textit{Företagen 1990}, p. 6.
Statistical data over manufacturing industries is by far the most wide-ranging source compared to other industries or lines of business, at least in a historical sense. Figure 2, along with figures 3 and 4, are based on a fairly large number of observation years between 1896 and 1999. The three figures describe the relative development; each observation year adds up to one hundred percent even if the absolute number of firms between years differed. Here, all lines of business and subgroups in manufacturing are included. It should be kept in mind that there are a number of reservations concerning the interpretation of the statistical material. Groups of firms have been categorized into five size-classes: 0-10 workers, 11-50; 51-200; 201-500, and 501 or more workers. As can be noted, the groups embracing some 0-200 workers would roughly include SMEs with today’s definitions, while the groups of 11-200 would be approximately intermediate firms. (Particularly from 1968 and onwards are different classifications used.)

Figure 2 shows that the smallest group of firms (0-10) experienced a relative decline during the last years of the nineteenth century up until the outbreak of World War I. At the same time other groups increased. Particularly the largest group that consisted of 501 workers or more almost doubled. Thus, over this twenty-year period, the smallest businesses diminished relatively while other, larger units increased in importance. The development was reversed after the war. During the entire interwar period (1919-1939), the smallest regained position ‘at the expense’ of larger ones. The second-largest firms (11-50) were decreasing rather steadily from 1913 up until 1940. A nearly similar tendency can be observed for larger business units (51-200; 201-500). Thus, medium-sized or intermediate firms were diminishing during the interwar period while they had increased during the pre-war era. Similarly did the largest group of firms fall, at least up until early 1930. These exhibited from this period a relative recovery up until 1940/45. Firms in the span of 11-200 seem moreover to have regained positions during the war (the exception here were 201-500 which in principle declined during the entire interwar period), while smallest group now were falling.
The postwar period (Figure 3), moreover, gives an impression of a continuation of the movement that had started during the Second World War: a smaller role for the smallest of firms. It is true that the statistical materials produced before and after 1945 are not entirely comparable with each other. The smallest group of firms was in this particular context firms with 5-10 workers. Thus, a larger share of firms was here excluded. In 1945, the group consisting of ‘ten workers and below’ (-10) added up to 13,617. In 1950, the category now consisted of 8,212 firms. The absolute reduction of the population consists thereby of re-definitions of size-groups and the relative numbers (or levels) concerning the postwar period should not be directly compared with previous years.

Source: Kommerskollegium/SCB. Own calculations.
Nonetheless the smallest group did continue to fall during these two decades while other (larger) groups on average were rising. This is particularly evident concerning businesses of medium or intermediate size: the shares of firms in the groups of 11-200 increased during this period. From this perspective it can consequently be stated that the ‘middle class’ of firms in manufacturing was gradually increasing in importance during the particular period. The interwar period was, as has been noted, characterized by the opposite with falling shares of medium/intermediate firms. A relative decline could nonetheless be detected as concerns the 1960’s: firms with fifty workers or more gradually decreased while on the whole smaller units seem to have started to regain their positions (compare early 1960 to the levels of 1965/67).
From the late 1960’s and onwards until the end of the century (Figure 4), existing data give a picture of a tendency for small firms to increase in numbers. This group represented just about 70 percent of the entire population in the late 1960’s and around 85 percent from the mid-1980’s and onwards. As mentioned earlier rearrangements and new definitions were at hand even – or even particularly – during the 1990’s. The smallest group is here represented by firms with 2-9 employees (note: not workers as in earlier statistics). The statistical material available for the period 1968-1976 reported the smallest size-group as 0-1 employees. It is not possible to separate ‘Zero-businesses’ from ‘One-employee businesses’.

Data after mid-1970 were reported on a more detailed level: 0 employees; 1 employee; 2-4 employees etc. Given that a very large number of firms due to more or less technical reasons – mostly firms consisting of zero to one employees – were introduced particularly during the 1990’s, the figure should be read with some care. Thus, manufacturing firms with zero to one employed are excluded here. Even if this may not be the most ideal procedure, it would nonetheless be equally or even more troublesome to assume that the population of firms with zero and/or one employee during the 1990’s increased solely due to new venturing activity. Therefore, even if it might be so that there has been an actual increase of firms with 0-1 employees from late 1960 and on, there is reason to use calculations that exclude the smallest of firms when possible.

145 As stated earlier, new definitions meant that a total of 200,000 ‘new’ firms (all industries) were included in 1997. Most of them had zero employees. For the entire population of firms, including all industries, the increase would have been more than 90 percent between 1993 and 1997 (from around 310,000 firms to some 596,000).
Even so, it can be observed that the smallest businesses on the whole have gained positions over the last quarter of the century. As observed in previous research (although the actual figures differ due to different techniques of calculations) small firms increased in numbers from late 1960 to the early 1990’s. Yet, even if the smallest group increased slightly during the first half of the 1970’s they seem to have stagnated or periodically fallen from approximately during the period 1975 to 1985; the pattern is here rather unclear. A nearly similar stagnation could be observed for the group with 10-49 employees during the same period of time. The turning point for the smallest firms came at the beginning of the 1990’s, when they increased again (and we note that firms with zero to one employees are excluded here).
For the period 1968-1999, other firms generally exhibited an opposite development. These increased on average between 1970 to the end of the 1980’s, and fell during the entire 1990’s compared with the level of the previous decade. There is some indication of recovery for the second-smallest group (10-49) from the second half of the century’s last decade, and a similar development was detected for the size-group of 50-199. The shift between 1980/90 shows however that the two largest groups of firms (200-499; 500+) fell rather steadily in importance over the entire 1990’s. Their development from the 1970’s up until the end of the –80’s had been opposite – particularly from mid-1970. Large firms increased significantly, as did all other groups (although their patterns were more unstable). Thus, the conclusions regarding the three last decades of the 20th century, when this particular statistical material is employed, is that the smallest of manufacturing firms displayed a general decline up to the late 1980’s/early 1990’s. Other groups had an opposite development. Firms commonly defined as intermediate firms (10-199) had as stated in previous research a decline if the late 1960’s is compared to the early 1990’s. Nonetheless, this group of firms was relatively speaking more numerous – especially the group of 50-199 – during the late 1980’s than it was both in the 1970’s and in 1990-95.146

What could be a plausible explanation for the development of the size distribution of firms during this period of more than one hundred years, given of course the numerous reservations that must be made regarding the statistical data? It seems that small firms (i.e. those with less than nine or ten employees/workers) have increased during periods characterized by economic crisis or decline. The economic development from around 1890 was defined by strong economic growth during the second industrial revolution. Numerous Swedish firms gained a leading position up until the 1910’s. Until World War I, small businesses came to decline in importance while others increased (c.f. Figure 2).

A plausible assumption here is that even if the total number of firms in absolute figures increased around the time of the second industrial revolution, existing firms were also growing. During and particularly after the war 1914-18, there were several setbacks. In the 1920’s and 1930’s were there severe depressions; in spite of recoveries the macroeconomic problems were pronounced as well as structural to their nature. The gross domestic product, GDP, increased only with 1.9 percent per year between 1910 and 1920, unemployment was high, and the investment ratio compared to both previous and succeeding periods was very low.147 The relative relationship between firms in different size-groups was on the whole transformed between 1913

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146 In 1968/70 firms with 10-199 employees were representing around 29 percent of the entire population of manufacturing firms, while the corresponding number in 1987/89 was 32 percent, 26 percent in 1993/95 and nearly 29 percent in 1999/00. SCB, own calculations.
and 1945 with a general increase of smaller businesses. In spite of a positive, absolute net inflow of firms of all sizes during the interwar period, nonetheless, the smallest ones increased most (1920 to 1925 is an exception during which the total number of firms in manufacturing decreased).

As Erik Dahmén has stated, there was an inflow of more small (stationary) firms during the interwar period, partly due to new types of entrepreneurs and business owners. A supplementary explanation could be that existing firms were cutting back and downsizing. The economic recovery from the middle of the 1930’s coincided with the relative recovery of some of the larger groups of businesses. It is clear that the smallest group fell while most of the others increased from 1935 to 1945. The situation during the war – particularly the first years – were defined by rationings and negative growth in production. Yet, the recovery was rather swift and industrial production was high at the end of the war. The economy was here additionally protected and regulated. As previous research has claimed, this exceptional situation made some lines of business in manufacturing very profitable.148

The period of generally high growth after the war (here 1950-1967; see Figure 3) does also seem to coincide with the development of the size distribution of manufacturing firms: the years 1950-75 have commonly been described as the Golden Age of industrialism. The average yearly economic growth rate was around 5.6 percent between 1950 and 1970 (Krantz 1997; own calculations). Relative other sectors in the economy the production volume increased significantly.149 The smallest firms diminished in importance during this Golden Age, just as they had around the turn of the century 1800/1900. Instead, other, larger firms increased – especially from 1950 up until the early 1960’s. Earlier research has claimed that the postwar period have not witnessed the rise of new large businesses that are on equal footing with the ones formed in the old industrial society. In spite of this, and in spite of the fact that new-venturing activity generally diminished from the 1950’s in the manufacturing industry, there is nonetheless good reason to believe that the conditions for expansion and growth within existing businesses were favorable.

Notwithstanding the difficulties in comparing different statistical series, here it can be established that the smallest firms (here: 2-9 employees; Figure 4) remained on a reasonably high level up until the early 1980’s. The previous decade had witnessed a slowdown in economic growth. The oil price shock 1973/74 triggered an international structural crisis. Whether the new conditions had an effect on the size structure of firms is not entirely clear. The share of small firms remained however on a comparatively high level during the 1970’s, and declined in numbers over the (overheated) boom of the 1980’s. Likewise did the groups of 10-49 and 50-199 exhibit a simi-

148 Pettersson (1980).
larly unclear/stable pattern 1968-82. It is nevertheless clear that these rose significantly during the economic upswing in the eighties. Firms with 200 employees or more showed here a more pronounced or obvious increase between 1970 and early 1990 – particularly the largest ones (500+).

This largely contradicts the idea of decreasing importance of larger production units from the 1970’s in advanced industrial economies (c.f. Traü, 2003) and brings some support to the notion that large corporations acquired an increasing dominating position over the course of time after the war. It can also be that Sweden in this respect constitutes an exception; the shift may have been delayed due to institutional factors. The second turning point in the early 1990’s coincided with the financial crisis and recession. The smallest firms once again increased, while others were falling behind. Yet, over the course of this last decade of the 20th century, the macroeconomic conditions improved and especially firms in the middle class of 10-199 employees started to increase, followed with some lag by the group of 200-499. Only the largest group of 500 or more decreased steadily over the entire decade.

Therefore, the relative development of the size distribution of (manufacturing) firms can also be but in a longer perspective of time in which its changes can be put in relation to general conditions in the macro economy. Firms have during periods of economic growth and progress had more room to expand (c.f. Jörberg) – such as during the period 1890-1914; as under the ‘Golden Age’ of the postwar period; during the boom of the 1980’s, and in connection to the recovery during the second half of the 1990’s. During these periods the smallest have diminished while other have increased. Additionally, increasing domination of large(r) business units under various periods also appear to coincide with distinct long-term economic cycles identified by economic historians (c.f. Schön 1995; 2000a-b). Structural cycles of some 40 years – characterized by two behaviors or phases that constitute the foundation for those cycles – have appeared regularly in the economy. The transformation phase, which lasts for some 20-25 years includes changes of industrial structures, increasing investments and reallocation of resources between industries. This first phase is replaced by a rationalization phase, which lasts for some 15-20 years. Here, resources are concentrated to the most productive units coupled with decreasing profit margins and enlarged measures for increasing efficiency. It is also a phase of stabilization in which e.g. consumption of standardized goods has increased.150 Broadly speaking, the periods 1890/95, 1930/35 and 1975/80 were signified by the onset of a new structural cycle and transformation. As we have seen smaller firms were

\[150\] While the first transformation phase contains more long-term investments that are directed towards increasing the development power of industry, investments in the phase of rationalization are more short-term, directed to a more efficient use of existing capacity. Schön (2000b).
reduced, alternatively stagnated, in connection to these cycles and the following period of transformation. Phases of rationalization, which last until the beginning of a new structural cycle, have started around 1915/20 and 1960/65. From here, firms of larger size were reduced in importance while smaller units increased. A similar tendency is detected as concerns the 1990’s. Consequently it is not unlikely that firms have expanded and grown (or have had greater scope for this) during transformation phases while they under rationalization phases have concentrated resources and effectuated measures to increase efficiency.

Such an unambiguous analysis of course reduces the importance of other explanations. During this long observation period there has been tremendous structural, technological and qualitative transformations in production, in business life, in ownership, and so on (as proposed by Schön). It also neglects that institutional factors as proposed in earlier research – suggested by e.g. Henrekson and Johansson – have a plausible explanatory power, as well as that the time period from the late 1800’s up until the 1960’s witnessed a tremendous increase in the total number of firms in manufacturing (and probably in other sectors, although there is less data here).

Figure 5 illustrates this phenomenon. If we were to create an index over the development of individual size-groups, using the late 1800’s as the base year (= 100), the indexes for all firms in manufacturing would at least had doubled at mid-1960. Yet, even in absolute terms all size-groups had positive as well as negative net changes over individual years. The number of firms with ten workers or less decreased between 1906 and 1913 while other categories increased absolutely. Trendwise, however, all groups increased in absolute figures 1920-1945. The smallest group of ten workers or less increased the most; hence the relative calculations here can be used to give the impression that size groups consisting of more than ten workers fell in some absolute sense even if that was not the case. There were exceptions, such as between 1920 and 1925. Here, firms in all size-groups diminished in absolute terms. The peace crisis had most likely here an effect on both firm survival and new-venturing activity.

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151 The economic crisis in the early 1990’s is an exception from the rule since this period – if we follow Schön’s scheme exactly – not rationalization phase but rather a shorter ‘Transformation crisis’ characterized by shorter rationalizations.

152 Note in Figure 4 that from 1968 and onwards, the smallest size-group (somewhat erroneously denoted 0-10) includes firms with 0-9 employees. The figure is therefore not entirely comparable to the development reported in Figure 4 in which firms with 0-1 employees were excluded.
Figure 5. Number of firms in different size classes. Manufacturing, 1896-1999.

Note: Different size-groups and definitions are used in the figure. The legend thereby reports approximate size-groups (compare Figures 2-4).

Source: Kommerskollegium/SCB. Own calculations.

The period from 1950 to mid-1960 cannot be directly compared to the earlier period. Yet, the increase in the number of firms with less than fifty workers seem to have subsided compared to the interwar years; the smallest group (ten workers or less) even fell in numbers. Therefore, the total number of firms in manufacturing fell during the 1950’s and –60’s. This may well be an effect of lower new-venturing activity as well as an effect of growth of existing units – both organically and through mergers. An absolute drop in the number of firms took place during the century’s last three decades. This data is by no means comparable to previous periods since the older material reports the number of workers as well as defines the establishment as the firm.
The newer data defines the firm as the legal unit as well as includes the number of employees, not only workers. Nonetheless, these absolute changes correspond to a great extent with the relative changes during the period: small firms – defined as those with 2-9 employees – were more numerous in the 1970’s than in the 1980’s but increased during the century’s last decade. Firms with more than 200 employees, which include the groups of 201-500 and 500+, respectively, increased furthermore in total between 1968/70 and 1990/92 (n = 593 and 621, respectively). Subsequently they decreased heavily, and this decrease was mainly due to a fall in firms with 500 employees or more. Thus, it was the largest of firms that seem to have fallen most in the 1990’s; all other groups have – in absolute terms – recovered from the decrease that occurred during the depression years.

All Sectors, 1931-2000

By using data from censuses as well as other data from SCB, the entire size distribution of firms can be analyzed, but for fewer observation years. Here, all sectors/industries are included. Since statistical reporting has changed over time – particularly concerning the smallest ones – firms with less than two workers/employees are excluded here. This indicates, as an example, that some 100,000 firms are not included in 1931, or that the analysis excludes some 125,000 businesses in 1968/70. Nonetheless, the cross sections are at least somewhat comparable over time with this procedure, even if it is also important to consider that the census data (1931 and 1951) as discussed earlier defines the firm as the establishment, while the statistics from late 1960’s and onwards use the legal definition.
Table 1. Size distribution and number of firms in Sweden during seven observation years, 1931-1999. All sectors. Percent (i.) and absolute numbers (ii.).

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<tr>
<td>2-10</td>
<td>87.90</td>
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<td>75.00</td>
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<td>11-50</td>
<td>9.50</td>
<td>11.20</td>
<td>19.80</td>
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<td>17.80</td>
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<tr>
<td>51-200</td>
<td>2.06</td>
<td>2.21</td>
<td>3.96</td>
<td>3.69</td>
<td>3.73</td>
<td>2.98</td>
<td>3.09</td>
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<td>201-500</td>
<td>0.45</td>
<td>0.48</td>
<td>0.73</td>
<td>0.73</td>
<td>0.81</td>
<td>0.66</td>
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<td>501+</td>
<td>0.14</td>
<td>0.19</td>
<td>0.48</td>
<td>0.61</td>
<td>0.81</td>
<td>0.63</td>
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<tr>
<td>2-10</td>
<td>116,488</td>
<td>161,907</td>
<td>71,566</td>
<td>73,702</td>
<td>77,385</td>
<td>97,820</td>
<td>104,757</td>
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<tr>
<td>11-50</td>
<td>12,568</td>
<td>21,111</td>
<td>18,892</td>
<td>19,606</td>
<td>21,470</td>
<td>22,271</td>
<td>25,615</td>
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<tr>
<td>51-200</td>
<td>2,735</td>
<td>4,157</td>
<td>3,773</td>
<td>3,626</td>
<td>3,898</td>
<td>3,732</td>
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<tr>
<td>201-500</td>
<td>595</td>
<td>902</td>
<td>698</td>
<td>716</td>
<td>844</td>
<td>827</td>
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<tr>
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<td>180</td>
<td>365</td>
<td>454</td>
<td>595</td>
<td>850</td>
<td>791</td>
<td>824</td>
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Note: Percentage figures are rounded off.

Source: Kommerskollegium/SCB. Own calculations. Census of Enterprises; SCB. Own calculations.

It was previously established that – on the whole – the total number of firms has increased rather steadily over time. During the last decades of the 1900’s, this increase has been significant even if there is reason to believe that a share of this increase is due to statistical technicalities rather than to an actual increase. If the two observation years 1931 and 1951 are compared it can be noted that firms with 2-10 workers had diminished in a relative sense from nearly 88 percent in 1931 to nearly 86 percent in 1951. This does not take away the fact that the total number of firms rose. All size-groups increased between 1931 and 1951, while the smallest one (2-10 workers) exhibited the smallest relative increase. From the 1950’s and onwards, similar data are more incomplete. Additional statistics however confirm to some extent that there seems to have been a tendency of a relative reduction in the number of smaller businesses also in industries other than manufacturing under the two decades after World War II, just as in the manufacturing industry.153

There is a similar tendency concerning the period 1968-1999. If the entire thirty-year period is analyzed, it seems indisputable that nearly all size-

153 Företagens intäkter, 1951-1961, own calculations. This material covers a sample of some 1,500 businesses in trading and manufacturing. The investigations were gradually refined over time as concerns representativeness etc. Therefore, any change of the size distribution concerning this particular statistical material cannot be analyzed in an absolute manner. The data however shows that the share of firms in the trading sector with less than 50 employees steadily diminished. In 1951, these were some 78 percent of the sample while they represented two thirds in 1961. Larger size groups (51 employees or more: 51-200; 201-500 and 501+) steadily increased over the same period.
groups have shown an absolute increase of the number of firms over time. It is furthermore indisputable that the smallest group (here: 2-9 employees) has grown most of all. Therefore, small businesses have gained ‘importance’ compared with larger business units defined here as firms in the middle class (some 10-200 employees). Yet, it seems that there have been periods in which both small as well as medium/intermediate-sized firms have lost as well as regained their positions.

The late 1960’s/early 1970’s characterized in comparison to the early 1990’s both a relative and absolute reduction in the number of firms with more than fifty employees. These were on the other hand actually increasing both in a relative and absolute sense between 1976/79 and 1986/87. The real fall came in the first half of the 1990’s, a decade signified by falling economic activity and recession. And, over the course of the 1990’s when the economy improved, small firms again fell (relatively) when at the same time the larger size-groups, consisting of firms with 10-200 employees increased. Larger firms (200 or more) were, as can be observed, falling measured in percentages over the entire decade even if these again increased absolutely compared to the low level of the period of 1993/95.

Discussion and Concluding Remarks

An observer in 1940 would most certainly have come to the conclusion that there had been an increase of the number of smaller businesses compared to 1920 while medium firms had declined. The same observer would have detected a reverse picture with reference to the immediate postwar-years when smaller units fell and larger ones – especially medium businesses – increased. This raises some questions regarding the causes to such change.

The objective with this chapter was to address the problem of changes in the size distribution of firms from a long-term perspective. The study’s contribution is twofold. Firstly, it has used and combined different sources and materials over the size structure of firms and additionally, in doing so, identified and discussed several problems that arise in such statistical materials. Secondly, it has revealed patterns and tendencies that may not be detected when more short-term cross section data (or fewer observations) are employed. Here, at least, it has been shown that changes in size distributions may have several, possibly supplementary explanations. Thus, the study has also discussed and given an account for previous explanations to this phenomenon.

To receive a ‘genuine’ or complete picture of the development over such a long period of time is however not easily achieved. Only certain aspects allow for an investigation. In most historical research, source difficulties are nearly always magnified the further back in time we go. This is true also in this case, although newer statistical material also suffer from the phenome-
non of nearly non-comparable data between different years. The statistical material employed is derived from different statistical sources. This data furthermore were based on different samples and used different definitions of the units of investigation. These discrepancies may have considerable consequences for an analysis of changes in the size-composition of businesses over time. Another important aspect to keep in mind is that a period of over one hundred years is loaded with a vast amount of economic, social and technological change. Increasing standard of living, increased consumption, technical advances and improvements in production have, as often discussed by economic historians, been immense. The economy has moved from a young to maturing industrial society, towards a service and information economy from the last decades of the 1800’s up to the early 21st century. Thus, to take into account only the development of the size distribution of firms without considering such important structural changes may lead to erroneous conclusions. It is most likely that such tendencies and movements have had an impact on the observed movements of the size structure in the business life. For example, previous research has acknowledged that the recruitment process of new entrepreneurs and business owners where modified in the interwar era when more firms began to be run by people from the working class. Additionally, these firms were often small and more stationary than older businesses.

It is more or less impossible to speak of or to analyze firms’ growth when just a few or even more aggregate cross sections are employed: between observation years new firms have entered, while others have disappeared. Moreover, even if most firms in fact survive between observation years (which in itself could be questioned especially if considerable time has elapsed between observations; most new firms do not survive) we do not know which of the individual units have grown or declined in size. What is evident is that the number of firms in the economy has grown significantly. It is also evident that the relationship between firms of different sizes has shifted over different periods, even if – by and large – the total number of firms has steadily increased.

Applying a longer perspective of time have some advantages: it raises new research questions and can reveal patterns that might remain undetected if shorter time-spans are employed or, alternatively, if only a smaller number of observation periods are available. Data on the intervening periods additionally can reveal other trends or opposite patterns. Nonetheless, even if additional data is used it is still difficult to analyze firm growth with cross section data – particularly if this data is reported on a very aggregate level. Even if I have combined different statistical materials on the size distribution of firms over a longer period of time, thus constructing ‘repeated’ cross sections, firm growth can only be viewed as a subset or one of many parts of these aggregates. Other phenomena – such as entries and exits – are built-in elements in these statistics. Thus, shifts in the relative and absolute number
of firms in various size-groups are not easily studied solely from the perspective of firm growth.

It can be that the characteristics of an economy during a particular period also define and determine how production is organized (for instance in the meaning of firm size). Businesses of different sizes can be more, alternatively less ‘common’ in one period compared to another due to the type(s) of production methods or – again with the vocabulary from Dahmén – due to the characteristics of the development block that is prevalent during the period of investigation. It is, as suggested by researchers that have studied the changing size and size structure of businesses for the latter half of the 1900’s, not unlikely that new macroeconomic and market conditions along with new production methods has necessitated or lead to an increased number of smaller units; units that are more flexible than larger (older) businesses. It is moreover likely that institutional change and new policy-conditions may have affected those structures, as proposed particularly when it comes to the case of Sweden. The increasing ‘domination’ of firms of somewhat larger size from the postwar period agrees to some extent with observations of a socio-economic system or of institutions that ‘favored’ larger plants.

Small business and entrepreneurship research has often pointed out that the era of big business is over. Additionally, some have remarked that the small business commonly is a more efficient form of organization. In that respect it seems as ‘history’ (i.e. history according to this approach) up until recently has been dominated by big businesses, and that the predictions of the coming death of small firms have been exaggerated (which ‘contemporary’ data would support). In that sense, distinct periods or period-specific circumstances have been identified with reference to both Sweden and other developed economies. Real economic events and circumstances have affected the size structure of firms. One example is this above-mentioned era of big business that was succeeded by smaller firms due to events in the macroeconomic environment. At the same time, a somewhat different viewpoint has meant that small firms cannot grow to at least medium/intermediate size. At least in Sweden’s case, small firms have increased in numbers during last three decades while others – especially those in the middle class – have declined.

Yet if we observe the development of the size distribution of firms in the entire business life from the 1930’s and onwards (all sectors), it is notable that small firms – that is firms having 2-10 employees or workers – had a greater frequency during the 1930’s than during the postwar period. Relatively speaking, this group declined between 1931 and 1951 and most likely even some time after this latter observation year. Only from the early 1970’s up until the 1990’s could an increase be observed. This gives at least a hint of a ‘domination’ of small firms during earlier periods: small businesses seem to have been more dominant during the interwar period than during the
decades that followed World War II. The trend – if it is even possible to speak of a ‘trend’ between two distinct observation periods with a considerable time-span – thus suggests a falling ‘significance’ of small firms from the interwar period. This tendency was reversed in the 1960’s when small firms increased their dominating position while medium and intermediate-sized firms declined. Large firms (500+), furthermore, seem to have increased their relative domination successively ever since at least the 1930’s. In that respect, these (sporadic) statistics show a movement towards an increasing domination of larger business units ever since the interwar period, with a possible decline of large businesses at the end of the 20th century.

The movement towards an increased number of smaller business units during the interwar period could also be observed concerning businesses in manufacturing industry. During the entire period, firms in the smallest size group (ten or less workers) increased their positions while other groups fell. The picture had been opposite prior to World War I, an economically more prosperous period, when larger businesses had increased. The reduction of larger firms was evident throughout nearly the entire interwar period. From the mid-1930’s, when the economy improved, the number of firms of larger size again increased while the smallest fell. The tendency towards a reduction of the smallest units could also be identified during the postwar period as regards manufacturing. If, furthermore, additional (yet more sporadic) data is taken into consideration it must be claimed here that there was a general movement towards an increasing relative domination of larger business units. It is therefore not unlikely that smaller businesses lost position over time. It moreover seems that smaller businesses in manufacturing over time increased in numbers, both absolutely and relatively, comparing figures for late 1960’s/early 1970’s to that of the 1990’s.

This empirical pattern coincides with the body of research that has recognized new conditions for production and organization for developed/advanced economies, which has decreased average firm size. Alternatively, it coincides with the body of research that acknowledges deteriorated institutional conditions for small businesses over the 1970’s and 1980’s and improved ones after the 1990’s. Nonetheless, intervening years were characterized somewhat by other patterns. Firms of medium or intermediate size (around 10-200 employees) in fact increased both absolutely and relatively from mid-1970 to late 1980. At the same time, the number of small businesses – 2-9 employees – increased steadily during the entire period 1968-1999 in absolute figures. Thus, the number of medium firms grew more than the smallest category in the 1980’s. Therefore, even if there was a tendency for the numbers of medium firms to fall during the last three decades, there were evidently exceptions during this period – as there were similar patterns during earlier periods.

The movements over the long period of one hundred years correspond also to long-term shifts in the economy: a reduced importance of smaller firms
during or in connection to economic phases characterized by transformation and unbalances and fewer larger firms when the macro economy has entered a period of rationalization. Therefore, while it may very well be true that institutional conditions have altered the positions between small, medium and large firms over time, and that this state of affairs may have affected the possibilities for small, young firms to grow, other explanations may have to be taken into consideration. Here, we have observed that there have been several explanations to adjustments over time of this distribution: technological change, concentration, specific periods and situations, institutional conditions. All seem plausible and it is reasonable to assume that these phenomena may occur simultaneously. Some are perhaps even stronger or more leading than others during specific periods. I have in this chapter identified that the positions between firms of different sizes have coincided and been a recurrent phenomenon that – when analyzed from a long perspective of time – has followed the macroeconomic development. This must therefore be seen as a accompanying explanation to other ones.
5. Survival and Selection: Seven Birth Cohorts of Firms

In this chapter the termination and survival pattern of firms in seven birth cohorts of joint-stock companies will be studied. The overall purpose is to study the macro biographies of the cohorts – particular interest here lies in investigating the relationship between termination and structural and macro-economic phenomena. A great deal of previous research has identified the liability of newness and the liability of smallness, respectively, as important phenomena in explaining why firms are terminated. Fewer have however addressed the problem of economic environment.

Age, Size, Selection

A general assumption in economic theory is that efficient firms survive and, perhaps, grow while inefficient businesses will fail and, presumably, decline in size before they disband.\(^{154}\) Such a supposition might seem reasonable even though several empirical studies have given evidence of the importance of institutional, economic, historical and structural circumstances that provide opportunities as well as circumvent the freedom of action for both individual firms or groups of firms. Hence, the reasons for why firms fail – that is, exit or disband – or in reverse why they manage to survive might be due to circumstances other or more complex than postulations of inefficiency.

The concept of business failure has several definitions. The most common and popular classification is that of bankruptcy. However, using bankruptcy as definition can become quite narrow since it does not include other types of terminations. A wider one incorporates firms terminating business at a loss, which includes bankruptcies as well as other types of terminations. An additional definition “encompasses all kinds of discontinuity in order to avoid losses” (Gratzer 2001a, p. 168). Generally, information over such occurrences is rather hard to apprehend and the definition is therefore regarded as difficult to apply in empirical research. Finally, another definition includes all three variants above as well as firms that are terminated due to failure of being competitive in comparison to alternative uses of capital and

labor. Here, the problem with such a definition can be that particularly small firms can continue operations because of other reasons. An even broader classification of ‘failure’ than the above-mentioned four variants would include all types of business terminations, regardless of the causes. Not all terminations of firms can however be regarded as genuine failures (however defined); a long-lived firm that is terminated after several years in operation cannot perhaps be put in comparison with the majority of young firms terminated each year in most economies. Therefore, ‘genuine’ failures are here mixed with firms that possibly disband due to other reasons. The advantage of such a definition is that it opens up a possibility to measure the duration of a firm’s life, i.e. the termination period for a firm. Much research has used this broader approach, and used termination or exit rates of firms in populations when studying their ability to survive.

As for the causes of business failure, three main explanations have been put forward. One incorporates a personality-based perspective, such as (the degree of) managerial competency and owner-manager characteristics. Another recognizes key structural attributes of firms such as their age and size, industry affiliation and so on. A third approach acknowledges environmental conditions for firms, for instance macroeconomic ones. At the population level, a widespread opinion amongst researchers is that firms are subjected to a liability of newness. Several empirical studies have demonstrated that young firms exhibit higher termination rates than firms of older age. As time goes by, consequently, termination rates successively fall. It seems to be a pervading idea within this type of research that firms and organizations are subjected to such circumstances irrespective of time and of place.

Apart from the much-observed age liability, firms or organizations are also viewed as submitted to a liability of smallness. Firms started on a small scale are imprinted with a disadvantage relative to larger organizations. Supposed or observed age effects may, according to such views, actually be effects of

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155 Such reasons could be that small-scale business-owners have other goals such as independence (‘being your own’), or that they for the survival of their business contribute with capital from their own pockets. For an overview of the different concepts of business failures, see Gratzer (2001a), pp. 168-169.
156 For a discussion, see for instance Gratzer and Box (2002), or Headd (2003).
158 See Brüderl et al. (1992). Anheier (1996), departing from a broader social science approach, includes also political aspects in why organizations fail.
159 See for instance Carroll and Hannan (2000), p. 3f. Closely related research has proposed alternative interpretations of this age liability, stating that, rather, firms might face a liability of adolescence. Brüderl and Schüssler (1990) found that termination rates in firm populations did not fall steadily over time, as firms grew older, but rather described a termination-curve with an inverted U-shape. In the very earliest phase in the life of firms, the risk for termination was small. The risk increased thereafter and reached a peak during their adolescence (2-3 years of age) and then fell again. Everett and Watson (1998) reached a similar conclusion.
size. This means that firm size and age are correlated. Small firms are, generally, facing higher death risks. Larger entities have, it is assumed, more resources and presumably more experience and closer contacts with creditors. In difficult times when, for example, the economic environment undergoes vast or unexpected change, the larger internal resources of bigger businesses make them endure harder times better than smaller ones. Small and young firms therefore appear to face the highest probability of termination while, on the average, large and old firms exhibit the lowest risk of termination. Slightly different results (J. Wagner, 1999) have pointed to that, while termination rates in general seem to decline with increasing age, only smaller shares of all business exits tended to be represented by firms with an age of less than five years. In Wagner’s study, an absolute majority of the exits were between 12-14 years or older; the latter were on average also larger than the exits of lesser age. Thus, high age – and, possibly – larger size do not necessarily imply a guaranteed immunity against termination.

The positions of big and small businesses have been a long-standing question in economic theory and research in which small firms commonly are viewed as having a special position or disadvantages. If it were assumed that large firms possess some size-advantage relative to smaller firms, economies of scale would imply such an advantage since large firms have lower average costs for production than smaller units. Furthermore, firms can produce more than one product or service. Multi-product firms are generally large, and hence economies of scope can prove to be beneficial for large firms in many circumstances – for example in capability to survive. Firms that have economies of scope may earn cost savings while small firms can be assumed to produce fewer or a single goods or services. Economies of scale and of scope therefore have been viewed as positional advantages for large firms: small firms exist closer to the edge while larger firms can continue operations over longer periods before they, perhaps, disband; an unsystematic shock that is only a minor problem for a large firm can prove to be fatal for the smaller business. Additionally, small firms, it has been claimed, face problems of access to capital with respect to higher interest

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160 Carroll and Hannan (2000), pp. 4f. Evans (1987a) came to a similar conclusion.
161 Wagner, J. (1999). The study consists of three cohorts of exits during three consecutive years, 1990-1992 (i.e. ‘death cohorts’ as opposed to the ‘birth cohorts’ used in this dissertation). Furthermore, there were no indications of a prevailing ‘shadow of death’ in the material, i.e. that firms that were terminated exhibited a decline in size the years before exit; therefore, decreasing (i.e. smaller) size did not seem to explain termination behavior.
162 As an example Edith Penrose wrote that “firms that are both larger and older in any economy orindustry do tend to have many competitive advantages over smaller or newer firms, no matter how able the management of the latter may be”; Penrose (1959), p. 218.
164 See Hannan et al. (1998), p. 283. Large firms can shrink over longer periods, it is assumed, since they have larger assets.
and limit to the amount of capital they can obtain since the risk of lending to small firms is greater than large ones.\footnote{Penrose (1959), p. 218.}

Generally, the consequences of environmental conditions at founding, or effects on the firm-population level caused by macroeconomic or external environmental change have received less academic attention and research results have been contradictory.\footnote{In some research, it seems to be an opinion that the risk for termination or exit is rather insensitive to variations in the macro environment. See, e.g., Caves (1998), pp. 1957-1958; 1977. See also Gratzer (1999), p. 137. Entries, or new-firm formation, and environment have also been investigated. Highfield and Smiley (1987) performed a study of the relationship between business starts and macroeconomic climate and found that low macroeconomic growth rates, low interest rates and high unemployment rates led to increases in the rate of new incorporations. Similar conclusions were reached by Audretsch and Acs (1994).} Such phenomena nonetheless have been viewed as causing effects for firms’ capacity to survive. Adverse conditions at founding is an example, implying that mortality rates in a population increase not only due to low age as such but also because of macro-environmental conditions. Such initial conditions, it is assumed, can remain throughout the entire lifetime; firms in a cohort founded during less benign circumstances are imprinted with a permanent liability. However, it has also been suggested that firms that survive such fierce processes may have better survival chances in the longer run due to the fact that intrinsically weaker firms are selected more fiercely, and due to a collective learning at the population level.\footnote{Swaminathan (1996), pp. 1350-1358; 1368-1373. Collective learning at the population level implies that firms that survive initially harsh conditions develop more successful survival strategies than, for instance, firms born under better conditions.}

Previous research results therefore point to that exogenous conditions or macroeconomic (cyclical) movements affect the termination of firms. Bankruptcies or business failures have been viewed as an integrated part of such economic fluctuations, even though it has been debated whether increased business failures/terminations is an early indicator of an economic recession, or if they increase with some delay after the recession has started. Longer periods of positive but low economic growth could have a similar effect on business conditions as a short, moderate recession.\footnote{Business cycles and economic growth conditions have received vast theoretical and empirical attention over at least the last one hundred years, and theories have replaced each other as well as re-emerged over time. It is not within the scope of this thesis to discuss various problems and questions that have been in the center of attention concerning the causes of economic cycles and macroeconomic growth. Some indicators of business cycles are viewed as pro-cyclical, some indicators are thought of as leading. See Zarnowitz (1985) for an overview, p. 526 ff, 532. See also Oppenländer (1997), p. 25 ff.}

Erik Dahmén’s (1950) investigation on business dynamics and entrepreneurial activity during the interwar era, 1919-1939, showed that in many industries, firms exhibited high death rates in the early 1920’s and 1930’s
when the macro economy were experiencing severe crises. Audretsch and Mahmood (1995) performed a somewhat comparable study covering 12,000 firms over a ten-year period. By using aggregate variables such as industry growth rate, as well as unemployment and interest rate level, Audretsch and Mahmood found mixed results. The interest rate level for instance showed no correlation with termination rates of firms; they suggest that this is an effect of the fact that most new firms are not dependent on external capital. The unemployment rate – used as an indicator for macroeconomic fluctuations – however proved to have a statistically significant effect on firms’ termination behavior.

In a study covering over 5,000 start-ups, Everett and Watson (1998) came to similar conclusions. In their examination they found that between 30 to 50 percent of small business failures, depending on the definition of failure, were associated with exogenous economic factors such as unemployment and inflation rates. Ilmakunnas and Topi (1999), furthermore, studied a large sample of entries and exits over a six-year period and argued that, although their results were mixed, growth in real GDP and interest rates affected exits of firms: a fall in demand and increasing interest rates increased the likelihood of business failures. Correspondingly, research on exits among large businesses and macroeconomic cycles has reached similar conclusions.

Nonetheless, while there is academic agreement on the influence of age and size-specific variables on the survival of firms, the effects of macroeconomic or external variables have been viewed as less obvious. Some results point to the conclusion that there do not seem to be any relationships: in a cohort study covering a time-span of nearly 15 years, Boeri and Bellmann (1995) had the explicit aim to investigate firm terminations and the business cycle, but found no such relationships.

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169 Dahmén (1950), p. 203 and 247. Death rates of firms were in their lowest levels the immediate years after each crisis, that is, when the economy was recovering. Gunnar Du Rietz (1975) came to a similar conclusion in a study over Swedish post-war conditions. Du Rietz (1975), pp. 39-58.


172 See Goudie and Meeks (1991). See also Bhattacharjee et al. (2002): their study focuses on large, quoted firms over a thirty-year period. There was a higher propensity for firms to go bankrupt during an economic downturn.

173 Boeri and Bellmann (1995) used among other things indicators such as aggregate (macroeconomic) unemployment figures and firm age.
Seven Birth Cohorts of Firms: Overview and Some Methodological Considerations

If the risk for termination at a specific age would be equal or at least nearly equal for firms regardless of cohort affiliation, one consequence would then be that each cohort’s age distribution would be approximately identical to each other. Then the selection rates – measured as the number of firms terminated at a specific age in relation to the number of remaining firms – could moreover be expected to reveal either no differences, or nearly no differences, between cohorts. Thus, for example the same percentage of firms in different generations would approximately be terminated at the age of one, two, three, five, ten and so on. If smaller differences appear, the dissimilarities could naturally be coincidental; although there are differences each cohort would still exhibit a large share of firms terminated at a young age. However, the question is whether considerable deviations in the age distribution of firms – with respect to cohort affiliation – are observable. It is also of interest here if cohorts exhibit different or similar termination ‘behavior’ when in the same age. If there are significant differences, other explanations than low or high age as such might have to be employed. Hence, although there may generally be support for a ‘common behavior’ of firms – e.g. high termination rates due to low age – unique exceptions or discrepancies may possibly well have their explanation in other circumstances, for instance the size of firms, or environmental conditions. This perspective could serve as a complementary explanation of firm termination.

The total number of firms in the database employed in the present study adds up to 2,154, founded as joint-stock companies in Stockholm during seven different years (Table 2). The oldest cohort, from 1899, originally consisted of 105 firms. With exceptions of cohorts 1912 and 1942, more firms were progressively founded over time. It is not unreasonable to assume that it became more common to start a new business in the form of a joint-stock company. The youngest generation, Cohort 1950, started with nearly five times more firms (n = 504) than the oldest one. The population of Cohort 1942 consisted of 407 firms and was consequently smaller than the twelve year older generation – Cohort 1930 – that had started with 452 firms. One plausible explanation of this relative new venture-decline in 1942 might of course be the situation during World War II, which probably held back business venturing in general. However, the relatively low new-business activity in Cohort 1912, when comparing this cohort with the ones founded 1909 and 1921, cannot be explained in such terms; the economy was rather prosperous during that time even if there had been an economic downturn some years prior to 1912.
Table 2. Seven birth cohorts of joint-stock companies. Frequency and percent.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>1899</th>
<th>1909</th>
<th>1912</th>
<th>1921</th>
<th>1930</th>
<th>1942</th>
<th>1950</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>105</td>
<td>201</td>
<td>134</td>
<td>351</td>
<td>452</td>
<td>407</td>
<td>504</td>
<td>2,154</td>
</tr>
<tr>
<td>Percent</td>
<td>4.8</td>
<td>9.3</td>
<td>6.2</td>
<td>16.3</td>
<td>21.0</td>
<td>19.0</td>
<td>23.4</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Database on Joint-stock Companies.

An investigation from the late 1920’s carried out by the Socialization Committee (Socialiseringsnämnden) reported the total number of joint-stock companies in Sweden for five different years during the period 1908-1920. Over this period, they had increased significantly. In 1908 there were some 3,400 companies; in 1912 around 4,700 companies; in 1916 some 6,400; in 1919 approximately 7,600, and in 1920 some 6,800. Generally, over a little more than a decade in the early twentieth century, the number of joint-stock firms had doubled. The figures for the years 1908 and 1912 contradict to some extent the observed decline in my own database (compare Cohorts 1909 and 1912). The relative drop in the latter case could be regional since the firms in the birth cohorts were founded in Stockholm.

Data on new joint-stock companies that are available gives however evidence of a decline in founding activity around the years in question. Table 3 provides further data over new joint-stock companies for eleven periods the years 1897-1950 (yearly average values). Trendwise, the average number of new joint-stock companies increased over time. During the last years of the 19th century around 350 new companies were founded per year, while this yearly figure in mid-1900 was around 1,700. It is not unlikely that the joint-stock company increasingly became a more employed form of business organization in all industries.

174 Figures are rounded off. Companies without taxable earning or with losses were not included in these figures. Therefore, the total number of companies was probably much higher. As to why the total number of companies decreased 1919-20 can be both an effect of many of them having losses and, naturally, that many went bankrupt during these years of severe economic problems. Even if the Socialization Committee’s investigation mainly dealt with manufacturing industries, it also included companies in other industries such as trade and real estate. In relation to the total number of companies that were included in the investigation (which only examined a representative sample of mainly larger companies), my calculations show that the share of firms in trading industries steadily increased over the period 1911-1925. In 1911, around 13 percent of the joint-stock companies were in the trading industry while nearly 20 percent were in trading in 1925. Socialiseringsnämnden (1929), pp. 40-42; 511-517 (own calculations).
Table 3. Number of new joint-stock companies per year (yearly averages) in Sweden, 1897-1950.

<table>
<thead>
<tr>
<th>Year</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1897/00</td>
<td>354</td>
</tr>
<tr>
<td>1901/05</td>
<td>452</td>
</tr>
<tr>
<td>1906/10</td>
<td>703</td>
</tr>
<tr>
<td>1911/15</td>
<td>606</td>
</tr>
<tr>
<td>1916/20</td>
<td>1,289</td>
</tr>
<tr>
<td>1921/25</td>
<td>1,020</td>
</tr>
<tr>
<td>1926/30</td>
<td>1,018</td>
</tr>
<tr>
<td>1931/35</td>
<td>1,030</td>
</tr>
<tr>
<td>1936/40</td>
<td>1,007</td>
</tr>
<tr>
<td>1941/45</td>
<td>1,351</td>
</tr>
<tr>
<td>1946/50</td>
<td>1,697</td>
</tr>
</tbody>
</table>

Source: *Statistisk årsbok* (1940, 1951).

In the following study, the age of firms is measured in full years. Firms that reached an age below half a year (0.5) were designated as zero years in the database, while firms above the age of 0.5 but less than 1.5 were coded as one year old. The same procedure was also carried out for firms with older age: 1.5–2.4 years = 2 years, etc. Since this is longitudinal data, not only is the age of firms controlled but also when in time each firm was founded (cohort). Another advantage is that there is information on when in time the events of interest occurred, here: an exit from the birth cohort. All types of exits, whether liquidation, bankruptcy, etc., are here used as indicators of termination. The main interest here is the ability of a business organization to survive.\(^{175}\)

The size of firms is measured as the size of the stock capital at founding. Even though other or multiple indicators of size would be preferable, stock capital is the only available indicator in the source material. Furthermore, only the start-up size is registered in the database. This is acknowledged as a possible disadvantage in the study since firm size signifies start-up size only.

\(^{175}\) The type of exit has also been recorded in the database. The most common way to terminate a firm was liquidation, followed by bankruptcy. Other types of closure, for instance merger, were less frequent events. In the database, around 44 percent of all exits were liquidations while a little more than 21 percent were bankruptcies. Less than five percent were terminated due to merger. There are furthermore strong indications in the case of Sweden that bankruptcy as a way of closing a business (here: joint-stock companies) generally was less employed than liquidation before the 1960’s. See for example Gratzer (2001a), p. 185. For some firms in the database there is no evidence of exactly when in time – or in what way – they ceased their operations. In such cases, the last year they appear in the source material, has been used as an indicator for exit. A smaller fraction of firms in each cohort were still active during the present investigation or at least until 1999. These firms have been defined as ‘alive’. Furthermore, some firms have, several years after the last sign of life, been deregistered by PRV. For example in the 1950’s, PRV sorted out their archives of firms that had been inactive for several years. Therefore, it is unreasonable to assume that such firms were really operative during that entire time. In such cases, the firms have been assigned, hopefully, a more realistic age (way of closure: ‘unknown’). The surviving firms are studied in Chapter 6 but are naturally included in the present chapter as representatives of survivors from each cohort.
Thus, in controlling for firm size, it is impossible at this stage to control for firms that perhaps were growing or shrinking.

In comparison, each cohort also exhibits different size distributions. The uppermost rows in Table 4 (i.), report the initial nominal stock capital of firms. The lowest capital limit for joint-stock companies was 5,000 kr. during the entire period of investigation. (In the mid-1970’s, the limit was changed to a minimum of 50,000 kr.) The stock capital in each cohort has been divided into seven size-classes.\textsuperscript{176} Less than ten percent of the firms in Cohort 1899 started with a stock capital below 9,000 kr., while 65 percent of the firms in Cohort 1950 had less than or equal to 9,000 kr. at start. There were no firms in this youngest cohort with a stock capital exceeding 500,000 kr. Furthermore, no firm in Cohort 1942 had a capital that surpassed the limit of 1,000,000 kr.

Therefore, more joint-stock companies were founded over time. There were also an increasing number of firms that started on a smaller scale while larger firms are found in older cohorts. One explanation of this gradual shift towards increasing numbers of small new companies during the first half of the 20\textsuperscript{th} century could be that it progressively became less costly to start a business in the form of a joint-stock company since the minimum capital required remained the same in nominal figures (5,000 kr.) for a long time. The monetary value changed significantly during the period of investigation. The Consumer Price Index (CPI) was used in order to deflate the stock capital in each cohort. For instance, 1,000 kr. in 1899 was around 44,000 kr. in the late 1990’s. As a result, the minimum capital of 5,000 kr. required in 1899 was equal to 220,000 kr. in 1996/99.\textsuperscript{177}

The stock capital in the lower sections of Table 4 (ii.) is expressed at the price level of 1930.\textsuperscript{178} As can be observed in the lower section of the table, the proportion of firms in the smallest size-classes in Cohorts 1899 and 1909 decreases if their capital is deflated. 5,000 kr. in 1909 was for example equivalent to around 8,500 kr. in 1930. The relationship between cohorts remains – gradually larger shares of firms that are small – but is further enhanced when expressed in fixed prices. There is an absolute majority of

\textsuperscript{176} In line with Gratzer (1996), pp. 205-206.
\textsuperscript{177} The CPI might not be the most ideal tool in deflating the stock capital of firms since it does not necessarily comprise the conditions in business life – rather, the CPI deals with a weighted basket of consumer goods. However, it is easy to employ, and I do not think that any other method would prove to be better. It is however important to remember that even if, e.g., 1,000 kr. in 1899 is equal to some 44,000 kr. in our day according to the CPI, the ‘real’ value of 1,000 kr. over one hundred years ago probably was much higher due to social and economic circumstances – here I have in mind differences between social classes, income levels and so on. See SCB: \textit{Levnadskostnadsindex/KPI. Historiska tal}.
\textsuperscript{178} It is of course possible to express the stock capital of firms in more present-day values, although I do not really see the point in such a procedure. Furthermore, by choosing 1930 it is not necessary to change the size groups in Table 4, which facilitates comparisons between nominal and deflated values.
firms of the smallest size-class in the two youngest cohorts, 1942 and 1950. One obvious difference also concerns Cohort 1921 that, in deflated values, receives larger shares of small firms in comparison with nominal values. This is due to the large general increase of the price level during that specific period. In 1921, less capital was required to start a joint-stock company than in 1930.179

Table 4. Start-up size per cohort. Stock capital. Nominal (i.) and deflated values (ii.). Cumulative percent.

<table>
<thead>
<tr>
<th>Stock capital</th>
<th>Cohort 1899</th>
<th>Cohort 1909</th>
<th>Cohort 1912</th>
<th>Cohort 1921</th>
<th>Cohort 1930</th>
<th>Cohort 1942</th>
<th>Cohort 1950</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. -9</td>
<td>7</td>
<td>13</td>
<td>10</td>
<td>19</td>
<td>29</td>
<td>42</td>
<td>65</td>
<td>32</td>
</tr>
<tr>
<td>10-19</td>
<td>11</td>
<td>26</td>
<td>31</td>
<td>30</td>
<td>50</td>
<td>65</td>
<td>79</td>
<td>50</td>
</tr>
<tr>
<td>20-49</td>
<td>33</td>
<td>54</td>
<td>56</td>
<td>62</td>
<td>70</td>
<td>82</td>
<td>91</td>
<td>69</td>
</tr>
<tr>
<td>50-99</td>
<td>52</td>
<td>72</td>
<td>77</td>
<td>77</td>
<td>82</td>
<td>90</td>
<td>96</td>
<td>82</td>
</tr>
<tr>
<td>100-499</td>
<td>94</td>
<td>95</td>
<td>93</td>
<td>97</td>
<td>96</td>
<td>99</td>
<td>100</td>
<td>97</td>
</tr>
<tr>
<td>500-999</td>
<td>96</td>
<td>98</td>
<td>95</td>
<td>99</td>
<td>98</td>
<td>100</td>
<td>-</td>
<td>99</td>
</tr>
<tr>
<td>1000+</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>100</td>
</tr>
<tr>
<td>ii. -9</td>
<td>3</td>
<td>7</td>
<td>5</td>
<td>23</td>
<td>29</td>
<td>58</td>
<td>80</td>
<td>39</td>
</tr>
<tr>
<td>10-19</td>
<td>8</td>
<td>15</td>
<td>18</td>
<td>38</td>
<td>50</td>
<td>77</td>
<td>95</td>
<td>55</td>
</tr>
<tr>
<td>20-49</td>
<td>16</td>
<td>39</td>
<td>45</td>
<td>66</td>
<td>70</td>
<td>88</td>
<td>98</td>
<td>71</td>
</tr>
<tr>
<td>50-99</td>
<td>37</td>
<td>57</td>
<td>67</td>
<td>78</td>
<td>82</td>
<td>95</td>
<td>100</td>
<td>82</td>
</tr>
<tr>
<td>100-499</td>
<td>76</td>
<td>90</td>
<td>92</td>
<td>98</td>
<td>96</td>
<td>99</td>
<td>-</td>
<td>96</td>
</tr>
<tr>
<td>500-999</td>
<td>95</td>
<td>96</td>
<td>93</td>
<td>99</td>
<td>98</td>
<td>100</td>
<td>-</td>
<td>98</td>
</tr>
<tr>
<td>1000+</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Database on Joint-stock Companies.

A possible reason for the increasing number of new companies has been given above: gradually, it became less costly to start a business as a joint-stock company. Other reasons to this observed increase could be a general and gradual increase of business activity amongst the Swedish population; more firms were gradually founded over time due to a growing market economy. Another explanation could be that the joint-stock company as an institution progressively was spread into sectors that previously had been dominated by (small) firms in other legal forms such as private businesses or partnerships. Small firms in trade, retail or service are examples of such enterprises. Lower entry barriers – i.e. lower costs for starting a joint-stock company – possibly have had a crowding out effect at the expense of other legal forms of enterprises. The former phenomenon – increased business activity – has been suggested in earlier research,180 and the latter is difficult

179 In 1921, CPI was 231. In 1930, it was 163 (1914 = 100). SCB: *Levnadskostnadsindex/KPI. Historiska tal*.

to estimate. The deflated values of newly founded firms’ capital suggest this to some extent (c.f. Table 4), but it is also necessary to compare new joint-stock companies with other legal forms of enterprises. Considering the general lack of historical sources on small business, such an investigation is nearly unfeasible.181

Table 5. Age per cohort and in total population. Years.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>P25</th>
<th>Md</th>
<th>m</th>
<th>P75</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1899</td>
<td>2</td>
<td>9</td>
<td>24</td>
<td>28</td>
<td>105</td>
</tr>
<tr>
<td>1909</td>
<td>3</td>
<td>8</td>
<td>22</td>
<td>29</td>
<td>201</td>
</tr>
<tr>
<td>1912</td>
<td>2</td>
<td>7</td>
<td>16</td>
<td>18</td>
<td>134</td>
</tr>
<tr>
<td>1921</td>
<td>2</td>
<td>5</td>
<td>18</td>
<td>32</td>
<td>351</td>
</tr>
<tr>
<td>1930</td>
<td>3</td>
<td>12</td>
<td>24</td>
<td>41</td>
<td>452</td>
</tr>
<tr>
<td>1942</td>
<td>10</td>
<td>24</td>
<td>27</td>
<td>52</td>
<td>407</td>
</tr>
<tr>
<td>1950</td>
<td>10</td>
<td>20</td>
<td>24</td>
<td>45</td>
<td>504</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4</td>
<td>14</td>
<td>23</td>
<td>41</td>
<td>2154</td>
</tr>
</tbody>
</table>

Note: P25 and P75 = quartiles; Md = median; m = mean

Source: Database on Joint-stock Companies.

Differences in both the number of firms in the group of seven cohorts, as well as in the cohorts’ start-up size, measured as the initial stock capital were identified. Variations in the age of firms also appear when comparing cohorts. In Table 5, the age of firms measured in years is presented. The average life-length in the total population of the 2,154 firms in the database was 23 years, but the mean is sensitive to extremes. The first quartile (P25) accounts for the 25 percent of the observations below this point, i.e. 25 percent of the firms reached an age of maximum four years. The median age (Md) signifies that half of the nearly 2,200 firms did not become older than 14 years. Furthermore, 25 percent of the firms reached an age of 41 years or more (P75; third quartile). Generally, therefore, a majority of firms were terminated at young age.

Large differences appear between cohorts when taking variable age into account. Cohort 1912 exhibited the lowest average age of 16 years, followed by Cohort 1921 and Cohort 1909. Half of the firms in Cohort 1921 reached an age of five years or less (Md), while the corresponding median age of Cohort 1909 was eight years. By comparison, cohorts 1942 and 1950 exhibited a median age of 24 and 20 years, respectively. This suggests a large deviation in the age distribution between cohorts that, in turn, implies that the firms in the cohorts exhibited dissimilar termination patterns over time. Clearly, firms in for example Cohort 1921 seem to have experienced a considerable fiercer selection at young age than the cohorts of 1942 and 1950.

One question that therefore arises is if and how much the termination ‘behavior’ differed between cohorts.

One generally does not encounter a problem when measuring the age of firms. Rather, the start-up size of firms is a greater dilemma. While firms in the seven birth cohorts were gradually smaller at start – indicated by the increasingly smaller stock capital among the cohorts – it also seems that younger cohorts displayed better survival capabilities than older ones. The median age in cohorts 1942 and 1950 (and in some extent in cohort 1930) were considerably higher than in older cohorts. A question that therefore arises is whether small firms generally had better chances of survival than larger ones. If so, this contradicts much prior research that identifies small firms as subjected to a liability of smallness. However, it does not seem reasonable to reject this observation; we can generally assume that small firms have a higher risk for early termination. One explanation to the observed age-size relationship concerning the seven cohorts could be that stock capital is an inappropriate size-measure and that other indicators would have displayed other relationships. This might of course be the case, even if different size variables commonly are correlated with each other. And even so, there are no other alternative variables available than firms’ stock capital. Theoretically, it could alternatively be assumed that the small firms grew to a greater extent than the ones that were large at start. Hence small firms of younger cohorts grew faster than firms in the older cohorts since the latter on average were larger. This, in turn, increased the formers’ chances of survival. Nonetheless, while this of course might be true to some extent, prior studies have frequently identified that most new firms do not grow. It does not seem reasonable to assume that the seven birth cohorts of firms are an extreme exception from the rule.

There are naturally no ideal answers or solutions to this dilemma. We can establish that firms’ start-up size on average decreased over the half-decade (1899-1950) that are studied here. This brings us to the question as to whether a small new firm in 1899 was considered to be a large new firm in 1950. More present-day data reveal for instance that the number of small firms in the Swedish economy have increased significantly over the past 20 years.182 We can ask ourselves if different classifications or size groups are even comparable over time. Should a medium-sized firm as defined today not have been considered a medium-sized firm fifty years ago? This issue among other things was discussed in Chapter 4; however, we have no exact answers to this problem.183 The prevailing state of affairs nonetheless creates

183 While most modern economies from the latter half of the nineteenth century have witnessed the rise of very large corporations, small firms have continued. If they have increased in absolute or relative terms is difficult to apprehend. Thus, one interpretation could be that small firms – or, rather, joint-stock companies – were getting even smaller over time (and
an actual problem when addressing the question of firm size and survival using the cohort database. Should stock capital as such be used as an indicator (as in Table 4) regardless of cohort? In that case, is it better to use the nominal capital in the classification of firms? Deflated values in fact inflate the number of small businesses in younger cohorts and reduce the number of small ones in the older cohorts. Or must other classifications be employed?

In solving such a problem, I employ period-specific size measures: small firms that e.g. were founded prior to World War I are defined differently from firms founded after World War II, meaning that a small firm from 1899 actually was rather large when compared to firms founded in 1950. The first-mentioned solution has the risk to neglect that average firm size in fact decreased over the period of fifty years and thereby the risk to come to erroneous conclusions regarding for instance the age-size relationship. Correspondingly, a ‘period-specific’ classification of firm size has the risk of becoming more or less arbitrary. Thus, even if the variables age and cohort on the whole represent no real methodological dilemma when it comes to definitions and measurements, there is reason to believe that size (start-up size) of firms in some respects actually does. While I do not consider stock capital as such as an inadequate size-indicator, the nature of the variables however causes some methodological problems. Previous analyses of the cohorts have used an absolute limitation of stock capital as classification (see Gratzer and Box 2000; 2002; 2004).

In this study, period-specific size definitions will be employed. By this, cohorts that were founded during the same period or era are here assumed to share a common attribute. The cohorts from 1899, 1909 and 1912 were therefore defined as Prewar cohorts while the 1921 and 1930 cohorts were classified as Interwar cohorts. Finally, even though Cohort 1942 was founded during World War II, this cohort and Cohort 1950 were defined as Postwar cohorts. By assuming that half of the firms in each of these three ‘synthetic’ cohorts were small at start and the other half large, a rather crude definition of start-up size is obtained (of course, other criterions could be used here). Yet, this procedure can hopefully be checked for in some sense that average firm size decreased over time and thereby control for cohort/generation.

In the Long Run They are (Nearly) All Dead:
Termination, Age and Size

Were firms generally terminated at an early age, indicating a liability of newness and were furthermore firms of small size subjected to a liability of even more numerous due to lower entry costs) under the shadows of giant corporations. See for instance the works of Alfred D. Chandler (1977, 1992), or John Kenneth Galbraith (1967).
newness as proposed in earlier studies? Figure 6a gives the (accumulated) hazard rate for all 2,154 firms during their first ten years in operation. The hazard rate signifies the probability for a firm to be exposed to an event – i.e. termination – at a specific point in time; more specifically, it controls both for the point in time when the event occurs and the sequence of time at which it appears. The hazard rate is however sensitive to the absolute figures of remaining firms in a population; to calculate hazards for longer periods of time could therefore be risky. It can be observed that the hazard rates were generally higher during the first five years than during succeeding years; hazard rates in years six to ten were considerably lower. Therefore, the risk for termination decreased as firms grew older. It can also be observed that there was a slight increase of hazard from the sixth or seventh firm year. Whether this is due to statistical circumstances or due other effects is difficult to establish.

A next step divided the 2,154 businesses into large and small firms, respectively, using their start-up size measured as stock capital at founding. Especially at the age of 1-2 years, hazard rates were noticeably higher for small firms in comparison to the group of large firms (Figure 6b). After that, the differences became less obvious and occasionally reversed. The highest hazard for both groups, however, occurred at year one and they (approximately) displayed similar patterns. Thereafter, and quite much in line with hazard rates for all firms in Figure 6a, hazard rates generally seem to have increased. Systematically, firms of smaller start-up size were exposed to a higher relative risk of termination and this risk was higher at a younger age.

There is of course a possibility that the volatility in hazard rates in the figures is random. If not, differences between small and large firms could be interpreted as small firms exhibiting higher termination risk at young age due to a size-disadvantage, a liability of smallness. Difficulties naturally arise in defining what specific type, or types, of disadvantage in size that is present, but it can be assumed that large firms have greater resources and that they possibly possess economies of scale and/or of scope. It is furthermore not unreasonable to assume that large firms generally have a higher degree of organizational experience and competence. The termination period for small firms were generally shorter for firms started with a lesser size in comparison to larger businesses. The latter, it can be assumed, could prolong their termination period due to a size advantage; secondary upturns in hazard for large firms when in a somewhat older age – as were the case at the age of five firm years – might support this assumption.

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184 If the remaining number of firms in a certain year is small, for instance when a cohort has reached a mature age, hazard rates might become high even if only a small absolute number of firms are terminated that particular year. See for instance Allison (1984), pp. 14-17.

185 Period-specific measures, discussed above, were employed using deflated values of each firms’ stock capital. Fixed prices, 1930=100. SCB.
Figure 6a-b. Hazard rates for all firms (6a) and for small and large firms (6b). First ten
firm years.

Source: Database on Joint-stock Companies.

Therefore, low age increased the probability for termination and a small start-up size furthermore seem to have amplified the hazard. The subsequent hazard rates, beyond the age of five, are more uncertain. It does not however seem that age effects, i.e. a liability of newness, actually were a liability of smallness. Even large firms exhibited higher hazard rates at young age even though their rates also displayed a more fluctuating and unsteady pattern after the age of four years when compared to the group of small firms.

Cohorts also exhibited dissimilar hazard rates when observed independently. This was expected, given the varying age distributions in the seven cohorts. (Life tables for the seven cohorts are presented in Appendix 1.) Hazard rates for each individual cohort during their first decade were calculated and are presented in Figure 7. For practical purposes, the hazard rates are here computed as two-year intervals (0-1, 2-3); the figure would otherwise become rather chaotic and difficult to interpret. A higher relative risk of terminating business related to the youth of firms, a liability of newness, appeared in five cohorts out of seven (cohorts 1899-1930). For these cohorts, it can be observed that the highest risk for termination appeared in Cohort
1921, followed by Cohorts 1909 and 1930. Thereafter came Cohorts 1899 and 1912. Cohort 1921 also exhibited high hazard rates the two following periods (2-3, 4-5). Even if Cohort 1912 displayed the lowest hazard rate in the age of 0-1 years amongst these five cohorts – and the third lowest hazard rate at this age in all seven cohorts – the rate rose significantly at the age of 2-3 years. This was the highest observed rate for all cohorts during the first decade of firms. Apart from the differences in rates per se, these five cohorts approximately showed a similar hazard pattern. Cohort 1921 seems however to stand out as an exception with very high hazard even at the age of 0-1 as well as a high level of hazard up until the age of 4-5.

Figure 7. Hazard rates per cohort. First ten firm years.

Source: Database on Joint-stock Companies.

The lowest and by far most stable hazard rates were found in Cohorts 1942 and 1950. Their curves were close to rectilinear, at least compared to the five older cohorts. It does not seem that a liability of newness played a role in the case of these two cohorts since the hazard rates were low even at young age. Cohort 1950 furthermore, except from displaying low hazards throughout its first ten years, rather showed a positive linear relationship with increasing age. This conflicted with previous research results and was unexpected. In
particular, the firms in Cohorts 1942 and 1950 had a small start-up size compared to older generations.

Hence, neither a liability of newness nor of size seems to be present in these two cases. This verifies the doubts that young firms regularly – regardless of time and place – exhibit excessive mortality rates due to low age, and that small size further enhances this risk. Such relationships may be exhibited on an aggregate level and particularly in cross section data. As has been observed here, there may well be exceptions to the rule. The results here show that separate populations can reveal different levels of hazard when in the same age group. Hence, there were diverging patterns in the ‘termination behavior’ of firms in different generations over time. Some cohorts continued to exhibit relatively high hazard rates at a fairly mature age (1912 and 1921) while for some cohorts, the hazard decreased significantly as they grew older. Others, specifically Cohorts 1942 and 1950, on the other hand showed no indications of higher death risks at young age.

The differences discovered here imply that not only age and, possibly, size are important elements in explaining both why, when and to what extent firms are terminated. Cohort as such, the period of birth, may be of equal importance. So may events occurring in the economic environment of cohorts over time.

In Good Times and in Bad: Termination and Macroeconomic Environment

Above, it was observed that cohorts generally exhibited different hazard rates and – with exceptions of Cohort 1942 and Cohort 1950 – high hazard rates at young age. It was postulated that, if cohorts would exhibit the same probabilities for termination at the same age there would, firstly, be no differences between firms of different size and, secondly, no discrepancies in hazard between cohorts. This does not seem to have been the case. The low hazard rates in the younger cohorts could have a plausible explanation in the fact that the general competency to run a business increased over time and that, hence, owner-managers gradually became more skilled than earlier ones. By this, a cumulative learning process would then take place.

It is however debatable whether the differences between the very low hazards in the two youngest cohorts and the extremely high hazard rates in Cohort 1921 were caused by a learning process that accumulated competency. High and prolonged hazards in Cohort 1921 over its first five years, compared to older cohorts oppose this. Such an assumption is also contradicted by the fact that Cohort 1899 and 1909 revealed lower hazard at the age of 0-1 than the ones established in 1921 and 1930. Furthermore, if large firms generally possess a higher degree of organizational competency (or, for that
matter, an advantage due to larger size in general), younger cohorts would in that case have exhibited higher hazard rates than older cohorts since average firm size was smaller in younger cohorts. If anything, the relationship between insignificant size and the ability to survive seems to have been quite the opposite. The observed differences in age and hazard between cohorts might have at least a partial explanation in external variables such as macro-economic conditions. Especially, the first years for new firms could prove to be critical as the hazard rates would indicate. From around the 1890’s, Sweden took its first steps into a modern industrial society. Before the First World War, the economy generally expanded while the following peace years proved to be volatile and defined by economic crises – particularly in the first part of the 1920’s and early 1930’s.

Table 6. Average annual growth rates of GDP, 1890-1970 (percent). Different periods.

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<tbody>
<tr>
<td>1890-1900</td>
<td>4.4</td>
<td>3.8</td>
<td>4.6</td>
<td>5.6</td>
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<tr>
<td>1900-1910</td>
<td>3.8</td>
<td>3.5</td>
<td>1.9</td>
<td>4.8</td>
</tr>
<tr>
<td>1910-1920</td>
<td>1.9</td>
<td>4.8</td>
<td>2.3</td>
<td>5.6</td>
</tr>
<tr>
<td>1920-1930</td>
<td>2.3</td>
<td>5.6</td>
<td>3.3</td>
<td>5.8</td>
</tr>
</tbody>
</table>

Source: Krantz (1997), own calculations.

The first decades in the post-World War II era however witnessed a more stable economic development. Between 1950 and 1970, the average annual growth rate of GDP was around 5.6 percent per year. Table 6 summarizes the economic development between the years 1890 and 1970 measured in average GDP growth. As can be observed, the years 1910-20 and 1930-1940 were characterized by relatively slower macroeconomic growth compared to other periods.

By this, the seven birth cohorts of firms also seem to have faced different environments – both at founding as well as over the course of time. Age effects (liability of newness) can therefore coincide with bad or more benign times. Such cohort effects might explain why different cohorts exhibit different termination behavior at a young age. Periodic effects, furthermore, presumably have an influence on the termination behavior of firms in different cohorts, even if they have reached a considerable age (which otherwise generally would lower the probability for termination). Moreover, such period effects, say an economic downturn, can be experienced simultaneously by separate cohorts while, however, the cohorts are of different age. For instance, firms in Cohort 1912 were nearly ten years old – thus rather mature.

– when the economic crisis of the early 1920’s set in. At the same time, Cohort 1921 was by all means of infant age in 1921. Hence, the ‘behavior’ of firms can prove to be different, caused by cohort, period as well as age.

For the firms in Cohort 1899, the first two years was a period of general industrial and economic expansion. A recession during the years 1901-1902 turned out to be especially harsh in Stockholm. The economy soon recovered and the upswing lasted another six years until another recession occurred. By this time, the new firms in Cohort 1909 faced a macroeconomic slump during their first years. After 1910, the economy improved and expanded some years into the First World War. Cohort 1912, therefore, seems to have experienced a period of economic expansion during its first years in life. The last war years were however characterized by speculation and by an overheated economy. So were the two following inflation years in 1919 and 1920. A deep and severe economic depression was the environment that faced the newborns of Cohort 1921. The economic fall was however rather short and ended in 1922, while both the price level was falling and with rigorous problems for the financial sector. The remaining years of the 1920’s were even so generally signified by macroeconomic revival.

Another deep recession occurred in the early 1930’s, which made the firms in Cohort 1930 to initially face a macroeconomic fall in business activity as well as high unemployment. Yet, for the Swedish economy, the recession did not prove to be as severe as in the previous crisis. The economy was improving already in the early 1930’s and the remaining years, up until the outbreak of World War II, was a period of economic expansion. The war years brought about several regulations of business activity and rationing of producer and consumer goods. These remained even after the peace in 1945.

The firms in Cohort 1942 were born into times of regulations. After a first drawback in economic activity and fall in aggregate demand 1940 and 1941, the macro economy was recovering. In lack of foreign competition, some industries even expanded during the war. The post-war years witnessed a boom in economic activity. The Korean War, 1950-1953, lead to increasing exports and high inflation rates. From the mid-1950’s, consumption and investments rose significantly. Hence, Cohort 1950 were founded in the beginning of an extraordinary economic expansion with few and, in comparison to the interwar years, less significant slumps in the business cycle. This was an expansion that did not weaken until mid-1960.  

Each separate cohort did therefore, as it seems, face different macroeconomic environments: some initially proportionally good years, followed by recession (Cohort 1899), some that faced rougher years (as Cohort 1909).

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For Cohort 1912, the economic conditions were, it could be assumed, initially advantageous while particularly the last years of World War I and the crisis in the aftermath of the war were less benign. Furthermore, and without exaggeration, the early years for the new firms in Cohort 1921 seem to have been particularly severe. An almost similar situation awaited the firms in Cohort 1930 while Cohort 1942 in the beginning faced relatively stable and protected economic conditions, notwithstanding the war situation as such. Finally, firms in Cohort 1950 met a somewhat comparable situation as Cohort 1942 during the extensive economic expansion of the Swedish post-war economy.

Figure 8a describes the termination rates in the three oldest cohorts – 1899, 1909, and 1912 – over a 20-year period per cohort. The rates are calculated as the number of firms terminated a specific year in relation to the number of remaining firms in the cohort of interest. As in the case of hazard rates, the figure describes termination rates in two-year intervals. At the age of 0-1 years, around 12 percent of the firms in Cohort 1899 were terminated, while nearly 15 percent were terminated in Cohort 1909 and a little less than nine percent in the generation from 1912.

The termination rates reached a peak for all three cohorts when they had achieved an age of 2-3 years. Cohort 1912 reveals a comparatively low termination rate at the age of 0-1 years, perhaps due to the macroeconomic improvement since the downturn in 1908-10. The termination of firms in Cohort 1912 did however intensify significantly during the First World War. If this is an effect of age – i.e. a similar trend as in the two older cohorts when 2-3 years old – or of period (economic recession) is difficult to appraise. However, successively decreasing rates over time for the cohorts from 1899 and 1909 did shift into higher termination rates during the war. Cohort 1909 in particular were experiencing fierce termination in the early 1920’s; nearly 16 percent of the remaining population vanished during these years. Moreover, the high termination rates in Cohort 1912 continued throughout the remaining war years and over the following period of economic recession in the beginning of the new decade in spite of increasing age. When the firms in Cohort 1912 had reached an age exceeding five years (from 1917-1918), the termination rates were generally higher than when Cohorts 1899 and 1909 were of corresponding age (1903-04 and onwards; 1913-14 and onwards, respectively).

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188 As noted earlier, calculations over longer periods may prove misleading.

189 The increasing rates in particularly Cohort 1899 during and after the war years should probably be read with some caution. The remaining population was quite small and seemingly high rates might prove misleading.
A somewhat similar pattern can be discerned in Figure 8b. Unlike Cohorts 1899, 1909 and 1912, the cohort from 1921 displayed very high rates of termination during its first five years (1921-1927). On average, some 22 percent per year of the remaining population were terminated. Most likely, this was an effect caused not only by young age – liability of newness – but also by the macroeconomic downturn. Low age and negative periodic events coincided. The observed intensification in termination rates at the age of 10-11 years seem furthermore to have been caused by the economic downturn in the early 1930’s.
Cohort 1930, additionally, revealed a similar pattern of termination as Cohorts 1899, 1909 and 1912 (see Figure 8a), with a peak in termination at the age of 2-3. As in the case of Cohort 1921 it is problematic to determine whether the high rates at young age in Cohort 1930 (1930-1933) could have been caused by low age as such or by the economic recession. It is however clear that the termination rates as such at the age of 2-3 were lower in Cohort 1930 than in Cohorts 1899, 1909 and 1912 even though the rates generally were higher in the former cohort at the age of 0-1 than in the latter ones. It is therefore not unreasonable to imagine that low age and economic recession coincided for the firms in Cohort 1930 although the two variables are difficult to separate. For the succeeding period, a similar difficulty in interpreting the termination rates of Cohort 1930 emerges. Increasing age and economic recovery are related. Higher termination rates can however be observed during the first years of World War II which, initially, witnessed a macroeconomic decline.

As noted earlier, the two youngest cohorts in the database exhibited by far the most contradictory patterns of termination when compared to the five other cohorts. Around 3.5 percent in the cohorts from 1942 and 1950 were terminated at the age of 0-1 years. At the age of 2-3, some six percent were terminated in Cohort 1942 while the figure for Cohort 1950 was less than four percent. In these two cases, consequently, young firms did not seem to have a higher risk for termination. This is particularly evident for the youngest generation from 1950, which from the age of 4-5 years actually proved to have (increasingly) higher rates of termination – from around 1954-55 and onwards – than during the age of 0-1 and 2-3 years. The last war years and above all the post-war period were years of exceptional economic growth. In comparison to the five other cohorts, one probable explanation could therefore be that a protected and regulated economy with a general economic expansion meant a low risk for early termination for new firms. At least, firms that hypothetically ‘should have’ disbanded at an earlier stage (‘should have’ in terms of the observed behavior of older cohorts) were perhaps able to prolong their termination period due to benign environmental circumstances that were not present for other cohorts. This might be suggested by the fact that even though termination rates generally were low throughout the first twenty years, the termination rates of these two youngest cohorts nevertheless showed a nearly positive correlation with increasing age.

Even if termination rates on aggregate levels (i.e. the macro biographies) seem to have corresponded with changes in macroeconomic environments, an investigation using firm level data is also possible. Growth in real GDP and the market interest rate were used as indicators for macroeconomic conditions.\textsuperscript{190} GDP growth is here assumed to be an indicator of general demand

\textsuperscript{190} GDP data is from Krantz (1997). The market interest rate level represents the lowest rate offered by Skandinaviska Enskilda Banken (and predecessors). Data is from Persson (2001).
conditions as well as of economic stability. Periods of negative or low economic growth imply decreasing consumption and investments and a decline in aggregate demand. Strongly fluctuating economic growth rates over periods can in addition lead to intensifications of the termination rates of firms. Moreover, high or fluctuating interest rate levels might cool off investments and put demands on firms that have high burdens of debt. It can create uncertainty for economic decisions. Firms could get into financial distress and leave the market. A low or stable interest rate level might therefore increase firms’ survival chances.

Are there reasons to expect different behaviors concerning small and large businesses? In general terms, it might be reasonable to argue in terms of capabilities to survive given scale and scope and given macroeconomic conditions. A basic assumption here is that firms with a small stock capital at founding also had fewer or even no employees in comparison to firms started with a larger capital (although there of course may be exceptions). During economic downturns, for instance during periods of low aggregate demand, small-scale entrepreneurs may work harder and continue their business. Periodically they might reduce or even renounce wage in order to make their business survive. One possible explanation, therefore, is that in small firms, production inputs have fewer alternative uses than in large firms. At least over shorter periods when demand is falling or fluctuating, small firms could possibly well stay in business. When times are getting harder, and since there are no alternative uses for labor, small firms will therefore continue. Higher or strongly fluctuating interest rates (or deteriorated lending conditions), however, can represent a credit-crunch for smaller firms. Periods of high interest rates can imply a tightening up of the economy. If small firms’ credit costs rise, highly mortgaged firms or marginal businesses can be terminated. Large firms have, it can be assumed, generally a larger organization, employed personnel and larger fixed costs.

Even though large firms that are indebted may be negatively affected by increasing interest rates, their financial strength in terms of solvency is greater than for small firms. Hence, the former may cope with fluctuations in the market interest rate. In times of higher credit costs it may further be understood that large firms have a relative advantage above small businesses

191 For a thorough discussion regarding business cycles and growth, see Zarnowitz (1985), pp. 530-533.
192 See Gratzer (2001a), pp. 168f. Other studies in economic history have proposed similar arguments. For instance, in a study about American tobacco producers in the seventeenth century, Anderson and Thomas found that all tobacco farms without exceptions were small – no producer was in possession of economies of scale. The demand for tobacco was quite unresponsive to price changes (i.e. rather inelastic) while the short-run supply of tobacco was perfectly inelastic: there were no alternative uses for the most important factor of production – labor – which meant that individual planters continued their business to grow tobacco irrespective of changing market conditions. In the long run, supply of tobacco was perfectly elastic. Anderson and Thomas (1978), pp. 371-374.
since large firms are more likely to receive credit (and, it can be assumed, at better conditions) from banks than smaller ones.\textsuperscript{193} If the demand is falling or is strongly fluctuating, bigger businesses might experience troubles in other ways than small businesses. Large fixed costs in combination with, presumably, reluctance amongst employees to lower their wages might prove large businesses less flexible than smaller ones under such circumstances. But large firms can naturally downsize and they commonly also have greater resources than smaller ones. They may also find alternative uses for their input to a greater extent if economies of scope are present. Therefore, due to a size-advantage they might be able to stay in business longer than small firms. Large firms could thereby theoretically prove to be less ‘flexible’ than smaller ones under volatile or low demand conditions. They may nonetheless also be able to cope with such conditions better than small businesses.

How can the termination of firms be tested when including phenomena such as environment and size? Logistic regression is commonly preferred to ordinary least squares regression when the dependent variable is categorial and not continuous. Explained variance ($R^2$) cannot be calculated as in ordinary regression; rather, a pseudo-$R^2$ is obtained that explains how well the model fits. In that respect, it resembles an ordinary regression. In logistic regression, the probability – or the odds – that an individual or unit of investigation has a certain status or if it belongs to a certain category, given an independent or several independent variables, is obtained. Odds ratios that are equal (or very close) to one (1) would indicate that an increase in or a certain value of an independent variable has no observable effect on the independent variable. Odds ratios significantly larger or smaller than one, signal that it has an effect – for example, if larger than one it would mean that an increase in an independent variable (holding everything else constant) increases the odds for belonging to a certain category.\textsuperscript{194} In this context, we are interested in the probability for firm termination, particularly termination at low age. A binary logistic regression analysis was therefore performed in which the dependent variable was represented by early termination. The analysis above using hazard rates showed that termination rates were turbulent up to the age of around five years. Thereby, firms terminated before the age of five were coded as 1 (= Yes), while all other was coded as 0 (= No).

\textsuperscript{193} Helen Manning Hunter’s study over the liquidity of small and large American businesses during and after the Great Depression supports such assumptions. Manning Hunter (1982).

\textsuperscript{194} An ordinary regression has certain limitations when using categorial data, especially when it comes to estimating probabilities. This is avoided in (binary) logistic regression. For example: the probability that an individual has a certain status or that a certain event has occurred can vary within the interval zero to one (for instance 0 = No; 1 = Yes). An ordinary probability model could theoretically predict the probability as larger than one, or smaller than zero; something that is quite unrealistic if an event or status cannot fall below zero or exceed one. A logistic regression analysis is therefore a linear probability model with restrictions. See Edling and Hedström (2003), p. 173ff.
Independent variables in the logistic regression were the start-up size of firms, measured as their stock capital at start in fixed prices. Here, size-categories were used, indicating that the fifty percent largest firms were defined as large (= 1) while remaining firms were coded as small (= 0).\footnote{Using the period-specific size definition, discussed earlier.} Thus, the size-variable is dichotomous. The correlation between the dependent variable and the size-variable is assumed to be negative; expressed in another way is it here assumed that the probability for early termination diminished if the firm were of larger size at start (lower odds).

Furthermore, by introducing variables that are indicators of macro-environmental conditions in the model it can be tested if firm termination was affected by other factors. Here, GDP change and changes in the interest rate level were employed as independent variables. Since the dependent variable is dichotomous, one question that arises here is how to measure demand and credit conditions. The coefficient of variation was employed. This is a measure of the relative dispersion of a variable, and can be used to calculate volatility. By using for instance the average rate of change over a period (say average GDP growth) would mean that yearly fluctuations are not taken into consideration.\footnote{Coefficient of variance (cv) = \( \frac{\text{Standard deviation}}{\text{Mean}} \times 100 \), Hence, cv is expressed in percentages. See Körner et al. (1984), p. 85. For instance the early 1920’s was a period of recession. In 1921, economic growth was negative while other years during the decade mostly showed positive growth rates even if growth generally was fluctuating significantly. One problem here is therefore that calculations of average economic growth for the period 1920-1925 (for instance) would display rather high positive macroeconomic growth even if common knowledge tells us that the early 1920’s were years of crisis.} It is reasonable to presume that a high volatility leads to stronger selection of firms, since smooth and stable periods economic growth or periods of stable interest rate levels (low volatility) probably involve more stable and secure conditions for firms. In this case, it is assumed that periods of high volatility of the interest rate level and macroeconomic growth has a positive relationship with early termination: i.e. the odds for early termination increased if the macro economy were unstable. The coefficients of variance of GDP and interest rate level were calculated for each of the seven cohorts’ first five years, including also the year prior to founding. For instance, the period 1898-1904 is used as an indicator for the first years of Cohort 1899, and so on.

Furthermore, interaction terms were also used in order to investigate the combined effect of firm size and environmental variables. Interaction commonly refers to variables that are added to a model in order to incorporate the joint effect of two independent variables. The effects of separate variables in a model are usually denoted \textit{main effects}, i.e. the effect of one or several independent variables. The inclusion of interaction variables takes into consideration not only a model with only main effects but also if two independent variables have a combined effect. Thus, an interaction effect
exists when the effect of the independent variable on the dependent variable differs depending on the value of a third variable, a so-called *moderator variable.*\(^{197}\) Two separate analyses were performed, with the second [2] also including interaction variables in the regression. Results (odds ratios) are presented in Table 7.\(^{198}\)

**Table 7. Logistic regression results. Termination at young age.**

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<tr>
<td></td>
<td>Odds ratio</td>
<td>Odds ratio</td>
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<tr>
<td>(Constant)</td>
<td>0.135*</td>
<td>0.145*</td>
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<tr>
<td>Start-up size</td>
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<td>Interest rate</td>
<td>0.992</td>
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<tr>
<td>GDP</td>
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<td>1.644*</td>
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<tr>
<td>Interest rate x Size</td>
<td></td>
<td>1.060*</td>
</tr>
<tr>
<td>GDP x Size</td>
<td></td>
<td>0.840*</td>
</tr>
</tbody>
</table>

Pseudo-R\(^2\) 0.096 0.101
N [n = Yes] 2,154 [686] 2,154 [686]

\( (*) = \) significant on at least the 0.1 level.


As can be observed, the tests could explain some ten percent (Pseudo-R\(^2\)), although both models were significant (indicated by the model chi-square). As for the first model, interest rate fluctuations had no observable effect on the probability of early termination. However, there was in fact a significant relationship between terminations and GDP. Here volatile periods of GDP were increasing the probability for early termination, indicated by the odds ratio that was significantly larger than 1, holding other variables constant. Furthermore, firms defined as large at start-up displayed a lower probability for early termination. The odds ratio was here around 0.7, which means that large firms had a lower risk. Thus, the test above confirmed what had been observed earlier, namely that small size at start had a negative effect on firms’ survival chances and, furthermore, that unstable environments were increasing the probability for termination at low age. The combined effect of size and environmental variables at founding showed furthermore that a very small yet significant size effect (odds ratio of 1.06) concerning the interest rate: larger firms’ probability for termination was slightly more sensitive to

\(^{197}\) See Jaccard and Turrisi (2003), especially pp. 3-4, and 18-28.

\(^{198}\) Here, only the odds ratios are reported while the Wald statistics (test of significance whether the coefficient equals 0) as well as the significance level for the Wald statistics, and \( B \) (the linear model equation) are reported in Appendix 2.
interest rate volatility. The larger firms were on the other hand less sensitive to unstable GDP growth periods – here, it does seem that small firms generally were more likely to terminate at low age during volatile macroeconomic conditions.

Therefore, even if results are mixed, it seems to have been present, a general pattern of higher termination risk at low age not only for firms of smaller size but also a probable intensification of this risk when the macro-economic environment was unstable.

**Conclusions**

In this chapter have I focused on a central problem in the study of business behavior, namely the ability of firms to survive. In doing so, I have employed a unique longitudinal database on seven birth cohorts of joint-stock companies, founded in different years in Stockholm during the first half of the twentieth century. Nearly 2,200 companies are included in the database. In academic literature and research, many reasons as to why firms fail or are terminated have been put forward. Our conception(s) of failure would normally contain a supposition that a ‘genuine’ business failure has occurred when there have been losses, or if the firm (or its management) has been inefficient. Such definitions would demand that the researcher is allowed a possibility of viewing each firm that terminates from within – i.e. to look inside the ‘black box’ – in order to determine if a ‘real’ failure has occurred or not. In historical studies, that may occasionally be allowed – such as in business history. This is a research field where a single enterprise or a group of generally large businesses are thoroughly studied. In the case of the seven birth cohorts, most firms were small and anonymous when they started, and they generally maintained that status. We are in these circumstances rarely allowed to catch a glimpse of what goes on inside since, for the most part, no sources are preserved. Furthermore, such an attempt would be difficult to realize since here we deal with nearly 2,200 business firms.

Much evidence has however shown that business can continue although they are experiencing difficulties, even if they are textbook failures and are inefficient. For the small-scale entrepreneur, her or his life’s work can be at stake. Therefore, they may put much effort to make the business survive although operating at a loss. I have used *all* types of exits from each birth cohort as an indicator of termination. Basically, a termination signifies that a firm has exited its birth cohort – without regard for the type of exit (bankruptcy, liquidation etc.) or the reasons behind it. Therefore, what has been measured here is a firm’s ability to survive. To take for granted that all terminations in the seven birth cohorts were genuine failures – as in inefficient, or as in misallocation of resources – would of course be a very simplistic assumption. Firms disband for many reasons, and likewise firms remain for
a number of reasons whether ‘failures’ or ‘successes’. I do however think that the use of the very broad definition of termination rates of firms still can describe under what conditions firms operate. If it is assumed that the majority of firms are founded because it is in the interest of their founders or owners to run a business, then the main goal of the firm will be to survive.

The number of new companies, with some exceptions, seems to have increased over the course of time. In 1899, 105 joint-stock companies were founded in Stockholm while a little more than 500 were founded in 1950. Probably, this can be understood as, partly, an increasing business activity in the Swedish economy in an era when the market economy expanded: the total number of joint-stock companies in Sweden increased significantly in the early century. But, even more likely, it also gradually became less costly to start a business in the form of a joint-stock company. It is not unreasonable to assume that the joint-stock company crowded out other forms of business enterprises due to increasingly lower entry barriers. Entrepreneurs with little capital in the early 1900’s were probably confined to use the private businesses form rather than that of joint-stock companies. In the 1950’s, less capital was needed to start a company. And new firms did in fact increasingly become smaller, at least measured in stock capital. It was demonstrated that successively younger cohorts displayed larger shares of firms with a small stock capital at start. For example, in Cohort 1899, around fifty percent of the firms had a stock capital – measured in nominal values – that exceeded 50,000 kr. In Cohort 1921 the figure was around 20 percent, and in Cohort 1950 around four percent of the firms had more than 50,000 as initial stock capital.

Furthermore, even if the age distribution of all the 2,154 firms revealed that more firms were terminated at young age – already at the age of four, 25 percent of the firms had disbanded – each cohort’s separate age distribution gave evidence of rather large deviations from the general picture. In the five cohorts founded between 1899 and 1930, a quarter of each cohort’s population had exited at the ages of 2-3 years. The two youngest cohorts – 1942 and 1950 – had lost an equally large share of firms at the age of ten. Further examples of these diverging age distributions can be seen in the fact that the median age of Cohort 1921 was as low as five years, which can be compared to the median age of Cohort 1942 (24 years).

These observations lead to the conclusion that each cohort most likely exhibited different termination behavior. Starting with observing the firms’ behavior on an aggregate level it was here found, in line with much previous research, that the firms in the cohorts exhibited a general liability of newness. Hazard rates were higher at young age than when the firms were older. Small and large firms exhibited similar patterns of hazard. However, higher hazard rates were evident for small firms at young age than for large. Over the three first observation years (0-2), small businesses had higher hazard rates. Secondary upturns in hazard for large firms during subsequent years
might be explained by that large firms, to some extent, can prolong their termination period due to a size advantage.

For the separate cohorts, however, the hazards displayed – as expected, given the different age distributions between cohorts – diverging behaviors. It can be questioned if there is an cumulative learning process that, over time, will lower the death risks amongst populations of firms since business managers learn from the mistakes of previously failed businesses. Such a process might be discernible in single industries, but in the case of the seven birth cohorts fairly low hazard rates in Cohorts 1899 and 1909, high (as well as rather prolonged) hazards in particularly Cohorts 1912 and 1921 and, again, very low hazard rates in the cohorts from 1942 and 1950 contradict such assumptions. Thus, the five oldest cohorts had somewhat similar hazard rates, but the two youngest exhibited hazards that were conflicting with much previous research. They had very low hazard throughout their first ten years. Low age did not seem to increase their hazards. Rather, particularly in Cohort 1950, increasing age even gave some evidence of intensified hazards. Therefore, it is doubtful if the liability of newness is a recurring phenomenon regardless of time and of place. Clearly, the hazards of the two youngest cohorts depart strongly from the common supposition that young firms exhibit a larger risk for termination. It is also conflicting with the view that insignificant size will increase the probability for termination. Most firms in Cohorts 1942 and 1950 – at least in comparison to the older ones – were regularly small at start; at least when using an absolute size criterion.

The size variable was therefore somewhat problematic. Even if it were established that small firms had higher hazards, a time-span over fifty years showed that firms, the younger they were, had an increasingly smaller start-up size. While it is true that new joint-stock companies gradually were smaller at start, one must perhaps also ask whether or not average firm size in the entire economy decreased. Therefore, one can present the question as to whether or not period-specific measurements (criteria) are preferable to one that does not take into account the factor of time and changes in economic life and business activity (although such criteria have the risk of subjectivity). As stated in the chapter, I do not think that there is an ideal solution to this problem. I do however think that the criteria for determining ‘small’ and ‘large’ not only differs between industries and places but also over time. Thus, I have used period-specific size-criteria when addressing the question of size and termination.

Even though age effects generally could reveal to what extent firms were terminated, macroeconomic events here were seen as complementary explanations to the termination behavior of firms. When observing the termination rates of firms over time, it was clear that although high termination rates occurred at young age, they seemed to have been intensified by the period as such. As an example, Cohort 1899 had lower termination rates at the age of 0-1 years than Cohort 1909, while Cohort 1912 displayed lower rates than
the two older cohorts. We know that the last years of the nineteenth century were economically more prosperous than the recession that occurred from 1908 and, further, that the immediate years preceding the birth of Cohort 1912 were signified by an improvement in the macro economy. Each of these three cohorts exhibited higher termination rates during the First World War, particularly Cohort 1912 that still was of young age at that time. Low age and hostile period effects therefore coincided. Cohort 1921 is, once more, an outstanding example of extended high termination rates. The ‘peace crisis’ in the early 1920’s was severe. This, in combination with insignificant age, did not seem to prove good prospects for survival for its firms. Cohort 1930 is another comparable albeit less obvious example of such circumstances. Its termination rate at the age of 0-1 years (1930-1931) was the second highest of all seven cohorts. Yet, and again, the most deviating termination rates were discovered in Cohorts 1942 and 1950. Regulations and a protected as well as growing macro economy characterized the Swedish society from 1941 and onwards. Particularly after the peace, the economy experienced an exceptional expansion. A probable explanation to the low termination rates in the two youngest cohorts might most likely be found in these circumstances. As was observed, termination rates of these two cohorts showed rather a positive correlation over time. A high aggregate demand as well as protections and regulations during and after the war might have made it possible even for less qualified businesses, or for small firms, to stay in business.

Hence, a relationship between macroeconomic environment and termination of firms in the seven separate cohorts were identified. Some (alternative) relationships or outcomes concerning termination, firm size and macroeconomic conditions were proposed in connection to this. One was that small businesses, due to less or even no alternative uses of factors of production, might continue operations – at least over some time – regardless of changes in demand. The self-employed entrepreneur will continue, perhaps without economic compensation. Large firms, even if they possess economies of scale and scope and can downsize during harsher times, have on the other hand invested in large fixed assets (i.e. high fixed costs) and have presumably employed personnel that are unwilling to lower their wages. If they lose sales, costs per unit rise. It is furthermore imaginable that large firms have better credit conditions than small firms. For the latter ones, an increased interest rate could represent a liquidity squeeze, particularly firms living close to the edge. Hence, they would have to exit. The tests here showed that small firms had a greater probability for early termination than large. Furthermore – and although results were mixed – the economic environment had an effect on termination. Insecure economic external conditions at founding increased the probability for early termination and, in addition, small firms were generally more sensitive. Consequently, not only structural
variables such as small size had an effect on termination rates but also the environment or external conditions.

In the same way that human beings can experience the same event or period, but be affected in many different ways, goes for businesses as well. Here, the database used is heterogeneous, including firms of all industries and sizes. Even if firms from the same cohort experienced the same environmental events at the same age, it is of course true that some were affected by those events in different ways than others. Therefore, the large quantity of ‘realities’ or circumstances experienced by individual firms and entrepreneurs over time and in and between periods cannot perhaps be fitted into such simplistic explanations. They rather serve as typical cases on a general level. Events or periods in the economic history could very well be viewed as unique and non-recurrent. In that case, there would be less room for generalizations on what the researcher understands as a common behavior amongst groups of firms. As I have demonstrated here, firms ‘behaved’ similarly since they as a rule were terminated at a young age. But cohorts displayed different behaviors, or termination rates, depending on circumstances at founding and according to events over the course of their lives.

Consequently, even in this respect would I like to suggest that there was ‘common behavior’, but from a somewhat different viewpoint that is commonly suggested in other studies. During harsher times, more firms were terminated than in times of benign conditions. This was true even for firms that had reached a more mature age. Even if this study has not investigated what goes on inside the ‘black box’ I think it is evident that there are forces that operate beyond the scope of the individual firm. Such forces might, as in this case, be changing macroeconomic environments that circumvent the capability for firms to continue operations (while, of course, they also can provide some firms with opportunities). In that respect, not only are the individual entrepreneur’s or business owner’s capabilities and competency important to include in research but also other factors. For this reason, as has been called for by researchers in entrepreneurship and small business, there is a need for more longitudinal research that can hopefully illuminate the interaction between environment and the (individual) business. The perspective that addresses environmental factors should not exclude or reject individual or structural-oriented explanations. Rather, the perspectives should be viewed as complementary.
6. Surviving Firms: Survival and Growth?

Introduction

A smaller number of firms from the seven birth cohorts remained in business for a substantial period of time. Even if the selection process, as shown in the previous chapter, was more intense during the businesses’ first years in almost all cohorts – particularly for those of smaller size – nearly one fifth of the entire population of the 2,200 firms survived until the 1990’s. This means that they survived for some fifty to one hundred years. Such firms are perhaps viewed as anomalies in many circumstances since most new ventures commonly display considerably shorter life times. These firms will be in focus in the present chapter. The purpose is here to investigate how large these survivors had become, and to explore if it is possible to discover any systematic relationships between their cohort affiliation, start-up size and their size. In many respects the theme in the present chapter concurs with the problem in Chapter 4, namely, the size distribution of business firms.

Size and Survival of Firms Over Time

The continuation of small firms has since long been considered in the economic disciplines. Classical economists and their successors noted the persistence of the large number of small firms. This persistence has been studied from various perspectives. Classical, neoclassical, historical and institutional theories and models have been used in order to explain these phenomena. It has been proposed that the existence of small firms needed not to be explained in any greater extent by Adam Smith. By keeping the economy liberalized most firms would invariably remain small, when at the same time the increasing division of labor in the economy would enhance the size of firms. Smith however utilized the example of a pin factory with around fifteen employees in describing this phenomenon. This size was probably a quite ‘normal’ size for firms at that time and age (late 18th century). Larger
firms were hence unusual, and the problem of ‘large’ and ‘small’ had possibly therefore no empirical ground as well.199

Economists after Smith, such as John Stuart Mill and Karl Marx, perceived however in a more explicit way the advancement of larger business units. The division of labor and the industrialization process would make small units obsolete, and they observed and predicted a continuous increase of large organizations in most industries – not only in manufacturing, but also in the retail sector. Small units would accordingly steadily vanish from the economy. For especially Marx, this was an important feature. Small firms could exist and survive, but most likely in newer or younger industries – and only temporarily until larger firms would either drive them out of business or devour them. Finally, in the course of capitalist development, only a few large businesses would remain.200 This was a period of a more mature industrial society that witnessed the emergence of large organizations. Thus, economists before the breakthrough of the neoclassical school presented a somewhat dismal view on the small firm; in order to survive the firms must grow.201

From a neoclassical viewpoint, one explanation of the persistence of small firms would be that market imperfections affect the size of firms (e.g. economies of scale, concentration). This might, at a certain observation point in time, leave a market with one or a few firms with economies of scale (large firms) and some with smaller size. Competition will affect firm size: perfect competition restricts the possibilities for firms to reach economies of scale, and is therefore naturally limiting the odds for firms to attain a large size. In that sense firms are not ‘supposed’ to grow, and they do not differ from each other in behavior and in conditions.202 Hence, if there is perfect competition, there are no ‘large’ nor ‘small’ firms, just firms. Following that

199 Larger firms or working sites were, e.g., usually state- or semi state-owned enterprises such as trade companies or shipyards.
200 According to Joseph D. Phylis, Adam Smith did however look with favor on the growing importance of large firms. Furthermore, the obvious persistence of something obvious in everyday life – or the existence of something that soon would become non-existent (i.e. small firms) – can perhaps explain why economists before the neoclassical revolution made no efforts towards a ‘theory of the firm’. See Phylis (1979), pp. 331-340.
201 Later observers were equally surprised over the persistence of small (independent) businesses in developed, modern economies; Dobb (1963/1973), pp. 280-285.
202 See for instance Nelson (1991), p. 64f. Robin Marris has put is as: “In the competitive model of capitalism, firms are neurons of the Invisible Hand… [...] neurons are not supposed to grow large or directly influence behaviour. [...] The fact that firms do grow, do become large, [...] is thus one of the keys to explaining the difference between actual capitalism and the competitive ideal.”; Marris (1971), p. 2. There is a theoretical distinction between internal and external economies of scale: External economies of scale arise when the cost for producing depends on the size of the industry in question, and not on the size of the single firms. Internal economies of scale are the opposite, where the costs depend on the single firm rather that the industry. See also Hart (2000).
argument, we would expect firms to exhibit at least approximately the same size.

A contractual view of firms and the existence of transaction costs explains the different size of firms not according to economies of scale, as in ‘pure’ neoclassical theory. Here, firms are rather exhibiting different sizes due to transaction costs – costs for concluding and enforcing contracts, costs for administration, search costs, etc. Firms will grow until the costs for allocating activities internally are larger than on the market. The cost curves for firms differ (depending of a variety of factors – internal, industry-specific), and they hence exhibit different sizes. Another neoclassical explanation has been that the size distribution of firms, viewed from a macro or aggregate perspective, is more or less a random process and that any firm, regardless of size, has the same chance to grow or decline between two periods of time. This means that a small firm during one observation period has the same likelihood of growing larger in the second observation period, as does a large firm, just as they exhibit equal chances to diminish in size when the next observation is made. The proportionate change in the size of a firm is therefore unrelated to its absolute size. By this, we could say that there is no real association between the initial size and subsequent size of firms, and if there is a relationship it would be at least weak.

Institutional research has presented a somewhat similar view in line with neoclassical accounts, i.e. that imperfections affect the size distribution of firms. These, in turn, affect the incentive system for economic actors (entrepreneurs, firms), create uncertainty and do not encourage business growth. Here, however, state policy and taxation of businesses are seen more as the real cause in explaining the skewed distribution since there is no proper incentive system. In that sense, however, firms can remain small and survive in a market economy but small firms will, nonetheless, also risk remaining small.

Historical or more ‘unique’ explanations (in some sense, of course, connected with institutional conditions) have also been presented. The breakthrough of the industrialized economy in Sweden necessitated large business units, which often were joint-stock companies (whereas smaller or medium-sized businesses usually were of different forms of enterprises such as private businesses), and many of the largest firms in the economy are also some

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205 Taxes and ‘business climate’ do not promote the growth of especially small firms, and these do not have the opportunities – the proper incentives – to grow and become at least medium-sized firms. Gradually, especially during the postwar period, new firms have had declining opportunities to grow. See discussion in Chapter 4. On corporate/business taxation as such during the last century, see for instance Grosskopf (1976), pp. 40-78; Mutén (1968), pp. 31-36, and Lundström, R. (2001).
of the oldest. Several of the ‘old’ industrial businesses were active and expansive quite early on the international markets and expanded also by establishing themselves abroad. The role of small and large firms has also been characterized by economic historians as an ‘interplay’, where they have had an alternating relationship and have stood out as more important or development-driving depending on phase of development. Historian Jan Glete (1994) has presented a similar explanation, somewhat connected to institutional conditions. It is obvious, according to Glete, that the latest decades have displayed an aging population of large companies.

By this, it is not necessarily law-like conditions that can explain the relative ‘importance’ and occurrence of large and small firms, but also distinct phases and particular episodes in the economic history, as well as the ‘historical fact’ that many of the largest firms have their roots in older times (which most firms in the economy do not have).

In that respect, the persistence of the large number of small firms – and the small number of large firms – has had several theoretical and empirical explanations. There does not appear to be any clear answer as to the implications of this structure for the economy as a whole. Most developed economies – some with very different market conditions – exhibit a similar size structure of firms. In that respect, our perceptions of ‘big’ and ‘small’ could have different meaning depending on time and place. It is therefore interesting to investigate the size of surviving firms from different cohorts that have existed over longer periods. Therefore some basic propositions or

206 Large national projects, such as railroads, canals and power plants, required very large business units (usually in the form of joint-stock companies). Erik Dahmén observed an increasing number of self-employed persons from the working class during the mid-war period (non-growing firms; ‘stagnated businesses’), which could be explained by the social and economic development (e.g. the economic crises during the period); Dahmén (1950). Historian Jan Glete has accentuated that only a few of the largest Swedish companies have been founded after World War II, and that the largest companies are rooted in the late 1800s or early 1900s. See Glete (1994).

207 See Lundström, R. (1992), on early Swedish multinationals, and Palmer (2001) on the expansion of Swedish transnational firms such as ABB, Ericsson and Sandvik.


209 Few newly founded businesses have become large after the 1960s. The central explanations to this are according to Glete first and foremost a general starvation of the small business sector (due to structural obstacles), the internal culture of businesses (a somewhat negligible use of the stock market for financing further expansion when it comes to new firms), and, finally, that the large supply of new firms has not matched available risk capital on markets. See Glete (1994).

210 Robert Lucas has put it as: “[…] in wealthy economies, ‘bigness’ is widely viewed as a menace against which government activity should, perhaps, be directed; in poor economies, ‘littleness’ is often viewed as a sign of backwardness to be dealt with by government policy.” Lucas (1978), p. 508. During the 1960s, e.g., a higher relative share of small firms in an economy was seen a sign of backwardness. Today, the view is somewhat the opposite, and a large proportion of self-employed persons is nowadays viewed as an indicator of progress and economic prosperity. See Lindh and Ohlsson (1997).
earlier observations could be used when observing and addressing the empirical results. One of them is based on classical economists and especially Marx, and would state that the remaining firms in the seven cohorts after the long time that had elapsed from their birth to the last decade of the 20th Century had become large units in comparison with firms in general, or at least in comparison with young firms. In that respect, no or only a minor share of firms with small size among the old firms (cohorts) would be discovered. We would also notice that increasingly older firms were larger in size, since firms by necessity have to become large in order to survive.

Additionally, based on assumptions of perfect competition, the empirical material would give evidence of firms of at least approximately equal size. This does however not seem reasonable since many empirical findings have given evidence of a skewed size distribution, and since the state of perfect competition nearly does not exist on any market (at least to my knowledge). One explanation could, of course, be the existence of imperfect markets. There are no ways to account for this phenomenon in this study since we do not have the accurate means for measurement, nor the means or data for investigating the size of firms according to transaction costs. One further aggravating factor is that the survivors, just as the firms in the seven cohorts in general, were in different industries and thus heterogeneous.

If, however, firms are rational and profit maximizing actors, and if there are market ‘imperfections’ in the real economy (which most likely has been the case throughout the economic history), they would nonetheless have seized any opportunity to become larger. Accordingly, surviving firms must to some extent have been more efficient than firms from the same generation that have terminated, i.e. have been weeded out, and we would expect them to be larger than the average firm.

Yet another assumption would concern the size distribution and age of firms, as noted above. Firms with a small initial size would have the same opportunity to become larger, as would a firm with a large initial absolute size (and vice versa; the process is here viewed as rather stochastic). If this holds true, it would not be surprising to find that there is either none or only a very weak relationship between the start-up size of firms and their later size. Thus, while I am aware of the long period of time that has elapsed between observation periods, an investigation might nonetheless give some interesting research results and raise some question as regards the growth of long-standing business units.

Surviving Firms from Seven Cohorts, 1990 to 1999

Available data from UpplysningsCentralen (UC) and Affärsdata have been utilized in the search for surviving firms. Additionally, information from
PRV has been employed. By using the organization number for each firm, it has been possible to search for them in various databases. Variables that indicate firm size are firm specific, such as total assets, turnover, stock capital and employment figures. These data have been recorded into a 'survivor database' (Database on Surviving Companies). In that respect are we here able to investigate the size of surviving firms. However, we have not been able to obtain any other type of measurement regarding size such as for instance market share.

Some firms were not possible to trace. As an example had the oldest cohort (1899) a very small total population of survivors. Here, two of totally nine cases were omitted. As for Cohort 1921, data on seven out of total of 43 firms were missing. Younger cohorts had a larger number of surviving cases. The largest number of surviving firms is, not unexpectedly, found in Cohort 1950 (124 firms); 98 firms in Cohort 1942, and so on. There are perhaps two coincidental factors that can explain this relationship: firstly that an older generation of firms will exhibit a smaller share of remaining firms over time, secondly, the younger the firms the greater the original population in each cohort. The relationship between age (i.e. cohort) and initial size of the population is reversed by this. In the following it will therefore in some circumstances be necessary to merge cohorts with each other in order to control for the relatively small number of firms in the older ones. Of the totally 358 surviving firms 17 cases were impossible to investigate due to lack of available information. In percentage terms, this translates to less than five percent of the total sample population. Considering that there are only a small number of 'missing' firms – around two firms per cohort – this will not prove to be a serious problem for the overall results (see Table 8).

Table 8. Surviving firms from the seven cohorts, 1990 to 1999.

<table>
<thead>
<tr>
<th></th>
<th>1899</th>
<th>1909</th>
<th>1912</th>
<th>1921</th>
<th>1930</th>
<th>1942</th>
<th>1950</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>9</td>
<td>22</td>
<td>11</td>
<td>43</td>
<td>51</td>
<td>98</td>
<td>124</td>
<td>358</td>
</tr>
<tr>
<td>Missing cases</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: Database on Surviving Companies.

Four size measures are used regarding the surviving firms, and therefore the relationship between variables of size of survivors was initially tested for interchangeability. It has been proposed in earlier research that there is an

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211 The data used for this investigation were more thoroughly described in Chapter 2.
212 Credit data usually contains four-year information (i.e. data over four consecutive fiscal years). This is however not always the case. If and when financial data and employment data have been available for more than one year average figures have been calculated.
213 In the seven cohorts were there initially 105, 201, 134, 351, 452, 407 and 504 companies. See Chapter 5.
interchangeability between different size measurements on an aggregate level. An opposing view has been that this is not entirely truthful, or that it becomes difficult to assert this when it comes to small firms as well as from case to case. Here Spearman’s rank correlation ($r_s$) was used due to the large dispersion of the variables, particularly the financial ones. One alternative could have been a log-transformation but since a number of firms were reporting zero employees, this procedure would have excluded them from the analysis.

<table>
<thead>
<tr>
<th></th>
<th>[2]</th>
<th>[3]</th>
<th>[4]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td>0.831</td>
<td>0.617</td>
<td>0.397</td>
</tr>
<tr>
<td>Turnover</td>
<td>1.000</td>
<td>0.842</td>
<td>0.553</td>
</tr>
<tr>
<td>Assets</td>
<td>1.000</td>
<td></td>
<td>0.733</td>
</tr>
<tr>
<td>Stock capital</td>
<td></td>
<td>1.000</td>
<td></td>
</tr>
</tbody>
</table>

Note: All correlations are significant at the 0.01 level.

Source: Database on Surviving Companies.

As can be observed in Table 9, there was in all cases significant as well as positive relationships between these four size-variables. In some cases, the relationship was not particularly strong (principally so between stock capital and employees). The generally strong relationship between variables, however, implies in general that one size measure can replace another: a high turnover frequently implies a large number of employees; large assets usually mean a large stock capital, and so on. Of course, this line of reasoning is valid when it comes to observations on the population-level (aggregate) – not necessarily from firm to firm. The correlation analysis shows exceptions from this rule.

Size of Surviving Firms: Larger Size – but Growth?

We now will turn to the question of the surviving firms’ size at founding and during the 1990’s. It seems reasonable to present the size of firms as distributions, i.e. to classify the firms according to size. Figure 9 compares the

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214 See for instance Agarwal, N (1979). Nonetheless have certain measures according to some research not a particularly good correlation – which may depend on firm size; is it a small or large firm? – and it could be risky to assume that they always are interchangeable. See Delmar (1997) or Gandemo (1996), pp. 87-92.

215 Eggeby and Söderberg (1999), p. 110ff
size distribution, expressed in percentages, for surviving firms with all Swedish joint-stock companies with the purpose to observe any differences between businesses that have survived for a longer period of time with an ‘average’ picture. The latter category includes all joint-stock companies active in all industries.\textsuperscript{216} Other types of businesses, such as private businesses or partnerships, are thus excluded since their inclusion would distort the comparison; private businesses, e.g., are rarely large firms and if all firms but joint-stock companies are excluded we therefore probably receive a more correct population for comparative purposes.\textsuperscript{217} The firms were categorized into five different size groups for the four variables employees, turnover, assets, and stock capital.

The distribution of all joint-stock companies is first examined. This was asymmetrical as expected and reveals that the proportion of smaller firms was greater than that of larger ones. This particular size distribution was additionally contrasted with a younger population of companies. Companies that were approximately five years old, founded during 1996, were selected from available data (\textit{Affärsdata} and UC) in order to observe if there were any differences between young firms and the entire population of joint-stock companies.\textsuperscript{218} The reason for this was that older or very old firms are inherently included in the total population of companies. If there would be any significant differences – say, that a population of young firms exhibits a higher share of small firms – this might imply that a comparison between the surviving firms is better done with a population of young firms. The differences in size distributions between the total stock of joint-stock companies and companies with an age of approximately five years showed however no significant deviations. The differences could generally be measured on only a 0.01-digit level. In that respect, the total population of joint-stock companies is probably an approximately useful ‘reference’-group.

\textsuperscript{216} Data concerns the year 2000/2001. \textit{Affärsdata} and UC.
\textsuperscript{217} See for example Dan Johansson’s study (1997). Here are all types of firms – joint-stock companies, private businesses, partnerships and limited partnerships – included. Hence, a higher frequency of small firms (measured as employees) is received.
\textsuperscript{218} The data on five-year old firms (founded between 1 January and 31 December 1996) was obtained from \textit{Affärsdata}. 
When this reference group of companies was compared with the surviving firms' size distributions a distinct feature appears. There were smaller frequencies in the smallest size-groups for the surviving firms relative to all joint-stock companies. Larger or somewhat larger size-classes in the group of surviving firms seemed to have displayed higher frequencies than Swedish joint-stock companies in general. The net differences between the two groups of joint stock companies therefore showed some important deviations. Small differences, say one percentage point, may not be of importance. But larger differences might imply that firms that have been in operation for a long time differ from average firms. As an example, the variable employ-
ees differed considerably between the survivor firms and the general distribution. Here, there was a net difference of more than 15 percentage points in the smallest size-group. The surviving firms hence exhibited a large ‘deficit’ of firms with zero to nine employees compared with companies in general. Significant differences also appeared in larger size groups. Surviving firms were appearing in larger size-groups and they generally displayed a surplus of firms in larger groups to a greater degree. There were for instance nearly eight times more firms with 500 or more employed in the survivor group than among companies in general. This pattern was furthermore rather consistent as concerns other variables.

In total, the comparison between the surviving firms and all Swedish joint-stock companies gave a picture of long-standing firms that were commonly larger than the cross section of companies. This difference was evident concerning all four variables of size, and is therefore an important discrepancy.

Significant differences also appeared when controlling for other factors. During the construction of the database firms were classified according to the categories independent units or subsidiaries. This information was available for 331 out of the totally 358 cases included in the study (missing cases around 7.5 percent). It could be of interest to observe the size of surviving firms with respect to this relationship. Results show that the largest firms were those that were subsidiaries, i.e. firms that not were independent (Table 10). The average number of employees reveals that subsidiaries had more than double the figure of employees than the other category. The mean value is however sensitive to extremes. We can observe that while ‘independent’ firms had a median employee value of two, the value for subsidiaries was four, and the third quartile (P75) in the distribution shows that while non-subsidiaries had eight employees, subsidiaries had 35. Quite large differences were also detected for the other variables when we compare the two categories of firms with a similar relationship; for instance non-subsidiaries had considerably smaller stock capital than the other group.

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219 Of the cases that had available information, 53 percent of the firms had non-subsidiary status, and 47 percent were subsidiaries. Database on Surviving Companies.
Table 10. Subsequent firm size according to subsidiary status.

<table>
<thead>
<tr>
<th></th>
<th>P_{25}</th>
<th>Md</th>
<th>m</th>
<th>P_{75}</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-subsidiaries</td>
<td>0</td>
<td>2</td>
<td>52</td>
<td>9</td>
<td>172</td>
</tr>
<tr>
<td>Subsidiaries</td>
<td>0</td>
<td>4</td>
<td>123</td>
<td>36</td>
<td>157</td>
</tr>
<tr>
<td>Turnover (tkr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-subsidiaries</td>
<td>180</td>
<td>2,000</td>
<td>108,000</td>
<td>11,500</td>
<td>169</td>
</tr>
<tr>
<td>Subsidiaries</td>
<td>40</td>
<td>9,800</td>
<td>244,000</td>
<td>84,000</td>
<td>157</td>
</tr>
<tr>
<td>Assets (tkr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-subsidiaries</td>
<td>510</td>
<td>1,900</td>
<td>601,000</td>
<td>12,000</td>
<td>173</td>
</tr>
<tr>
<td>Subsidiaries</td>
<td>2,300</td>
<td>13,000</td>
<td>198,000</td>
<td>58,000</td>
<td>157</td>
</tr>
<tr>
<td>Stock capital (tkr.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-subsidiaries</td>
<td>100</td>
<td>100</td>
<td>7,600</td>
<td>500</td>
<td>173</td>
</tr>
<tr>
<td>Subsidiaries</td>
<td>110</td>
<td>750</td>
<td>13,000</td>
<td>4,900</td>
<td>157</td>
</tr>
</tbody>
</table>

Note: P_{25} = 1^{st} quartile; Md = Median; m = mean; P_{75} = 3^{rd} quartile. Figures are rounded off.

Source: Database on Surviving Companies.

Therefore one conclusion is that firms that survived and were independent (in the 1990’s) were generally smaller than firms that were subsidiaries or that belonged to a corporate group. Presently, we have no possibilities to investigate the relationship regarding the ‘independence’ of firms during earlier periods, for instance at founding. One conclusion that could be drawn from this state of affairs, however, in order for surviving firms to grow in size, it is an advantage if they not are independent firms.

Another conclusion could be that if the possibility for growth would be equal for all firms – i.e. that all firms regardless of size have the same likelihood to grow – the size distribution of surviving firms would be the approximately similar to the cross section of companies, or similar to that of younger firms. However, as demonstrated, it was not. Even if we would take into consideration the age of firms (which we shall, below), it would be reasonable to assume that firms that are old on average should be larger than younger firms, or at least larger than the cross-section of all firms.

It has been shown here that a very large share of the surviving firms displayed higher percentages of firms in the larger size-group compared to all companies. The largest surviving firms were those that belonged to a corporate group (i.e. not ‘independent’), while firms that were non-subsidiaries clearly exhibited smaller size no matter of what size-indicator employed.

Cohort, Start-up Size and Subsequent Size

In this section the relationship between the initial size of firms and their subsequent size will be investigated, as well as the connection between cohort and size. One assumption with reference to this relationship, discussed earlier, could be that there is no association between the start-up size and subsequent size of a firm, particularly when a substantial period of time has
elapsed. Another assumption would suggest that the initial size in fact affects the subsequent size. In that case, it is reasonable to assume that there is a positive relationship between start-up size and future size, i.e. that a large initial size has a positive effect for a larger size in the future.

How large were these long-standing firms when they were founded? Did only the ones with the largest size at founding survive for a long period? The only available measure here is the initial stock capital of the firms in the cohorts. It seems as if a large share of survivors had started with a small size. Their stock capital was, as a first step, classified into the seven size-groups used earlier in the dissertation; see Table 11. Nearly half of the total population had an initial stock capital below 10,000 kr. Only five percent of the firms had an initial stock capital exceeding 500,000 kr., which indicates that the greater population of firms was small at founding.

It seems as the pattern of a greater number of large firms in older cohorts also was apparent concerning these long-standing firms: it can be recalled from Chapter 5 that the start-up size of firms generally decreased over time, i.e. by cohort. Although the very small numbers of surviving firms from the older cohorts makes them somewhat unsuitable to present in percentages, Table 11 nonetheless suggests that survivors from older generations generally were larger than those from younger generations. A considerable part of the firms in the two youngest cohorts, for instance, were comparably small when they started. Hence – and in some respects in line with previous findings – this implies that initial size of firms may not be an overall crucial factor in explaining their likelihood to survive, although the hazard rate for small firms during their first years in life were higher than for large firms.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>1899</th>
<th>1909</th>
<th>1912</th>
<th>1921</th>
<th>1930</th>
<th>1942</th>
<th>1950</th>
<th>Total</th>
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<tr>
<td>0-9</td>
<td>9</td>
<td>19</td>
<td>18</td>
<td>49</td>
<td>74</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-19</td>
<td></td>
<td>9</td>
<td>33</td>
<td>33</td>
<td>70</td>
<td>82</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>20-49</td>
<td>5</td>
<td>18</td>
<td>58</td>
<td>59</td>
<td>82</td>
<td>92</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>50-99</td>
<td>11</td>
<td>32</td>
<td>64</td>
<td>65</td>
<td>93</td>
<td>98</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>100-499</td>
<td>44</td>
<td>73</td>
<td>91</td>
<td>95</td>
<td>94</td>
<td>99</td>
<td>100</td>
<td>95</td>
</tr>
<tr>
<td>500-999</td>
<td>89</td>
<td>82</td>
<td>91</td>
<td>98</td>
<td>100</td>
<td>100</td>
<td>98</td>
<td></td>
</tr>
<tr>
<td>1000+</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>9</td>
<td>22</td>
<td>11</td>
<td>43</td>
<td>51</td>
<td>98</td>
<td>124</td>
<td>358</td>
</tr>
</tbody>
</table>

Source: Database on Surviving Companies.

Was there an association between the initial size of the surviving firms and their present size? Since the time period between observation periods is long – roughly between fifty and one hundred years – any correlation might of
course be misleading; the businesses may have grown, diminished and re-
grown over the years. Nevertheless it could be interesting to see if there is at
least an indication of a relationship. Table 12 reports the percentage distribu-
tion of this association, using three size-specific groups for the dependent
and independent variables, and shows an image of some ‘stability’ in size
over time.

It must be emphasized that the categorizations here are somewhat arbitrary
and that alternative groupings may show a different picture. Even so can it
be observed that firms that had started in the smallest group tended to remain
mainly in the smallest group at the second observation. Take, for instance,
the size of stock capital at the second observation period: an absolute major-
ity (88 percent) of firms that had started with a capital of less than 50,000 kr.
were in the smallest size-group in the 1990’s and had a capital below 2.5
million kr. This figure diminishes among larger start-up sizes. Of those firms
that had started with more than 500,000 kr., in this respect the largest size
group, ‘only’ a quarter of them were in the smallest group at the second ob-
servation. Instead, a relative majority of these firms – nearly 50 percent –
were in the group of firms that had a stock capital exceeding 20 million kr.
in the 1990’s. Similar tendencies are also found for the other size variables:
those firms that had started on a relatively smaller scale tended to be smaller
than others from the same population. Correlations of the firms’ initial size
and their size at the second observation period, when using firm-level data,
revealed additionally somewhat weak yet significant correlations.

220 The dependent variables employees, turnover, assets and stock capital were classified
according to Figure 9.
221 For example the Spearman rank correlation coefficient \( r_s \) was nearly 0.3 between the
initial size of the stock capital and stock capital in the 1990’s. Other variables displayed both
significant as well as much weaker associations with the start-up size of firms, but generally
there were positive relationships: a larger size at start was positively correlated with subse-
quent size even if the strength of association generally was weak. Spearman’s rank correlation
\( r_s \) gave the following results as concerns the relationship between business initial size and
subsequent size measured, in order, as employees; turnover; assets, and stock capital: -0.002;
0.080; 0.178, and 0.290. The first two were not significant (n.s.) and the latter significant
(sig.) on least at the 0.001 level. Pearson’s correlation \( r_p \) showed somewhat similar results:
0.178 (sig.); 0.245 (sig.); 0.009 (n.s.), and 0.245 (sig.). Database on Surviving Companies.

<table>
<thead>
<tr>
<th></th>
<th>Stock capital at start (tkr.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-49</td>
</tr>
<tr>
<td>Employees</td>
<td></td>
</tr>
<tr>
<td>-49</td>
<td>91</td>
</tr>
<tr>
<td>50-499</td>
<td>7</td>
</tr>
<tr>
<td>500+</td>
<td>2</td>
</tr>
<tr>
<td>(241) (83) (16)</td>
<td></td>
</tr>
<tr>
<td>Turnover (tkr.)</td>
<td></td>
</tr>
<tr>
<td>-7,999</td>
<td>63</td>
</tr>
<tr>
<td>8,000-59,999</td>
<td>23</td>
</tr>
<tr>
<td>60,000+</td>
<td>15</td>
</tr>
<tr>
<td>(239) (82) (16)</td>
<td></td>
</tr>
<tr>
<td>Assets (tkr.)</td>
<td></td>
</tr>
<tr>
<td>-9,999</td>
<td>64</td>
</tr>
<tr>
<td>10,000-49,999</td>
<td>33</td>
</tr>
<tr>
<td>500,000+</td>
<td>3</td>
</tr>
<tr>
<td>(242) (83) (16)</td>
<td></td>
</tr>
<tr>
<td>Stock capital (tkr.)</td>
<td></td>
</tr>
<tr>
<td>-2,499</td>
<td>88</td>
</tr>
<tr>
<td>2,500-19,999</td>
<td>8</td>
</tr>
<tr>
<td>20,000+</td>
<td>4</td>
</tr>
<tr>
<td>(242) (82) (16)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Number of observations (n) in parentheses.

Source: Database on Surviving Companies.

Even though the relationship is not entirely obvious and even if different measures are used in the correlations (and even if there obviously were exceptions from the overall picture) this nonetheless raises some questions as regards the long-term growth of businesses that have managed to survive. One of them is whether surviving firms had really grown or generally had remained in the ‘same’ size or size-group over time. Given the long time period that had elapsed between observations this systematical relationship was somewhat unexpected. This relationship, in turn, may tell that firms do not exhibit the same opportunity to become larger (or smaller) no matter of their initial size. On the contrary it seems as if a small start-up size tended to result in a small subsequent size, and vice versa. This result is to some extent also confirmed by previous research (see Vesterlund et al. 1998): there is quite much ‘stability’ in firms’ development patterns.222

So far it has been established that firms that survived were not necessarily large at start. Several of the survivors were small at start. It was further detected a somewhat weak yet observable tendency for a positive association between their initial size and subsequent size. Can we then see any detectable pattern between the size of survivors after a long period of time and their cohort affiliation, i.e. age? It would be reasonable to assume that older firms...

222 Vesterlund et al. (1998) showed that firms in various size-classes in 1988 mostly had remained in the same classes when followed up in 1996/97, i.e. over nearly ten years.
firms should have a larger size than younger firms if time as such positively affects the possibilities to become larger. It would furthermore be reasonable to detect such a picture due to the findings above: there was a general association between the size of firms at start and their subsequent size. And it was additionally shown that older firms that had managed to survive on the whole had had a larger size at start and that survivors that belonged to younger cohorts generally had started on a smaller scale.

This is confirmed to some extent in Figure 10. Here, three categories of age were used, classifying the cohorts into prewar, interwar and postwar cohorts respectively. Particularly the small number of firms in the three oldest cohorts made this procedure necessary. The size groups employed in Table 10, furthermore, were used in dividing the businesses into ‘small’, ‘medium’, and ‘large’ firms. For instance small firms as regards employees were those with less than 50 employed while large firms had more than 500 employees.

If the age of firms would positively affect their subsequent size it could be expected that the population of the oldest firms (i.e. the oldest cohorts) exhibits the smallest share of small firms, and vice versa. The distribution would in this case become skewed, leading to higher percentages of small firms in younger age groups. This suggests a high upper tail, and small frequencies in the lower tail of the distribution. For medium firms it is reasonable to assume a distribution that approximately resembles a normal curve – a smaller percentage in the oldest and youngest age groups, and a higher frequency in the age groups between. Finally, large firms would be most frequent in the oldest size-group, hence a mirror image of the distribution of small firms. This picture was partially confirmed in the empirical material. Generally the younger cohorts – the postwar cohorts – had larger shares of small businesses while older cohorts, preferably the prewar cohorts, displayed higher frequencies of large firms. Exceptions were nonetheless detected, and no size variable showed exact distributions as assumed above.

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223 This categorization was also employed in Chapter 5. Cohorts 1899-1912 were defined as prewar cohorts; Cohorts 1921 and 1930 as interwar cohorts, and Cohorts 1942 and 1950 as postwar cohorts.
The conclusions drawn from the relationship(s) between cohort affiliation, start-up size and subsequent size are therefore – as concerns the general picture that has evolved here – that: a) surviving firms for the most had a relatively smaller size at start, chiefly those from younger cohorts; b) many firms that had started on a small scale were in a relative sense small also during the second period of measurement and vice versa (i.e. after fifty to one hundred years), and, c) older cohorts had a proportionally larger share of large businesses while smaller ones generally were found in younger cohorts – which in many cases could be explained by a) and b). Thus, firm age (cohort) and firm size – both start-up size and subsequent size – are most likely interrelated. I do however think that it would be going too far in trying to establish a more formal model or to find a statistical simultaneous relation-
ship between these three variables – for this, a more comprehensive and larger material would be necessary.

Discussion and Concluding Remarks

This chapter has had an overall aim to trace the 358 surviving firms from the seven cohorts that survived over a long period of time. It has been possible to study some 340 of them. In that respect only a very small percentage (less than five percent) was omitted in the study. ‘Survival’ has here been defined in legal terms: that is, the legal status of business unit at least at some point in time between 1990 and 1999. In that respect, the firms have had up to one hundred years to develop and to grow. As was accounted for in this chapter, a majority of firms had not become large in any significant terms.

Many of the surviving firms had, during the period 1990/99, a fairly small size. In a relative sense, smaller firms were more numerous than larger ones in the survivor sample. In comparison to a cross section sample of joint stock companies obvious differences appeared. It is quite clear that firms were larger in the survivor sample than when comparing a cross section of companies. In that respect, firms that were older were, in some respects, generally larger. At least the observed frequencies would imply this state of affairs.

The size distribution of surviving firms approximately resembled any other size distribution (such as the above-mentioned cross-section). When I took into consideration the start-up size of the firms, a relationship was discovered between the initial size (measured as stock capital) and the subsequent size. First, a large share of firms had started with a tolerably small size. Second, there was a correlation between a firm’s start-up size and its subsequent size, in particular those from younger cohorts. It did not seem reasonable to assume a negative relationship, but rather that either a positive or zero-relationship would be present. Although the period between measurements was long (and without any measurements in intervening periods, which is acknowledged as a weakness), I nevertheless found a relationship between these two variables: firms with a small start-up size tended to maintain that size during the next observation period (1990/99), and, similarly, a large start-up size meant continuous large size. It would of course be desirable to be able to correlate the same variables with each other, e.g. employees at start with present employee force, and so on. There was however a general interchangeability between measurements of size (which also was tested here).

Here it was furthermore recognized that the size of firms was affected by their status as subsidiaries or non-subsidiaries. Firms that had a parent company were larger than ‘independent’ firms. Although we know nothing regarding the entire history of ownership and related matters for the surviving
firms, my results suggest that there is a smaller possibility to become larger if a firm is ‘independent’. For Edith Penrose (see Chapter 3), it is the internal, organic growth of firms and its processes that are in focus, not external growth through mergers and acquisitions. Penrose asserts, however, that a reasonable conclusion is that firms that have grown externally generally will be larger than firms that have grown organically (due to the costs and problems for organic growth). Furthermore, Penrose emphasizes that smaller, ‘independent’ firms might reach a point where it is better to sell to another (larger) firm rather than to continue to grow organically. This might be an explanation as to what we have seen here, even though we – with the present design of the database – cannot state that for sure. This is nevertheless an important future research question. And much of the small business literature that aims at studying firm growth has often focused on internal, organic growth in independent firms. My results suggest that firms with a subsidiary status have, at least in the long run, obtained an average size that is larger than the size of independent firms. Perhaps too much attention in research has been put on the growth of the small share of single organizations that exhibit fast growth.\(^{224}\)

Furthermore, if as it is claimed in much of the small business literature, small firms on average exhibit higher growth (or growth rates) than larger firms, it however does not seem as though the small firms generally grew more – in absolute terms – than larger ones. It seems on the contrary that large firms in the cohorts ‘remained large’, and that small firms ‘remained small’. A large size might not be strategically important for survival, and therefore it probably becomes quite insignificant in this respect even if there is of course some uncertainty around this problem. My results show, however, that in order to become large during subsequent periods it is an advantage to be large at start.

Following that, it also seems that the fact of becoming larger or smaller is not a ‘random process’. Economists have for instance proposed that all firms, regardless of size, may have the same opportunity to grow and to contract regardless of size. My results demonstrate, as noticed, that the initial size of firms affected their subsequent size. I have however conducted a total investigation over different cohorts that have experienced different cyclical and political conditions, and this suggests that the results cannot be treated as insignificant. One interesting discussion could of course be whether the ‘growth behavior’ of firms has changed over time, during the course of the period of interest (that is, 1899-1999). For this, we have no answer. We know that Swedish businesses were expanding – thus growing – heavily abroad (with large foreign direct investments) by the turn of the last century.

\(^{224}\) A somewhat similar view is expressed by Davidsson and Delmar (2001), pp. 109-111. It is here rather the aggregate picture that is of interest, as well as renewal in the business sector.
The size of the surviving firms might therefore be an effect, or result, of cohort (i.e. age).

A somewhat vague relationship was also observed: the older the firms in the survivor sample, the larger they were. There were of course exceptions to this rule. Here I proposed that if older firms generally were larger than are younger firms (as with the comparison with the cross-section of firms), lower frequencies of small firms would be found in older cohorts. These frequencies would gradually increase the younger cohorts we observed. It was furthermore proposed that medium-sized firms would exhibit something resembling a normal curve, i.e. the highest frequencies in interwar cohorts and the lowest frequencies in the oldest and in the postwar cohorts. Relatively higher frequencies of large firms would appear in older cohorts and lower frequencies in younger cohorts. What were the results? Quite obviously, when attending to large firms and cohort affiliation, there was to some extent a relationship between age (cohort) and the percentages of large firms. At least the distribution suggests a relationship between cohort and number of large firms. A more indiscernible pattern could be observed for medium-sized firms, and for small firms. Some exceptions could therefore be found.

One explanation as to why the older firms (cohorts) generally exhibited higher frequencies of large firms can be institutional (not, however, institutional in the sense of the institutional explanations to the asymmetric size distribution): joint-stock companies founded at the turn of the previous century were commonly larger in both scale and scope compared with companies founded later on. The size of required stock capital was 5,000 kr. between the period of investigation and 1975/77. With respect to the depreciation of the currency it gradually became less costly to found a joint-stock company, and, as we have seen, there was an association between start-up size and subsequent size, which in turn would explain why there was a larger number of large companies in older cohorts.

For classical economists and above all Marx the small firm would gradually become obsolete in the evolution of capitalism and with increasing division of labor. In order to remain on the market – i.e. to survive – firms would have to grow. At last, the economy would be characterized by a few monopolies. In that respect, we would expect to find that the firms generally would be large, and no firm would be small. The findings in this chapter do not support this view, but these results are however by no means new. The classical standpoint, in which we would find a positive relationship between cohort and size, is however to some degree given a case here. The notion of monopolies for economists such as Mill and Marx, nevertheless, was that there would be a few large monopolies, and no other firms. It is perhaps not inaccurate, however, to describe the market structure of today as monopoly-like or monopolistic markets in many aspects. There are some few very large firms, and many small firms that probably quite often are ‘dependent’ as
subcontractors. This asymmetric dependency that has emerged was something that these economists did not predict.

In neoclassical theory, the equal opportunity to grow for any firm at any point in time has been a common feature. Perfect competition will keep firms at approximately ‘equal’ size (however measured), and market imperfections will lead to economies of scale and, probably, monopolies. It is from my viewpoint not particularly fruitful to discuss the problem in terms of perfect competition (since almost no market is characterized by it). Moreover, we do not know if the large firms in the survivor sample possess economies of scale (as defined in theory) or if there have been or are internal or external economies of scale. The surviving firms are not, and have not been, active in the same industry – we recall that the database is heterogeneous in this respect. If, however, the firms that have survived have been more efficient than the firms from their own generation that failed (which were weeded out), we would perhaps expect that they – rational, profit-maximizing actors – have grown large or at least larger than other firms. If the surviving firms were de facto more efficient than the other firms of their generation (something about which we have no information), they have apparently not seized the opportunity to grow: it was more common for the survivors to exhibit a relatively larger share of small firms than the cross-section of joint-stock companies.

The existence of transaction costs, it is claimed in theory, holds that firms will grow up to a certain limit. This limit is reached when an additional (marginal) allocation measure is less costly to realize externally than within the firm. If most of the firms here had not grown (which I assert), one interpretation would in that case be that the firms in question have not had any requirements to change their size over the years. In that case, the market has not ‘demanded’ that the firms must grow or reduce their size. This must require a situation where the transaction costs have been constant over time, and where the firms – rational and profit-maximizing units – therefore have not grown or contracted. It is however not realistic to assume that the transaction costs for surviving firms – and therefore market conditions – have not changed during the twentieth century. On the contrary have there probably been constantly changing conditions for firms that have survived for a long period of time, both industry-specific, political, and so on.

If we would prefer an institutional and historical explanation as to why the older firms on the average are larger than younger ones, we might say that during the second half of the 20th century, there was an increasing tax pressure. Hence, the relatively higher share of small firms amongst Cohorts 1942 and 1950 can be explained by the fact that they have not had the opportunity to grow as older cohorts (since the older cohorts did not experience the same negative climate for business during their first years). If so, historical and less law-like events might equally explain the differences between cohorts. Nonetheless the age, or cohort factor in itself might also explain why firms
in the younger cohorts have higher frequencies of small firms. In that re-
spect, the classical explanation of the possibilities of firms may be of value.
A historical explanation as to why older cohorts generally exhibited larger
shares of large firms might also be that the oldest firms usually are the larg-
est firms in the economy. Glete (1994) has for instance suggested this. Busi-
nesses founded after the 1960s have not become as large as the older firms in
the economy. The large firms here are considered to be rooted in the ‘old’
industrial era, which takes into consideration the industrialization process as
such, with its distinct phases (the second industrial revolution, for instance).
In my opinion, we cannot really say if this is truly the case. The formation of
large Swedish businesses took place during the turn of the last century.

In that case, the age of firms, i.e. that younger firms generally are smaller
than older firms just because they are younger, becomes somewhat less im-
portant as an explanatory variable. For this would we need more coherent
longitudinal data. The hypothesis that we can interpret the results from a
real, historical or unique, less law-bound perspective might be true to some
extent, but it might also be that time (age) in itself is an influential variable.
These are two competing hypotheses. But even the proposition that age of
firms affect their size, does not hold entirely. Since there were exceptions,
the suggestion that we would find more larger firms in older generations is
therefore challenged when we observe the surviving firms in the cohorts.
There is of course some sort of randomness as to why in some cases there
was not a strong or observable relationship between age and subsequent size.
There could evidently also exist some randomness between the survivors’
start-up size and present size, or – for that respect – between the survivor
sample and a cross-section sample of all joint-stock companies. The pattern
is however rather clear, and the long-term growth and size of long-standing
firms is perhaps an issue that has to be investigated more thoroughly. As
implied here it does not seem as though large size, or for that matter, increas-
ing size over time, is a necessary requirement for survival.
7. Growth of Firms: Age, Size, Environment

Introduction

The aim of the present chapter is to investigate the growth of firms, using longitudinal data that covers more than 400 joint-stock companies founded in 1912 and 1930. While Chapter 5 studied the termination of businesses in seven birth cohorts, the present chapter will study the opposite side of the problem, namely growth. The precise intention is to study firm growth and effects of environmental-related factors. For instance, were firms growing and contracting as the macro economy changed? If so, were there any differences between businesses of different size and age?

Where possible, each firm in the two birth cohorts has had its development ‘re-created’ in line with the source situation. It is here a unique database in which each firm is traced longitudinally (year-by-year) over the course of its lifetime. In some cases it contains firm level data over a thirty-year period for individual businesses. Here, there are totally nearly 6,600 observation years in the database. While the birth cohorts from seven different years were specifically chosen because they were founded under different environmental conditions, the choice of Cohorts 1912 and 1930 is based on the same assumptions. On the whole, Cohort 1912 went through two World Wars and two severe depressions as well as times of prosperity. Its first years were defined by stability and relative prosperity. Cohort 1930, on the other hand, was born into a period of crisis and depression, then experienced a more stable and growing economy from the mid-30’s and, thereafter, World War II. Hence, there were different founding conditions for the firms in the two cohorts. Additionally, the two cohorts also experienced the same events and environment but at different ages: in the early 1930’s, Cohort 1912 was relatively mature while Cohort 1930 was a newborn cohort. Thus, the depression in the early 30’s and the effects of World War II were experienced by the surviving firms from both cohorts. A longitudinal, long-term perspective hopefully can be helpful in analyzing the relationship between firm growth and environmental conditions. If anything, it may be difficult to investigate such links when using short-term cross section data.
On Firm Growth: As Larger and Older, the Smaller Their Growth

Much business growth literature and research has acknowledged observed growth of firms as being dependent of the size and age of firms. For instance the size of firms – e.g. their start-up size – has been viewed as influential in explaining how much they grow in the future. A general consensus is that small firms grow more (faster) than large firms. Furthermore, the growth rates of surviving firms decline not only with size but also with increasing age. A small firm exhibits higher growth rates at a young age, while the same firm (if it manages to survive and grow larger) will have diminishing growth rates over time. A young large firm, consequently, will have smaller growth rates than the young small firm, and, accordingly (if also this firm survives), lower growth rates than the old small firm over the course of time.

Hence, it has been claimed that ‘stylized results’ show that there is a general pattern that a) growth rates are higher for smaller enterprises, and b) growth rates are higher for younger enterprises. One view has however been that the size of firms and their growth rates are unrelated, referred to as Gibrat’s law, or the Law of proportionate effect. Here, growth of firms is seen as independent of size and implies that a large firm just as a small one can exhibit negative or positive growth in the next period(s). Therefore, there is no association between, say, the start-up size of firms and their subsequent development. Among other things, these relationships have been employed in analyzing market structures.

In addition, the argument that small firms grow faster than larger ones has regularly been put in connection with debate concerning the extent to which small businesses contribute to economic growth and the creation of (new) job opportunities, thereby becoming a matter for economic policy measures. Overall, there have been two main views on the matter. One side has claimed that small firms – or, more specifically a smaller share of small firms – con-

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226 Hannan and Freeman (2000), p. 314 ff for an overview; see also Sutton (1997). Others have claimed that although small firms have e.g. higher relative growth rates than large firms, indicating a negative relationship between growth and size, absolute size at a specific period in fact is positively correlated with the start-up size of firms or their size during a previous period. A small young firm may, according to this, naturally grow faster than a large young firm in a relative sense since small changes of size might have large effects on the growth rate as such if the firm is small. Going from 1 unit (start-up size) to 2 (subsequent size) is growth by 100 percent, while a change from 4 to 6 is growth by 50 percent. Four is however more than one to begin with. Furthermore, in the latter case, absolute growth is larger (two units compared to one unit). And, as can be seen, the initially small firm is still small in the second period compared to the other firm. It is also frequently claimed that ‘historical’ growth rates are positively correlated with future growth rates. Firms that grow one period generally continue to do so in the future; for a discussion of firm growth and ‘continued entrepreneurship’, see Davidsson (1989) and Wiklund (1998).
tribute significantly to economic prosperity since they grow faster than both larger ones and the majority of new and small firms. For instance a body of research claim that a small part of new (small) firms create the lion’s share of new jobs. Others have been more skeptical and occasionally claimed opposite patterns. For example, Davis et al. (1996) came to the conclusion that large firms were more important in job creation than small ones. In addition, many studies often fail to acknowledge that small firms also have a higher failure rate than larger businesses. Similar arguments are found in studies that maintain that it is not only a minor share of (new) small firms that create genuinely new jobs. Rather, the overall entry of and marginal growth in a very large number of micro firms add up to significant effects on aggregate levels. (Nonetheless, such assumptions/dichotomies might risk neglecting another aspect, namely the lessening autonomy of small firms in modern production systems. Thus, small firms’ strong dependency on larger ones is probably an important factor; the behaviors and decisions of large businesses probably affect the life, growth and death of smaller units to a great extent.)

Apart from the influence of age and size on the degree and timing of firms’ growth, much attention has been laid on the influence of ‘entrepreneurial variables’. Examples of such variables are the business owner-managers’ background, education, motivation and their attitudes to growth and expansion. Studies that analyze the significance of technology, innovations and industry differences, as well as the role of institutions, legislation, bureaucracy, and taxes have also been increasingly given focus. It is quite common to use a set of the above-mentioned variables in the study of firm growth. It therefore seems that the main interest has been in exploring the above-mentioned age-size relationship and/or entrepreneurial personalities (individual-oriented explanations) along with some other independent variables such as the businesses legal form(s), their industry affiliation and so on, in order to test if and how much they affect firm growth.

Cross section data have been frequently used in much research and, furthermore, the time period studied is generally a few years. A smaller number

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227 See Birch (1987) and Storey et al. (1987), p. 131ff. Thereby, research has frequently made attempts in ‘picking the winners’, i.e. what firms are likely to grow or fail, which firms generate new jobs, etc.? Consequently, the question has additionally become rather political.

228 Davis et al. (1996), p. 312, found that their research results “clash sharply with conventional wisdom about the job-creating prowess of small business”.

229 Davidsson and Delmar (2001), pp. 84-85.


232 For instance Delmar et al. (2003) used 21 independent variables (ranging from firm age and firm size to types of ownership, geographical location of firms, their legal form etc.) in a study over firm growth.
of studies has aimed at introducing longer periods and using longitudinal data. Therefore, although the relationships between the age and size of firms described above have received much attention, there is little knowledge of these relationships over longer periods of time. Surviving firms can, it has been claimed, grow, contract and resume growth.233 What could be the consequences of research designs that use cross sectional data and, additionally, rather short observation periods? One is, that it could turn out to be problematical to observe or apprehend an assumed influence of environmental conditions or change. As has been established in many research contexts, if young firms grow faster than old firms, will their growth rates, for example, over a two or three year period be an effect of (or be amplified by) fluctuations in the macro economy or of institutional change? Additionally, if cross section data is employed, firms of all ages are included in the sample. Hence, even though the units of observation in a statistical sense share a common attribute such as the same age, they may quite probably have been founded during different periods (years). In that case, they have experienced different environmental conditions at start and in that respect there is a problem in separating age and size effects from environmental ones. Furthermore, cross sectional data is usually imprinted with survival bias, meaning that firms that have been closed down are not included in a cross section data set. Thus, even if we in the cross section could control not only for the age of firms but also for the time in which they were founded (as a birth cohort), firms that have belonged to but exited this cohort in an earlier period are excluded from the data. Any possible effects of external factors, such as period effects, could of course be measured, but without including all firms from the birth cohort.234

Growth of Firms and Their Environment

Although the relationships between the age and size of firms (described above) have received much attention, there is probably little knowledge on the growth of surviving firms over longer periods of time. Additionally, even if some of the explanatory variables used as determinants of or explanations to firm growth can be said to be external or exogenous (such as institutions, taxes, technology), there seem to be fewer studies that have actually sought to elucidate such relationships. Furthermore, even fewer have investigated whether e.g. fluctuations in the macro economy have an observable effect on firms’ growth rates over time. Boeri and Bellmann (1995) have among others acknowledged that it is a necessary requirement to address such issues since the bulk of research has focused mainly on structural determinants such as innovative activity etc. Their explanation of this state of affairs is

233 Vinell and Hamilton (1999).
234 A discussion is found in Hagenaars (1990), and in Chapter 2.
that there are few long time-series available and that effects of environment generally become difficult to investigate.  

Some previous research have therefore tested or at least indicated that the growth of firms might be affected by macroeconomic change. Environmental-related phenomena have been acknowledged by some social scientists as significant in explaining when, why and to what extent firms and organizations are founded, grow and are terminated. Other schools have been more sceptical towards the overall assumption that structural constraints and environment affect the behavior of firms and ascribed more importance to individual leaders and managers, while another body of research has played down the significance of general external conditions as such, for instance business cycle conditions, in explaining firm growth or come to the conclusion that such conditions play a lesser role. It seems furthermore that other research has viewed real events or macroeconomic conditions as more or less ‘disturbing’ elements in formal models on firm growth.

‘Business conditions’ or ‘entrepreneurial environments’ could, furthermore, judging from previous research and literature, theoretically include nearly an infinite number of factors. There probably does not exist a manageable body of definitions on which there is some common agreement. For instance, Gnyawali and Fogel (1994) has described it as: “… while the role of environmental conditions in developing entrepreneurship has been recognized, most of these studies have been fragmented, highly descriptive, and focused on only a few aspects of the environment”.

‘Environment’ is consequently a broad conception and represented by a spectrum of factors that range from general economical, socio-cultural and political factors in an economy, down to economic cycles; technological conditions and change; industry specific or regional circumstances and diff-

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236 Skeptics have for instance meant that there are often enormous differences in the ‘quality of life’ of surviving ventures; managers or entrepreneurs can and do influence the performance of particularly young and small firms. Some grow while “others languish as small firms, surviving, but barely clinging to life.”; Eisenhardt and Schoonhoven (1990), p. 504.
237 Bartelsman et al. (2003) found for instance that observed effects in post-entry growth amongst surviving firms could only partly be explained by statistical technicalities or business cycle conditions.
238 For instance Evans (1987b) seems to deliberately exclude periods signified by macroeconomic depression when analyzing the relationship between business growth, age and size. Such an approach reminds of macroeconomic theories of growth: some neoclassical growth theories assume that factors such as labor supply and technology are exogenously given, while newer endogenous growth theories have tried to include phenomena such as human capital, knowledge and R&D as well as other assumptions than merely perfect competition and homogenous firms. See for instance Romer (1994) for an overview.
ferences; wage levels, or as another example, down to different policy measures for certain types of businesses.

Both in theory and research, it is at any rate presupposed that social, cultural and economic environments in an economy is important for the formation, survival and growth of firms. Some research has analyzed venture level events and outcomes, and the effects or gains of such events at a more aggregate/societal level. Others have rather departed from a macro-environmental level and analyzed the consequences for micro level events and behavior. Investigations of effects of micro level events on the macro level have for instance tried to identify the (types of) firms that generate genuinely new job-opportunities in an economy, or effects of entry and exit rates of firms. Inversely, investigations of environmental effects on firm behavior have for example focused on start-up processes and new venture creation. Here it has been assumed that benign entrepreneurial environments stimulate the formation of new firms and give incentives to potential entrepreneurs to start a business (and, in many cases, also assumed that increasing start-up activities generally are favorable to aggregate economic performance). Others have studied firms’ ability to survive in relation to environmental conditions, something investigated earlier in the present dissertation, while another body has been investigated in relation to the conditions under which firms grow. Hence, in such research, what is in focus it is rather the environmental effects on individual businesses.

Even though a connection between the individual, or the firm on the one hand, and on the other the environment has been identified in various literature and contexts – and although it seems reasonable to think of the relationship between the individual business and the environment as an interplay – the question still remains as to what particular factors or variables should be included when addressing the problem of environment, as well as how to measure the environment.

240 The view is here that successful or failing businesses (micro level events) may have different or opposite effects on the aggregate level. Davidsson (2004), p. 12ff.
241 See for instance Birch (1979) and Davis et al. (1995). There has been extensive debate on the subject, first and foremost regarding new and small firms’ contribution to job opportunities. See also Davidsson and Delmar (2001), and Schreyer (2000).
242 Bruno and Tyebjee (1988). See also Ucbasaran et al. (2001). As another example, the Global Entrepreneurship Monitor (GEM) measures entrepreneurial activity among a vast number of economies (business start-ups, growth firms etc). GEM states among other things that the general climate for entrepreneurship in an economy is important for economic success, and that in some cases, including Sweden, negative cultural attitudes towards small business activity and towards business failures impede new business activity and entrepreneurship. However, it is impossible to find how those statements are supported. See for example GEM (2000). Others have used exogenous or external variables to explain rates of new-firm formation, such as macroeconomic growth, unemployment rates and interest rates; see for instance Audretsch and Acs (1994).
243 See Audretsch and Mahmood (1995), and Everett and Jackson (1998). See also Chapter 5.
For instance institutional economic theory has recognized that the rules of the game, the institutional setting in an economy, create both boundaries and possibilities for economic agents, e.g. firms. Therefore some research has, as mentioned earlier, investigated the institutional setting (measured as legislation, bureaucracy, and taxes) and its relationship with firm formation, growth and survival. From this viewpoint, deteriorated environmental conditions impede business activity and vice versa. Such studies therefore identify economic policy settings to a great extent. Similar thoughts can be found in other theoretical contexts on the behavior of firms. An interest in neoclassical models in the firm’s external relations with labor, capital, and product markets has addressed such issues. In economic models that have been developed, firm behavior is as at least partially dependent on environmental uncertainty, such as high inflation or unstable government policy (see for instance Greenwald and Stiglitz, 1990). Economists have furthermore suggested that events or conditions such as macroeconomic demand shocks and cyclical conditions may affect firms’ growth.

Other economic theories have recognized similar relationships. Penrose (1959), although she developed a theory for the internal organization and management of growing businesses, admitted that external conditions, in particular credit constraints along with economic policies, might affect the growth possibilities of firms. Higher interest rates and restrictions on credit implies that small firms must have more profitable opportunities than large ones. Thus, growth of small firms can be limited by increasing interest rates and of anti-inflationary policies since rising interest rates and restrictions on bank credit reflect the scarcity of real resources for further investment, i.e. growth.

Therefore, it has commonly been acknowledged in literature and research that general economic conditions as well as credit constraints – along with different financing conditions and fiscal and regulatory influences – are influential on especially small firms’ success and growth. It has been suggested that low or diminishing interest rates generally are favorable for small firms. There is reluctance on the part of banks to give credit to small firms as they are seen as being too risky. Thus by this, small firms have a dispro-

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244 Davidsson and Henrekson (2002) have, among others, discussed these issues. See also Henrekson (1996).
245 Greenwald and Stiglitz (1990) claim that information asymmetries are key determinants in explaining behavior of firms, measured as how likely it is that a firm reacts to external environmental and policy changes.
246 Higson et al. (2004). Furthermore, Machin and Van Reenen (1993), studying profit margins amongst firms and the business cycle, reached similar conclusions.
248 Steindl (1945), p. 39, claimed that: “… if the rate of interest is lowered, this will afford some breathing space for the small firm”.
portional access to credit and are often subjected to high credit costs that affect their growth negatively.249

Another, somewhat parallel school of thought can be found in literature that address entrepreneurship and economic and market change. Such approaches can for instance be represented by Erik Dahmén’s theoretical framework, which is to combine micro and macro perspectives. Micro in the sense that behaviors and strategies of individual firms play a significant role in explaining why some grow and survive (and why new markets emerge); macro from the perspective of among other things growing and diminishing markets, transformation and growth in the macro economy, and institutional change. The latter phenomena affect both existing firms and new-firm formation. Firms are here reactive and proactive. For Dahmén, some individual businesses can be highly competitive and innovative. Sometimes these create new markets by introducing innovations, new technologies, goods or services – something Dahmén labeled ‘market creation’. Even on already existing, ‘old’ markets, some firms are competitive and expand (market expansion). Dahmén however emphasizes that firms also emerge, fade away, and grow (or contract) due to what they – as individual businesses or as a group – perceive as an increase or decrease in demand for their products or services. Therefore, firms also respond in a great extent on their environments. For Dahmén it is necessary to be analytically aware of such differences: have new firms emerged or existing firms grown or declined because of events on the market or economic change; or what types of firms have created new markets? Dahmén states that a fairly wide set of phenomena could be constituted as ‘environment’, and his general assumptions are in my opinion reasonable to a great extent.250 Similar lines of thought have also been proposed in theoretical models developed by economist and economic historians. For instance, such models address the degree to which the environment under certain (periodic) conditions affect the freedom of action of businesses, although, to my knowledge, explicit micro-(firm)-to-macro empirical investigations have been uncommon.251

249 See Miller and Friesen (1983), Covin and Slevin (1989), p. 75, Brito and Mello (1995), and Reid (1996). Gertler and Gilchrist (1994) found that small firms contracted significantly when money was tight.

250 Dahmén has used the definitions market suction (approx. [increasing] market demand; marknadssug) and market contraction (i.e. diminishing markets; marknadskrympning) for situations in which firms to a greater extent react than during market expansion or creation. Analyses of markets – which Dahmén views as the meso level – along with macro level studies (e.g. institutions, general economic development, macroeconomic transformation etc.) are of importance according to Dahmén. Are (individual) markets emerging, stabilizing or contracting? See first and foremost Dahmén (1992).

251 More specifically, some theories have taken a long-term perspective on economic development, for instance the long-term structural model by Erixon (1998, 2001) in which firms react to immediate challenges or events in their environment which in turns puts a transformation pressure on them. This has aggregate effects. Lennart Schön’s theoretical model of struc-
Another important question of interest is: what have been operational definitions of environmental variables or factors in earlier studies on firm growth? As stated earlier, the environment for business is a wide concept. In some research, managers’ or business owners’ own perception(s) of their environment or their market situation are used as indicators (often using questionnaire or interview data). While such information on many occasions is the only data available, there have been critical remarks on the use of such records, particularly since they may not reflect ‘objective’ situations. Validity problems may therefore arise.

In other research, business environment has been quite often represented by aggregate industry specific indicators and fluctuations of those indicators over time – particularly in research that utilize data on homogenous populations of firms. Here, these variables are for instance presumed to be related to the growth of the individual firm: growing industries or highly innovative environments can provide opportunities for (as well as barriers to) growth of individual firms. It is not necessarily assumed that individual firms generally grow or have a higher probability to grow if their industry expands and vice versa. Since it most probably is a fairly complicated set of variables that is related to firm growth (and survival), high-competition industries or harsh environments have for instance often been thought of as favorable for some but not for all firms. The potential gains for individual businesses may be larger in competitive environments, but the risk for failure may also be higher. For instance Audretsch (1995) came to such conclusions: the underlying technological conditions in an industry were linked to the survival and growth of firms.

The assumption that individual businesses and their behavior can be viewed as an interplay with aggregate and industry-specific economic change and events is related mainly to studies in business history, which have as a rule investigated a single company’s development over the course of time. This is a point of view that also relates to research in strategic man-

253 Starbuck and Mezias (1996) are for instance critical towards general research results when it comes to measuring environment and individuals’ perceptions thereof: most of the time, studies seldom compare ‘perceptual’ data with ‘objective’ data, or even attempt to seize a more critical viewpoint.
254 Audretsch (1995) used variables over innovation rates and industry growth as independent variables. See also Eisenhardt and Schoonhoven (1990). Regional (spatial) differences for firm growth have furthermore been thought of as having similar effects; see for instance Vaessen and Keeble (1995).
agement, in which it is assumed that firms that obtain good alignment with their environments tend to be high performers.255

Thus, research with an aggregate and population-focused approach has in many instances taken this fairly broad spectrum of environmental circumstances into consideration in the study of firm growth. Studies that explicitly incorporate real (macro or environmental-related) economic factors in the analysis seem however to be less common than more short-term, individual or firm focused studies which generally appear to have put less focus on those relationships.256

Some previous research has tested or suggested that the growth of firms might be affected by macroeconomic variables and/or conditions and fluctuations in their external environment. Results have been mixed.257 Davidsson and Delmar’s (2001) study of Swedish firms over the period 1988-1996 found that the growth of firms, at an aggregate level, might have been affected by the severe economic downturn in 1991-93. Poorer economic conditions led to low or negative rates of firm growth. Even the top ten percent of firms that exhibited strong growth over the period in question exhibited a similar, although weaker, pattern of slowed-down growth. Davidsson and Delmar’s conclusions were that a majority of firms were unable to control their own development while a smaller amount of firms (probably) could, even through varying and sometimes harsh environmental conditions.258 Kangasharju (2001) furthermore, using cross section data, found that small firms were affected by macroeconomic fluctuations during the period 1988-95: growth of firms was more likely during an economic upturn than during a recession although the influence of other variables, such as low firm age, diminished the effects of environmental conditions.259 Boeri and Bellman (1995) also considered age and size effects in an analysis of birth cohorts that covered a period of one and a half decade. Here, cyclical conditions (measured as aggregate unemployment rate) had little effect on surviving firms’ growth rates when they were young. As firms grew older/larger however, they became more responsive. Although such relationships seem odd at first – one considers perhaps small firms in general as more sensitive to cy-

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255 For an example in business history, see Lindgren (1979). See for instance Keats and Hitt (1988), and Venkatraman and Prescott (1990) for strategic management studies.

256 A thorough research and literature survey of entrepreneurship by Audretsch (2002) contains as an example nearly no references to such ‘environmental’ factors other than taxes, institutions etc.

257 See for instance Bridge et al. (1998), pp. 178-179. Filippi and Zanetti (1971) found no relationships between the growth amongst large Italian firms and exogenous economic variables such as macroeconomic fluctuations.

258 In the study, there was a tremendous loss of jobs among the majority of smaller firms 1991 to 1993. From 1994 and onwards – after macroeconomic improvement – the trend was reversed. Davidsson and Delmar (2001), esp. pp. 103 ff.

259 That is, environmental conditions were of importance, but other variables such as founder-owner characteristics were more influential.
clical conditions than large – an explanation offered was that larger plants on average are older than young ones. Hence, in times of adverse economic shocks, surviving (mostly larger) firms contract rather than terminate while small (younger) firms cannot since they already have a minimum size. Therefore small firms are terminated, they do not shrink.260

Also other findings have been more uncertain or at least produced equally mixed results when it comes to the influence of environmental conditions. For instance J. Wagner (1995) used longitudinal data consisting of birth cohorts of firms that were followed over a ten-year period. Results showed that growth rates in the cohorts were high when the firms were young. Over time, the surviving firms in each cohort compensated the ‘loss’ of employment caused by exiting firms, i.e. surviving firms tended to grow on the average. Wagner did not however find any clear relationship between the growth rates of the cohorts and macroeconomic circumstances, and similar albeit equally uncertain research results have been presented also in other studies.261

Analytical Framework

As mentioned earlier, the aim of this chapter is to investigate the long-term growth of firms in two birth cohorts of firms (1912 and 1930) with a specific interest in exploring the relationships between firm growth and environmental conditions. Even though it can be assumed that a complicated set of factors affect the survival and growth of firms – ranging from firm and manager-specific factors to general economic conditions – the empirical material available to a researcher defines both the possibilities and limitations of a study. In the present case, the database on the two birth cohorts is homogeneous in the sense that e.g., when observing the cohorts separately, firms experienced the same event at the same age. It is however heterogeneous when it comes to industry affiliation – some firms were active in service sectors, some as manufacturing technical companies.

Hence, one question is the measure of firm-specific variables such as the size of firms (which could be measured in several ways; some size measures may furthermore be more appropriate for some industries than others, see discussion in Chapter 3). Another question regards the measure of ‘environment’. Since there is substantial heterogeneity in the database concerning industry affiliation, specific industry measures are difficult to employ when

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260 Boeri and Bellmann (1995) however offer some other explanations, for instance that older plants have accumulated more physical capital over time and operate below capacity. Therefore, an economic downturn may affect them to a lesser extent.

261 Furthermore, Almus and Nerlinger (1999) found that wage rates generally had a negative relationship with firm growth. See also Heshmati (2001): labor market conditions (representing an external variable) had positive (but little) impact on the growth of Swedish firms over a four-year period in the 1990’s.
studying effects of environment on firm growth. Chapter 5, which investigated the life-length and termination rates of firms in the seven birth cohorts, therefore utilized general, or aggregate, variables: growth of the Gross Domestic Product (GDP) and changes in the interest rate level. It seems reasonable to use the same variables when addressing the problem of firm growth. Increasing GDP implies generally increasing aggregate demand. Firms accordingly, it may be presumed, find better markets for their products or services. Therefore, firms may have better opportunities to expand, i.e. grow. Changing interest rates have opposite effects: increasing interest rates means that money is more costly. Firms may have to look for other ways to finance the business or to grow. Alternatively, they might decrease in size.

Sources and Methodological Considerations

A study that wants to investigate the relationship between firm growth and changing environment(s) requires a method and data that makes it possible to trace firms from the point in time when they are founded until they cease to exist. Thus, a necessary requirement here is to re-create the development of each cohort member (firm) over the course of time, not only to be able to control for when in time firms are founded and when they are terminated (birth cohort). In previous chapters (5 and 6), the life-lengths and termination patterns were investigated. In the present chapter, firms – in cases where it has been possible – are followed on the micro-level.

Such an approach further calls for a possibility to re-create a fairly large population. Too large a number of missing cases in the analysis could theoretically imply that the analysis becomes biased. On the other hand, missing cases are almost generally a problem in any type of investigation, be it a historical study or a contemporary. When possible, each joint-stock company’s development – measured as firm-specific variables, described in more detail below – has been re-created, in this case the life-courses of a total of 420 firms out of 586. In Cohort 1912, 102 of 134 firms (76 percent) were located in various archival sources while the figure for Cohort 1930 was 318 of 452 firms (a little more than 70 percent). These particular companies have been traced from their birth until their prospective termination or, at most, for a thirty-year period.

Therefore, missing cases here represent some 30 percent of the total population (Table 13). Such missing firms consisted for the most part of businesses that, relative to other firms in the data set, reached only a low age. This circumstance has most likely an explanation in the fact that firms that did not survive for any longer period of time (one to two years, sometimes less) were less likely to produce any artifacts such as annual statements or other documents that are used as empirical material. This is reasonable. Firms that in an early phase of their lifetime were discontinued have left fewer historical traces; in some cases it is not unlikely to assume that firms
that were terminated early left no other evidence of their existence than certificates of registration and, for some, documents over the decision to terminate the business. As an example, the median age in the sub-population of firms of missing cases in Cohort 1912 was two years, which can be compared to the median age of firms actually located in archives. The latter ones’ median age were eight years. Yet larger differences can be found concerning Cohort 1930. For the missing cases, the median age was two years, while the median age for firms in the cohort that were possible to re-create was a full 22 years.


<table>
<thead>
<tr>
<th></th>
<th>No. of firms in cohort</th>
<th>No. of firms found (% of total)</th>
<th>First obs. year</th>
<th>Last obs. year</th>
<th>Firm years (=)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohort 1912</td>
<td>134</td>
<td>102 (76.1)</td>
<td>1912</td>
<td>1944</td>
<td>1,300</td>
</tr>
<tr>
<td>Cohort 1930</td>
<td>452</td>
<td>318 (70.4)</td>
<td>1930</td>
<td>1962</td>
<td>5,300</td>
</tr>
<tr>
<td>Total</td>
<td>586</td>
<td>420 (71.7)</td>
<td>1912</td>
<td>1962</td>
<td>6,600</td>
</tr>
</tbody>
</table>

Source: Cohort 1912 and 1930 Database.

It furthermore seems that missing cases in each of the two cohorts were firms that to a great degree were not only young when terminated but also small at start. Measured in nominal share-capital at start, the median size for the sub-population of missing cases were 15,000 kr. in Cohort 1912, while non-missing cases had a median share-capital at start of 50,000 kr. Corresponding numbers for Cohort 1930 show similar disparities: 10,000 kr. (median age for missing cases) and 20,000 kr. (median age for non-missing cases), respectively.\(^{262}\) Therefore, a reasonable assumption is that missing cases are small and rather short-lived. It is difficult to control for these circumstances in the analysis; no alternative sources (or sources within reach) are available. Most firms were small, and remained small and anonymous throughout their life.

How, then, is a ‘re-creation’ of an individual company’s development carried out? As mentioned earlier the cohort database is based on public material, and each cohort’s life-course has been re-constructed at the population level. The same goes for the problem of re-constructing each individual firm’s course of development. Here, the researcher departs from the original (population) cohorts but uses other source materials and partly different methods. If the purpose of the original database (the seven birth cohorts) was to perform a life analysis on the population level, the purpose in the present

\(^{262}\) Since missing cases never produced any annual statements over, say, assets, revenue or employees, stock capital is the only comparable variable that can be employed here.
circumstances rather is, for each year each individual firm were active, to unfold its development. By using each individual company’s unique registration number it is possible to find out if, and in that case when, the company in question was terminated. It is therefore also possible to search for and use other source material that each company produced. Each company was obliged to annually report their accounts and statements to PRV. For business historians, yearly statements and accounts have often constituted an important source when re-creating a company’s development over time – not only in financial terms but also with respect to the company’s strategies and actions and how management assessed its situation on the market.263

Thus, the database on the development of firms on the micro level is founded on documents and certificates of registration and, above all, annual statements produced by the companies in question. Furthermore, these are principally the only sources and remnants for many of the firms in question. We here deal with firms that, more or less, were active for a rather short period of time and that throughout their life-courses remained quite anonymous. A large part of this source material is preserved at RA, at the least concerning firms that were discontinued before 1960. Documents for firms active after that year, irrespective of when in time they were founded, are preserved at PRV.264

In the best of worlds, a researcher would have the opportunity to recover the company files and documents about each firm in the investigation. Furthermore, the researcher would also here be able to employ a number of alternative variables or indicators over business size, development and growth. Unfortunately, this is not the case for the type of source material used in the present investigation (and that, moreover, is the only source of information regarding the companies in the study). As mentioned above, for several cases (firms) sources are completely missing and there are consequently no available information regarding these. I have earlier in this dissertation discussed various measures of size in previous research. The best way would of course to be able to use a larger set of definitions and measures in order to analyze individual firms as well as to make comparisons between firms over time. Thus, for each year of activity (firm year) for each individual company, measures such as the number of employees, assets, revenue, turnover etc. would be used.

Yet, vast differences in the quality – or, rather, usefulness – of yearly statements and accounts are present. Few firms were very precise in their

263 See for example Ullenhag (1970).
264 At RA the availability of public material is rich and, hence, there are almost never any difficulties in obtaining documents on – as in this case – joint-stock companies (some files have also been discovered at KB). The situation is somewhat different concerning the Swedish Companies Registration Office. While it is true that the primary business concept for the latter institution is not to make historical material available for research purposes, its archives are less accessible.
accounts concerning their financial situation. Examples of this are detailed accounts of wage costs, short and long term debts, the number of employees and so on. Additionally, such firms in their annual reports did thoroughly describe the development of the business during the year that had gone. Such ‘model accounts’ are nonetheless very few when put in relation to the total body of source material. It was generally the larger firms in the birth cohorts that gave such detailed accounts and descriptions even if there were exceptions. A fairly small firm, started in 1912 with a stock capital of 35,000 Kronor, Aktiebolaget Matthiessen & son (initially with the name Aktiebolaget Heinr. Schipmann), gave for instance the following report in the statement of 1918, after a severe war recession and political turmoil:

The business was normal during the first three quarters, but underwent after the temporary ending of the war – due to the general crisis and the English blockade – a change for the worse akin to standstill. Therefore, the board thought it necessary to make cutbacks in personnel. Due to the Russian state of affairs, the board has made relevant write-offs concerning some Russian claims that, unfortunately, now must be considered worthless (my translation) 

Another firm, AB Aug. Fredlund, founded in 1930, gave somewhat similar accounts during the economic depression in the early 1930’s. The crisis – particularly falling prices on goods and a general insecurity on the exchange market – was viewed as the main reason that the business had developed in an undesired direction. Ten years later, in 1942, the war situation and the regulated economy had again brought about harsher times:

Due to the small earnings permitted for rationed goods, the company has notwithstanding increasing turnover run at a loss of Kronor 30,457:30. Among expenditures, of which all have increased, are taxes, client losses, and car expenses; the latter adding up to Kronor 13,769:56 (my translation)

As can be noted, both firms recognized that changing conditions were influential in explaining the development of the business over the year. Such rich descriptions of individual businesses are as a rule unfortunately lacking.

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265 In Swedish: “Affären som under de tre första kvartalen visade sig normal, undergick efter krigets provisoriska slut på grund av den allmänna krisen och den engelska blockaden tyvärr en nära till stillestånd gränsande försämring, varför styrelsen ansåg nödvigt vidtagna inskränkningar i personalen. På grund av de ryska förhållanden har styrelsen gjort lämpliga avskrivningar å en del ryska fordringar som tyvärr måste anses såsom värdelösa”. Statement from 1918, Aktiebolaget Matthiessen & son (reg. no. 10 999)

Furthermore, even if such statements and accounts are useful in particularly case studies, they are nonetheless rather difficult to translate into figures and numbers in a study with a more quantitative approach.

The most ordinary annual statement therefore consists of a handwritten or typewritten document that in a very basic manner, and without any detailed items, accounts for the year’s profits and losses and the company’s balances in quite aggregate figures. Moreover, no further information regarding for instance the number of employees (if there at all were any) or about the development of the business (i.e. something resembling an annual statement of the board) is to be found in most of the statements.

Therefore, the question here is to find a collective measure of business development, i.e. to obtain something that can represent a least common denominator. As mentioned earlier, the number of employees would theoretically be such a measure. On the other hand, the number of employees is rarely accounted for in the documents and if so, mostly as regards somewhat larger businesses. From the 1940’s and onwards employee figures appear somewhat more frequently in the statements, at least this is a tendency in the source material. The cases are nonetheless too few. There are still some common measures that can be used, namely economic and financial data. Small as well as large firms gave as implied above each year accounts for their profits and losses, their assets and debts and the size of their stock capital. From such data it is thus possible to re-create at least parts of each firm’s development and to measure the size of firms in financial terms.

In the re-creation of the development among the 420 firms I estimate that some ten to twelve meters of archive material have been used – if not more; nearly 6,600 observation years means that nearly 6,600 annual statements for 420 incorporated firms have been used. In that respect, to longitudinally re-create even so ‘few’ cases as 420 has been quite an extensive exercise. Simply put, it has been a question of identifying the individual companies and thereafter to chronologically document the selected variables from each annual statement. Each company’s development over time – from the time it was founded and onwards – has thereafter been recorded in a database and processed and analyzed. The actual workload is in fact a partial reason as to why two, and not more, cohorts have been reconstructed.²⁶⁷

Naturally, more cohorts would perhaps be more desirable, but is on the other hand not possible in a limited horizon of time. The advantage with this longitudinal cohort method however, is that the development of cohorts can be studied in a timely order on the micro level. It is for instance here possible to control for the age of individual firms (such as its age when it has reached a certain size), as well as when in time it grew or contracted. Another advantage with this particular database is that there is probably less

²⁶⁷ My hopes are that future research will provide opportunities to include a larger set of birth cohorts.
under-sampling than is the case in most other studies. As mentioned earlier, firms are missing here – particularly smaller ones – but studies that build on ‘secondary’ data have probably even fewer small firms included. Therefore, this particular database covers hopefully a wider and more representative range of firms of all sizes.

Even if most of the firms in the cohorts of 1912 and 1930 did not survive for an especially long time (see chapters 5 and 6), the total number of observation years – here denoted firm years – in the database adds up to a rather large number. As mentioned, there are here just about 6,600 observation years if each company’s life-length is included. Thus, there are indeed 420 firms that are traced over time in the database, but nearly 6,600 observations when the analysis is performed longitudinally on the firm level.268 As an example: consider hypothetically that each firm in the database would reach an age of exactly five years, no more or no less. Therefore we receive 420 firms times five years. This adds up to 2,100 firm years. Or, for that matter, consider that 30 of the 420 firms were active for 30 years. These few firms contributed in that case with 900 firm years to the database. This is also the reason why the number of observations (firm years) adds up to such a large figure. A majority of firms in the databases did not however reach an age over five, but the ones that did contributed significantly with many firm years.

Variables and Measurements

In the analyses of the micro level growth of firms, firm-specific variables will be employed. Additionally, events that are defined as occurring outside the individual firm will be included in the tests. Those variables are assumed to be ‘environment’-specific at a particular point in time of a firm’s life.

Firm-specific variables that are used are the firms’ yearly assets, as well as their age. The dependent variable that here measures size and growth of firms is the firms’ assets (total assets) at any given point in time (i.e. at a certain age/specific time, \( t \)) defined as Size, in the study. Therefore, size at \( t_0, t_1, t_2, \ldots \), and so forth is used to measure the size and growth of each individual business at a particular age, given that the firm in question still was active at that age.

The start-up size of firms, measured as the size of assets the first year of observation of each firm, is furthermore used as an independent variable that controls for any size advantage or disadvantage for the individual firm over the course of its lifetime (Start-up size). Hence, this variable is held constant

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268 Naturally it is impossible to measure growth for firms that were active for only one single year, i.e. when there is only one observation (firm year) for an individual firm. Thereby will the total number of firm years not add up to 6,600 in the analyses below.
for all firms in the tests. In some parts of the analysis, the firms’ assets at founding will be used as a basis for grouping the firms into size classes.

It is furthermore reasonable to imagine that earlier size – i.e. size of a firm a previous year – affects its subsequent size. In the tests, therefore, previous size of firms at any point in time \((t)\) is used as an independent variable that is assumed to have influence on firm size a subsequent period. If for instance the relationship between size at \(t\) and at \(t\) were to be insignificant or unrelated, this would mean that previous size cannot explain the size and growth of firms. \(Age\) of firms is furthermore used as a firm-specific variable in the analyses. In the specific database employed in the study, age can assume any value between 1 and 33. Finally, a firm-specific variable, \(Last\ 2\ years\), is a dummy variable that indicates the last two observation years per firm \((0 = \text{no}, \ 1 = \text{yes})\). If for example firms generally tended to shrink in size before they disbanded, the relationship between the independent variable \(Size\), and \(Last\ 2\ years\) would be negative.269

It is additionally assumed here that environmental phenomena might affect the size and growth of firms over time, just like increasing age. There are of course a number of possible factors that theoretically could be employed to indicate environmental circumstances. Since the cohorts consist of heterogeneous firms in the sense that joint-stock companies of all types of industries are included, it might become problematic to use for instance industry-specific indicators. One alternative therefore is to employ more general, or common indicators, for instance economic growth such as in Chapter 5.

Therefore, here I will use two macroeconomic indicators when the growth of firms over time is tested. First, GDP growth is employed to measure change in aggregate demand in the total economy. Falling GDP growth rates indicate that demand is falling. In such cases it is assumed that the opportunities for firm growth generally are diminishing. Individual (or groups of) businesses might stagnate or contract during such circumstances, while periods of increasing aggregate demand would improve the possibilities for firms to grow. Historical GDP data from Olle Krantz (1997) is used, and the calculations are measured as GDP ratios. Therefore, positive GDP growth rates are expected to have a generally positive relationship with the growth of firms. Second, interest rate change, measured as the increase or decrease in the market interest rate level, is used to measure any tightening or expansion of credits. Increasing interest rates, as GDP growth, is measured as the relative interest rate change (ratio). If the ratio increases over time, this implies higher costs of borrowing compared to previous periods; if they fall it is then assumed that the possibility for growth among firms on average will increase since capital is available at lower costs.270

\[269\] There has been debate over firms’ growth prior to termination; for instance did Almus (2004) find that firms diminished in size before disbanding.

\[270\] Interest rate data is from Persson (2001).
Furthermore, each of the two cohorts’ (aggregate) selection rate – measured as the percentage of firms terminated a specific year – was added (here: Selection rate \( t-1 \)). The purpose was to analyze if specific ‘cohort behavior’ reflected growth behavior among the firms. More specifically – and as demonstrated previously in the dissertation – the selection rates of firms were not only sensitive to low age (i.e. low age on average meant higher death rates); a further proposition is that selection (termination) of firms also were sensitive to macroeconomic/environmental change. Therefore, to include the selection rate of Cohort 1912 and 1930 would assume that a year/period that was defined by high termination would to some extent reflect that growth conditions for (surviving) firms in each cohort had deteriorated.

In the analysis below (particularly in the regressions that are carried out) variables included have generally been transformed into logarithms in order to, among other things, attempt to reduce problems of heteroscedasticity. All calculations are additionally based on deflated values/fixed prices concerning the development of businesses over time. Since the source material (balance sheets, and profit and loss accounts) report in current prices, it is reasonable to transform the values into fixed prices, and the price-level of 1930 (= 100) is used throughout the study.\(^{271}\)

### Growth of Firms and Environmental Conditions

To what extent can environmental, or external, variables be said to have had an effect on the growth behavior of firms over time? As mentioned earlier, GDP growth and changes in the market interest rate are here used as indicators of such environmental variables: GDP as change in aggregate demand; interest rate in the sense that e.g. increasing interest rates signals a tightening of money and hence that the cost for borrowing increases. Firms’ expansion plans can therefore be hampered by increasing credit costs or by a fall in aggregate demand and vice versa. While most studies have focused solely – or more or less – on firm specific variables such as the (start-up) size, one question, as claimed by previous research, that therefore arises: did smaller firms in the present study grow faster than larger ones and did growth rates decline with increasing age?

While the law of proportionate effect (Gibrat’s Law) is not the main interest in the present study, the suggestion that small and particularly young firms exhibit higher growth rates than larger (and older) firms, is still interesting to investigate. Much small business and entrepreneurship research has identified them as important phenomena. As stated above, there are various research designs that can be employed in testing these relationships. Some researchers have investigated rather short time-spans, with a pronounced

\(^{271}\) Deflator from Krantz (1997). 1930 = 100.
interest in growth of new firms;\textsuperscript{272} others have used longer periods of time and compared groups of firms in different size and age-classes.\textsuperscript{273} A shared component in most studies is that the start-up size (initial size) of firms is usually compared to firm size in another point in time.

Table 14. Annual growth rates in percent over time.

<table>
<thead>
<tr>
<th>Firm size</th>
<th>Firm age</th>
<th>1-4</th>
<th>5-9</th>
<th>10-14</th>
<th>15-19</th>
<th>20-24</th>
<th>25+</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>Median</td>
<td>3</td>
<td>-2</td>
<td>-3</td>
<td>1</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>178</td>
<td>40</td>
<td>5</td>
<td>12</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Std. Dev.</td>
<td>2,618</td>
<td>981</td>
<td>69</td>
<td>81</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>Small</td>
<td>Median</td>
<td>3</td>
<td>-1</td>
<td>-3</td>
<td>1</td>
<td>-2</td>
<td>-3</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>321</td>
<td>70</td>
<td>9</td>
<td>13</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Std. Dev.</td>
<td>3,562</td>
<td>1,380</td>
<td>87</td>
<td>59</td>
<td>49</td>
<td>67</td>
</tr>
<tr>
<td>Large</td>
<td>Median</td>
<td>2</td>
<td>-2</td>
<td>-2</td>
<td>0</td>
<td>-1</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>10</td>
<td>9</td>
<td>2</td>
<td>11</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Std. Dev.</td>
<td>72</td>
<td>90</td>
<td>46</td>
<td>97</td>
<td>67</td>
<td>81</td>
</tr>
</tbody>
</table>

Source: Cohort 1912 and 1930 Database.

Table 14 reports descriptive statistics over annual growth rates among the firms in the database (firm-level data), divided into six different periods (firm years). Growth is measured here as annual percentage change in size for each individual firm given that it was active at that particular age.\textsuperscript{274} In order to observe any differences between different size-groups, the firms’ initial sizes were split at median (around 100,000 kr.) and divided into small and large firms, respectively. First, it can be observed that growth rates fell over time. For all firms, as an example, the mean growth rate during the first years of life was considerably higher than during succeeding periods. Moreover, growth rates seem to have fluctuated more significantly during the firms’ early years than during subsequent periods. Second, smaller firms generally displayed higher (as well as more dispersed) growth rates than larger ones – particularly at younger age. For small firms that managed to survive, growth rates on average diminished over time. Here, large firms gave evidence of more stable growth. Even though the median growth rates did not differ significantly between groups and ages, the larger ones had on the whole more evenly distributed growth rates over time.

Thus, this seems to support earlier propositions that young and particularly small firms grow more than older (and larger) firms. In that case, if growth is

\textsuperscript{272} See for instance Lotti et al. (2001), who investigated the size-growth relationship among newborn firms and if Gibrat’s Law holds for new firms.

\textsuperscript{273} Dunne and Hughes (1994).

\textsuperscript{274} Calculated as \(\{(\text{Size}_t - \text{Size}_{t-1})/\text{Size}_{t-1}\} \times 100\)
a measure of success, then small firms were more successful. However, based on previous results in the present dissertation, if survival is a measure of success then large firms seem generally to have been more successful since they had higher average survival rates.

In the present study a rather simple but quite conventional test that is quite common in contemporary research was used: the comparison of the size of a firm at one point in time to its size at another point in time using regression analysis. The size measure (i.e. firms’ assets) was transformed into logarithms. Therefore, if smaller firms did not grow faster – or more – than larger, the law of proportionate effect (Gibrat’s Law) would then be confirmed if the regression coefficient was equal (or close) to 1. This would mean that firms (more or less) exhibited the same growth rates regardless of size. If smaller than 1, it would mean that small firms grew more than larger ones; if larger, then large firms grew more than smaller firms. Based on previous research designs (see for instance Dunne et al., 1989; Dunne et al., 1994), different periodizations were employed in order to control for any age effects. The tests consisted of basically two different approaches – one using the start-up size of firms (Size t0) as the independent variable, another test using previous size at a particular point in time, for example measuring the growth of firms over a five-year period between the age of 1-6 years, 6-11, and so on (‘running’ tests).

The first approach showed that firms with a smaller start-up size – if they managed to survive – grew more than large firms over time. As firms grew older, the smaller the firm at start, the more it grew. Coefficients did however tend to increase as firms reached a mature age (here: from the age of 15 years), meaning that there was a tendency towards a law of proportionate effect of size among the firms as they grew older. This is in line with previous research results; the test therefore suggests that small firms grew more than old at younger age but not when older.275 The second approach, using ‘running’ regressions further confirmed this tendency. The smaller the size of young firms any previous period, the faster their growth. As the firms grew older, their size in any previous period gradually became of lesser importance since regression coefficients generally moved towards 1. The regression coefficients are reported in Appendix 3.276

Similarly, when analyzing firm growth controlling for multiple independent variables, regression results confirmed that increasing age had a negative effect on growth over time (see Table 15). Here, four independent, firm specific variables were included (all variables except the dummy variable were transformed into logarithms). Three separate regressions were carried out: one including both cohorts, and separate regressions per cohort. By measur-

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275 See as an example Hannan and Freeman (2000).
276 Additionally, regression results in Appendix 5 also confirm this pattern to some extent.
ing growth on the micro level, the database can be more fully utilized since in its basic form comprises nearly 6,600 observation years.

Table 15. Regression results. Growth and firm-specific variables. Both cohorts and per cohort.

<table>
<thead>
<tr>
<th></th>
<th>Both Cohorts</th>
<th>Cohort 1912</th>
<th>Cohort 1930</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.237</td>
<td>0.102</td>
<td>0.263</td>
</tr>
<tr>
<td>log Age</td>
<td>-0.040</td>
<td>-0.014</td>
<td>-0.044</td>
</tr>
<tr>
<td>log Size t-1</td>
<td>0.964</td>
<td>0.980</td>
<td>0.961</td>
</tr>
<tr>
<td>log Start-up size</td>
<td>0.012</td>
<td>0.010</td>
<td>0.011</td>
</tr>
<tr>
<td>Dummy Last 2 years</td>
<td>-0.133</td>
<td>-0.057</td>
<td>-0.165</td>
</tr>
<tr>
<td>R²</td>
<td>0.9347</td>
<td>0.9557</td>
<td>0.9289</td>
</tr>
<tr>
<td>R² adj.</td>
<td>0.9347</td>
<td>0.9289</td>
<td>0.9289</td>
</tr>
<tr>
<td>Std. Error</td>
<td>0.4411</td>
<td>0.3368</td>
<td>0.4601</td>
</tr>
<tr>
<td>F</td>
<td>20509.58</td>
<td>5416.55</td>
<td>15419.67</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Source: Cohort 1912 and 1930 Database.

Increasing age had a generally negative effect on growth, i.e. firms grew more when young. As expected, firm size any previous period (\(\text{Size}_{t-1}\)) had an influence on growth. It further seems that, on average, the start-up size of firms had a small but positive effect on size for any observation period that followed. This would possibly suggest that larger firms generally survived longer than smaller ones. Lastly, the dummy variable \(\text{Last 2 years}\) shows that firms were diminishing in size before they were possibly terminated since the coefficient was negative. Observing the separate regressions for the two cohorts (1912 and 1930), the relationships between the independent variables and the dependent variable \(\text{Size}_t\) assumed the expected signs. However, the regressions over the firms in Cohort 1912 shows that only \(\text{Size}_{t-1}\) had a significant effect. The other three independent variables indicate no statistically significant relationship for Cohort 1912. Concerning Cohort 1930, however, all independent variables display significant coefficients. Therefore, it could perhaps be stated that, on the whole, firm specific variables had an influence on firm growth generally, and that Cohort 1912 seems to have ‘behaved’ somewhat differently.

The Role of Environment

What relationships between firm growth and environmental variables could then be detected? Starting with an aggregate picture, the development of each cohort over time can be analyzed with respect to the number of growing firms over time and the general economic development. Figure 11 (Figure
11a, 1912/13-1944; and 11b, 1930/31-1962) displays the share of (surviving) firms in the two cohorts that exhibited growth during a particular year. The limit for growth here was set to a minimum: given that an individual firm displayed any growth at all, measured as increasing assets no matter how small, the firm was included in the figure (assets in fixed prices; 1930 = 100). The bars in the figures therefore represent the percent of firms that grew that particular year (left axis). The lines, which are read on each figure’s right axis, represent GDP growth in 3-year moving average values.

Two features can be observed in the figures. First, a larger share of firms exhibited growth at very young age; a share that decreased over time as firms grew moderately older. Compare, for example, the number of firms exhibiting growth in 1913/14 with the number in 1915/16 (Cohort 1912), and 1931/32 with 1933/34 (Cohort 1930). This is in line with previous research results. In both Cohort 1912 and 1930, more than 70 percent of the remaining populations grew during their second year – 1913 and 1931, respectively. This does not however seem to imply that as firms grew older they gradually displayed weaker growth. In both cases there is an indication that surviving firms from each of the cohorts could demonstrate growth even at a reasonably high age.

As for Cohort 1912, a very large share of the survivors grew during the early 1920’s, i.e. when ten years or older. A large part of the survivors from Cohort 1930 exhibited a similar pattern around the age of 15, i.e. in 1944-46. Thus, even if the proportion of growing firms fell as they became older, quite opposite patterns over a longer period of time could be observed. Previous research has for instance suggested that growth is strong at a young age and that, on average, it declines with increasing age. Most studies have however researched firm growth over quite short time spans. Hence, even if the data used here to some extent confirms earlier research, it also raises some questions regarding the validity of research that measures growth over, say, a three-to-five year period. Evidently, other factors must be included to explain why many of the remaining firms in the cohorts displayed growth at such an ‘old’ age.
Second, it seems that the share of surviving firms that exhibited growth followed macroeconomic movements, measured in the figures as GDP growth. Concerning Cohort 1912, macroeconomic growth slowed down significantly a few years after the outbreak of World War I. The number of firms exhibiting growth decreased. It would seem that firms started to grow again as the macro economy improved after some years of negative development during the 1920’s. Even if there were fluctuations during this decade, it seems reasonable to assume that the general economic decline in the early 1930’s affected the firms’ growth. The share of firms exhibiting growth fell here
sharply but increased again as macroeconomic conditions improved during the second half of the decade. The first years of the Second World War witnessed once more falling production and demand. GDP growth rates fell during the early years but improved at the end of the war. As can be observed, the early war years were represented by relatively low proportions of firms demonstrating growth in Cohort 1912 while the overall economic improvement thereafter seems to have brought about more growing firms in the cohort.

The first years in life for the firms in Cohort 1912 coincided to a great extent with favorable economic conditions. GDP had increased by nearly 13 percent between 1910 and 1914 while the economic growth rate was minus approximately three percent for the period 1915-19. Interest rates also increased significantly during the period. In 1918, the lowest interest rate offered by Stockholms Enskilda Bank was around thirty percent higher than it had been in 1912-17.\textsuperscript{277} Unfavorable economic conditions prevailed during the first years in life of the firms in Cohort 1930. Even if the last years of the 1920’s had been characterized by positive development and lower interest rates than during its first years, the crisis, which for Sweden’s part was particularly severe in 1931-32, coincided with the early years of the Cohort. Even so, a relatively large share of firms displayed growth during the period 1931-33.

Therefore, it seems as even though the general conditions were poor, firms – on the whole – grew because of low age. Nonetheless, the aggregate development of Cohort 1930 seems to have been equally affected by general economic conditions over time. It is not unlikely to think of the increasing shares of firms that grew in the latter half of the 1930’s followed the macroeconomic improvement and the subsequent decline during the first years of World War II. Consequently, a difference between the early years of each cohort can be observed: in the older cohort a smaller proportion of firms displayed growth at around five years of age than the older (1916/17 and 1934/35, respectively). As can be observed, the economy was in a downturn in the last years of World War I but in a recovery phase during the latter part of the 1930’s. It is moreover noteworthy that both cohorts displayed a downturn in the number of growing firms in the beginning of the Second World War. The last observation year for Cohort 1912 is 1944, hence no further information of the subsequent fate of the remaining firms is available when using the present database.\textsuperscript{278} The development of Cohort 1930 from the last war years and onwards seems however to have been affected by the economic development, particularly from the early 1950’s and onwards. Al-

\textsuperscript{277} GDP: Krantz (1997), own calculations. Interest rate: Persson (2001); own calculations.

\textsuperscript{278} For firms surviving after 1944, there are of course information and statements preserved in the archives. When constructing the database, however, the last observation year chosen for Cohort 1912 was 1944.
though the numbers were fluctuating when observing single years, the number of growing firms increased trendwise from the 1950’s to the early 1960’s as did macroeconomic growth.

On an aggregate level, therefore, it seems that economic fluctuations were influential at least partially in determining when in time firms grew. A positive relationship between aggregate cohort growth and macroeconomic growth was detected. Similar patterns can be observed concerning changes in the interest rate over time for the two cohorts: during periods of increasing interest rates, the number of firms exhibiting growth during a specific period decreased, signaling a negative relationship. Additional calculations (correlations) for these aggregate relationships are presented in Appendix 4.

Table 16. Regression results. Growth, firm-specific variables, and environment. Both cohorts and per cohort.

<table>
<thead>
<tr>
<th></th>
<th>Both Cohorts</th>
<th>Cohort 1912</th>
<th>Cohort 1930</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Sig.</td>
<td>B</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.304</td>
<td>0.000</td>
<td>0.184</td>
</tr>
<tr>
<td>log Age</td>
<td>-0.061</td>
<td>0.000</td>
<td>-0.030</td>
</tr>
<tr>
<td>log Size t-1</td>
<td>0.065</td>
<td>0.000</td>
<td>0.978</td>
</tr>
<tr>
<td>log Start-up size</td>
<td>0.013</td>
<td>0.015</td>
<td>0.013</td>
</tr>
<tr>
<td>Dummy Last 2 years</td>
<td>-0.125</td>
<td>0.000</td>
<td>-0.056</td>
</tr>
<tr>
<td>log GDP growth</td>
<td>0.400</td>
<td>0.000</td>
<td>0.517</td>
</tr>
<tr>
<td>log GDP growth t-1</td>
<td>0.094</td>
<td>0.599</td>
<td>0.445</td>
</tr>
<tr>
<td>log Interest rate change</td>
<td>-0.161</td>
<td>0.000</td>
<td>-0.265</td>
</tr>
<tr>
<td>log Interest rate change t-1</td>
<td>-0.102</td>
<td>0.025</td>
<td>-0.225</td>
</tr>
<tr>
<td>log Selection rate t-1</td>
<td>-0.032</td>
<td>0.000</td>
<td>-0.040</td>
</tr>
<tr>
<td>R²</td>
<td>0.9356</td>
<td>0.9578</td>
<td>0.9296</td>
</tr>
<tr>
<td>R² adj.</td>
<td>0.9355</td>
<td>0.9575</td>
<td>0.9294</td>
</tr>
<tr>
<td>Std. Error</td>
<td>0.4390</td>
<td>0.3294</td>
<td>0.4582</td>
</tr>
<tr>
<td>F</td>
<td>9209.52</td>
<td>0.000</td>
<td>2521.81</td>
</tr>
<tr>
<td>df</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>


Regression analyses were utilized yet again in order to observe any effects between environmental variables and firm growth. Table 16 reports regression results where firm specific and environmental specific variables were included. GDP growth rates over a one year period (GDP growth), as well as lagged GDP growth (GDP growth t-1) were added to the model; in addition, interest rate change between two years and a one year-lagged variable over interest change (Interest rate change, and Interest rate change t-1, respectively) were also included. Finally, the selection rates in each cohort over time, Selection rate t-1, were added.
The results largely confirmed the assumptions that environmental factors exhibit significant relationships with firm growth. For instance, macroeconomic growth did have a positive influence. For both cohorts, an average increase in the macro economy of five percent compared to the previous year would on average increase firm size by two percent, holding all other variables constant. Similarly, a ten percent increase in the interest rate (not an addition of ten percentage points to the prevailing rate) at a specific year compared to the previous year would decrease average firm size by around 16 percent. In the same way were each of the two cohorts’ macro ‘behavior’ influential: increasing cohort selection rates \((\text{Selection rate } t-1)\) a previous year would negatively affect growth of firms, indicating that firms that were of equal age (i.e. from the same cohort) were experiencing harsher times.

Furthermore, the two cohorts independently exhibited similar responses to macroeconomic and external events: a positive relationship was on average detected for macroeconomic growth, and a negative concerning rising interest rates and selection. As can be noted, some firm specific variables were also in this model insignificant concerning Cohort 1912 (\(\text{Start-up size}\) and \(\text{Last 2 years}\)), even if the age variable now assumed a significant value at the 10-percent level. It is possible that an introduction of environmental variables could explain the behavior of Cohort 1912 better than with only firm specific variables. The surviving firms in Cohort 1912, in particular, that survived for a somewhat longer period of time probably experienced intensely fluctuating conditions: from a youth of relative stability and prosperity, into severe circumstances at the end of the war and the years that followed with, among other things, sudden price changes and falling demand. That is perhaps why the \(\text{Last 2 years}\) variable had no observable effect on the firms in Cohort 1912: selection rates were, as noted earlier, high in the cohort during the years of World War I. Hence, firms in Cohort 1912 had perhaps no ‘time’ to shrink before termination – death may have come very sudden during the depression years.

**Controlling for Effects of Size and Age**

In order to elucidate relationships between environmental variables and the size and age of firms, further tests were employed. One question inquired as to whether firms of different size and age diverged in their sensitivity to changing environmental conditions.

Tests for interaction between firm-specific variables (size and age) and environmental variables were performed. Controlling for interaction between independent variables in an analysis can be performed in several ways, using different techniques. One rather common way, occasionally criticized in applied research, is to make group comparisons. Simply put, this implies performing separate regressions for each category of interest, for instance
separate analyses of small and large firms, etc.279 Such an approach can initially detect patterns or effects on different groups in an analysis. The database was divided into four groups of firms: Young-Small; Young-Large; Mature-Small, and finally Mature-Large. Four separate regressions were thereafter performed, including firm-specific and environmentally related variables. The database was split at median for the variables Age and Start-up size. The median value for variable Age was 12 years while the median for Start-up size was around 100,000 Kronor. Firms with an age or start-up size below the median values were defined as young and small, respectively. Consequently, four separate groups were obtained. The regressions are not presented here but rather an overview of significant coefficients (for regressions and descriptive statistics, see Appendix 5). The overview is presented in Table 17.

Table 17. Overview of regression results with four age-size categories.

<table>
<thead>
<tr>
<th></th>
<th>Young-Small</th>
<th>Young-Large</th>
<th>Mature-Small</th>
<th>Mature-Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>(+)***</td>
<td>(-)***</td>
<td>(-)***</td>
<td>(+)***</td>
</tr>
<tr>
<td>Size t-1</td>
<td>(+)***</td>
<td>(+)***</td>
<td>(+)***</td>
<td>(+)***</td>
</tr>
<tr>
<td>Start-up size</td>
<td>( )</td>
<td>( )</td>
<td>(+)***</td>
<td>( )</td>
</tr>
<tr>
<td>Dummy Last 2 years</td>
<td>(-)***</td>
<td>( )</td>
<td>(-)***</td>
<td>(-)**</td>
</tr>
<tr>
<td>GDP growth</td>
<td>( )</td>
<td>( )</td>
<td>(+)***</td>
<td>(+)**</td>
</tr>
<tr>
<td>GDP growth t-1</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Interest rate change</td>
<td>( )</td>
<td>( )</td>
<td>(-)**</td>
<td>(-)***</td>
</tr>
<tr>
<td>Interest rate change t-1</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
<td>(-)**</td>
</tr>
<tr>
<td>Selection rate t-1</td>
<td>(-)**</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>

( ) not significant, (*) significant at the 0.1 level, (**) significant at the 0.05 level, (***) significant at the 0.01 level

Source: Cohort 1912 and 1930 Database; Krantz (1997); Persson (2001)

The results showed interesting differences between the four groups of firms. Increasing age (that is, increasing age within the specific age group) had a significantly negative effect on young and small firms while no discernible effects could be detected for Young-Large and Mature-Small firms. However, it seems as if firms that were mature and large had in fact increased in size over time since the coefficient was positive. It is possible that firms that survived for a longer period of time (and were larger at start) did grow while those that did not seemed to have belonged to the category of small and younger firms.

a smaller size for smaller and younger firms had a negative effect. The start-up size of firms, furthermore, did not seem to have any effect on size for any group except the one that incorporates Mature-Small firms. In this group, firms that had survived for a somewhat longer period of time seem to, relatively speaking, have possessed an advantage in their larger size. Additionally, three out of four groups displayed a significantly negative relationship with the dummy variable \textit{Last two years}, which can be understood as that firms generally decreased in size before termination.

An interpretation of the findings therefore is that young firms on average may have been more negatively affected in their growth as they grew older than large firms, while more mature (and larger) firms were not affected by increasing age, or may possibly have been even positively affected. Differences also appeared when observing the significance of the start-up size of businesses in which only mature and small firms showed any significant positive relationship. This might tell about positive effects of a relatively larger start-up size for growth and survival in the longer run. The environmental variables – GDP growth, interest rate change and selection rate – discerned further differences. Results showed that GDP growth and interest rate fluctuations had no noticeable effects on growth among firms of low age and small size. Here, only the cohorts’ selection rates showed any significant relationship, meaning that a high termination rate the previous year had a negative influence on growth. Young but large firms demonstrated no such relationship.

Therefore, small size – as proposed earlier in the dissertation – was disadvantageous to growth when observing the effects of termination of each cohort. Furthermore, macroeconomic growth or interest rate changes did not seem to affect businesses that were young and had a larger size. Rather, sensitivity to economic fluctuations, according to the regression results, on the average was displayed by mature firms. For both Mature-Small and for Mature-Large firms, GDP growth and interest rate changes did have an influence: increasing GDP meant generally that firms grew, while increasing interest rates implied shrinkage and vice versa.

Consequently, one hypothesis derived from the analysis above could be that the firms’ age made a difference: ‘young’ firms (here, firms were around a decade old) were here not affected by environmental change while older firms were. The separate regression analyses can therefore serve as a foundation for extending the model to include interaction variables. Interaction commonly refers to variables that are added to a model in order to incorporate the joint effect of two variables. The effects of separate variables in a model are usually denoted \textit{main effects}, i.e. the effect of one or several independent variables. The inclusion of interaction variables takes into consideration not only a model with only main effects but also whether two (or several) independent variables have a combined effect. Thus, an interaction
effect exists when the effect of the independent variable on the dependent variable differs depending on the value of a third variable, a so-called moderator variable. For an example, social science research may take into consideration ethnicity when observing what effect the number of years of education may have on a person’s income. Education might have a greater impact on income for some ethnic groups than for others. Ethnicity is thereby the moderator variable. As stated earlier, interaction can be performed in different ways for instance by using dummy variables. In the present case, interaction variables were created by multiplying continuous variables used the previous regression models, theoretically: variable $X$ times variable $Z$.\textsuperscript{280}

Four interaction variables were created with the explicit purpose of exploring the effects of size, age and environmental conditions on growth of firms. The first variable takes into consideration the effect of macroeconomic growth and firms’ start-up size ($GDP$ growth $\times$ Start-up size); the second possible effects of macroeconomic growth and firm age ($GDP$ growth $\times$ Age), while the third and fourth variable included the interaction between interest rate change and firm start-up size and age, respectively ($Interest$ rate change $\times$ Start-up size, and $Interest$ rate change $\times$ Age).\textsuperscript{281}

Regression results are presented in Table 18. As can be observed, the ‘main-effects’ still showed significant coefficients concerning e.g. age: increasing age still had a negative effect on size. The start-up size of firms now assumed a non-significant relationship when including the interaction variables. Moreover, main effects from GDP growth and interest rate change were on the whole still significant. Furthermore, selection rates in the cohorts were still negatively affecting firm size. Thus, environmental variables generally had a significant effect on the growth of firms. The interaction variables tell of the combined effect of size and environment and age and environment, respectively.

\textsuperscript{280} Such an approach may according to some produce problems of multicollinearity, i.e. that the two independent variables that are correlated with each other, although for instance Jaccard and Turrisi (2003) do not consider this as a real dilemma in most circumstances. One way to avoid such problems is to mean center both variables (i.e. subtract the mean) before forming the product term, which then results in an interaction variable that is uncorrelated with both $X$ and $Z$. See Jaccard and Turrisi (2003), especially pp. 3-4; 18-28.

\textsuperscript{281} The variables were mean centered before calculating the interaction variables.
Table 18. Regression results. Growth, firm-specific variables, environment, and interaction variables.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.274</td>
<td>0.000</td>
</tr>
<tr>
<td>log Age</td>
<td>-0.044</td>
<td>0.000</td>
</tr>
<tr>
<td>log Size t-1</td>
<td>0.966</td>
<td>0.000</td>
</tr>
<tr>
<td>log Start-up size</td>
<td>0.001</td>
<td>0.822</td>
</tr>
<tr>
<td>Dummy Last 2 years</td>
<td>-0.127</td>
<td>0.000</td>
</tr>
<tr>
<td>log GDP growth</td>
<td>0.520</td>
<td>0.005</td>
</tr>
<tr>
<td>log GDP growth t-1</td>
<td>0.248</td>
<td>0.172</td>
</tr>
<tr>
<td>log Interest rate change</td>
<td>-0.167</td>
<td>0.000</td>
</tr>
<tr>
<td>log Interest rate change t-1</td>
<td>-0.062</td>
<td>0.174</td>
</tr>
<tr>
<td>log Selection rate t-1</td>
<td>-0.019</td>
<td>0.044</td>
</tr>
<tr>
<td>log GDP growth x log Start-up size</td>
<td>0.346</td>
<td>0.000</td>
</tr>
<tr>
<td>log GDP growth x log Age</td>
<td>1.272</td>
<td>0.000</td>
</tr>
<tr>
<td>log Interest rate change x log Start-up size</td>
<td>0.041</td>
<td>0.090</td>
</tr>
<tr>
<td>log Interest rate change x log Age</td>
<td>-0.030</td>
<td>0.520</td>
</tr>
</tbody>
</table>

R² = 0.9360
R² adj. = 0.9358
Std. Error = 0.4372
F = 6431.384
df = 13


Three out of four interaction variables showed significant effects. The positive coefficient of the GDP growth x Start-up size variable signifies that the larger the firm at start, the more sensitive it was to macroeconomic growth conditions. Thus, smaller firms seem to have been less affected in their size-adjustments when it came to changes in GDP. As firms increased in age they were also more sensitive to the business cycle, which can be observed in the coefficient for the variable GDP growth x Age. In that case the growth of ‘established’ firms’ was affected to a greater extent by such macroeconomic fluctuations than smaller, less established (younger) firms. One would perhaps have expected the opposite relationships in this case, meaning that the smaller and younger the firm, the more sensitive to GDP change whereas larger and older firms would have been less responsive to such conditions.

There was no evident interaction effect between firm age and interest rate change (variable Interest rate change x Age). Therefore, no particular age effect was exhibited here. On the other hand, however, there was a discernible effect related to size. The interaction variable Interest rate change x Start-up size revealed a small positive effect on firm growth (although significant at the 0.1 level). This means that as the interest rate increased, and the larger the size of the firm at start, the more it grew. At first, such a relationship might seem counter-intuitive. If the coefficient would have been
negative the relationship could have been interpreted as that the growth of firms would have diminished as interest rate and start-up size increased. Thus, holding all other variables constant, the smaller the start-up size of the firm, the greater would be the decrease in its size. Here however, the coefficient was positive. One interpretation could be that larger firms received higher returns on assets or investments – and thereby grew more – when the interest rate increased. It could be assumed that larger firms usually have greater or more diversified (financial) assets than small businesses. When interest rates are rising, larger firms may invest some assets or excess resources in interest-bearing bonds. Smaller firms may not have that opportunity. This is however only speculative and further investigation is called for concerning these circumstances.

Conclusions and Discussion

The present chapter has dealt with the growth of firms over time, with an explicit aim of taking a long-term perspective and to investigate whether exogenous conditions could explain when and to what extent firms grew. In order to do so, longitudinal cohort data consisting of firm level data on firms founded in 1912 and 1930 were used. The author, using public material, has compiled this database. The two birth cohorts experienced different founding conditions as well as fluctuating conditions over time. Cohort 1912 was founded under more or less favorable conditions but also went through two major wars and depressions. Cohort 1930 was born into a period of economic decline and crisis and experienced after nearly a decade after its birth the initially severe conditions of the Second World War (something also experienced by the surviving firms in Cohort 1912, but at a considerably more mature age), as well as the ‘golden age’ of the post-war Swedish economy. As has been suggested in the present study, growth of the firms in question was affected by events and conditions beyond the scope of the individual firm.

Economists with an interest in firm growth have frequently investigated the correlation between growth, size and age of businesses. Similarly, research in entrepreneurship and small business has displayed an equal interest in such relationships with a keen interest in new and small firms. Particularly in entrepreneurship research, a key concern has frequently been researching the degree to which individual oriented (entrepreneurial) variables affect observed growth and survival rates among small and newly founded businesses. Indeed, much truth lies probably in the fact that skilled, motivated entrepreneurs stand a better chance in succeeding to make their business grow than new, inexperienced persons. Even if the present investigation has not studied such circumstances, that was most likely also the case when it comes to the firms in Cohort 1912 and Cohort 1930. Complementary expla-
nations are however necessary in order to understand fluctuations and patterns over time. At any rate, such explanations or perspectives can shed light on a specific phenomenon from a different angle.

‘Environment’ is normally employed in research as an umbrella term consisting of a fairly wide set of external or exogenous factors: industry-specific fluctuations, institutions, policy, economic growth, and so on. This is perhaps not that problematic since most social science research is characterized by the same problem. What may be more surprising is that fewer studies, relatively speaking, seem to have had a pronounced interest in exploring the relationship between firm growth and the environment. While most would admit that events and circumstances that are ‘exogenously’ given for the individual business are of importance in explaining its development, it has not been equally acknowledged in applied research as have individual related and structural factors. Even so, various academic fields have in both theoretical as well in empirical studies identified the wide concept environment as significantly important when it comes to firms’ possibilities to grow.

In this particular study environment was measured as growth of the macro economy, changes in the interest rate, as well as aggregate cohort ‘behavior’ in terms of each cohort’s selection rate. While I am aware that alternative (available) indicators of the environment very well may have been used – for instance aggregate unemployment data etc., as in previous research – I do on the other hand think that the variables chosen here capture a significant part of the reality experienced by the firms in question. Since the cohorts consist of heterogeneous firms, a general/mutual indicator such as GDP or the equivalent may be the best alternative to employ. Additionally, the common firm specific indicator (size) used in the study was an individual firm’s assets during a particular year. Perhaps other variables – say, employment figures – would have given different results in the analysis even if previous research has also often claimed that there usually exists a strong correlation between firm specific size indicators. It is beyond the scope of this dissertation to investigate whether this is the case. Here we have dealt with firms that often were small. The only artifacts from those firms are annual statements – documents that frequently were simple to their nature. Even if it can be assumed that most of the firms had employed personnel (or at least were self-employment businesses), the sources in more than nine cases of ten do not tell us this.

What, then, are the conclusions in this study on firm growth and the influence of environmental phenomena? As found in much previous research, the growth of firms seems to have been more vigorous at young age and, furthermore, small firms generally had higher growth rates than large ones. Hence, this study confirms the findings of previous research.

However, by introducing environmental variables, further relationships could be identified, and generally both cohorts in the study exhibited similar ‘behavior’ concerning the relationship between firm age, size and environ-
ment. Some previous research findings are supported by the results in the present study. Research with an explicit focus on the relationship between firm level growth and economic fluctuations or the environment has often used industry specific or aggregate data as independent variables. An assumption here has been that falling aggregate demand, higher unemployment rates or macroeconomic shocks affect firms’ market situation. It is then not unreasonable to expect that growth rates among firms are falling. Thus, studies using empirical data on different economies and different time periods support my findings even if actual research methods diverge. Theoretical considerations in predominantly neoclassical fields as well as more heterodox schools (such as Penrose and Dahmén) have furthermore assumed that firms may react or respond to events and/or cyclical movements in their surroundings. This also seems to have been true considering the two cohorts born in 1912 and 1930, particularly when firms had reached a somewhat more mature age.

The assumptions in the present chapter were also that increasing GDP (aggregate demand) would have positive effects on observed firm growth, while increasing interest rate would signal increasing credit costs. So it was seen that firms expanded when the economy did; that increasing interest rates led to firms’ contraction. Therefore, in times of relative prosperity – high or relatively stable macroeconomic growth and stable interest rates – one can assume that individual firms on average had a greater chance to grow than during periods when the macro economy contracted or credit costs increased significantly. The inclusion of ‘generation effects’ in the analysis – measured as each cohort’s selection rate, indicating that ‘fellow firms’ from the same generation on average experienced harsher times – displayed similar effects on firm growth. Therefore, not only a connection between aggregate macro data (GDP) and interest level changes but also less-aggregate (meso) conditions on the population level were discovered.

Furthermore, when observing effects of age and start-up size of firms there were some interesting results. The purpose here was to observe whether firms of different size and age displayed different growth behavior when addressing the issue of environmental variables. Interest rate changes generally had a negative effect on firm growth. On average, firms shrunk when interest rates increased. However, larger firms were more sensitive to increasing interest rates than smaller in the sense that increasing interest had a positive effect on those firms’ growth. It was suggested here that larger firms might have received higher returns on assets or investments by investing some resources in e.g. interest-bearing bonds or the equivalent. The interest rate reflects not only credit costs – i.e. costs for borrowing – but also the alternative cost for keeping assets totally liquid. Hence, larger firms may

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282 See for instance Davidsson and Delmar (2001); Heshmati (2001), and Almus and Nerlinger (1999).
have had that alternative if they had excess resources, something smaller ones could not. However, even if those relationships may have to be investigated more systematically in future research, it seems as a reasonable assumption.

It was moreover found that larger and older firms were more sensitive to the business cycle (GDP growth) than younger and smaller ones. Previous research results have come to similar conclusions and proposed that this can be explained by the fact that a greater number of large firms than small ones tend to survive in the longer run. When business conditions worsen, large firms contract in size while smaller simply may be forced to close down.\textsuperscript{283} Thus, while business \textit{terminations} may be affected by macroeconomic fluctuations, particularly smaller and younger ones (as investigated in Chapter 5), small (young) firms may be less sensitive than large/old ones when it taking business \textit{growth} and macroeconomic fluctuations into consideration. It is reasonable to assume that small firms mainly operate on local markets. This was perhaps particularly true during the first half of the 20\textsuperscript{th} century. Thus, larger firms were possibly more active on national or international markets than smaller ones and thereby more sensitive. An alternative or complementary explanation to the sensitivity of larger firms to the GDP growth rate may be that more small firms may have no alternative uses for their resources. Support for such arguments can be found in for instance Anderson and Thomas (1978), that even when conditions have changed for the worse small firms still remained in business. Size-adjustments downwards could, under certain circumstances, have been impossible for smaller firms since they already may have been already operating on a minimum scale and could not downsize – hence they were less affected by falling demand.

I would like to claim that the scientific strength of this particular study lies in the long-term perspective and that a large number of observation years (6,600) of a fairly large set of businesses are included. A further advantage is the ambition to include \textit{all} firms from the two cohorts, which is the strength in employing a prospective research design. Even if this was not the case in reality (mainly because of short life-spans; see discussion earlier in the chapter), many studies on firm growth are often limited in the sense that ‘small’ firms occasionally are relatively ‘large’ compared to the actual, empirical size of small firms in an economy or in a real, empirical population/cohort. Data availability in public registers etc. not sometimes does contain information on the smallest firms. Hence, while this study is marked by similar problems – as we saw, missing cases were normally smaller firms – I do think that a greater number of (in a relative sense, and from a cohort perspective) small firms are included in the present study than in other ones. Hopefully, the research results are representative to a greater extent.

\textsuperscript{283} Boeri and Bellmann (1995).
To include more birth cohorts and to expand the analysis further would be of great interest. Perhaps it would further elucidate the relationship between the growth of firms and their environment. For instance the inclusion of more cohorts would make it somewhat easier to separate age effects from size effects and, furthermore, to separate cohort effects from period effects, and so on. By assuming a longer time perspective and by using longitudinal data, developments and relationships that are difficult to discover with short-term cross section data and with an individual oriented focus, complementary explanations to firm growth can be generated. Therefore, even if the findings here in many ways may appear self-evident – i.e. that business behavior is an interplay between the firm and the environment – I do also think that such circumstances to a greater extent must be taken into consideration in theoretical and empirical contexts. If, for instance, the creation of benign environments for new small businesses (entrepreneurs) are that important as both researchers and policy makers claim, then it would be of great use to elucidate the relationship between environment and firm development even more.
8. Succession and Success? Board Turnovers and Firm Performance

Introduction

Business leaders and managers are commonly regarded as important in explaining the success or failure of firms. In business studies in general and, to a considerable extent, in business history, much attention has been directed towards the attributes, backgrounds and behavior of business leaders. Organization and management research have recognized successions, or turnovers, of leaders and owners as important events in the development of a business firm or an organization. Like much research in social sciences, there has been much debate on cause(s) and effect(s); studies have for instance addressed the reasons as well as the timing of succession events in firms. Furthermore, there has been extensive debate concerning the effects of new management or ownership on firm performance.

The purpose with this chapter is to study the timing and effects of succession events among newly founded and mostly small firms over time. Here, attention is directed towards the relationship between firm performance and observed succession events that took place in the firms. My empirical material consists of the two birth cohorts of joint-stock companies from 1912 and 1930, also analyzed in Chapter 7 regarding their growth over time. Therefore, 420 firms are ‘traced’ over time from their birth to their (prospective) termination or, at most, over a period of thirty years with respect to each individual firm’s development and possible changes of ownership/management. Some firms displayed quite short life spans, while others stayed in business for a very long time and the database that constitutes the foundation for the empirical investigation of the 420 firms contains nearly 6,600 observation years. Hence, and unlike much previous research on succession and performance, longitudinal, firm-level data is used in the study, including small, large, young and old businesses.
Successions and Performance, Management and Ownership

When a business undergoes a crisis, perhaps a typical image that comes to mind is that management resigns or is dismissed. At least, such an outcome could very well occur in large, established corporations. The new leaders here are supposed to improve business performance and reputation. Whether businesses in fact exhibit improved performance after a renewal of leadership has however been considered debatable in research. A closely related problem has been the relationships between managers in and owners of (often larger) companies. Least of all in corporate governance such relationships have been recognized as essential in explaining the behavior and performance of firms. The management-owner relationship is not in focus per se in the present study. Yet, by way of introduction it might be reasonable to discuss related questions in a longitudinal investigation of succession in young, often small firms. Research has often acknowledged that small or medium firms (SMEs) are owned and operated in other ways than are larger ones, as well as that SMEs commonly operate under different conditions.

Frequently, the owner-manager in smaller firms has been placed on an equal footing with the business firm as is indicated in entrepreneurship and small business research as well as in economic theory. Small firms, it is often stated, constitute opposites to large ones. The former, it is claimed, are less complex organizations where decision (management) and risk (ownership) fall under the same person as a rule than in large businesses. Hence, small business owners often have dual roles as both owners and managers. Such organizational arrangements have been viewed as advantageous as well as unfavorable for the small business, even though empirical studies of governance practices in small firms have been less common. Research specifically focused on manager or ownership successions and turnovers have, similarly, mainly investigated larger or very large businesses. Successions and other related questions in smaller firms have constituted a less attended research field.

284 Greiner and Bhambri (1989).
285 Fama and Jensen (1983), and Schleifer and Vishny (1997).
286 See for instance Shane (2003), pp.4-5.
288 On the one hand, such dual roles of owners-managers in smaller firms are recognized as reducing monitoring costs and increasing the growth possibilities. On the other, opposite effects have been identified, such as organizational inertia due to lack of time for necessary strategic issues which, in turn, hampers firm performance. See Gabrielsson (2003), for a study of governance in SMEs. See also Huse (2000), esp. 284ff, and Bennet and Robson (2004); the
Lack of empirical data on small businesses can perhaps explain at least partially why large firms have received more attention in governance and succession research. It is, in addition, probably rather complicated to obtain an image of changes in ownership and management in business life over the course of time. A dominating interest in big business within economic history can be a possible explanation. Business historians have as a rule investigated the development of large, single businesses and studied their owners and leaders. Owners and managers have been attributed significant roles in explaining the development of the business. In relation to such research, one proposition put forward is that there has been a general development from family-owned and family-managed firms towards a more accentuated separation of ownership and management, at least in the large-scale industries and the big business sector. It is here that distinct stages in general business life have been identified. For example, business economist Sune Carlson wrote in 1945 that it was quite common from the 1800’s until the First World War that “…[you] either became a business leader by founding your own business, or you inherited one” (my translation). Over time, when the industrial society entered a more mature stage in which business firms grew in both organizational complexity and in size, there was a tendency towards a more distinct differentiation between business owners and corporate leaders.

Such descriptions over changes or shifts in the overall business life can perhaps be valid when studying the development of, as well as within, larger industrial companies or groups. It might perhaps be less applicable for SMEs or other sectors in the economy. Here, the picture is rather unclear; to my knowledge our understanding of the historical development is rather incomplete. It could be hypothesized that while there have been significant changes over time in the organization, ownership and leadership of large corporations, smaller businesses have generally been owner-managed to a

latter claim that board size, structure and competence have a rather weak link with firm performance.

For an overview and discussion, see for instance Sjögren (2003), pp. 27-30.

Carlson (1945), p. 95: "... [man] blev företagsledare genom att själv grunda företag, eller så ärvde man ett". For example has Matti (2003) studied the process of professionalization of management and Swedish managers between 1900 and 1940. The image of various distinct stages in the ownership in business life emanate from a view that the dominating form of enterprise was represented by the family business, which was succeeded by a phase in the more mature industrial society characterized by professional managers’ power. So called ‘entrepreneurial owners’ – a term from Alfred D. Chandler – were at least in large scale industry or in big businesses in Sweden rather unusual during the first half of the 20th century; see Glete (1999). Glete states that the three-stage model proposed by Chandler is not representative for the Swedish development. Chandler claims that businesses, in a first stage, were managed and led by their owners, and thereafter managed by professional leaders (day-to-day business) while owners themselves made the strategic decisions. Finally, in the third stage, there was a distinct separation of management and ownership.
greater extent. Research results have however shown evidence of both diverging and complex relationships. Systematic ‘reconstructions’ of the development of smaller Swedish joint-stock companies during the first decades of the 1900’s have demonstrated that ownership and management, just as in bigger businesses, were separated to a large degree. Ownership was often dispersed; significant ownership turnovers (successions) were moreover quite common. Thus, continuity with respect to ownership and managers in the firms were not always a reality even in smaller businesses. 

Investigations of more present-day conditions in smaller businesses have revealed similar results and pointed to regular occurrences of ‘portfolio entrepreneurs’, that is, individuals that are involved in more than one business as both managers and owners. Cross-holdings as well as multiple (active) ownership therefore can constitute phenomena that are common also outside the sphere of big business. Consequently, it may be in many instances rational to recognize that the smaller firm is simple by its nature, while the large (or the larger) business is more complex. Furthermore, it may be reasonable to assume that the two normally face rather different business conditions. This image may however be too simplistic. So may also the conception(s) of the small business as being lead by one single owner-manager, along with assumptions that small businesses behave and are owned and managed in ways (both historically and in present-day conditions) that differ significantly from their larger counterparts.

Successions’ Causes and Consequences

Even if it can be assumed that management and management competence and behavior is significant for the individual firm’s performance and development, and even if succession of management and owners in businesses has been a long-standing research topic, an overview of previous research results, nevertheless, gives an ambiguous and rather contradictory picture. Research that has specifically concentrated on turnover or succession of leadership or ownership in business organizations has presented three main

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292 In his investigation of the industry of automated vending restaurants/machines, Gratzer found that ownership in fact was highly dispersed during the industry’s first phases of formation and expansion. When the industry matured, ownership became more concentrated, such that in some cases firms became mere family businesses. Gratzer (1996), pp. 195-196.

293 Rosa and Scott (1999) conducted an investigation of multiple ownership in SMEs and came among other things to the conclusion that vast connections between different firms could be discovered concerning ownership representation. A fully firm-focused approach would, according to the authors, not have revealed such patterns. Research on interlocking directorates have in addition pointed to the occurrences of cross-ownership and representation in larger businesses; see e.g. Bunting and Barbour (1971), or Palmer (1983). Furthermore, other research results have proposed that duality can be frequently discovered even among large businesses (for instance that the CEO and the chairman of the board is the one and the same person). See Baliga et al. (1996), pp. 41-42.
propositions. First, one part of research results has implied that a succession event generates an organizational crisis. Organizational performance is therefore affected negatively; succession of management or ownership is here viewed as a disruptive event for the firm. Second, another part of previous research results has come to the opposite conclusion and suggested that succession as such in fact improves performance. Third, another body of empirical evidence has proposed that the relationships between succession and firm performance are weak. There is reason to return to previous research results along with discussions concerning measurements and operational definitions in more detail below.

Since the ‘behavior’ of business organizations – or organizations in general – along with the actions, backgrounds, motivations and skills of business leaders and owners has constituted a long-standing research issue in many social sciences, it is a somewhat difficult task to present a representative and ample description of previous approaches and perspectives in this limited space. As stated earlier, the business owner or manager (often referred to as the entrepreneur) has frequently been integrated with the business as an entity in the case of SMEs. Therefore one assumption, rooted in neoclassical economic theory, is that an entrepreneur exits the firm if he or she underperforms and that also the firm is disbanded. A difference between an entrepreneurial/owner-manager exit (failure) and a business failure is commonly acknowledged; to assume that the two phenomena generally are synonymous would be too simplistic.\footnote{Storey (1994), pp. 87-88.}

However, assumptions in economic theory can provide some relatively reasonable insights as to why managers/owners might choose to exit a business. Some have suggested that the business owner or the dominating owner discovers better opportunities and alternative uses for hers or his resources. Consequently, the owner removes those resources either by terminating the business or by selling it. And, accordingly, the owner exits the business while the business as such goes on. Thus, an individual after starting or acquiring a business will in each period that follows decide to continue the business or to separate from it.\footnote{See Holmes and Schmitz (1995) and Gimeno et al. (1997).} The development or ‘fate’ of the ongoing business after an owner’s exit is perhaps more unclear. Asymmetric information, as defined in economic theory, would imply that the seller possesses more knowledge of the business than the prospective buyer.\footnote{See Akerlof (1970).} One theoretical situation would then be that the business as such has been managed poorly, or is (nearly) insolvent, or that market conditions have deteriorated. Succession in ownership would then possibly result in a higher risk for termination or deteriorated firm performance since the buyer (i.e. the new ‘entrepreneur’) holds less information.
There is however reason to assume that an individual’s (or a team’s) choice to exit a business may depend upon other circumstances. Succession in a family business is one possible situation in which, it might be presumed, no one has a reason to withhold information about the business from the successor. Another issue concerns the size and age of businesses, e.g. is it a small and relatively young firm, or is it a large established corporation? Such conditions could have consequences for an owner’s or owner-manager’s freedom of action and the set of choices or options that are available. For instance, a stockholder in a larger company can choose to exit (sell) or use the right to vote at the stockholders’ meeting. Therefore, this owner has a set of options. This might not be so in the case of the small business: postulations which presume that managers/owners separate from the business due to discoveries of alternative uses of their resources, also assume in a large sense that resources or assets can be reallocated rather frictionless from one economic activity to another. They also assume that resources have alternative uses.

However, apart from the fact that business owners (or for that matter other individuals) might not always be aware of alternative uses or might not be ‘rational’ in their decisions, some resources or assets – firm- or industry-specific – are tied for instance to the specific business in question. Alternatives, furthermore, are not always necessarily ‘given’. This would imply that not all types of resources are easily transferred from one economic activity to another. In situations where no alternative uses exist, a business or a business owner might, in spite of losses, continue operations. Business owners might also value their own business more than others would – long-standing small business owners (or as in the case of family firms) often value their businesses more than would an ‘outsider’, or would the market. A life’s work might not easily be voluntarily sold or liquidated. Thus, although to some extent it might be reasonable to assume that owner-manager successions can be affected by the discovery of alternative opportunities, there are also in my opinion several arguments that could be put against such assumptions.

Other viewpoints related to managerial behavior and action could perhaps shed some further light on the issue, since management studies and research focused on the skills and motivation of business leaders or owners (naturally) accentuate the importance of such attributes. For example, Edith Penrose’s theory (1959) has been influential. While not considering leadership

297 See for instance Albert O. Hirschman’s (1972) theory of exit, voice and loyalty.
298 Erik Dahmén has for instance been critical towards assumptions in neoclassical economic theory. See Dahmén (1992). See also Cyert et al. (1956) or Simon (1979) for discussions over decision-making in businesses and economic theory.
299 Anderson and Thomas’ (1978) study of small tobacco farms in seventeenth century Colonial America gave evidence of such circumstances.
succession as such, Penrose emphasized that managerial abilities were im-
portant in explaining performance. Planning is here a key concept, and there-
fore continuity of some kind is essential for business performance, at least in
the long run. Penrose also stressed that for small firms, planning and release
of managerial services as in the case of large businesses might become prob-
lematic due to the formers’ limited resources.300

Such a theory could in some way shed some light on succession – at least
if succession is viewed as an event that ‘disrupts’ planning for expansion for
the individual firm since there are discontinuities in management or leader-
ship, particularly in smaller firms. Arguments similar to Penrose’s have been
proposed in other circumstances, not least in life-cycle theories of firms in
which management practices are assumed to differ depending on the age and
size of the business. In the early stages of the life of a business, creativity
and delegation are seen as more important than coordination, which is more
important in a more mature stage. Therefore, as firms mature (if they indeed
succeed to survive), they will be managed differently.301

Previous Research on Succession and Performance

In management and organization studies successions or leadership turnovers
has been one of the most frequently addressed research questions.302 In em-
pirical research that has had a specific focus on the causes and effects of
succession in business firms, contradictory assumptions and explanations
have been put forward as to why firms exhibit varying performance in con-
nection to observed succession events.

Some have viewed firms and organizations as adaptive in the sense that
changed conditions – conditions that can be firm specific (internal) or relate
to changes in their environment – necessitate adjustments. In the strongest
sense, when conditions are poor and, it is assumed, the firm exhibits weak
performance, succession of leadership is hence beneficial for the firm and
serves as a catalyst to adaption. Therefore, it has here been assumed that the

300 Over time, if planning is consistent, managerial resources (services) are released, which in
turn facilitate expansion of the firm. This is followed by periods of relative ‘stagnation’: fur-
ther expansion must be planned and (new) managerial services and resources again must be

301 Management problems and principles are thought of as rooted in time. The critical task for
management is to find a new set of practices for the next period in the firm’s development
since its development can be categorized into distinct phases. The view of a life cycle of
firms, using biological analogies, is rather well established. Firms – like humans – are thought
of as going through various stages: from birth to adolescence, maturity, old age and finally
death. For instance Garnsey (1998) has developed a model that builds on Penrose’s theory.
Greiner (1972) identified for instance five distinct management phases in the chronology of a
business, which were (in time order): creativity, direction, delegation, coordination, and col-
laboration. See also Adizes (1988).

dismissal of a leader or a CEO is more probable when firms show evidence of inadequate performance. The succession event as such is viewed as a dependent variable, ‘caused’ by past negative performance. Other research has doubted the overall positive effects of succession events: a succession – irrespective of the firm’s presuccession performance – are here seen as a disruptive event, which leads to deteriorated performance or even to termination of the business. ³⁰³

Figure 12. Some observed effects of succession and performance in earlier research.

<table>
<thead>
<tr>
<th>Presuccession performance</th>
<th>Postsuccession performance</th>
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<tr>
<td>(−)*</td>
<td>(−)</td>
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<tr>
<td>Magnifies inertia and conservatism</td>
<td>Lack of resources</td>
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<tr>
<td>(−)</td>
<td>Catalyst to organizational adaption</td>
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<tr>
<td>Prior success leads to resistance to change</td>
<td>‘Success breeds success’</td>
</tr>
<tr>
<td>(−)</td>
<td>New strategies possible</td>
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(∗) Denotes negative performance. (**) Denotes positive performance.


Therefore, even if firms do adjust to changing conditions (however defined) as well as adjust to past performance by replacing managers or CEOs, there have been doubts about succession’s overall effects. Sceptics have for instance suggested that replacements of leaders most of time are only a means to appease owners or interest groups. (And, as can be seen, such research has assumed that there are in fact owners or groups that can replace a CEO. For small businesses, the situation might be rather different.)³⁰⁴

Equally ambiguous therefore have been the observed relationships between presuccession and postsuccession performance of businesses in empirical studies (see Figure 12). One school of thought recognizes, as outlined above, succession as a catalyst to organizational adaption: poor presuccession performance is followed by improved performance. Inversely, similar assumptions have been made for firms that exhibit successful or positive performance prior to a succession event but where postsuccession performance is affected negatively. From this viewpoint, past success breeds inertia and apathy amongst business firms and leads to resistance to change. Further explanations of poor postsuccession performance have been that work routines change and insecurity runs high within the organizations that in turn

³⁰⁴ ‘Ritual scapegoating’ has been used as a term for this phenomenon: leaders are replaced although no effects are discernible, see for instance Beatty and Zajac (1987), pp. 305-306.
affect performance negatively. Hence, studies that have identified inverted relationships between firm performance surrounding succession events have viewed such events as breaks or disruptions in organizational momentum. Succession is useful when firms are experiencing stagnation and deteriorating performance (for whatever reason). It is however inefficient – and leads to deteriorated performance – when firms’ previous performance has been positive.

Other studies have maintained opposite relationships (Figure 12). It is here assumed that weak prior performance frequently is followed by weak postsuccession performance, and vice versa. Succession here has a moderating or a reinforcing effect on a business. The explanation put forward here is that a business organization that exhibits a negative development will continue to do so since it strengthens organizational conservatism and inertia. Similarly, firms that have displayed positive performance and that (for some reason) go through a succession event will also exhibit positive developments after the succession since prior performance, among other things, generates excess resources to the firms. Such assumptions might be interpreted as that successions and changes of leadership and ownership might not have any effects. However, as stated, succession events are not here considered insignificant but rather have the role of moderators of prior performance; they do consequently affect the direction in which firms develop. Although, as I understand it, no study of successions has addressed the problem from that particular viewpoint, an approach that perceives successions as moderators is to some extent in line with assumptions in institutional economic theory. Douglass North (1990), e.g., points out the self-reinforcing mechanisms in economic systems, among other things the presence of large setup or fixed costs, and adaptive expectations among economic agents, which can explain the path of development. Hence, businesses – irrespective of whether new owners or leaders have entered – will accordingly run the ‘risk’ of continuing operations in the same manner as before (see also the discussion regarding alternative uses of assets for especially small firms, above).

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308 North addresses these questions from a macroeconomic viewpoint, i.e. path dependence and different economic or technological solutions at the macro level; see North (1990), pp. 93-95.
Even so, while two bodies of research identify some kinds of relationship between the presuccession and postsuccession of firms, a third body maintains that succession events give small effects among businesses. In the extreme case, successions are insignificant and result in no predictable changes in performance at all. Other explanations – ranging from randomness to industry-specific, political and institutional conditions – are thought of as having more explanatory power than mere replacements of leaders or owners. In that respect the roles of managers here have had less explanatory power, with a point that (at least) large and therefore commonly old businesses are more or less permanent institutions that have a life of their own.309

As to why prior research has produced occasionally contradictory results probably can have a partial explanation in the fact that different research designs and variables have been applied, and that different types of organizations and businesses have been investigated. Figure 13 is an attempt to de-

309 See for instance Lieberson and O’Connor (1972). Only a small part of explained variance in performance measures could be ascribed to leadership effects. Weiner and Mahoney’s (1981) investigation of a large number of big companies however ascribed leadership a more significant role; nearly half of the variance in performance was explained by leadership.
scribe variables and relationships identified in earlier research. Frequently
the tenure of managers or board members – as well as their biological age –
have been used as explanatory or independent variables in the study of suc-
cession. Irrespective of the size of a business, a longer period of business
activity eventually makes a succession event inevitable; the longer a busi-
ness continues, the more probable is succession.\footnote{See e.g. Boeker (1992), p. 400f, or Wagner, G. et al. (1984). Grusky (1961b), p. 262 has put it as: "Since man is mortal, all organizations, large and small, must experience succession".} Other commonly used
indicators that, presumably, affect the postsuccession performance of firms
have been team or board size, as well as from where new leaders are re-
cruited (i.e. inside or outside recruitment).\footnote{Examples of such studies are Boeker (1992, 1997); Helmich and Brown (1972); Helmich (1974); Wagner, G. et al. (1984), and Haleblian and Finkelstein (1993).}

Further factors are also considered crucial in explaining the performance of
firms. Unexpected occurrences – such as deaths or involuntary resignations
of leaders – have been recognized as non-comparable with planned succes-
sions in businesses (such as customary retirements). The outcomes of firm
performance may as a result differ significantly. Some have therefore recog-
nized that much explanatory power lies in knowledge of the forces initiating
leadership or ownership change.\footnote{Friedman and Singh (1989) studied stockholde-
rer reactions to successions in large quoted companies and maintain that it is important to be aware of the performance contexts in which
successions occur and the forces initiating the changes. Outsider or insider recruitment is an
example of such contexts.} Several other situations and contexts that
could explain why firms exhibit different performance behavior could very
well be accounted for. Here, perhaps, it might be sufficient to say that many
explanations of both succession and its effects have been proposed in a large
number of studies.

Nevertheless, it should be pointed out that most studies on successions
have investigated large businesses. While researchers with a distinct focus
on large corporations might not be forced to consider possible effects of the
age and size of businesses, a study (such as this) that utilizes longitudinal
data on for the most part small – and in many cases young – firms may very
well have to. A one-sided or dominating focus on large businesses can pro-
duce biased results and erroneous generalizations. Investigations of smaller
and younger businesses have suggested that such variables are of impor-
tance. Large firms are often in a relatively mature phase in their organiza-
tional life cycle; at least it can be assumed that they have a lower death risk
than that of young and small firms. Hence, relative to the latter, large busi-
nesses can without any significant consequences experience succession
events. It has been proposed that the process of succession in large, bureau-
ocratic companies with fixed routines differs widely in both content and effect.\textsuperscript{313}

For small firms or SMEs, their behavior and performance to a greater extent than for large business units have been linked to the actions and behavior of the individual owner-manager. Some research has suggested that the continuation of a successful enterprise (e.g. continued growth) necessitates that the founder is replaced by a professional, hired manager while others have viewed the first succession event in a firm as particularly risky for its survival.\textsuperscript{314} Additionally, smaller businesses with long-standing owners face somewhat different succession problems than do large established corporations. For small firms, a reluctance of the owner to let go of the business is an often-identified factor, as well as the problem of finding an appropriate successor. Notwithstanding, such questions have frequently been addressed in family business research,\textsuperscript{315} and they have been recognized as crucial for the performance of SMEs. A study of successions of ownership and leadership in a large number of Swedish SMEs showed that performance was lower in firms that were on the brink of succession in comparison to firms that had experienced a succession event. These results agree to some extent with the proposition that owner-manager change in smaller (and possibly smaller and somewhat mature) firms serves as a catalyst to increased performance.\textsuperscript{316} Therefore, to make a distinction between firms of different size and age can be relevant when it comes to the issue of succession.

Figure 13 also reports commonly used measures of performance and succession in previous research. Performance measures often have been firm-specific financial variables such as profitability or sales, or organizational survival. Particularly in small business and entrepreneurship research, firm survival and/or growth have been acknowledged as central indicators of firm performance. Other studies that have investigated succession events and outcomes in large, listed companies have used stockholder reactions as indicators of business performance (hence disregarding the fact that business behavior can differ significantly between the larger listed companies and firms.

\textsuperscript{313} Often, this standpoint has been inspired by Max Weber; see Grusky (1961a).
\textsuperscript{314} Glenn R. Carroll (1984) investigated first-time succession events in a study of the newspaper industry, where data on the age of the businesses were available. Carroll found that first-time succession events had negative effects on the survival of the businesses. A study similar to Carroll’s has been carried out by Haveman and Khaire (2004), but with a focus on the founder’s ideological and political standpoints along with the successions and business survival. Willard et al. (1992), on the other hand, found no differences in performance between founder-managed firms och professionally managed firms. See also Jayarman et al. (2000).
\textsuperscript{315} In Trow’s (1961) analysis of small (family) businesses, Trow came to the conclusion that planning for succession in firms was to a great extent dependent upon availability of willing family members and their competency. See also Miller et al. (2003). For an overview of entrepreneurship and family business research, see for instance Brockhaus (1994).
\textsuperscript{316} NUTEK (2004). Other results indicate that business owner themselves do not identify (intra)generational succession as a particularly large problem; see Lundström, A. (1990).
in a general sense). Thus, a variety of indicators of performance have been used. Similarly, there have been plenty of definitions of succession. While some have studied replacements of chief executive officers (CEOs), others have studied turnovers of boards or of top management teams.

Objectives and Methodological Considerations

The purpose of the present study is as mentioned earlier to investigate the relationship between successions and performance among totally 420 firms in two birth cohorts of firms, founded in Stockholm in 1912 and 1930. Although they are two separate birth cohorts, in the following they will be treated as one single (‘synthetic’) birth cohort. In order to be able to perform such a study, a necessary condition is that there are a fairly large number of cases available, and that the observed period of investigation is sufficiently long. The above-mentioned database on 420 joint-stock companies, comprising nearly 6,600 observations years (referred to as firm years), serves as an empirical basis. Hence, the database consists of annual longitudinal firm-level data. By re-creating the development of each individual joint-stock company for each company’s year in life, changes in each company’s board was also recorded during the construction of the database. Each firm has thus been tracked from its founding until its termination (to the extent that this was the case) or at most over a thirty-year period.

Succession events – as here defined; see below – occurred at least one time among 210 of the totally 420 firms. Some of them experienced more than one succession event, particularly if they were active for a long period of time. Mainly, firms that actually underwent a succession event (or several events) are in focus in the present study, even if what I have chosen to call ‘non-successors’ also are investigated to some extent. The source material therefore allows, among other things, the analysis of board tenure; the total number of boards in a company; and when in each individual company’s

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317 Listed companies constitute a very small total number of businesses. Therefore, generalizations regarding business behavior, governance or succession can become very limited when considering the 99 percent of non-quoted firms in an economy.

318 A general discussion and overview can be found in Pitcher et al. (2000). Regarding discussions and definitions that concern performance measures in entrepreneurship and small business research, see for example Delmar (1996), pp. 7ff, or Shane (2003), p. 4-6.

319 Cohort 1912 consists originally of 134 firms, while Cohort 1930 comprises 452; totally 586 firms. In the present study, Cohort 1912 consists of 102 firms while Cohort 1930 has 318. Hence there are missing cases (n = 166) that, due to several circumstances, have not been possible to investigate.

320 Separate analyses of different cohorts have been made elsewhere, see e.g. Box (2001), or Gratzer and Box (2002).

321 The reason for the large number of observation years (ca. 6,600) is that some of the 420 firms exhibited long life-spans (while, of course, others did not).
lifetime (at what firm age) succession took place. By law, each change in the
companies’ board composition had to be reported and each company was
furthermore obliged to report its financial situation annually. In most cases,
this is the only information that is available concerning these joint-stock
companies.

Measurements and Definitions

The analysis below is based on a set of definitions of succession and per-
formance. Furthermore, here I will also employ control variables such as the
age and size of firms, where firms’ age and size have been dichotomized (i.e.
young-old, small-large). The median firm age at succession for all observed
succession events was 11 years in the database while the median size of
firms – measured as each firms’ assets at the year subsequent to succession –
were nearly 150,000 kr. in fixed prices (1930 = 100). The database has been
split at the median, where young firms are defined as less than 11 years and
small firms as those with assets less than 150,000 kr.322 However, the main
focus in this section concerns how succession and performance are defined.

To a fairly large extent will I here attempt to perform a study using some
variables identified as important in previous research.

There are evidently a number of limitations at hand as well as need for
some clarifications. One question concerns the measuring – or definition – of
ownership and management; another relates to the ‘causes’ of successions or
board turnovers. First, a limitation in the present study concerns the very
definition of management and, to a great extent, ownership. It would natu-
rally be ideal to be in the possession of source materials that contain infor-
mation on CEO (manager), owners, chairman of the board and other board
members in a study that has an aim to investigate successions. Nevertheless,
such information is only occasionally available, for instance if the chairman
of the board was also the company’s CEO (or to the extent owners were
active in the board, and so on). The roles of owner and manager were proba-
bly dual in particularly smaller firms since these commonly consisted of only
a small number of board members (sometimes there was in fact only one).
This is however only speculative; previous research results have indicated
that other arrangements even in small businesses can occur. At least theo-
retically some additional PRV sources could be used to receive a fuller un-
derstanding of ownership and (possibly) management in each of the firms.
Subscription lists (teckningslistor) could for instance be utilized. A re-
construction of the yearly development of over 400 firms with respect to
their financial situation as well as to their board composition and changes
thereof is however time consuming; as mentioned earlier there are nearly
6,600 observation years. Here, we have to settle with the assumption that

322 Database on Cohort 1912 and 1930. See also Appendix 6.
successions in the investigated companies’ boards also are indicators of changes in management and/or ownership.

Concerning the reasons (or causes) for succession events, such information was provided by the businesses in question in only a very small number of cases. Hence, it is possible to observe that a new board, or new board members, entered the firm but generally the reason is not known. Boards or leaders with a long tenure might, as discussed earlier, resign due to old age, but here we can only hypothesize on what were the reasons for resignations or withdrawals. Additionally, other limitations regarding the boards’ characteristics have, due to source-specific reasons, also been necessary.

Also the degree or scope of succession in a company is probably of importance when it comes to constructing an indicator for succession. The withdrawal or replacement of a single board member may not be placed on an equal level with situations in which the entire board or the CEO was replaced. In the latter case, it could be imagined that something of greater importance occurred in the firm. Therefore, the database tells not only that a succession event (of some kind) has taken place, but also the extent of succession. This was recorded for each individual firm’s year in operation, and initially this was carried out using a four-degree scale.

Zero (0) indicated that no succession (of any kind) were at hand at time t, while One (1) signified a smaller type of event, for instance an individual board member. Two (2) indicated, when possible, resignations of the CEO, the chairman of the board and/or a majority of board members – in the latter case more than 50 percent. Finally, Three (3) indicated that the entire board resigned. In a later stage of the analysis this succession variable was dichotomized into No or Moderate change (Zero to One), and Stronger to Substantial change (Two to Three). The cases where the entire board resigned were very few. Therefore, the definition of succession here is that a firm exhibited a succession event at a point in time, (t), when a stronger or substantial change in the board occurred. It must be emphasized that we should not confuse a succession event or several events (in an individual firm) with the firm as a unit of observation: a firm could exhibit more than one succession event over its course of life, particularly if it was active over a longer period.

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323 Some individual company files mention or at least hint on the reasons for why e.g. the chairman of the board or the CEO resigned. However, such statements have been very rare.

324 As mentioned, earlier studies on successions in firms have included variables such as the recruitment of (new) leaders or board members, their background, previous experience etc. Such variables are nearly impossible to include in the present investigation.

325 Naturally, a company that e.g. consisted of only two board members could here be coded as (1) as well as (2); since ‘only’ one single individual resigned it was also equivalent to the resignation of half of the board. Here, a good measure of common sense must be employed when the source material is coded and interpreted. For companies that consisted of rather large boards, say ten or so, the effects of a single individual’s resignation may not have been as important as in small companies that had only one or two board members.
As for the variable firm performance, two main measures are used here. First, the individual firms’ development in purely financial terms constitutes one performance measure, where changes in revenue growth between each observation year measures performance. Second, each individual firm’s survival ability is also used as a performance variable, i.e. the extent to which a business managed to survive a succession event. It must be emphasized again that succession events (in a firm) should not be confused with the firm as a unit of observation. In the first case, presuccession and postsuccession performance can be analyzed by comparing changes in each firm’s revenue prior and after a succession event. In the second case, where survival ability is used, the life-length or remaining life-length of firms after a succession event is used to measure firm performance. In more detail, the variables have been defined as follows.

Presuccession performance: firms that had exhibited increasing revenue – or, at least unchanged revenue – under the two years that preceded a succession event at \( t_0 \), where coded as positive performance (= 1), while firms with a negative development (decreasing revenue) were coded as poor performing firms (= 0).\(^{326}\) Note that \( t_0 \) here signifies a succession event. Theoretically, a succession event could take place at any age of a firm, e.g. at the age of one, two, three… etc. Similarly, postsuccession performance was defined in a similar manner as regards measures in revenue. Here, changes in revenue over a two-year period from the succession event in question (i.e. from \( t_0 \)) were coded in the same way as presuccession performance.\(^{327}\) Furthermore, it was also observed whether the firms in question remained in business – i.e. survived – after a succession event, in this case if they were still active as businesses two years after the event in question. Firms that were terminated within this two-year period were coded as poor-performing firms, while survivors were coded as positive performance. Both post-performance measures have generally been combined in the analysis. Thus, both the single firm’s ability to survive as well as its performance after a succession event is measured here.\(^{328}\)

Nearly all operationalizations and definitions in research can be criticized. And particularly concerning the coding of firm-specific variables, it could of course be claimed that firms perform in varying degree and that they perform differently depending on for instance their age and their size. This is also the case here; some firms could increase (or decrease) their revenue with over a hundred percent while others exhibited only smaller changes.

\(^{326}\) Thus, on a hypothetical time-scale, changes in revenue between \( t_{-1} \) och \( t_{-3} \), where the succession event takes place at \( t_0 \).

\(^{327}\) In this case, comparisons of revenue change between \( t_0 \) och \( t_2 \) for each succession event/firm.

\(^{328}\) Termination could e.g. be bankruptcy, liquidation or merger. I make no difference here between the different ways of termination.
Therefore, the above-mentioned procedure of course means that empirical information is lost or at least reduced. However, a dichotomization of variables also implies some advantages. A minimum requirement for calling a firm ‘successful’ is that it at least survives and/or that its performance over time (measured in economic terms) is not deteriorating. Where possible, I have attempted to operationalize the investigation in line with much previous research (c.f. Figure 13), by measuring pre- and postsuccession performance and using other often-recognized variables such as firm age and size, as well as board-leadership tenure. Other factors, such as measures of management competence, are naturally rather more difficult to include in the present analysis.

Succession: Success or Failure?

To what extent, and when in a firm’s lifetime, did succession take place? Totally, and with the definitions here used, there were 381 succession events among the 420 firms in the database. For some firms, some events occurred at young age while others displayed succession at a late stage. As pointed out earlier, 381 successions do not here imply that 381 of 420 firms exhibited succession; rather should the 381 succession events be put in comparison to the total number of firm/observation years (nearly 6,600). In that respect succession as a phenomenon was not particularly frequent. Table 19 reports some basic data on succession events. For instance, the median firm age for the first succession event was six years, while the median age for the second succession event was 17 years.

Table 19. Succession and boards in database.

<table>
<thead>
<tr>
<th></th>
<th>P_{25}</th>
<th>Md</th>
<th>P_{75}</th>
<th>mean</th>
<th>N obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm age (years) at first succes-</td>
<td>2.00</td>
<td>6.00</td>
<td>14.00</td>
<td>8.80</td>
<td>210</td>
</tr>
<tr>
<td>sion event</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm age (years) at second</td>
<td>10.00</td>
<td>17.00</td>
<td>21.00</td>
<td>16.10</td>
<td>82</td>
</tr>
<tr>
<td>succession event</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of boards per firm (1 =</td>
<td>1.00</td>
<td>2.00</td>
<td>2.00</td>
<td>1.84</td>
<td>420</td>
</tr>
<tr>
<td>founder)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Cohort 1912 and 1930 Database.

However, succession could also take place at an early stage of a firm’s life: a fourth (P_{25}; first quartile) of firms that underwent their first succession did so at an age of two or below. More variables, such as the tenure of boards, number of board members in the firms along with separate data on firm size can be observed in Appendix 6. Generally it can be established that there were no significant differences between firms of different size regarding for instance the age at which succession occurs in a firm. Large firms seem to
have displayed a somewhat longer board tenure, as well as generally (rather expected) a larger number of board members, than did small firms.

Exactly half of the firms exhibited however succession at least once during their lifetime. It could perhaps be proposed that there was a rather high degree of continuity of boards among the firms. The longitudinal design of the database allows for an investigation of when and to what extent firms exhibited board turnovers from their founding and over time.

Figure 14. Successions among surviving firms (n = 420 at year one).

![Graph showing successions among surviving firms](image)

Source: Cohort 1912 and 1930 Database.

This can be graphically observed in Figure 14. The figure describes the share of surviving firms that maintained their original board in relationship to firms that had a second board, and firms in which a third (or more) board was active. At year one 420 firms were included, but owing to high firm mortality rates at especially young age, firms were gradually terminated. Hence, the number of remaining firms at e.g. the tenth year was 139, and consisted at the twentieth year of 59 firms.

The number of firms in which the founders (i.e. original board) remained, quite expectedly fell over time as succession events occurred. In spite of this, it is observed that half of the firms that had managed to survive at least fifteen years were still operated by their founders. After thirty years, the remaining share of founder among firms that had survived was around 25 percent. In spite of this observation of continuity, the general image of the business as synonymous with the business-owner does not concur with the
analysis; for firms that had managed to survive at least three to four years, 20 percent had gone through a succession event. In this case, it adds up to 60 out of 300 firms.

Succession and Survival?

One measure of firm performance has as mentioned earlier been to observe whether a firm survives a succession event. Thus, termination – for instance liquidation or bankruptcy – has here constituted an indicator of negative performance. Here, there is an interest also in when in a firm’s lifetime a succession event took place, as well as the size of the individual firm. Out of 381 succession events, 37 were followed by termination within a two-year limit (see Figure 15).

Therefore, related to the total number of succession events, less than ten percent were actually terminated. Consequently it could be questioned whether survival ability is a meaningful measure to use concerning successions. The proposal that changes in firms’ leadership lead to higher probabilities for termination does not seem to hold very well. In more than 90 percent of the cases, successions were not followed by business closure after one or two years. Figure 15 reports the total number of successions over time. Around 30 to 50 successions occurred every second year during the first ten years. As can be observed, the number of firms terminated after a succession event were few.

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329 Liquidations, followed by bankruptcies, were the most frequent ways to terminate a business while e.g. mergers were rather uncommon; Database on Joint-stock Companies.
Here, nonetheless, doubts emerge in what respect successions, when defined as hazardous events for firms, in fact are mixed with other factors such as low age and small size. Many previous studies have recognized such structural disadvantages. Small and young firms often have higher death risks than old and large ones.\footnote{See Gratzer and Box (2002).} Hence, a comparison with the group of non-successor firms (firms that did not exhibit any succession), using the same definitions of firm size, reveals that non-successors exhibited higher probabilities of termination at low age and, furthermore, that small firms generally were over-represented.

\footnote{See Gratzer and Box (2002).}
The termination rates as such in the two figures are however not directly comparable since the relative relationship between successions and terminations is measured in Figure 16a, while mere firm-level terminations are included in Figure 16b. Even so, terminations due to successions were quite unusual here. Among the 210 firms that exhibited succession, only a few
percent were terminated after a succession event when measured at the firm level. For example, during the first ten observation years, only between one and just over three percent of the firms that underwent succession events were terminated in connection to those events. These low figures even became significantly lower as the surviving firms grew older.331 Therefore, succession events as such do not seem to have brought along any decreased probability for firm survival.

Table 20. Regression results. Firm age and succession.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>9.054</td>
<td>0.000</td>
</tr>
<tr>
<td>Succession (yes =1)</td>
<td>17.253</td>
<td>0.000</td>
</tr>
<tr>
<td>Early succession, under 6 years (yes =1)</td>
<td>-11.585</td>
<td>0.000</td>
</tr>
<tr>
<td>Start-up size (large = 1)</td>
<td>2.307</td>
<td>0.034</td>
</tr>
<tr>
<td>R²</td>
<td>0.349</td>
<td></td>
</tr>
<tr>
<td>R² adj.</td>
<td>0.344</td>
<td></td>
</tr>
<tr>
<td>Std. Error</td>
<td>10.151</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>74.651</td>
<td>0.000</td>
</tr>
<tr>
<td>df</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Source: Cohort 1912 and 1930 Database.

Nonetheless, a regression analysis (see Table 20) at the firm level to some extent did contradict the assumptions of no relationship between succession and termination. Here, the attained age of the 420 firms – measured in full years – was used as dependent variable (from 1 to 33 years). Three dummy (binary) variables were used as independents. The first indicated whether a succession event (or several) had taken place in a business or not (1 = yes). A second variable indicated whether a succession event had occurred at an early stage in a firm’s lifetime – that is if it had occurred at all; around half of the businesses did not exhibit succession. Here, those firms that had undergone one or several succession events before or at the age of five were coded as 1, and 0 otherwise.332 Finally, firm size, measured in assets at start was included. Large firms were those with assets exceeding 150,000 kr. (1 = yes).

The regression, yielding an R² of 0.35, shows that firms that at some point in time experienced succession events on average had a longer lifetime. The successor sample showed in comparison to the non-successors a higher average age (over 17 years). Even so, the other succession variable indicates that

331 Own calculations; Database on Joint-stock Companies.

332 Thus, the firms that were coded as ‘yes’ concerning succession events were not necessarily coded as early succession since many were experiencing succession at a quite late stage of their lifetime.
firm age decreased significantly for businesses that had early succession. Thus, board turnovers at an early stage might have decreased the probability for high age. Finally, and as confirmed previously in the dissertation, a larger size at start increased a business lifetime. In that respect, at least for these particular 420 businesses, structural variables (size) as well as internal events (succession) were influential for firm survival. Succession was – especially in the long run – necessary for firm survival, while early succession nonetheless decreased average firm age substantially.

To some extent these results lend some support to previous research results in the sense that, measured at the event level, succession events to a greater extent seem to have ended in termination at young age, where particularly small firms were exposed to a higher death risk or showed shorter lifetimes (c.f. Carroll, 1984). At the firm level an analysis furthermore showed that successions as such probably were necessary for firm survival, since the firms that underwent succession displayed longer life-lengths. Yet, early ‘board turbulence’ did seem to negatively affect the firms’ life-length. This might support previous findings as regards continuity and planning in firms as concerns successions. However, if only some ten percent of all 381 observed succession events recorded here ended in – or ‘caused’ – termination, then the overall degree of explanation can be considered rather low: in nine cases of ten did succession not lead to termination.

Presuccession and Postsuccession Performance

As a second step, analyses of the relationship between firms’ presuccession and postsuccession performance were carried out. One question is whether there were any discernible relationships between the performance of firms prior to a succession event and after. In this respect, 324 of the totally 381 succession events could be analyzed; in some cases presuccession performance could not be calculated due to the fact that succession took place at an early stage in some firms.333 Postsuccession performance is here defined as a combination of performance variables in the sense that both performance in revenue and performance in survival were included. If a firm for example exhibited positive performance after succession it was nevertheless coded as poor performing if it was terminated within a two-year period.

Table 21 gives aggregate data on performance of firms that underwent successions. The distribution of the number of succession events preceded by negative and positive performance seems to be rather evenly distributed (c.f. All firms). This may suggest that performance as such did not have any causal link as to why firms exhibit succession, as suggested in previous research. Similarly, postsuccession seems to have been equally evenly distrib-

333 Presuccession performance is e.g. difficult to calculate if succession takes place during the first firm year; see the discussion on measurements above.
uted, even if a somewhat larger share of postsuccession events exhibited negative performance after succession. A correlation analysis between the two variables presuccession and postsuccession performance confirms this. A first interpretation could therefore be that succession as such to some extent increased the likelihood of negative performance.

Table 21. Percentage distribution of presuccession and postsuccession performance.

<table>
<thead>
<tr>
<th>Presuccession performance</th>
<th>Postsuccession performance</th>
<th>N events</th>
</tr>
</thead>
<tbody>
<tr>
<td>(-)</td>
<td>(+)</td>
<td>(-)</td>
</tr>
<tr>
<td>All firms</td>
<td>47</td>
<td>53</td>
</tr>
<tr>
<td>Young-small</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>Young-large</td>
<td>38</td>
<td>62</td>
</tr>
<tr>
<td>Mature-small</td>
<td>56</td>
<td>44</td>
</tr>
<tr>
<td>Mature-large</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: Cohort 1912 and 1930 Database.

When taking into consideration the age and size of firms in Table 21, a somewhat different pattern emerges. Though the differences are not large, it seems that a majority of firms that were young and small exhibited positive presuccession performance, while performance after succession was reversed. Similar, but slightly less obvious relationships could be found in the group of young and large firms. Firms that were more mature showed a more evenly distributed relationship. Thus, for all 324 succession events included here it seems that the general tendency (although weak) was that a majority of firms, particularly young ones, displayed positive presuccession performance and, inversely, negative postsuccession performance. Mature firms exhibited a less obvious change in the distribution. It seems that for especially mature small firms, performance increased somewhat after succession. This could perhaps be put into relation with research on (older) family business that has identified that new leadership and ownership acts as a catalyst for organizational change (c.f. NUTEK, 2004).

Another related question concerns whether there were any observable relationships at the firm level (or, rather, on the event-level since some firms exhibited several succession events), when at the same time the age and size of firms were taken into consideration. With dichotomized data, three possible outcomes of such an analysis are possible. One is that there is a positive relationship between firms’ presuccession and postsuccession performance, possibly implying that succession as such ‘only’ had some sort of moderating effect on postsuccession performance (c.f. Figure 12). Another possible outcome is that the relationship is negative (inverted), meaning that succession events break organizational momentum and that e.g. succession during

334 See Appendix 7.
negative performance acts as a catalyst to improved performance. A third outcome could be that there are no observable relationships between the two variables (or a very weak one), which would indicate that presuccession and postsuccession performance are two (rather) unrelated variables.

Table 22. Chi² test of presuccession and postsuccession performance.

<table>
<thead>
<tr>
<th></th>
<th>Presuccession performance</th>
<th></th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( - )</td>
<td>( +)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postsuccession</td>
<td>73 (83)</td>
<td>105 (95)</td>
<td></td>
<td>178</td>
</tr>
<tr>
<td>performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(+)</td>
<td>78 (68)</td>
<td>68 (78)</td>
<td></td>
<td>146</td>
</tr>
<tr>
<td>Total</td>
<td>151</td>
<td>173</td>
<td></td>
<td>324</td>
</tr>
<tr>
<td>Chi²</td>
<td>4.967 (0.026)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phi</td>
<td>-0.124 (0.026)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Zero cells have expected count less than five. Degrees of freedom = 1. Expected values and levels of significance in parenthesis.

Source: Cohort 1912 and 1930 Database.

A Chi²-test was employed as a first step (see Table 22). This test is suitable for variables measured at the nominal scale. The test assumes a comparison between observed frequencies and expected frequencies – in the latter case, it relates to the distribution that could be expected if the variables have no relationship with each other.335 Here, there was a statistically observable relationship between presuccession and postsuccession performance. Phi was −0.124 (negative).336 There was an overall tendency for firms (or events), which displayed positive presuccession performance, to exhibit poor postsuccession performance. These findings could thus be in line with previous research that has viewed succession as a disturbing event: firms that underwent negative presuccession performance improved their performance after a succession event while the situation was reversed for firms that exhibited positive presuccession performance.337

335 Commonly, a null hypothesis (no relationship) and an alternative hypothesis are formulated in these circumstances. The difference between observed frequencies and expected must exceed a critical value in order to reject the null hypothesis. Chi² depends in a great extent upon the total number of observations. It is moreover not a measure of association; Chi² only indicates if two variables are independent or not. In 2 x 2 tables, such as in this case, a measure of association is in that case phi, which ranges from −1 to +1 in which zero indicates no association between variables. See e.g. Djurfeldt et al. (2003), pp. 225-238.

336 The critical Chi² value is in this particular test 3.841 at the 5-percent level of significance. The value in the test was 4.97 and therefore exceeded the critical value.

337 In spite of this, results were not particularly impressive. The distribution of events was rather even.
Succession, Age, Size

Similar tests, but controlling for several independent variables, were carried out. Binary logistic regression with two models was used for the analysis. Results are presented in Table 23, and they show statistically significant yet rather weak models. All variables in the models were dichotomous and included, as a first step, presuccession performance, firm age and firm size, as in the previous analyses. If firms of different size and/or age would exhibit diverging patterns or behavior as concerns postsuccession performance this would hopefully be indicated by the regression. Board tenure was furthermore included as an independent variable. This measures the length of board commitment. The median tenure age was seven years, and the tenure variable was dichotomized according to this (1 = long tenure, 0 otherwise).

Apart from the above mentioned variables was the second model [2] furthermore including interaction terms. One term indicated the joint effect of firm age and board tenure \((\text{Age } \times \text{Tenure})\). A company with a board that is active for only a shorter period of time might possess less firm specific (or industry specific) knowledge and experience compared to a board that is active for a long period of time. For instance, performance in a firm that was 25 years old at a succession event, and in which the board had been active for 15 years, might differ from a business that was in the same age as the first but had a board that was active for only two years. Some previous studies have claimed that performance in companies in which owners have been active for a long period of time exhibit lower performance. On the other hand it can be imagined that a short tenure implies that the boards or owners have not been able to make any significant contributions to the company irrespective of the firm’s age. Observations of shorter tenures in firms – particularly if the firm is fairly old – might also be interpreted as that something more essentially different has occurred compared to a ‘normal’ (for instance planned) succession. Although such assumptions could be reasonable, they are merely speculative since the present empirical material does not provide any information on such relationships. Thus, the age-tenure variable assumed in this respect the value 1 if the firm was above median age and if the board at the same time had a long tenure (i.e. 1 times 1), and 0 otherwise.

The joint effect of firm age and presuccession performance was also included \((\text{Age } \times \text{Presuccession performance})\) in order to see if there was a joint effect between firm age and presuccession performance. We know from the Chi²-test that there was a negative relationship between pre- and postsucces-

\[ ^{338} \text{For a description of the method, see Chapter 5. See also Appendix 8 for complete binary logistic regression results.} \]

\[ ^{339} \text{Since all 'main effects' variables are binary (0,1) are also the interaction variables binary. When multiplying two binary variables are there of course four different combinations, but only two outcomes: zero times zero equals zero; one times zero (and vice versa) equals zero, while one times one equals one.} \]
sion performance. This interaction variable would in that case measure any age and presuccession performance effects on postsuccession performance. Finally, the combined effect of firm age and firm size was included \((Age \times Size)\), indicating in this particular case if there was an effect of high age and large size.

The regressions in both models confirmed the earlier observation of a negative relationship between presuccession and postsuccession performance indicators; the odds ratio was in both models lower than 1, which indicates that firms that had shown a positive presuccession performance had a significant probability to display negative performance after succession – here measured as decreasing revenue and/or termination. In Model [1] did no other variables however exhibit significant values. Thus, this showed that firm age, board tenure or firm size was uncorrelated with postsuccession performance and that these variables had no observable effect on the dependent variable.

Model [2] additionally included interaction terms. As noted, here the general negative relationship between pre- and postsuccession performance remains while the variables that were used in model [1] still showed non-significant values. It did not seem to be any joint effect of firm age and size; large and mature firms did not differ from others. Nonetheless, all other things equal, there was in this second model a strong joint effect from the interaction variable \(Age \times Tenure\). Thus, mature firm age and long board tenure increased the probability to display positive postsuccession performance (nearly four times). Furthermore, there was also a combined effect from firm age and presuccession performance: firms with a positive presuccession performance that were of mature age had a significant probability to display positive postsuccession performance. Therefore firms of a mature age with a board that had a longer commitment differed – as did those of mature age with positive presuccession performance – differed from the general (and opposite) pattern of positive performance being followed by negative performance after succession and vice versa.
Table 23. Logistic regression results. Succession performance, firm age, tenure and firm size.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.716</td>
<td>1.099</td>
</tr>
<tr>
<td>Presuccession performance</td>
<td>0.654*</td>
<td>0.348*</td>
</tr>
<tr>
<td>Age</td>
<td>1.440</td>
<td>0.682</td>
</tr>
<tr>
<td>Tenure</td>
<td>1.202</td>
<td>0.479</td>
</tr>
<tr>
<td>Size</td>
<td>1.089</td>
<td>1.418</td>
</tr>
<tr>
<td>Age x Tenure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age x Presuccession perf</td>
<td>3.760*</td>
<td>2.562*</td>
</tr>
<tr>
<td>Age x Size</td>
<td>0.626</td>
<td></td>
</tr>
<tr>
<td>Pseudo-R²</td>
<td>0.039</td>
<td>0.073</td>
</tr>
</tbody>
</table>

(*) = significant on at least the 0.1 level.

Source: Cohort 1912 and 1930 Database.

To some extent, these results were suggested earlier in the chapter since young, and to some extent small firms generally displayed a negative relationship (Table 22). Nonetheless, this analysis was based on aggregate data but the firm (or event) level regression confirms the pattern. Thus, size as such was of no importance. Rather, the results, although the models as such were fairly weak, suggest that a long-term commitment in a business – which nearly automatically assumes a somewhat older firm – increased the probability for a successful postsuccession. This suggests that planning for succession in fact seem to have been an important aspect for the business in question. Firms that, perhaps, more abruptly changed the board of directors had a diverging development.

Therefore, from this analysis it seems that only mature, and not necessarily large, firms were exceptions from the ‘disturbing’ effect of succession events. How can this be interpreted? Based on assumptions that claim that the firm and the ‘entrepreneur’ as phenomena coincide among small (and possibly young) businesses to a greater extent than in large, mature ones, we would perhaps have had some reason to expect some succession effect among the former ones (and, perhaps, none concerning large and/or mature firms). Previous results have pointed to the fact that performance prior to leadership and ownership change among small or medium firms is low, and that performance is improved afterwards. Thereby, effects of succession ‘should’ be evident, although it might be more uncertain concerning the direction of performance as such. Some other studies have furthermore claimed (although other research shows different results) that large and old businesses so to speak have a ‘life of their own’ and that they are not affected significantly by successions in leadership and ownership.
In my analysis of succession was it recognized that succession had a disturbing effect on performance (nonetheless, in cases in which negative performance was followed by increased performance a term such as ‘positive transformation effect’ or the equivalent might be more suitable). Business size was of less importance with reference to postsuccession performance measured as revenue increases and/or survival. Therefore it can be claimed that generally there was no consequence as to whether the firm was small or large at succession; the inverted relationship remained. There was additionally no combined age-size relationship. Rather, it was age in combination with a longer board tenure that increased the probability of successful succession in the firms. Therefore, even if the firm and the business owner coincide to a greater extent in small businesses than in large ones, the size factor was not decisive in this particular case. Even large, yet young, firms exhibited the disturbing (or transformation) effect. This deviates from previous research results and assumptions.

Conclusions

A summary of the research results in this study shows, firstly, that with an observation period of thirty years fifty percent of the 420 businesses exhibited board turnovers – successions – although some firms lived for a considerable time while others terminated very early. The number of remaining founder boards in the businesses diminished steadily over time, which was quite expected. There was nonetheless a long continuity of owner-managers in the businesses over time. After thirty years, a fourth of the surviving firms still had the founders as leaders. Yet, it does not correspond to the perhaps general image of small firms as being run by the founder(s), not even in the short run. Successions were common even at an early stage in small as well as large firms.

Was then succession on the whole a widespread or for that sake significant phenomenon among the total of 420 joint-stock companies that were analyzed here? Results in a study depend to a great extent on operational definitions of variables and measurements. Here – owing to the state of source materials – I have been required to measure succession as (the degree of) board turnover in each business. The sources do not allow for any alternative definitions. Additionally, the measures of firm performance might have been defined in other ways, for instance to measure changes in revenue or ability to survive over e.g. longer periods of time. Performance has here been measured in two ways: Termination/survival, and revenue growth. And as concerns the significance of the succession phenomenon I would, for the most part, like to answer the question above with a ‘no’. No, both in the sense of the scope or extent of successions as such, and no (but a more ambiguous
one) as regards successions as events and their relationship with firm performance.

First, the 420 joint-stock companies contributed together with nearly 6,600 firm years. Since 381 succession events were recorded, the figure appears fairly insignificant. As has been demonstrated, half of the firms did not exhibit any succession. In that respect, successions were rather uncommon. Second, succession as an event furthermore seems not have been significant or crucial for the survival of firms. Indeed, a relatively higher mortality risk was observed for firms at low age, particularly if they were smaller. But such structural attributes – i.e. low age, small size – are widely acknowledged risks in a general sense in much previous research and theory. Hence, ascribing succession events in this sense as ‘causes’ for termination may merely be a general effect of low age and small size. I am at least partly inclined to believe that this is the case also here: the number of firms terminated after a succession event was relatively speaking negligible. Therefore it does not seem that succession meant a higher risk for termination (negative performance).

On the contrary, succession probably was an essential necessity for organizational survival – continuation – on the whole, which the rather scarce research on successions in small and/or young firms has emphasized. This does not mean that succession meant survival. An analysis showed that early successions decreased the average life-length of firms. Thus, it is probably so that early ‘turbulence’ affected the course of development for individual business firms in a less desired direction – at least if we accept that organizational survival is a basic goal for any business. In that case, (early) succession events may have shortened the life-length of firms. And, furthermore, this factor may naturally be an important one in research that addresses the often-identified liability of newness and other structural-related phenomena (c.f. chapters 3 and 5).

Some previous research results concerning the relationships between pre-succession and post-succession performance of firms are contradicted in the present study. Previous research has often claimed that succession can be decisive or even a necessary requirement for especially small/smaller (or family owned) businesses, since the characteristics, competency and therefore ‘behavior’ of owner-managers are widely recognized. Therefore, the owner-manager is here synonymous with the firm to a great extent. It has, among other things, been claimed that particularly mature small firms improve performance after (as assumed) a period of deterioration and decline. This was not the case here. I found here no relationship – or combined effects – between firm age and size as concerns successions. Successions had nonetheless effect on firm performance, which shall be discussed in the following.

For instance neoclassical economic theory and assumptions of asymmetric information would suggest that weak (presuccession) performance induces
the owner to search for alternative uses for resources. If so, the business is sold or terminated. Negative presuccession performance could be expected to be followed by negative postsuccession performance, i.e. in this case termination and/or decreasing revenues. A prospective buyer of the firm in question possesses less knowledge and has, perhaps, less experience – particularly if the firm is small (less known) or young. Hence, the firm, it is assumed, exhibits negative performance after succession. However, it seems as if the ‘inflow’ of new boards in the firms that exhibited succession was constituted by individuals that, in a ‘causal’ sense, could just as well improve or deteriorate performance since the pattern regarding postsuccession performance was quite random. And this might just as well have been the case: some of the new boards may have affected the firm’s development in a positive direction, some in a negative direction irrespective of its presuccession performance.

In that case, and with respect to the fact that other definitions and measurements could generate other results, new boards (owners) in small firms might be viewed as a random process in which it is difficult to state anything as regards the development of individual businesses after a succession. Therefore, if owner-manager ‘competency’ within (young) small business theoretically would deteriorate over time – since past negative performance would only amplify coming performance because new owners have less information and are less or at least equally capable as their predecessor(s) – this investigation does not support such assumptions.\(^{340}\) Empirical research on successions has suggested relationships similar to such neoclassical assumptions (although due to other reasons): prior performance acts as a moderator or re-enforcing mechanism – while poorly performing firms will continue to do so even after a succession, high-performers will continue to exhibit positive performance. In the first case, negative developments perhaps magnify organizational inertia since there is a lack of resources in the business, and in the latter case success breeds success due to prior performance’s generation of excess resources.

Yet, a correspondence between pre- and postsuccession performance measures was discovered while no relationships relating to firms’ continued negative (positive) performance before and after succession could be identified in the present study. My results show that successions had a disturbing, or transformational, effect, thereby concurring with a body of previous research: negative presuccession performances were followed by improved postsuccession performances and vice versa. Succession serves, according to this research, as a medium for improvements when performance has been declining. It is furthermore assumed that it acts as a catalyst for apathy, resis-

\(^{340}\) Which in the other sense would imply that ‘competent’ prospective buyers (i.e. new owners) commonly identify well-performing businesses in the economy and, since they possess a high degree of competency, makes the business perform well after succession.
tance to change and increased need for internal organizational insecurity when prior performance has been favorable. Mature firms, irrespective of size, with a board that had been active in the business for a longer period of time (tenure) differed from others. These businesses indicated evidence of a re-enforcing effect. The firms in this particular category that had exhibited good presuccession performance – which in fact was more probable for mature firms to do, as the analysis showed – had greater chances to exhibit a positive development after succession.

Such assumptions might be in line with other economic theories and research, such as management-oriented theories that identify planning and continuity as important factors in explaining performance. Successions in leadership/ownership might interrupt the individual firm’s development. Such theoretical reasoning is principally developed for large(r) businesses. As noticed above, it was among younger firms that succession seemed to have this disruptive role. It is interesting that small young firms did not stand out, or differ, from large young firms. It is generally acknowledged in SME research that lack of time and of resources for planning is greater in small firms than in large ones. Thus, we would perhaps have expected that large firms, although they were young, would have shown, as regards firm performance, more continuity or another pattern than the small and young ones. In that case, size did not matter but rather a longer lifetime and longer board tenure. Here, perhaps, planning for succession could also have been a more frequent phenomenon. Furthermore, other explanations are probable. External buyers of those particular businesses had possibly more information as regards their past performance. Thus it could have been less asymmetric information for those businesses, and they were probably more known on their markets.

Thus, the results generated in this study of successions and performance support as well as contradict earlier research. It has identified and confirmed a de facto, although occasionally weak, relationship between presuccession and postsuccession performance which generally is a negative (disruptive, transformational) one. It has, furthermore, shown that this was not valid when it came to mature firms even though size had no observable effect. Even if larger businesses mostly have been in focus as concerns managerial turnovers and successions, it has been shown here that this may apply to smaller business as well. These have nonetheless been less investigated research objects. Here, mature – and not necessarily large – firms stood out from younger ones, irrespective of their size. In that case there was perhaps a stronger age effect than a size effect evident as concerns successions.

This brings about several research questions, particularly when we take into consideration the large body of research as well as theory that has viewed conditions for small and young firms along with particularly management practices, behavior, motivation and competency as significant in understanding how and why small firms differ from older larger ones. A
more thorough study of the problem of succession (as well as the scope of succession) in particular small and young firms would therefore be of interest. In spite of the findings here that assert that mature firms differed from others I would like to point out that the overall relationship(s) may have been quite weak. Other measurements or definitions would, as implied above, perhaps reveal different results. Alternatively, as other researchers have claimed, successions of leaders and owners in firms and the relationship between business performance is rather weak. In that case, other explanations to performance (as well as to successions) must be investigated. Thus, not only has this study confirmed as well as challenged some earlier results. It also questions the often-asserted importance of successions as such in business organizations. For the survival and performance of a particular firm a succession might naturally be of utmost significance, while for another individual firm it is of less importance. And, viewed on an aggregate or long-term basis, successions may nonetheless be a less crucial phenomenon.
9. Concluding Remarks and Summary

This dissertation has had the aim to study the behavior and development of firm populations as concerns aggregate developments and firm survival and growth. In doing so, a long-term perspective has been an important feature, along with a chiefly longitudinal research design as well as an approach that takes into consideration relationships between the behavior of the firm(s) and chiefly external and structural variables. The dissertation has hopefully contributed with new knowledge as regards conditions for and behaviors of businesses. By this, I have in mind not only my use of methods, employed in entrepreneurship and small business economic research, on historical data per se. My hopes are that I not ‘merely’ have confirmed or refuted findings and theories in research that use more present-day empirical material. More specifically, I think that the dissertation in some instances also stand in contrast to other studies in its general setting and methodology. With any luck, it has contributed with alternative insights and shown that there are complementary ways in researching the growth and survival of business firms.

Scholars in the field of entrepreneurship and small business have called for more longitudinal studies while they also have identified a certain bias as concerns the ‘balance’ between micro and macro/aggregate studies – with the bulk of research leaning towards micro studies – as well as the link or interrelatedness between micro behavior(s) and external or aggregate phenomena. And while business historians have often produced substantial scientific contributions as regards case studies of large, established businesses, followed over long periods of time under changing environments, these works have nonetheless in most cases dealt with precisely large, established businesses. The aim of this dissertation has indeed not been to write a history of small business in Sweden. Even though I think it would be of importance for economic and business historians to focus on smaller business units in empirical research, it is also probably a more difficult task. Yet, even so, I think that an additional contribution with my dissertation is that it has shed some light on our historical knowledge of small businesses – particularly in establishing new, coherent databases.

A summary of the dissertation’s main empirical results shows the following. The study of the development of the size distribution of firms in Sweden over more than one hundred years gave evidence of a continuously changing size structure. This is not particularly surprising given the long period studied. But even in the shorter run this size structure was ‘unstable’. I again
want to emphasize that changes in statistical reporting and larger reorganizations have been significant over the decades. Comparisons of different statistical materials over time may as a consequence result in serious validity problems. Furthermore, aggregate data (cross-sectional), as used in this circumstance, do not take into account e.g. industrial dynamics such as the rise of new and fall of old industries. Thus, behind observed developments of size distributions over time may lay factors that are not related to any ‘real’ societal forces other than statistical (governmental) reorganizations. Furthermore, analyses of firm growth and survival can be carried out only to some extent with the use of cross section data: we do not know which individual business units grow, which are terminated, or which ones are new from one period to another. The problem of cause and effect is even so less discussed in some size distribution research. Nonetheless, it is a quite a serious dilemma, and it deserves more academic attention.

However, in the study over the development of the Swedish size distribution I have suggested that its relative development in many respects followed phases or periods in the macroeconomic development. Over the course of time research has suggested different explanations as to why firms of, say, smaller size appear to be more or less dominant under certain periods. Some, such as during the 1950’s and –60’s, maintained that small firms became less important due to concentration tendencies while others claimed an increased division of production. Yet others have spoken about distinct phases in the economic development in which firms of particular sizes have been more or less important while others have seen changes in the size distribution as institutional-driven or caused by unique phases. As for the Swedish development from the late 1960’s and onwards some scholars have claimed that mainly institutional determinants have shaped the size structure and lead to fewer growing firms. Nonetheless, international comparisons have shown a similar development during the same period that can cast some doubt on this explanation (even though it of course still might be true that Sweden has a relatively larger share of small businesses than do other developed economies; I do however think that heterogeneity in statistical reporting and dissimilar definitions make international comparisons quite difficult).

Data from the late 1800’s up to the years prior of World War I show that larger business units increased while smaller ones were reduced. These years were also characterized by macroeconomic growth and expansion. The picture was quite opposite during the interwar years – here smaller business units increased in a relative sense, while at the same time the macroeconomic problems were rather severe. It is not unthinkable that a combination of factors – unemployment, downsizing etc. – were prevalent here. The immediate postwar years were, again, defined by larger shares of larger units. The postwar period – particularly during the 1960’s – was unique from a macroeconomic viewpoint. Thus, existing businesses could probably expand through organic as well as external growth. Similarly, even if the smallest
businesses increased significantly (both in absolute and relative figures) from, roughly, 1970 to 1999 it seems that the same tendency could be identified here just as for earlier periods. The relatively smaller numbers of – or movement towards – small firms during boom years (for instance 1983/86 and 1996/97 and 1998/99) compared to less favorable periods (e.g. 1990/92 or 1993/95) speaks to some extent for this. I proposed that the pattern over one hundred years also suggests some correspondence with phases of macroeconomic imbalances/transformations and rationalizations in the economy which, to some extent, have affected the possibilities for firms to grow and expand. Yet, this must be seen as a complementary hypothesis that does not refute other, most plausible ones such as institutional explanations or ‘real-historical’ ones.

The size distribution study showed that conditions for firms may be influenced by external or environmental factors while, of course, the role of individuals should not be diminished. The empirical material covering longitudinal data (birth cohorts) of originally 2,200 joint-stock companies founded in Stockholm 1899, 1909, 1912, 1921, 1930, 1942 and 1950 had the aim to research the growth and survival of business firms from a structural and external-oriented viewpoint. Gradually, more joint-stock companies were founded – from around 100 in Stockholm in 1899 to some 500 in 1950. In time, furthermore, a greater number of smaller firms were established – younger firms/cohorts were on average smaller than older ones. Probably this type of enterprise had a crowding out effect on others since it gradually became less costly to found a joint-stock company. The study of survival and selection (Chapter 5) confirmed to some extent previous research findings: insignificant age and small size were variables negatively correlated to survival chances while larger and/or older units had lower hazard rates. The longitudinal design of the study makes it quite unique compared with much other research in the field since it follows the same units prospectively over a long period of time. Additionally, the cohort design of the database – separating generations of firms from each other – facilitated to a greater extent a ‘separation’ of age, period, cohort (and to that size) effects. Some interesting research results emerged. The study showed that cohorts (generations) founded during less-benign economic periods were more prone to exhibit early termination. Thus, period itself – or the economic environment – intensified the risk for termination due to low age and/or small size (as e.g. for Cohort 1921). Tests showed here that macroeconomic (in)stability – in this case represented by macroeconomic growth rates and interest rate conditions – was related to selection rates of firms.

Secondly, even if firms from a cohort founded during unfavorable conditions managed to survive, increasing age did not necessarily protect them from disbanding. A ‘stable’ cohort with some considerable age – a mature population – could nonetheless exhibit increasing selection due to harsher times. This is the advantage in using longitudinal data. This was for instance
evident as concerns the increased selection in cohorts 1899, 1909 and 1912 during the economic crisis in the 1920’s. Furthermore, what was shown regarding the developments of the cohorts from 1942 and 1950, the often-identified ‘law’ of a liability of newness and of smallness regardless of time and place was questioned. These cohorts did not behave as other ones. Thereby, environmental conditions (Cohort 1942 was initially operating under a heavily regulated economy as did partially the one from 1950; the postwar years were additionally signified by macroeconomic expansion) probably have significant explanatory power. Therefore, this study gave some important research results and cast doubt on the theory of a liability of age of firms and organizations. The ‘aggregate’ or cumulated behavior of newly founded firms may give evidence of an age liability. However, when taking into account generation and period factors, this theory or law may prove to be less valid. However, as economic as well as organization theory suggest, it should not be questioned that firms of larger (start-up) size have some scale advantages relative to smaller firms. There were obvious size effects in the termination patterns. In that case, and alike the cumulated behavior of the firms in the cohorts, the liabilities of age and size were – as in much other research and theoretical models – confirmed. Still there can be some reservations on earlier theoretical assumptions which include age and size of firms as main or sole explanatory factors. More specifically, we can ask ourselves if not periodic (environmental) conditions interact with for instance firm size. Therefore, in such theoretical circumstances the importance of the liability of size (smallness) can become exaggerated as well as underestimated, depending on empirical material. If, as an example, a theoretical model is developed from a sample of young firms that experience a severe economic depression, it is not unlikely that size effects may be exaggerated – especially if the model does not assume any environmental influence. These relationships should be addressed more systematically in future research.

A follow-up study of the firms from the seven birth cohorts that survived was also carried out in Chapter 6. It was here investigated how large the individual firms – some 340 firms were traced – had become in the 1990’s. If growth is a prerequisite for survival, then it could have been assumed that the firms would have had to become large business units. Nonetheless, most of the survivors were quite small in spite of the fact that they had had a long time to grow: their size distribution corresponded in a relative sense to any other size distribution in the sense that is was skewed. Yet, the ‘survivor sample’ showed that these firms on average were larger than joint-stock companies on average. Economic theories from classical economics and onwards have often claimed that firms, in order to survive, have to grow. Similarly more contemporary economic theory and entrepreneurship and small business research suggests that firms have to reach some minimum efficient scale or that smaller firms – as also was shown in the previous
chapter – have lower chances to survive. It was nonetheless interesting to
detect a relationship between the founding size of firms and their size after
the passing of several decades. Therefore, even if firms of course may have
grown between observations (and the time-span was also quite long between
measurements) the relationship was quite surprising. The larger firms –
measured as their size at start and as their size in 1990/99 – were also gener-
ally older firms, i.e. they were found in older cohorts. For that reason it
might be reasonable to partially apply an institutional explanation for this
phenomenon: older companies were generally larger than younger ones at
founding and this pattern was quite consistent over time as regards the firms’
start-up size and subsequent size since, as the results in the study show,
growth does not seem to be a condition for survival – not even in the long
run.

The subsequent study (Chapter 7) dealt with long-term firm growth at the
micro level. Here, the growth of more than 400 firms from cohorts 1912 and
1930 was in focus. For this purpose I had constructed a longitudinal database
that followed each firm from its birth to its termination – or, at most, for 30
years – and the database consisted in its original form of nearly 6,600 obser-
vations based on data (statements and reports) generated by the firms in
question. The two cohorts were founded under different conditions and additionally went through different (and to some extent the same) conditions
over time: Cohort 1912 was initially experiencing a favorable time but there-
after harsher times – particularly from the last war years in the First World
War and the following peace years. The younger cohort was founded during
a depression that hit Sweden in the early 1930's.

This particular study’s focus on firms’ long-term growth with respect to
external (environmental) and structural variables is in my opinion justified
from the dominating body of research and theoretical models in entrepre-
neurship and small business literature that has had much focus on individual-
oriented factors and, additionally, has had a shorter perspective of time in
which external variables are more difficult to take in. It is also justified by
the fact that theories – for instance theory on firm growth – mainly have
taken into consideration firm age and size (i.e. structural variables) and the
effects thereof. For instance, much theoretical debate has been about the
relationship between growth, age and size without any consideration as re-
gards environmental factors. And, furthermore, it is justified by the fact that
social science in general considers the interplay or relation between mi-
cro/individual and macro/structural behavior as a fundamental question. As
regards firm behavior, its environment is often – at least theoretically –
thought of as an important determinant.

Nevertheless, research that has taken in environmental factors when it
comes to firm growth has often included a variety of factors. In my particu-
lar case – and since the cohorts in the present study are heterogeneous – I
once again employed ‘general’ or ‘universal’ variables, namely economic
growth (GDP) and interest rate indicators. As observed in much previous research, firms were generally growing faster (and unstable) when young. Additionally, smaller firms exhibited higher growth rates than larger ones. This is in line with a vast body of economic theories on the growth of firms and confirmed in many extents previous findings. My study assumed that economic conditions and fluctuations had an influential effect on firm growth. For instance, if there is an economic recession it can be assumed that aggregate demand is falling. Firms, in general, can therefore face diminishing markets for their products and services. Similarly, changing interest rates were affecting firms’ growth rates – it was assumed here that increasing interest rates diminished firm growth since it made capital more costly. Here was also, among other things, firm-specific variables (the age and size of firms) included in order to observe any interaction between on the one hand environmental variables and on the other firm variables.

The analyses show that increasing age and larger size made firms more sensitive to environmental factors – both regarding macroeconomic growth and interest rate change. As earlier research has suggested, this phenomenon could be explained by the fact that larger firms tend to survive longer than smaller units – particularly under harsher economic conditions, larger firms may contract (diminish in size), and survive, to a greater extent than smaller businesses. But, as discussed, small firms may have no alternative uses for capital and labor. Therefore, economic downturns might affect larger firms more than smaller ones. Thus, the study has included factors that in much research due to data limitations are often difficult or impossible to incorporate. It has also to a great extent met up with requests from scholars in entrepreneurship and small business research that have identified a need for more longitudinal research that investigates micro to macro relationships. As was shown here firms were sensitive to changing environmental conditions when, at the same time, structural factors were influential. The individual-oriented perspective should not be ignored; firms consist of – at most times – humans. Their actions, competence and motives are important factors to consider. Yet, also other phenomena are, as shown in this study, important factors that influence when, why and how much firms grow and shrink in size. These are some significant research results.

As discussed above, while previous theoretical models on the micro growth of firms in entrepreneurship and small business research often has used personality based explanatory variables, some theories in economics maintain that firm behavior, such as growth, under some circumstances is determined by environmental conditions. Examples of such circumstances are credit conditions as well as macroeconomic demand shocks (that create uncertainty for firms). Another example is the dynamic theoretical framework developed by for instance Erik Dahmén. Here, firms are reactive as well as proactive in their behaviors. Such theoretical models are probably accurate to a great extent and they can be complementary to already existing
theories on firm behavior that assume that mainly human behavior and decisions affect the development of a business (which in my opinion is correct in many instances). Similarly, they can be complementary to theoretical models that take into account structural variables but leave out other explanations. This empirical and theoretical problem should be investigated more in future research and receive more attention – particularly in the development of research models and theories. Therefore, my findings do not reduce existing theoretical assumptions and empirical findings that have an individual/entrepreneurial focus; rather, they support earlier theories and also include theoretical assumptions from other research fields.

In the dissertation’s final empirical chapter (8) the above-mentioned database of more than 400 firms from cohorts 1912 and 1930 was once again employed. Here, however, the performance of firms in relation to successions in those very firms was investigated. Leadership and management practices often have been assumed to affect the performance of firms, particularly in management and organization theory. Likewise, successions – discontinuity of leadership and ownership – in organizations and in business firms is a well-studied research area. Yet, governance and successions in small firms has been a less investigated field. The database on the two cohorts from 1912 and 1930 contains data on when and to what extent there were successions in leadership and ownership in the firms in question over time. Most firms were small (and remained small) over their life course. Previous research results and theoretical models on management behavior and succession suggest that the relationship between firms’ presuccession performance – i.e. their performance measured in financial or other variables – has a negative relationship with their postsuccession performance (growth or survival). This means that a firm that performs well prior to a succession event will perform poorly (or less well) afterwards and vice versa. This is due to the succession’s disruptive nature. Nonetheless, other results have shown a positive correlation – firms that perform well or grow prior to succession will continue to do so while poor performers will likewise continue to do so after the succession event. In this case the thesis is that presuccession performance has a re-enforcing effect (‘success breeds success’ and so on). Other researchers have also identified particularly the first succession event in a firm’s lifetime as crucial for survival. Here, perhaps, organizations and businesses are considered to lead a life of their own to a greater extent.

My results in the study show that of nearly 6,600 observation years – comprising the life spans of over 400 firms – there were 381 succession events measured as board turnovers. Given the large number of observation years this figure was quite insignificant and it therefore could be questioned, at least to some extent, if successions and managerial turbulence are crucial events for firms. Nevertheless, early successions (i.e. at an early stage of a firm’s life time) were related to achieved life-length, which was interpreted as ‘early turbulence’ negatively affecting firms’ probability to continue. And
succession is to some extent probably necessary for survival – at least in the long run. If there is no existing successor (for whatever reason) is it without question hard to continue the business. The quite weak relationship regarding the firms’ presuccession and postsuccession performance confirmed to some level the body of research that has identified a negative relationship between presuccession and postsuccession performance. Therefore, successions can be said to have had a ‘disturbing’ or ‘transformational’ effect. Yet, the overall correlation was quite uncertain and it can be questioned if successions as such were particularly important (which also would question some neoclassical assumptions of an entrepreneur’s search for alternative uses of hers or his assets). It can also be questioned if small firms differ from larger ones. At least in this particular study did neither small nor large firms stand out when it comes to the question of postsuccession performance. In this respect, size did not matter and small businesses ‘behaved’ similarly as larger firms. Nonetheless firm age, along with tenure of boards, was a more important (significant) variable. Older firms with a presuccession board of fairly long tenure had, irrespective of firm size, greater chances to exhibit a positive postsuccession performance. (Which is in line to a great extent with some theoretical models that test these relationships with samples on very large corporations; it can nonetheless be questioned if they are valid for business behavior in general.)

Even if there was evident an overall negative relationship between presuccession and postsuccession performance for all observations even so this relationship was the opposite for firms of higher age. Therefore, older businesses that exhibited poor presuccession performance had a tendency to do so even after succession and vice versa. In this respect succession events had a re-enforcing effect while the general picture (which includes small, large, young and old firms) showed a negative relationship. Thus, older, more mature businesses differed from others. As a result, previous research findings and theoretical models were both confirmed and contradicted. Particularly the ‘similar’ behavior as regards small and large firms was interesting and calls for more scientific investigation. Yet the overall research results agree with previous research that has identified a weaker relationship between successions and performance and it was here established that succession naturally might be crucial for the individual business while such importance might not be visible at an aggregate level. I would like to claim that theoretical models that focus on the importance of managerial successions and that include managers’ or entrepreneurs’ background, age, tenure etc. could be further developed by including or taking into consideration the theoretical and empirical difference between small and large businesses, as well as the differences between firms in different ages. It might be so that already existing models could be improved or generate other results.
This dissertation has moved over different research fields and used both aggregate and micro empirical materials in order to study a phenomenon that in a general sense could be labeled as ‘business behavior’ – in this respect firm growth and survival. Alternative methods or other data could give other and conflicting results. Nonetheless do I think that it is important to stress the influence not only of managerial and entrepreneurial traits but also of structural factors. And, moreover: in the life, growth and death of firms other elements are crucial, for instance macroeconomic conditions and institutional as well as policy related factors. They all coincide. In some periods in a firm’s lifetime, or during certain historical periods, one element may be more important than another. I have here tried to incorporate some of them in this dissertation by using longitudinal data and some alternative methods.
Appendices

Appendix 1.

Life tables, seven birth cohorts of joint-stock companies. Remaining population (percent) over
30 observation years.

<table>
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### Appendix 2.

Logistic regression. Termination at young age and environment.

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<td>(Constant)</td>
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<td>0.135</td>
<td>-1.933</td>
<td>52.854</td>
<td>0.000</td>
<td>0.145</td>
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<td>12.945</td>
<td>0.000</td>
<td>0.706</td>
<td>-0.496</td>
<td>1.874</td>
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<td>1.537</td>
<td>0.497</td>
<td>90.847</td>
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<td>1.644</td>
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<td>GDP x Size</td>
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<td>160.515</td>
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### Appendix 3.

Tests of growth and size among firms controlling for firm age.

Regression coefficients (B). All coefficients significant at the 0.01 level. Size = assets. Logarithmic values.

**[1] Start-up size \( (t_0) \) and size at \( t \)**

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<tr>
<th>( t )</th>
<th>( t_1 )</th>
<th>( t_2 )</th>
<th>( t_3 )</th>
<th>( t_4 )</th>
<th>( t_5 )</th>
<th>( t_6 )</th>
<th>( t_7 )</th>
<th>( t_8 )</th>
<th>( t_9 )</th>
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<td>0.867</td>
<td>0.843</td>
<td>0.817</td>
<td>0.791</td>
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<td>0.667</td>
<td>0.683</td>
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**[2] Size a previous year and size at \( t \), different periods (‘running tests’)**

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<th>Firm years/age</th>
<th>1-2</th>
<th>2-3</th>
<th>3-4</th>
<th>1-3</th>
<th>2-4</th>
<th>1-5</th>
<th>5-10</th>
<th>10-15</th>
<th>15-20</th>
<th>20-25</th>
<th>25-30</th>
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<tbody>
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<td>B</td>
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<td>0.968</td>
<td>0.977</td>
<td>0.841</td>
<td>0.943</td>
<td>0.791</td>
<td>0.912</td>
<td>0.949</td>
<td>0.931</td>
<td>0.985</td>
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Appendix 4.

Aggregate correlations (Pearson’s $r_{xy}$) between percent growing firms, GDP growth, and interest rate change in cohorts 1912 and 1930 and in both cohorts.

GDP and interest rate values measured in 3-year moving average values. Levels of significance in parentheses.

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<th>Cohort 1912</th>
<th>Cohort 1930</th>
<th>Both cohorts</th>
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<td>GDP growth (%)</td>
<td>0.368</td>
<td>0.157</td>
<td>0.045</td>
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<tr>
<td></td>
<td>(0.038)</td>
<td>(0.389)</td>
<td>(0.045)</td>
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<tr>
<td>Interest rate change (%)</td>
<td>-0.436</td>
<td>-0.298</td>
<td>-0.369</td>
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<tr>
<td></td>
<td>(0.013)</td>
<td>(0.098)</td>
<td>(0.003)</td>
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<tr>
<td>N obs.</td>
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Appendix 5.

Regression results using for age-size categories. Cohorts 1912 and 1930.

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<th>Young-Large</th>
<th>Mature-Small</th>
<th>Mature-Large</th>
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<td>(Constant)</td>
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<td>0.997</td>
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<tr>
<td>log Age</td>
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<tr>
<td>log Size $t-1$</td>
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<td>0.335</td>
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<td>0.029</td>
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<td>Sig.</td>
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<td>0.000</td>
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<tr>
<td>log GDP growth $t-1$</td>
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<td>B</td>
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<td>log GDP growth $t-1$</td>
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<td>0.000</td>
<td>0.000</td>
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<td>0.000</td>
<td>0.000</td>
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<tr>
<td>$R^2$</td>
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<td>0.943</td>
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<tr>
<td>$R^2$ adj.</td>
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<td>0.863</td>
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<td>0.945</td>
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Appendix 6.

Basic data on boards and successions in Cohort 1912 and 1930.

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<th>M d</th>
<th>P 7 5</th>
<th>m e a n</th>
<th>S t d . d e v</th>
<th>N o b s .</th>
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<td>9.10</td>
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<td>17.00</td>
<td>21.00</td>
<td>16.10</td>
<td>7.15</td>
</tr>
<tr>
<td></td>
<td>Small firms</td>
<td>12.00</td>
<td>18.00</td>
<td>21.00</td>
<td>16.80</td>
<td>6.70</td>
</tr>
<tr>
<td></td>
<td>Large firms</td>
<td>9.00</td>
<td>15.00</td>
<td>19.00</td>
<td>15.20</td>
<td>7.70</td>
</tr>
<tr>
<td>Duration of board (years)</td>
<td>All firms</td>
<td>2.00</td>
<td>5.00</td>
<td>12.00</td>
<td>8.13</td>
<td>8.12</td>
</tr>
<tr>
<td></td>
<td>Small firms*</td>
<td>2.00</td>
<td>5.00</td>
<td>11.00</td>
<td>8.10</td>
<td>8.18</td>
</tr>
<tr>
<td></td>
<td>Large firms*</td>
<td>3.00</td>
<td>6.00</td>
<td>12.75</td>
<td>8.60</td>
<td>8.07</td>
</tr>
<tr>
<td>Board size (no.), all obs.</td>
<td>All firms</td>
<td>2.00</td>
<td>3.00</td>
<td>4.00</td>
<td>3.16</td>
<td>1.61</td>
</tr>
<tr>
<td></td>
<td>Small firms*</td>
<td>2.00</td>
<td>2.00</td>
<td>3.25</td>
<td>2.72</td>
<td>1.25</td>
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<tr>
<td></td>
<td>Large firms*</td>
<td>2.00</td>
<td>3.00</td>
<td>4.00</td>
<td>3.53</td>
<td>1.75</td>
</tr>
<tr>
<td>Number of boards per firm</td>
<td>All firms</td>
<td>1.00</td>
<td>2.00</td>
<td>2.00</td>
<td>1.84</td>
<td>1.08</td>
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<td>1.00</td>
<td>1.00</td>
<td>2.00</td>
<td>1.70</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>Large firms</td>
<td>1.00</td>
<td>2.00</td>
<td>3.00</td>
<td>2.10</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Source: Database on Joint-stock Companies.
(*) Some cases are missing

Appendix 7.

Correlations (Spearman’s r_s) boards and successions, all observations in database (Cohort 1912 + 1930).

<table>
<thead>
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<th></th>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>(1) Postsuccession performance</td>
<td>1</td>
<td>-0.131(*)</td>
<td>0.134(*)</td>
<td>0.141(**)</td>
<td>0.090</td>
<td>0.075</td>
<td>0.033</td>
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<tr>
<td>Predecessor performance</td>
<td>1</td>
<td>-0.174(**)</td>
<td>-0.195(**)</td>
<td>0.085</td>
<td>-0.022</td>
<td>0.000</td>
<td></td>
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<tr>
<td>(3) Duration of board (precession)</td>
<td>1</td>
<td>0.669(**)</td>
<td>0.194(**)</td>
<td>0.007</td>
<td>0.055</td>
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</tr>
<tr>
<td>(4) Firm age at succession</td>
<td>1</td>
<td>0.172(**)</td>
<td>0.012</td>
<td>0.100</td>
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<td></td>
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<tr>
<td>(5) Size t-1 at succession</td>
<td>1</td>
<td>0.628(**)</td>
<td>0.204(**)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(6) Size at start</td>
<td>1</td>
<td>0.178(**)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(7) Board size (no. of partners)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).
Appendix 8.

Logistic regression. Succession performance, firm age, board tenure and firm size.

<table>
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<tr>
<td></td>
<td>B</td>
<td>Wald</td>
</tr>
<tr>
<td>(Constant)</td>
<td>-0.334</td>
<td>1.669</td>
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<tr>
<td>Presuccession perf.</td>
<td>-0.425</td>
<td>3.412</td>
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<tr>
<td>Age</td>
<td>0.365</td>
<td>1.864</td>
</tr>
<tr>
<td>Tenure</td>
<td>0.184</td>
<td>0.492</td>
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<tr>
<td>Size</td>
<td>0.085</td>
<td>0.137</td>
</tr>
<tr>
<td>Age x Tenure</td>
<td></td>
<td></td>
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<tr>
<td>Age x Presuccession perf.</td>
<td></td>
<td></td>
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<tr>
<td>Age x Size</td>
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<tr>
<td>Pseudo-R²</td>
<td>0.039</td>
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