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FIRM DYNAMICS
IN A NORDIC PERSPECTIVE
Large Corporations and
Industrial Transformation

in cooperation with
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ABSTRACT: The paper looks at the growth, internationalization and concentration patterns of the 30 largest industrial corporations in the four Nordic countries - Denmark, Finland, Norway and Sweden - over the period 1974 - 1990. It appears that the growth of the top 30 companies has been clearly faster than that of total manufacturing. The aggregate concentration ratios have been increasing in each of the countries. The growth has taken place mainly abroad; the rate of internationalization of large companies has been increasing particularly fast in Finland and Norway. However, the Swedish industrial companies are by far most highly internationalized in the Nordic countries: about two thirds of total employment of the top 30 companies is in foreign subsidiaries whereas the corresponding figure for Finland and Norway are about 40 % and 30 %, respectively. In spite of the fact that most of the large companies' growth has been outside the national borders the contribution of these firms to total domestic manufacturing employment has been increasing slightly. The groups of leading companies have remained very stable over the past 15 years: the rank orderings within the groups have experienced only minor changes in each of the countries. The bigger the firm the more likely it is to keep its rank position.

KEY WORDS: Corporate growth, concentration ratios, internationalization of business, industrial transformation.

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FOREWORD

The Nordic Perspective Group (NPG) is a cooperating venture of the research institutes ETLA (Finland), IFF (Denmark), IUI (Sweden) and SNF (Norway). In several publications this group has discussed the prospects of the Nordic economies by elaborating on the industrial base in the region. There has, however, been a lack of firm level data in these analyses, and the NPG has encouraged work to fill this gap. A project team was set up to a focus attention specifically on the large industrial firms of the different Nordic countries.

Pontus Braunerhjelm (IUI), Per Heum (SNF), Steen Thomsen (Copenhagen Business School) and Pekka Ylä-Anttila (ETLA) have formed the team. Heum and Ylä-Anttila have been in charge of the work. Each researcher has been responsible for providing data on the largest firms for their respective countries. This work has been undertaken on the basis of national funding: in Denmark, Finland and Sweden mainly from the cooperating research institutes or from the researchers themselves, and in Norway additionally from the Norwegian Research Council for Applied Social Science (NORAS).

We appreciate the funding from the Nordic Economic Research Council, which has contributed to covering the marginal costs of bringing these data together for a comparative presentation at the Nordic level. This report responds to this task by presenting a descriptive analysis of the business development and the role of large industrial corporations in the Nordic economies.

Per Heum and Pekka Ylä-Anttila have been responsible for writing this report. Pontus Braunerhjelm and Steen Thomsen have commented on the approach and the manuscript at different stages of the work. However, due to time restrictions we have not had the opportunity for a joint examination of the version, which now is published. Thus, we present it as a discussion paper, which later will be worked out for a more final publication. We also hope to continue this cooperation through more extensive studies on industrial transformation and the role of large firms.

Maarit Säynevirta has done a tremendous job in keeping track of all the data and by preventing confusion from our repeated efforts to reexamine the comparability of the data. She has also compiled the tables and figures that are presented in this publication. We are grateful for her patience and her professional work. We also greatly appreciate the work undertaken by Trond Hammervoll and by Jyrki Ruutu. They have both contributed significantly to the progress of this project.

1 FIRM DYNAMICS, INDUSTRIAL TRANSFORMATION AND GROWTH

1.1 Firm Dynamics, Manufacturing and Wealth

In a dynamic economy there is a continuous restructuring of the business community. Old companies grow and change; they divest and close down. Simultaneously, new companies are established; they fail or succeed, either growing as independents or being acquired by other firms. This kind of firm dynamics is the very foundation for industrial transformation. Firms are subject to continuous change, and industrial operations change with them. This pertains to economic growth as well. The introduction of innovative and competitive entries are shown to be of vital importance for stable and strong economic growth in the long run (Eliasson, 1991).

The establishment of new firms is undoubtedly a major driving force in the growth process in the very long run. On the other hand, it is the group of existing firms that is responsible for the bulk of aggregate output and employment growth in the short and medium term, and which also contributes the most to the growth changes in the economy (Kristiansen, 1992). Thus we regard reorganisations within existing firms, and external expansion of their business through mergers and acquisitions, as essential parts of firm dynamics and economic growth also in a long-term perspective. The introduction of innovative and competitive entries is taken care of within existing firms, as well as through the establishment of new firms.

The general purpose of this report is to use firm level data to address these issues of industrial transformation and economic growth. We apply information on large Nordic firms to describe business development and to discuss the role of large firms in their domestic economies.

Our focus is on manufacturing as the prime industrial source for long-term growth. Other industrial sources may, of course, also contribute. But service production is usually linked to manufacturing production, while there are obvious limitations to the long-term growth potential of exploiting natural resources. The exploitations of natural resources may, nevertheless, provide important spill-over effects for the long-term development of manufacturing in a country.

This crucial role of manufacturing production as the long-term growth engine of modern economies is clearly reflected in the economic development of Denmark, Finland and Sweden. Norway forms a slight exception as international transport services in shipping were an important factor in Norway's economic development until the early 1970s, while extraction of oil and natural gas has provided the most important growth impulses over the last two decades. Looking beyond 2000, however, manufacturing will undoubtedly be extremely decisive for the economic development of all these countries.

We have in several publications (ETLA et al. 1984; 1987; 1990) compared the structure and patterns of development in Nordic manufacturing at the industry level. However, we have also advocated that to understand industrial transformation and economic growth, we need a micro-based approach applying firm level data. Thus, we have put huge efforts into collecting data on large Nordic firms to contribute to this task. This report gives the first joint presentation of these data.

At this stage in our work we have concentrated on descriptive analyses of the business development and the role of large corporations in the Nordic economies. The work has been undertaken in a project team of four researchers from Denmark, Finland, Norway and Sweden. The researchers have been responsible for collecting data from their respective countries. This data collection has drawn on national funding. The marginal costs of bringing the data together for a comparative presentation at the Nordic level have been funded by Nordic Economic Research Council.

1.2 The Industry Level Background of Nordic Manufacturing

In **Denmark** export oriented manufacturing is mainly made up of foodstuff industries and more sophisticated engineering. The Danish manufacturing sector has traditionally been small and dominated by small companies. It has, however, been argued that Danish firms are too small to enter the integrating European market (Thomsen, 1990).

In **Finland** manufacturing exports mainly stems from the pulp and paper industry, and from the engineering industry, which has shown significant growth. The large corporations have been internationalizing very rapidly during the past few years and domestic manufacturing investments have remained on a relatively low level. The dominance of large corporations in the industrial structure has probably increased, but it is evident that a greater contribution of these firms can be seen in foreign direct investment and other foreign operations (Kajaste, Parviainen and Ylä-Anttila, 1992).

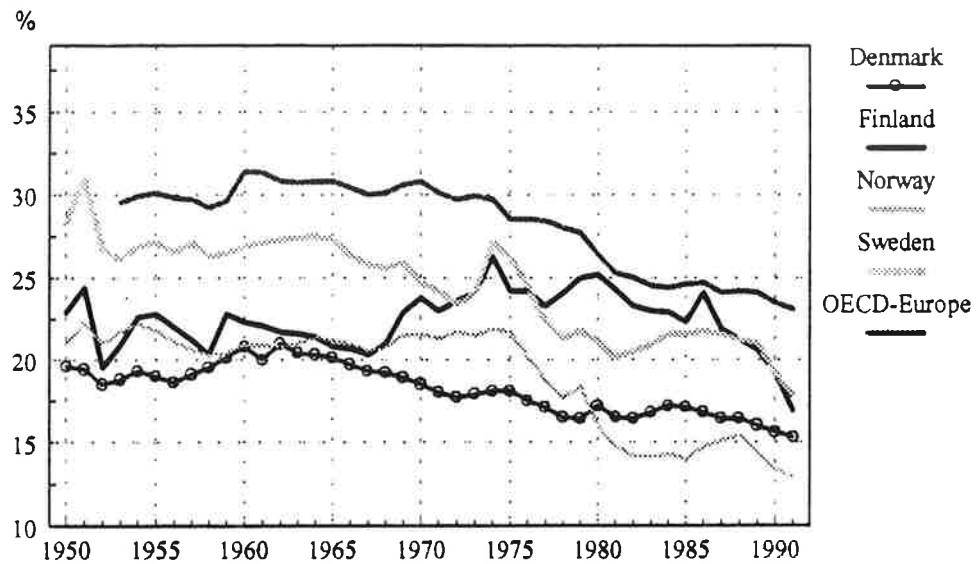
In **Norway** exports of crude oil and natural gas dominate the export picture followed by manufacturing exports from energy-intensive industries applying hydroelectric power. Large firms operate in these industries, while small business historically has dominated other parts of manufacturing. The traditionally strong contribution of small business to industrial production has, however, diminished and large corporations have been argued to be responsible for the bulk of economic growth in recent years (Berrefjord, Heum and Tvedt, 1990).

In **Sweden** the manufacturing sector has long been dominated by 30-40 large multinational companies, mainly based in the metal and engineering industry. Swedish industry is in relative terms probably the most internationalized in the world (Swedenborg et al., 1989). The largest Swedish corporations are giants compared to other Nordic companies (Oxelheim, 1984; ETLA et al., 1990). Contrary to the other Nordic countries, there is a host of Swedish studies on the role of large companies and their contribution to macroeconomic performance in Sweden (Swedenborg, 1973, 1979, 1982; Swedenborg et al., 1989; Eliasson et al., 1985). In general, the results of these studies show that the macroeconomic impacts of international operations on exports, and on domestic growth, productivity and employment have been positive. However, some recent studies have questioned whether the ongoing surge in cross-border mergers and acquisitions by the large industrial companies is leading to a too narrow and structurally unfavorable production capacity in Sweden (Braunerhjelm, 1990).

Turning to the development of manufacturing, it is a common feature of all Nordic economies that the manufacturing sector has been shrinking relatively. According to Figure 1, the share of manufacturing - as conventionally defined - in total output has shown a declining trend since the

1970s. The industrial countries in general exhibit the same trend, but the Nordic shares are clearly below the OECD Europe average.

Figure 1.1: Share of manufacturing output in total GDP, 1950-1991. Per cent.



Source:OECD

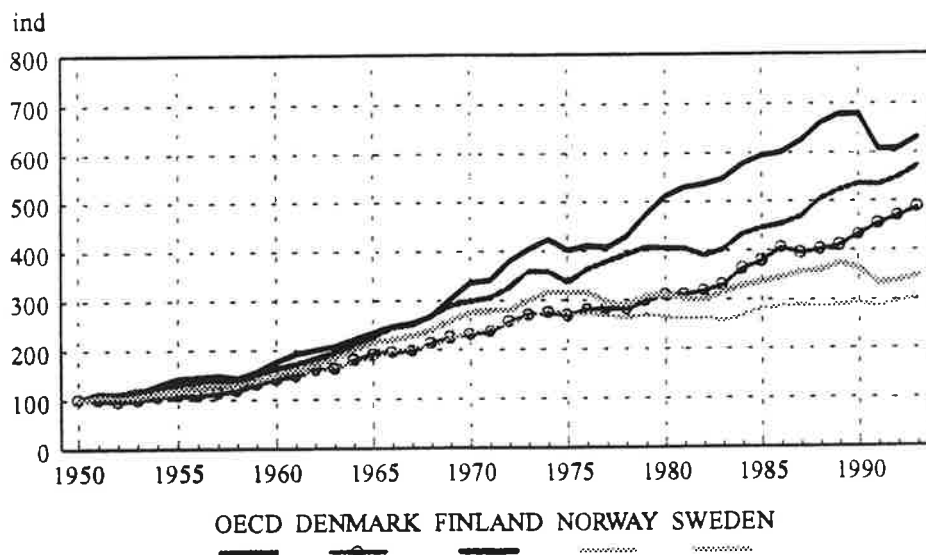
The growth rates of manufacturing production have varied substantially across the Nordic economies since 1950. This is shown in Table 1, where average annual growth rates are calculated for different periods, and in Figure 2 showing the annual volume of manufacturing output in the Nordic countries and in the OECD.

Table 1.1: Manufacturing output in the Nordic countries and the OECD, 1950-1990.
Annual average change in volume. Per cent.

	OECD	Denmark	Finland	Norway	Sweden
1950-65	5.4	4.4	6.2	4.6	5.2
1965-74	5.3	3.3	7.1	4.4	4.1
1974-90	2.2	2.5	2.8	0.4	0.7
1950-90	4.1	3.4	5.0	2.8	3.1

Source: OECD

Figure 1.2: Volume of manufacturing output in the Nordic countries and the OECD, 1950-1991. 1950=100.



Source: OECD

Finland is the only of these Nordic countries where manufacturing growth since 1950 in general has exceeded the OECD average. Since 1990, however, the growth performance of Finnish manufacturing has been very poor. The pace of growth in Swedish and Danish manufacturing picked up somewhat in the early 1980s. Sweden has, however, slowed down again, while Danish manufacturing has exhibited fairly rapid growth compared to the Nordic average after a short downswing in the late 1980s. In Norway, manufacturing growth has generally been below the OECD average, and since the mid-1970s hardly any growth has been recorded at all.

There has been a general trend throughout the 1980s for all these countries that domestic firms absolutely and relatively have increased their level of foreign direct investments. This increase in foreign direct investments has in particular been directed towards the EC countries (Braunerhjelm, 1990; Karlsen, 1991). Foreign direct investments is mainly made up of investments conducted by domestic manufacturing, with the exception of Norway where the producers of international shipping services and of oil and natural gas also hold a significant share. It is uncertain how this investment pattern affects future growth of domestic manufacturing.

Another general trend in the investment pattern of Nordic manufacturing is the absolute and relative increase in the level of intangible investments. An indication is R&D expenditures in manufacturing, which have increased significantly compared to the level of fixed investments in all Nordic countries (ETLA et al., 1990). Finnish manufacturing firms have in particular been expanding their R&D activities. The level of R&D is, however, clearly the highest in Sweden.

At the same time technical change - notably the new flexible technologies - have heavily impinged on industrial organizations and company structures of the Nordic economies (Ylä-Anttila and Lovio, 1990). The average size of establishments has been decreasing in several manufacturing industries, while the bulk of these industrial categories show that the share of value added to the sales value of production has decreased (Hammervoll and Heum, 1992). Thus, in certain lines of production there seems to be a trend of scaling down production as further specialization is required to stay competitive in more flexible production arrangements within industrial networks.

These trends of internationalization, of more knowledge-intensive production, of descaling production and of flexible manufacturing are general phenomena affecting manufacturing all over the world. The weak average growth in manufacturing output, as recently experienced by most Nordic countries, is not, however, a world-wide trend. From a Nordic point of view this makes it increasingly important to examine how the industrial transformation that is going on will affect the future of these countries. Neither the processes leading to these changes nor their implications for future wealth can, however, be fully grasped at the industry level.

1.3 The Need for Firm Level Data

Data at the industry level originates from adding together information on domestic establishments whose production is classified as belonging to the same industry group. In addition to the problem that we frequently lack data on matters which are of importance to illustrate changes in the creation of value, there are certain obvious shortcomings in industry level data when we want to analyze industrial transformation.

New technology is expected to contribute to flexible specialization. Firms reorganize by establishing previous inhouse activities in separate establishments. Service production is increasingly conducted in separate units within one firm, but not to the same extent as manufacturing in the same establishments. Operations which previously were conducted in one establishment, may now be undertaken in several establishments classified as belonging to different industries. This will cause changes in the recorded activity levels in these industries without reflecting real changes in the economy, only different ways of registering operations that always have been conducted. Thus, recorded changes at the industry level is becoming hard to interpret as firms move their operations across industries.

Another major problem is that industry level data is based on domestic production, whereas firms carry out production internationally. Thus, real firms will act according to how they

consider their world-wide interests, whereas information is only provided to show how changes are taking place in industries in separate countries.

When applying industry level data to elaborate on firm behaviour, other problems arise. It is quite common to construct an artificial firm by calculating industry averages. However, the average firm is not a firm as we know it in the real world. In addition to not capturing production that is being conducted abroad, information on establishments is simply not aggregated to the firm level domestically, i.e. to the organizational unit authorized to make major strategic moves. Furthermore, the method of calculating average firms does not make any sense in analysis of industrial transformation. It assumes all firms within one industry to be equal, while it is the differences in efficiency and competitiveness which cause industrial transformation.

This means that there is a need for firm level data to analyze the processes of industrial transformation, simply because it is hard to grasp what is going on at the industry level. We have started this work by collecting some data on the largest industrial firms, or corporations, within the Nordic economies.

Firm level data should also facilitate evaluation of growth prospects at the national level. For instance, national wealth is increasingly being affected by the internationalization of firms. Large corporations are expected to play a major role in this respect. Thus, the interplay between the competitive advantages of countries and those of large firms ought to be one of the key issues in industrial and economic policies. Many assets, like management, technological skills and skilled labour, are becoming more mobile. Relocations of activities internationally within firms may lead to major changes in national economic structures. The trends in the group of large companies give us an idea of how the globalization of business may affect the Nordic economies.

1.4 Purpose and Outline of the Report

The general idea underlying this report is that information on the largest industrial corporations may provide the necessary microeconomic foundation for analyzing industrial transformation and macro-economic growth. There is undoubtedly a direct linkage between the development of the largest corporations and considerations at the micro level of the economy. At the same time, we argue in this report, the industrial magnitude of a rather small number of large corporations is sufficient to produce effects of significance to the industrial and macro-economic development in their countries of origin.

This idea of linking information on large firms to macroeconomic considerations is by no means new. When, for instance, predictions of future investment levels are to be made, or when documenting the financial situation within the business sector, public authorities frequently collect information from the largest domestic firms. This approach is also significantly extended and formalized in the micro-to-macro model (MOSES) on the Swedish economy at IUI: Economic growth is modelled to build on firm (microeconomic) behavior, which in turn is restricted and influenced by ensuing macroeconomic feedbacks (Eliasson, 1985).

There is, however, still a need to document the relevance of such an approach, and to improve its design. This report contributes to the former of these tasks. With information from only the 30 largest corporations of each country we argue that macroeconomic relevance is assured, and we apply it to illustrate current patterns of industrial development. At this stage we mainly present an extensive descriptive analysis, since we want to give a comprehensive picture of the large firm data base which never before has been used in a joint Nordic study. In our future work we will concentrate on the broader issue of firm dynamics, and the role of large firms in that respect.

The report starts out by relating the trends in current business development as predicted by theory (Chapter 2) to the development which we can observe for the largest industrial corporations in Denmark, Finland, Norway and Sweden (Chapter 4). This serves the point of showing how

information on a rather small number of firms may be used for illustrating the industrial development at the national level.

Secondly, we provide information to shed light on the macroeconomic relevance of these corporations. This is done in Chapter 5 by examining the direct contribution of the largest firms to industrial growth and transformation. There we also compare the relative magnitude of the largest Nordic firms with that of those in other countries to see whether there is a particular Nordic - or a small-country - pattern in industrial organization.

Thirdly, the competitive position and strategies of the largest Nordic corporations is studied in Chapter 6. Here our special interest lies on the persistence of firm characteristics i.e. in the stability of microeconomic structures in the group of the largest companies.

2 THE DEVELOPMENT IN BUSINESS AND ITS MACRO-IMPACTS

The basic assumption of this report is that the development in business reflects firm behaviour, and that these changes in business affects the prospects of any national economy. In this chapter we spell out a perspective to identify current trends in business development on the basis of firm behaviour and raise questions as to how this development in business may affect the Nordic countries. The basic actor is, as we see it, the firm. A firm, however, is no easily definable entity. So, before turning to these issues, we need to clarify our conception of the firm.

2.1 The Business Firm in Economic Analysis

2.1.1 Existence and Organization of the Firm

According to neoclassical descriptions firms only react passively to external stimuli, i.e. to changes in price information. They have no internal organization nor external relations other than those related to price information. The firm's existence or organization simply have no role in this theory, since the purpose is not to explain the behaviour of firms but to explain and predict changes in observed prices (Machlup, 1967). The firm described by the neoclassical economic theory is something very different from the business organizations we observe and on which we can get information in statistics or other sources.

If we want to look at the firm's growth and the changes in their market position, we have to adopt another concept of the firm. The modern corporation has a multitude of goals which they try to reach by strategic manoeuvres. Firms are complex organizations with various kinds of external relations. Firms can be seen in the light of the contractual theory of the firm: the modern corporation is a contract between several parties or a 'nexus treaties' (see Aoki et al.).

This type of active aspect to the firm behaviour is needed if we want to raise questions about the boundaries, and the size and growth of firms. It is also needed when we want to look at the firms as parts of national economies. It is evident that firms tend to grow differently and reach different limits to their size depending on their national economic environment or home base.

2.1.2 Growth, Size and Internationalization of the Firm

It is our point of departure that firms actively pursue growth either to maximize long-run profits or to reach other (managerial) goals. Hence, rather than maximizing profits within given constraints, it is seen that firms attempt to modify and remove the constraints in order to achieve their objectives. Research and development, product differentiation, mergers and acquisitions as well as strategic foreign direct investments are all the forms of active constraint-modifying behaviour (cf. Hay and Morris 1979).

It is not a trivial question why firms differ in size. The standard assumption that economies of scale in production determine the size is not sufficient. It might be that there are scale economies at the level of plants (in production) but not at the level of a firm. As firm size increases the economies of scale might turn into diseconomies due to higher control and monitoring costs. On the other hand the scale economies are often argued to relate more to other activities than production, namely to financing, marketing, R&D and international operations (see Eliasson 1991 which shows that only small proportion of large firms' resources are devoted to production of goods). The size as such, too, might be among the goals of the firm as argued by the managerial theories of the firm.

The theory of internationalization of firms as presented by Hymer (1960), Caves (1971 and 1982), Dunning (1981 and 1988) and others argues that firms grow international due to lack of markets for firm - specific assets. Ownership advantage is the key concept. Possession of firm-specific advantages allows the firm to overcome the problems associated with operations in the foreign market.

Firms tend to internalize production in their foreign subsidiaries, since the firm-specific advantage might be eroded in traditional international trade arrangements (exports and licencing). Firm-specific assets occur where products are differentiated either by research and development or advertising. That leads to horizontal foreign direct investment. Similarly, firms in concentrated markets may grow via foreign direct investment in order to fully utilize their management capabilities without expanding output in the home market. Furthermore, high home market concentration will encourage vertical foreign direct investment (FDI) if the essential raw material are located abroad.

Hence, two factors are essential in explaining the growth of firms outside the national borders. First, the existence of some firm-specific, rent-yielding asset and secondly cost advantages in using it in local production abroad. These cost advantages stem from the fact that acquiring information about market demand and consumer preferences is costly and the local producers always have an advantage over foreign producers.

Other approaches in the investigation of the business firm pay even more attention to the active behaviour of firms than those presented above. In particular the strategic management literature is relevant here.

2.1.3 Strategy and Firm Behaviour

The prime concern of capitalist firms is to generate a profit. As this generally has to take place within a context of competition, profit generation depends on the competitiveness of the firm. To stay competitive any firm must cultivate and exploit business opportunities while adapting to changing conditions in production and markets. In this perspective, firm behaviour is governed by the **strategic concerns** of a firm: What shall it produce, and in what lines of business should it be engaged? To what extent is cooperation between different lines of businesses to be promoted? What competitive strategies are the most forceful to pursue? How shall it design and organize its span of control, and to what extent shall the operations of different activities and business engagements be coordinated administratively?

In the literature on business strategy, it is often deemed worthwhile to make a conceptual distinction according to the **aggregate level at which business is organized**. The purpose of business is to create value. Value creation, however, is organized in entities at different levels of aggregation, which is illustrated by the different content of concepts like "the single-unit firm" and "the multi-unit firm".

Competition occurs at the disaggregate business unit level between **strategic business units** (SBU). The prime strategic concern of a SBU is its competitiveness. Thus, it is at this disaggregate level competitive strategies ought to be implemented (Porter, 1987).

A business unit may be independent (the single-unit firm) or be part of a constellation of several SBUs. **Corporation** is the term we will use when referring to the aggregate entity encompassing all SBUs in one constellation (the multi-unit firm). The corporation represents another strategic level at which production and business is organized. The purpose of a corporate strategy is to strengthen the competitiveness of its SBUs, i.e. a SBU shall be more competitive within a corporation than it would have been as an independent firm (Salter and Weinhold, 1978). This may be achieved by organizing relations between the corporate level and the SBUs, and between the SBUs of the corporation. If these relations do not contribute to competitive advantages for

the SBUs, there is no economic justification to keep them within the same corporation (Porter, 1987).

2.2 Firm Behaviour and the Development in Business

When elaborating on current trends in business, our discussion is very much based on how the firm is conceived in the strategic management literature. Then we have to bear in mind that the strategic concerns at the corporate and SBU level of the economy, varies between producers depending on the businesses in which they are engaged and the business environments in which they operate. **Changes in the business environment** are crucial for understanding strategic reconsiderations and the outcomes of strategic decisions. The implementation of strategies is then assumed to be decisive for the development of business; for industrial restructuring and economic performance at both microeconomic and macroeconomic level of the economy (Rumelt et al., 1991).

2.2.1 Changes in the Business Environment

Since the 1970s two major forces of change have produced significant effects on the competitive environment of almost any business. One is changes in **technology**; the other is changes made in **political regulations**.

The continuous **development of technology** means that production processes and products always are subject to impulses of change. One of its major impacts over the last two decades is expected to be the change of scale economies in production in many industries. Technology has made it easier to adjust production processes to respond to different product standards. Thus, standardized mass production is challenged by more flexible production arrangements, which allows profitable production of goods and services that are increasingly adapted to the specific

needs of different customers (Piore and Sable, 1984; Edquist and Jacobsson, 1988; Ylä-Anttila and Lovio, 1990).

However, even if we theoretically can argue that scale economies are becoming less predominant in production, there may still be untapped scale economies, for instance due to political regulations. And there may still be substantial scale economies regarding other economic activities, as in R&D and in finance.

As technology changes, so do **political regulations**. There is a rather unilateral trend among industrialized countries to promote competition. Almost world-wide steps are taken to liberalize flows of capital, goods, services and labour. This takes place within countries, and in the economic relations between countries and different economic regions of the world. Entry and exit barriers are being reduced. Business is increasingly becoming more exposed to international competition.

These technological and political changes provide firms with the option to exploit new opportunities regarding production processes, product development and market access, while being exposed to stronger competition. This obviously has to affect their behaviour, and in turn show up in what we observe as industrial development.

2.2.2 Current Trends in the Development of Business

Industrial development can be expected to reflect changes both at the SBU and the corporate level of an economy. It may show up as changes in **the size** of SBUs and of corporations, as well as in changes regarding the **content of business operations**: Is the division of labour between different units of production increasing or decreasing? Is the factor base on which value is created changing? Is value creation becoming more international? Do firms increasingly conduct their business independently or in huger constellations of diversified corporations?

In the light of recent literature, we will highlight four major trends regarding the current business development in the Nordic countries: 1) Firms are increasingly cultivating the core competence of their businesses; 2) Industrial competence is increasingly becoming of importance for the competitiveness of firms; 3) Firms are internationalizing their businesses to stay competitive; and 4) Firms exploit scale economies at the corporate level, while the SBUs are becoming smaller.

1. Stronger Efforts to Cultivate the Core Competence of Businesses: One option in new technology is that producers may increase their profits by exploiting the opportunities which technology creates to adapt products to the needs of specific customers. Another option is that activities which used to be conducted inside one firm, now may be decoupled and performed more competitively in separate SBUs. If both of these opportunities prove profitable, competition will force production to become more specialized. SBUs may maintain and strengthen their competitive edge by concentrating their efforts to the activities which they perform the best.

The recommendation for a competitive strategy is that any SBU ought to **cultivate its core competence** (Reve, 1990), and to purchase the inputs they need in performing their core activities from other SBUs which enjoy a competitive advantage in producing these inputs. The implication is a decoupling of activities which either are not based on, or do not support, the core competence of the SBU. The division of labour should be increasing at the SBU level of the economy. If there is such a trend, this should for instance show up as an increasing share of purchased goods and services relative to the sales value of production in SBUs. This seems to be the case in many lines of production when consulting industry level data (Carlsson, 1989; Hammervoll and Heum, 1992).

Even at the corporate level the literature suggests that corporate strategy ought to be designed so that the corporation may **expand, or diversify, on the basis of a common denominator of competence**, or technology (Porter, 1987). Then it may gain synergy from its different business engagements, which is crucial to for justifying the existence of the corporation economically.

This recommendation is in contrast to the corporate development which was observed through the 1960s and 1970s, when corporations in many instances expanded by moving into businesses which were rather remote from their core (Scherer, 1988).

Current trends in corporate development are expected to be more in consistence with the recommendations in the literature on corporate strategy. However, even though corporations may pursue strategies of related diversification, this does not necessarily mean that the division of labour is increasing at the corporate level. Most likely it would be increasing if the corporations did not change their portfolio of business engagements. But this is changing all the time, through mergers, acquisitions and divestitures.

2. Industrial Competence Is Becoming More Decisive for Competitive Business: If there is a general trend that SBUs cultivate the core competence of their business, firms will need to pay more attention to external sourcing. They will have to define their needs, investigate how these may be satisfied, be conscious about how relations to suppliers are organized, and implement efficient supplies. Furthermore, the potential to "tailor-make" products to the specific needs of different customers, means that firms also increasingly have to interpret what the particular needs of their customers actually are, how these may be served through different product adjustments, and to make customers conscious of these needs. In other words, it is becoming increasingly decisive to combine effective supplies and sales efforts with innovative capabilities in product development and production. Competitiveness is not determined solely by the efficiency in manufacturing, but by the overall capacity within a firm to identify, create and exploit business opportunities (Carlsson and Stankiewicz, 1990). This capacity is discussed as economic or industrial competence (Pelikan, 1988).

Such **industrial competence** may be regarded as the decisive factor regarding the possibility of keeping and strengthening the competitive edge of firms (Eliasson et al., 1990). Brain-power and organization will increasingly decide the future of firms and corporations. Other production factors, such as natural resources, physical real assets and man-power, will be less important than in the earlier days. Empirically this means that intangible investments should grow more

rapidly than investments in physical real assets as buildings, machinery and equipment. This is shown to be the case at the industry level in the Nordic countries (ETLA et al., 1990). However, due to the continuous rearrangement of business engagements within corporations, this trend is not necessarily reflected when applying the same measure on only a group of corporations.

Another way of approaching this issue empirically would be to consider the share of value added spent on intangible investments. If competence is becoming more decisive for the competitiveness of firms, this share is likely to increase, which is documented to be the case at the industry level (Bjørklund and Heum, 1990). The relative level of intangible investments compared to value added varies substantially, however, between industries. Since corporations continually rearrange their portfolio of business engagements, this measure is not guaranteed to capture such a trend as long as only a group of corporations, and not all, is considered.

3. Business Is Internationalized: As political regulations are designed to liberalize the flows of goods, services, capital and labour internationally, competition is becoming globalized. This is reinforced by the development of technology which has eased long-distance communication considerably. These changes in the competitive environment of firms should, when taking the thesis that firms increasingly cultivate their core business into account, mean that firms have to expand foreign sales to grow and to reap profits. At the same time they will also increasingly have to consider foreign supplies to ensure that they will stay competitive. Altogether this means that business is **internationalized** (Porter, 1986). The business of a country will increasingly have to conduct sales abroad. Moreover, it probably means that competitive firms have to engage in production outside its country of origin. This may partly take place through subsidiaries, partly through strategic alliances, or coalitions, with foreign firms (Porter and Fuller, 1986).

Foreign production has been considered a means to getting around trade barriers, or to escape unfavourable conditions to business domestically. An overvalued currency, which at least has been quite common on the Nordic scene, may have contributed to foreign direct investments. However, we do not expect such investments to halt, or to be reversed, even if such barriers are torn down by the current liberalization, or if the overvaluation of the Nordic currencies is elimi-

nated. Other, and more important, factors should be regarded as the driving forces behind the expected internationalization of business.

As far as bulk production is concerned, costs of transportation and the efforts to restructure mature industries internationally, stimulate corporate efforts to engage in production world-wide. Some will have to withdraw, but the most competitive will become more international. As far as knowledge-intensive production is concerned, the needs to stay close to customers, and the possible advantages of drawing on the dynamics of different industrial clusters around the world, imply that firms have to establish production in several countries. If participating in just-in-time production arrangements, this may become even more evident.

The level of internationalization varies between different industries. The trends of becoming more international in business operations are, however, widespread and strong, in particular for the business of small economies. Thus, we expect it to show up as an increase in the shares of foreign sales within total sales and of foreign employment within total employment for almost any groups of business entities on which a study may focus.

4. Larger Corporations and Smaller SBUs: International competition and new technology also affect the size of corporations and SBUs. There are no clear cut theory to elaborate on corporate growth. Brief examination of corporate restructuring in the Nordic countries over the last decade, however, clearly leaves the impression that corporations have grown.

Acquisition and mergers are frequently justified as a response to the increasing competition from abroad. Partly, it is the kind of argument that "one needs to be large to fight foreign giants" which is presented. More fundamental arguments may, however, also be introduced.

International integration of business, due to current efforts to liberalize and standardize trade and capital flows, probably reveals untapped economies of scale. Thus, the size of business entities should be expected to be increasing in industries where such barriers have been prevalent.

Furthermore, there may exist scale economies in economic activities, as in R&D and in finance, which also may cause corporations to grow.

Besides, current trends in business development require more and larger risky investments. This holds for investments in intangible assets, which are needed to respond to increasing knowledge requirements in production; and it is the case regarding investments to gain footholds abroad, which may be needed to operate in a more competitive environment internationally. In both of these areas, the failure ratio is significant. Firms need a solid financial base to engage in these. If the financial base is weak, such investments will expose the firm to huge risks, making its whole business vulnerable to a failure in every single investment project. One way of hedging against such risks, is to be part of a larger corporation, which can suffer losses in any single investment project without jeopardizing its long-term business engagements. This should also imply that corporations should be expected to grow in size.

On the other hand, the trend at the corporate level to consolidate and expand on the basis of related diversification, could imply the opposite. For the USA it is documented that the employment in the largest US industrial corporations has shrunk since 1979 (Carlsson, 1989). De Jong (1986) also finds that concentration is being reduced in the USA. However, in Europe he finds it still to be increasing. As the largest Nordic corporations are rather small by international standards (cf. chapter 4), we expect their size development to be in accordance with this general European pattern, i.e. **corporate growth**.

At the SBU level, however, theory suggests a different trend. New technology changes the economies of scale. In many areas of production, as in the engineering industry, large scale operations do not generate as great advantages as in the age of mass production (Carlsson, 1989). The more profitable opportunities to adapt products to the specific needs of different customers, the greater the demands on SBUs to be flexible in production and organization: Flexible production systems are becoming more competitive (Ranta and Tchijov, 1990), favouring the competitiveness of small and medium - sized firms (Diwan, 1989). If demand patterns should be changing more rapidly than before, this advantage of small scale business could be favoured even more despite high fixed costs. All in all, this calls for a trend of "scaling down" among

SBU's (Johnstone and Lawrence, 1988). This is confirmed empirically in the sense that according to Nordic industry level data, the average employment of business establishments, is decreasing in several industries (Carlsson, 1989; Hammervoll and Heum, 1992).

Thus, we are confronted with patterns of development on the Nordic scene, which on the one hand should imply that corporations will grow, while on the other hand that SBU's are becoming smaller. There is no contradiction in this. A corporation encompasses several SBU's. Corporate growth can take place despite a trend of a declining size in SBU's, simply by including more and more SBU's within the corporate span of control. In this respect it is also important to recall that technology has improved the possibilities to distribute and interpret information considerably. Thus, the capacity to coordinate an increasing number of business engagements within one corporation should technically be present. The exploitation of this option will, however, depend on to what extent internal coordination actually serves the corporate purpose.

2.3 Macroeconomic Impacts of Current Trends in Business

When it comes to the macroeconomic impacts of changes at the business level of the economy, the literature is not so clear. As we will illustrate the development in Nordic business by focusing on the largest corporations of the Nordic countries, a natural starting point when considering their macroeconomic impacts, is to document the share of economic activities which are conducted within these largest corporations. Then, the next step is to investigate how the growth pattern of large corporations has affected production, or the execution of other economic activities. Is there a process of concentration that is taking place on the domestic scene, or do smaller and medium - sized firms grow faster?

It is uncertain, however, as to what conclusions that may be drawn regarding the macroeconomic impacts of corporate growth. Usually an increase in concentration is expected to hamper aggregate economic growth through efficiency losses. However, for open economies the existence of international competition may assure the necessary competitive forces even if domestic produc-

tion is becoming more concentrated. Actually, larger corporations, meaning concentration in a small-country economy, may be needed if domestic businesses are to stay competitive internationally. If so, efficiency gains may be expected.

The trend of internationalization further raises the issue as to how foreign production affects value generation domestically (Schwedentors, 1973, 1979, 1982; Blonström, 1991). The concept of internationalization means in some sense that corporations grow more rapidly abroad than at home. But, how does this growth pattern affect domestic production? Foreign production may be considered a prerequisite for maintaining and strengthening competitiveness and value creation at home. On the other hand, foreign production may also be regarded as a means for firms to escape production requirements that are set on the domestic scene. Thus, the macroeconomic impacts of internationalization on the Nordic economies are uncertain, revealing an issue it is well advised to examine.

Macroeconomic impacts of the trend in business development, which imply that industrial competence is becoming more important to the competitiveness of firms, may be traced by consulting perspectives on how competitiveness evolve. It is well established that the competitiveness of firms cannot be ascribed to the inhouse resources of individual firms alone. Competitiveness is created in complex processes involving a broader industrial base (ETLA et al., 1984 and 1987). This is in tradition with Schumpeterian research, with research on innovation (Rosenberg, 1976; Freeman, 1974; Mansfield, 1968) and with evolutionary economics (Nelson, Winter, 1982). Perroux (1950) makes use of a similar perspective when elaborating on "growth poles", as Dahmén (1950; 1989) did when studying Swedish business in the context of "development blocks". Currently, Porter's (1990) perspective on dynamic business in industrial clusters is gaining the most attention on the Nordic scene. As the others, Porter's perspective is based on the assumption that under certain conditions there is a reciprocal promotion of competitiveness among firms. The behaviour of a firm may generate externalities which also benefit other firms, and this is all the more so the more human capabilities and competence that are demanded.

As Porter consider domestic industrial clusters to be of vital importance in this respect, he also draws the macroeconomic implication that dynamic clusters benefit the competitiveness, or

economic development, of nations, even though this connection on an aggregate level is not well developed by Porter. This is, however, the topic of economic theories on endogenous growth (Romer, 1986; Grossman and Helpman, 1991). The economic models of endogenous growth document that long-term macroeconomic growth is possible if there are positive economic externalities within the business community, or if there is shortage in the supply of one essential production factor (Rebelo, 1990). Such a factor may be industrial competence.

Industrial clusters, development blocks, or whatever it may be labelled, provide in theory the industrial base for such processes of creativity and diffusion of knowledge, i.e. what the general term "externalities" must consist of. If economic competence is becoming more important as a factor of production for firms to stay competitive, externalities, or the ability to exploit synergy among firms in the domestic economy, should also become more decisive for the economic development of the nation. This is, however, hard to show as there is no well established way to document the existence or to measure the magnitude of externalities quantitatively.

Nevertheless, accepting this perspective, we may investigate whether some firms may mean more to the development of the national economy than others. Industrial competence has to stem from systematic efforts and practical experience from matters that really matter for the effectiveness in business operations. Investments in R&D may be of the systematic kind, while participating in international business may represent the kind of on-the-job-training which is of general importance. Thus, if a group of firms, for instance, should be identified as the major conductors of R&D in a country, or as the ones that possess the bulk of experience from international business in this country, these firms may be classified as possible and important sources for externalities in the domestic business communities they are part of. The largest corporations are the candidates that are put to the test in this study.

However, holding a position of a possible source for important externalities within domestic business communities, does not guarantee that firms actually nurture each other. Beside individual firm capabilities, this depends on labour market mobility, efficiency in the market for corporate control, and the kinds of business relations between firms. Rather than nurturing each other, allowing the rate of growth to vary between different firms and businesses, large firms

may exploit others preventing the evolution of domestic challengers. The first step forward approaching this issue would be to consider to what extent the group of the largest corporations within a country has changed over time.

2.4 Questions to Be Addressed in this Report

This report is not one where we attempt to conduct a formal empirical testing of hypothesis that are spelt out, or which may be formulated on the basis of our previous discussion. Rather it is the story-telling type, where we seek to illustrate the trends in business development and their macroeconomic impacts by applying information we have gathered on the largest industrial corporations of different Nordic countries.

Chapter 4 aims at illustrating current trends in the development of business on the basis of information from the largest corporations of the Nordic countries. Lack of information prevents us from considering changes at the SBU level of the economy. It also prevents us from illustrating the trend that firms are cultivating their core competence. Our main discussion will be on corporate growth and on the international operations of the largest corporations.

However, the concept of core competence has great similarities to the concept of firm - specific assets, which is applied in the literature on foreign direct investments. Exploiting firm specific assets, or business opportunities which are based on the core competence of the firm, implies internationalization. Thus, indirectly our discussion on the internationalization of business also touches upon the trend of firms cultivating their core competence.

Also when it comes to the discussed role of industrial competence, our data fall short of providing a basis for an extensive discussion. Actually, we just touch upon the issue of increasing knowledge requirements in production by investigating corporate expenditures on R&D.

Then, in the next two chapters we discuss the impacts of the current business development on the macroeconomy. In Chapter 5 data on the largest corporations are related to the macroeconomic-level of the Nordic economies. We focus on their growth pattern with respect to growth in domestic manufacturing. Then we consider their share of economic activities domestically and whether this has been increasing or decreasing over the last two decades. Furthermore, we briefly discuss the impacts of internationalization on domestic production, and the role of large corporations in domestic business communities.

Chapter 6 focuses on changes in the group of the largest corporations over time for different Nordic countries, i.e. to what extent the operations of large firms allow other firms to grow and surpass them. As industrial transformation is a slow process, which in general has to be based on continuity, or technological paths, we compare the changes that have taken place over a 15 - year period and more than a 50 - year period.

3 DEFINITIONS AND DATA

3.1 Definitional Problems

The prime concern of our research is **manufacturing growth** as the key to wealth for all the Nordic countries. We address this issue by focussing on the largest corporations. However, if we only are to include corporations in manufacturing, our empirical base may easily prove too narrow. Manufacturing capabilities do not only evolve from current manufacturing production, but also from business in neighbouring industries. In particular, we assume the possibilities of spill-over effects to manufacturing from the extraction of non-renewable natural resources, as ore, oil and natural gas, to be of importance. Thus, in this study we pay attention to the **ISIC industries 2 and 3**.

Defining mining and manufacturing as the empirical base of our study, poses another problem. The **conventional classification of industries** do not give a sufficient picture of manufacturing production. Manufacturing firms are increasingly becoming service producers (Eliasson et al., 1990), while they also decouple manufacturing services in separate units which officially are classified to belong to other industries. Hence, official statistics do not properly account for the role of internal and external service production related to manufacturing firms. There is, however, no easy way to avoid this problem.

Focussing on corporations poses another definitional problem, which may be labeled the **boundaries of the firm** (Tirole, 1988). The modern corporation is no easy definable entity. In many respects its boundaries are blurred because of several types of ownership arrangements and contract based inter-organizational relations (Ylä-Anttila and Lovio, 1990). Also here we have to make a choice, and we end up by applying the legal boundaries which define the corporation as a financial entity.

These two main definitional problems arise because the traditional boundaries between firms and industries are fading away. National accounts and industrial statistics do not properly measure the industry level aggregates; and defining corporations as financial entities neglects the contract-based inter-firm relations, which are of importance when the corporation, or a firm, is seen as a strategic decision making unit. This, however, has to be a shortage to our study, as it is to most others.

3.2 Selecting the Largest Industrial Corporations

In this report we have a main focus on the **30 largest industrial corporations** of Denmark, Finland, Sweden and Norway. The number 30 is chosen at random. Our concern has been to select a number that is small enough to be handled efficiently in a microeconomic-based approach, and we regard 30 to be so.

Further clarification is needed to operationalize what we mean by the largest Nordic industrial corporations. We define a **corporation** as a financial entity encompassing several business engagements which legally are within the control span of one ownership group. An **industrial corporation** is defined as a corporation which has more than 50% of its total employment in mining and manufacturing. This means that industrial corporations may have SBUs operating in other industries, but that the majority of employment in the corporation as a whole is in industries classified as ISIC 2 or 3.

Defining **Nordic industrial corporations**, we include all firms operating in one of the Nordic countries, even though they may be owned from abroad and be part of a larger foreign corporation. In such cases, however, we only include the legal parts of the firm registered in the host country, i.e. also foreign subsidiaries which are directly subordinated to their control.

When selecting the **largest industrial corporations** in each of the 4 Nordic countries of this study, several size measures are available. As value creation is our main concern when studying

industrial and economic development, information on value added would be a quite natural ranking criterion. Value added data is, however, hard to come by at the corporate level of production. The most frequently reported size measures are sales and employment. As employment figures are the ones that correlate most strongly with value added, we have chosen it to be our ranking criterion. We have then considered world-wide employment of the corporations rather than employment which they have in their countries of origin. Either way, the sample of corporations would have been more or less the same. Only the rank order is to some extent affected.

3.3 Data on the Corporations

There are no systematically collected public data on corporations in any of the Nordic countries. Thus, we have had to collect them from different sources: mainly from annual reports and directly from the management of the corporations. This means that we base our information on the consolidation principles which the corporations apply. These may vary between corporations, and they have to some extent been changed during the period covered by this study. Thus, accepting the consolidation principles of the corporations, we are aware of problems that may arise when interpreting development patterns indicated by the data reveal. We think, however, that these problems are of minor importance to our cause.

The number of variables on which we have corporate data, is quite limited. We have sought information on sales, employment, R&D, profits and foreign operations (sales and employment) as well as on value added and on the founding year of the firm. At this stage, the priority has been given to foreign operations, in particular regarding sales and employment, and our data coverage is fairly good in this respect. However, also for these variables as for the others, there are variations in the coverage over time and between countries. Appendix 1 presents the list of variables and information on the number of corporations from which we have data.

The 30 largest corporations are selected for every year between 1974 and 1990. Thus, our sample varies from one year to another. As the largest corporations one year tend to be among the largest also in later years, we do to some extent have panel data. The number of corporations which can serve as a panel for all of this period, however, is fairly low, i.e. less than 20 in each country.

Another caveat should also be raised: A corporation changes over time due to mergers and acquisitions even though its name may be kept unchanged. Our basic idea has been that we keep the acquiring corporation in our data base, and regard it as expanding through external growth. The acquired corporation or SBU becomes part of the acquiring financial entity. If the acquired unit is a corporation, it stops to exist as a separate entity at the corporate level. In some cases, however, it is difficult to say which of two merging corporations actually should be considered as staying on as a financial entity. Then we have had to rely on our own discretion. There is no reason to believe that this causes major problems in analyzing our data.

This means, however, that the issue of establishing panel samples from our corporate data is complicated in two ways. One is due to our selection procedure: A corporation is excluded any year it does not rank among the 30 largest even though it still may be in operation. The second is due to the continuous changes which occurs within the units that are the object of our analysis: A corporation may keep its name unchanged while the lines of business in which it is involved, may change completely from one period to another. Thus, to establish true panel data we not only need to collect information for the years a corporation does not qualify to be among the 30 largest. It also requires substantial work to consolidate corporations over time. We have not had the resources to do this.

We are aware that panel data is to be preferred when analyzing for instance the trends in business development on which we have elaborated in Chapter 2. Nevertheless, this cannot be accomplished in this study. However, for practical purposes we do not expect it makes much difference to illustrate current trends in business development on the basis of the then largest industrial corporations in a country, rather than to examine these trends on the basis of a panel sample selected among the largest corporations. This is also confirmed when comparing the

trends envisaged by our samples with results from our preliminary attempts to construct panel data from our data base.

Our own data collection has been at the corporate level, meaning that we do not possess unique data to shed light on the SBUs of these largest corporations. Thus, we are not able to approach issues that are raised regarding this level of the economy in this report.

Industry aggregates from the National Accounts are used to compare growth patterns at the corporate and national level for the different countries, and to calculate the share of the largest corporations in domestic mining and manufacturing. This causes some problems as service production is included in the corporate figures, while excluded for those at the aggregate level. We take account of that in our discussion.

4 THE LARGEST NORDIC INDUSTRIAL CORPORATIONS

This chapter contains a brief examination of trends in business development at the corporate level of the economy (see chapter 2). We start out by showing the size and growth pattern of the largest industrial corporations of Denmark, Finland, Norway and Sweden. Then we approach the process of internationalization. Finally, we touch upon the importance of intangible investments.

4.1 The Largest Corporations of the Nordic Countries

4.1.1 The Corporations and their Size

Table 1 lists the 30 largest industrial corporations of each of the 4 Nordic countries according to corporate employment in 1990. Just glimpsing at the figures, it is evident that the largest of the Swedish corporations are rather huge compared to the largest of the other Nordic countries. None of the Danish corporations in 1990 is as large as any of the 10 largest of Sweden, and only 1 of the largest in Finland (NOKIA) and in Norway (NORSK HYDRO) would have made the Top-10 in Sweden according to employment.

However, by Nordic standards also the largest Finnish corporations are rather huge. Actually, the smallest of the 30 Finnish corporations making this list, is larger than the similar Swedish corporation according to employment. Further, both No. 30 in Finland and in Sweden, would have ranked quite high both in Denmark and Norway.

Table 4.1 The largest Nordic industrial corporations by country, 1990.

Corporation	Employees	Corporation	Employees
<u>Denmark</u>		<u>Finland</u>	
SOPHUS BERENDSEN	14600	NOKIA	37336
DANFOSS	13910	RAUMA REPOLA	20724
DANISCO	12744	KONE	20120
CARSLBERG	12192	VALMET	17955
F.L.SMIDTH	10937	KYMMENE	17943
NOVO	8742	OUTOKUMPU	17494
GRUNDFOS	7179	METRA	16901
NKT	6979	ENSO	15974
ROCKWOOL	5566	KEMIRA	15256
MD FOODS	5501	PARTEK	14762
SKANDINAVISK HOLDING	5289	YHTYNEET PAPERITEHTAAT	13434
TULIP	4588	AHLSTRÖM	13324
LEGO	4221	ASKO	13218
ABB DENMARK	4220	FAZER	13204
SUPERFOS	4115	METSÄ SERLA	13049
JENS VILLADSENS FABRIKER	3820	TAMPELLA	12265
SADOLIN & HOLMBLAD	3298	NESTE	11707
BANG & OLUFSEN	3200	HUHTAMÄKI	10431
INCENTIVE	3068	RAUTARUUKKI	10124
AARHUS OLIEFABRIK	2729	WÄRTSILÄ	9740
GUTENBERGHUS	2616	STRÖMBERG	8339
AALBORG PORTLAND CEMENT	2585	AMER	8218
V KANN RASMUSSEN INDUSTRI	2516	ORION	6124
STEFF HOULBERG	2399	SANOMA	5545
LÖVENS KEMISKE FABRIK	2394	SUOMEN SOKERI	5317
ELECTROLUX DANMARK	2334	LASSILA TIKANOJA	5016
B W DIESEL	2279	VEITSILUOTO	4886
ODENSE STAALVÆLSEVÆRK	2238	TAMPEREEN KIRJAPAINO	4556
BERLINGSKE	2170	HACKMAN	4406
DANYARD	2046	MASA YARDS	3934
<u>Norway</u>		<u>Sweden</u>	
NORSK HYDRO	33042	ASEA	215154
STATOIL	13222	ELECTROLUX	150892
ELEKTRISK BUREAU	12979	VOLVO	72213
KVÆRNER	12774	ERICSSON	66138
AKER	12461	SKF	49305
NORA	7727	PROCordia	45193
ELKEM	7454	STORA KOPPAR	36416
DYNO	7273	SKANSKA	31746
NORSKE SKOG	6465	SCA	30139
ORKLA-BORREGAARD	6317	SAAB SCANIA	29388
FREIA-MARABOU	5476	NOBEL INDUSTRIES	26654
SIEMENS	3085	SANDVIK	26373
ALCATEL STK	3085	NORDSTJERNAN	23178
RIEBER & SØN	2883	TRELLEBORGS	21939
NORSK JERNHOLDING	2810	ATLAS COPCO	21507
RAUFOSS	2777	ALFA LAVAL	20809
ULSTEIN	2758	ESSELTE	19545
HAFSLUND NYCOMED	2735	INCENTIVE	16525
PHILLIPS PETROLEUM	2712	AGA	14559
NORSK DATA	2579	MODO	12961
MOELVEN INDUSTRIES	2550	EUROC	9207
JOTUNGRUPPEN	2375	ASTRA	8846
APOTEKERNES LABORATORIUM	2340	ESAB	8279
TIEDEMANN	2323	BAHCO	7806
M.PETTERSON & SØN	2288	ASSI	7633
NORSK FORSVARSTEKNOLOGI	1845	PERSTORP	7374
MUSTAD INDUSTRIES	1610	PLM	6342
ESSO NORGE	1272	SKÅNE GRIPEN	4810
KVERNELAND	1228	NCB	4727
NORSKE SHELL	1121	SÖDRA SKOGSÅGARNA	3285

Source: The large firm data base of the Nordic Perspective Group

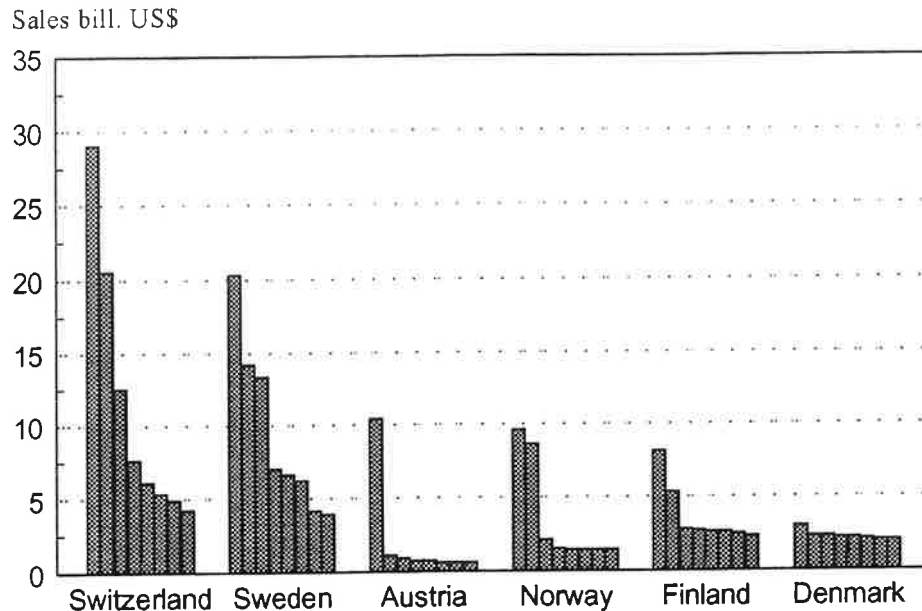
The large Swedish corporations are dominated by ASEA, which we have regarded as Swedish while it actually is Swedish-Swiss, and ELECTROLUX. Similarly NORSK HYDRO stands out in Norway and NOKIA in Finland. However, if size had been measured by value added or sales rather than employment, the Norwegian picture would, due to the high value of oil, have been dominated by 2 corporations: Statoil and to Norsk Hydro. In Denmark no corporation stands out in a similar way relative to the others in the group of the 30 largest in 1990.

The 30 largest corporations taken together for each country underlines the point that the large Swedish corporations are by far the largest on the Nordic scene (cf. Table 4.2). In 1990, they employed on the average 2.7 times as many as the largest Finnish, and approximately 6 times as many as the largest Norwegian and Danish. Even if only the Swedish-based parts of ASEA were included in the sample, these differences would hold true but not to the same extent. Average employment among the 30 largest Swedish corporations would then have been approximately one-sixth lower.

4.1.2 Large in an International Perspective?

The largest of the large Swedish corporations are obviously giants compared to their Nordic counterparts. However, when compared to the largest corporations of other small nations, this relative hugeness is not so remarkable. Figure 4.1 shows the distribution of the 8 largest corporations according to sales figures for Switzerland and Austria in addition to the 4 Nordic countries of this study. Then the largest of the Swedish do not stand out so much as in the strictly Nordic comparisons.

Figure 4.1 The 8 largest firms of different small countries, 1989. Corporate sales in billion USD.



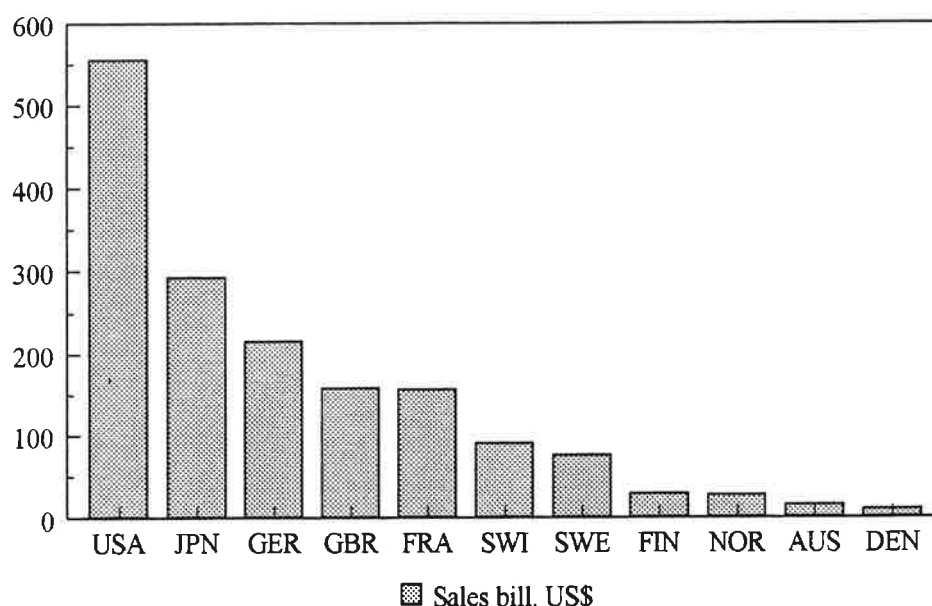
Source: Nordic Perspective Group.

The largest Swiss corporations are of the same magnitude or even somewhat larger than the largest Swedish. The interpretation depends to some extent on how ASEA (ABB) is classified. In Figure 4.1 it is included both as a Swedish and a Swiss corporation, due to the 50/50 ownership structure between these countries. However, the Swedish and the Swiss corporations in this figure are in general much larger than the largest of the other countries. Actually, with the exception of the state-owned holding company AUSTRIAN INDUSTRIES, the largest Austrian corporations are smaller than the similar ones in Denmark, Finland and Norway.

When comparing the largest Nordic corporations with those of large nations, the picture is different. Then the magnitude of even the largest Swedish corporations turns out as rather modest, while the other Nordic corporations appear rather dwarfish. This is evident from Figure 4.2. Here figures on corporate sales are added together for the 8 largest industrial corporations of different countries. Accumulated sales of the 8 largest Swedish corporations were about 80

billion USD in 1989, while for the corporations of the other Nordic countries 30 billion USD or less. The similar figure for the 8 largest US corporations was 540 billion USD, and 300 and 220 billion USD for Japan and Germany respectively.

Figure 4.2: Accumulated sales for the 8 largest corporations of different nations, 1989.
Billion USD.



Source: Nordic Perspective Group

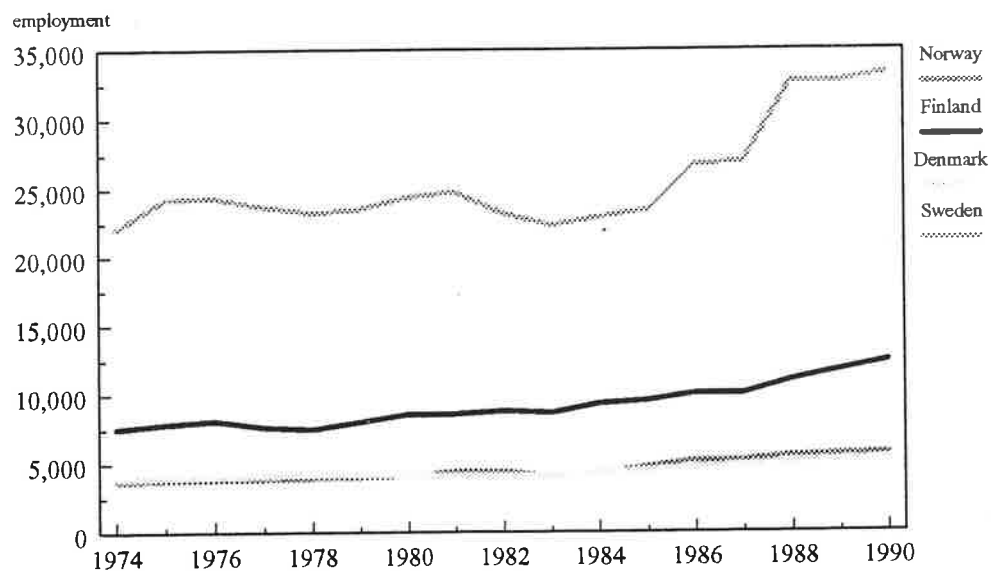
We shall not go deeper into the question of international size differences among corporations from different countries. Of course, the relevance of applying sales figures to rank and compare corporations may be questioned, and differences in lines of production ought to be brought into considerations. Nevertheless, our point is simply that despite the hugeness of the largest domestic corporations on the Nordic scene, and of the Swedish in particular, these cannot in general be regarded as giants when they compete internationally. With one or two exceptions, this even holds for the largest Swedish firms.

4.2 Corporate Growth

The fact that the largest Nordic industrial corporations are rather small by international standards has led us to expect an overall growth in the operations which the larger Nordic corporations conduct. The argument is untapped economies of scale, and that such growth will make the single businesses of the corporations less vulnerable to the demands put on them regarding internationalization and intangible investments.

The simplest data to use to measure corporate growth is to consider changes in corporate employment. Figure 4.3 shows world-wide employment on an average basis for the 30 largest corporations of each of the 4 Nordic countries in the 1974-1990 period. For Finland, Norway and Sweden we have annual observations; for Denmark the observations concern 1974, 1978, 1983 and 1990.

Figure 4.3: Average employment in the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1974-1990.



Source: The large-firm data base of the Nordic Perspective Group.

The figure reveals the size differences among large corporations from different Nordic countries as we discussed in the previous section. However, despite these size differences there are certain similarities in the pattern of corporate growth. During the 1970s and early 1980s employment growth was rather modest among these largest corporations. Then, in all countries corporate growth occurred throughout the latter half of the 1980s.

This corporate growth is more clearly seen when consulting Table 4.2, which presents employment figures for these groups of corporations in 1990 and in the mid-1970s. For the 30 largest firms from all the countries, it is obvious that employment growth has been significant. However, some differences occur regarding the relative growth of employment of these corporations. It has been of the same magnitude as far as the Danish and Swedish corporations are concerned. In Norway this growth rate has been somewhat higher on the average, while it in Finland has been the strongest. To be more specific, the employment of the 30 largest Finnish corporations in 1990 is almost 60% higher than in 1974, in Norway it is almost 50% above, while in Denmark and Sweden somewhat less than 40% higher.

Table 4.2: World-wide employment of the 10 and the 30 largest Nordic industrial corporations by country of origin, 1974/75 and 1990. 1000 persons.

	Denmark		Finland		Norway		Sweden	
	1974	1990	1975	1990	1975	1990	1975	1990
10	65	98	131	195	69	120	491	727
11-30	52	63	105	176	45	50	236	272
30	117	161	236	371	114	170	727	999

Source: The large-firm data base of the Nordic Perspective Group.

Considering different groups among the 30 largest firms, it is evident that employment in the group of the 10 largest has increased significantly over the period in all countries. In Norway employment among these largest of the large corporations has grown more than 70% since 1974, or equivalent to an annual average growth rate of 3.5%. In the other 3 countries the 1990 employment in the group of the 10 largest is some 50% higher compared to the mid-1970s. However, if only the Swedish-based operations of ASEA in 1990 were included, employment growth among the 10 largest Swedish corporations would have been less than 20%.

With the exception of Finland, the growth in employment has been much weaker among the 20 next largest corporations on the list for all countries. Employment in this latter group of Finnish corporations has increased with almost 70% since 1974. This group of corporations from the other 3 countries reveals employment growth at the level of 10-20% over this period, with the Norwegian at the lower end of this interval. Altogether, this indicates that the largest of the large corporations has become relatively larger within the domestic business community particularly in Norway, but also in Denmark and in Sweden. This is not the case in Finland. The concentration ratio within the group of the 30 largest is the highest in Norway and Sweden.

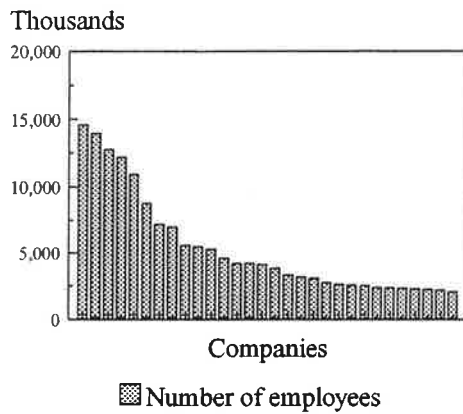
A more detailed picture on how corporate growth has affected the size distribution among the 30 largest corporations of different Nordic countries, is presented in Figure 4.4. It is evident that employment in the No.1 corporation of Norway and Finland, and in the No.1 and 2 of Sweden, has increased significantly from 1974 to 1990, whereas there is no similar growth for the highest ranked Danish corporation. Nevertheless, the size distribution within the whole group of 30 corporations is with this exception rather even in Finland, and has become increasingly so since 1974. A rather even size distribution also characterizes the 30 largest corporations of Denmark, as was the case even 15 years ago.

The country-internal size differences were most prominent among the largest corporations of Sweden in 1974, and they have been strengthened since then. Even greater size differences have formed among the largest Norwegian corporations, which now resemble the Swedish distribution. Thus, the corporate growth that has taken place since the mid-1970s, has been more broadly based among the 30 largest corporations of particularly Finland, but also of Denmark, compared to the development among the largest corporations from Norway and Sweden.

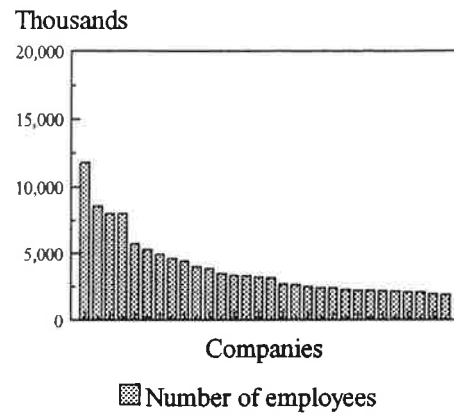
Figure 4.4: Employment in each of the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1990.

Denmark

1990

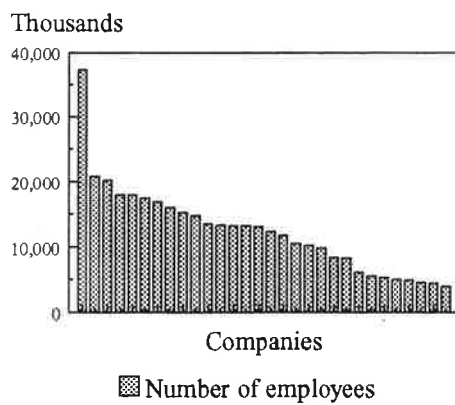


1974



Finland

1990



1974

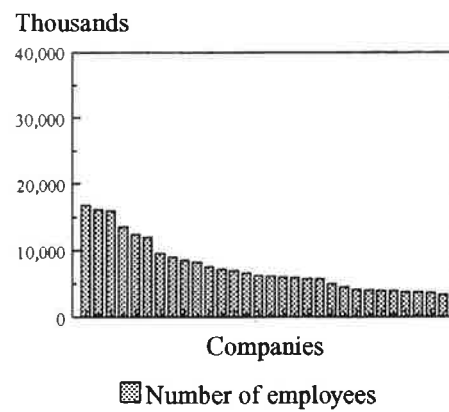
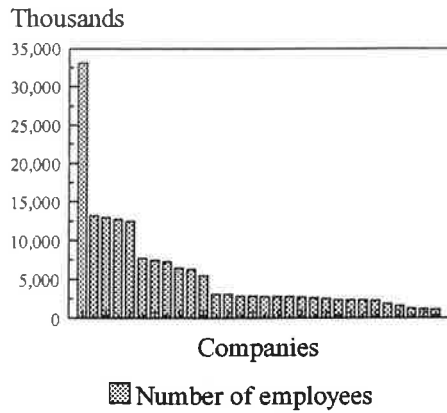


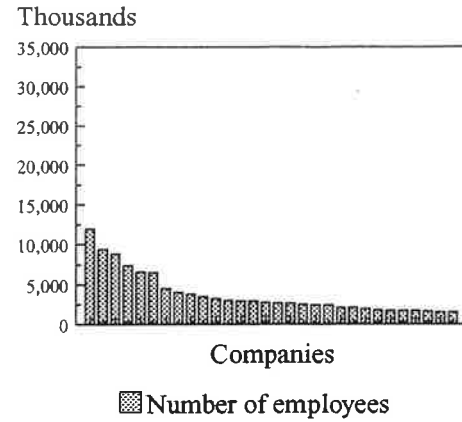
Figure 4.4 continues ...

Norway

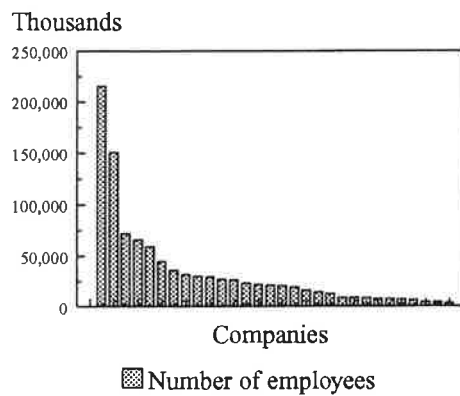
1990



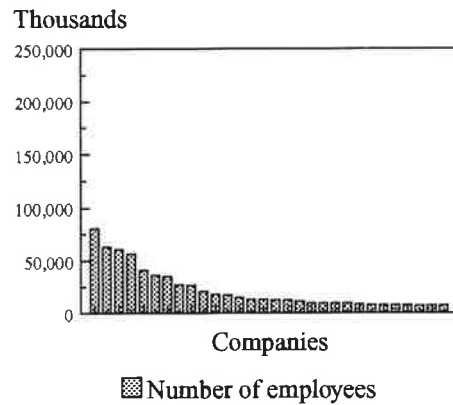
1974

**Sweden**

1990



1974



Source: The large-firm data base of the Nordic Perspective Group

4.3 Business Is Internationalized

Limitations in our data prevent us from digging into all aspects of internationalization, which besides trade and the build-up of corporate hierarchies also ought to include the variety of strategic alliances or coalitions with foreign firms (Porter and Fuller, 1986). However, information on sales and employment is sufficient to pinpoint the international base of the largest Nordic industrial corporations. By looking into how these positions have changed over time, we can also answer if the business engagements of these corporations have become more internationalized.

4.3.1 The International Base of the Largest Nordic Corporations

The largest Swedish corporations are well-known for their world-wide activities. This is confirmed in Table 4.3, which shows that business activities abroad play a substantial role in the operations of the largest Swedish corporations: 78% of their sales are with foreign customers, and 62% of their corporate employment are outside Sweden. This is not caused by any single corporation: Even if only the Swedish-based parts of ASEA were included, foreign sales in the Swedish sample would have been at the level of 75% of corporate turn-over, and the share of corporate employment abroad would have been above 55%.

It is also evident that foreign operations play a more substantial role for the largest Swedish corporations than for the largest industrial corporations of the other Nordic countries. However, the international base is also quite significant when considering the largest industrial corporations of the other Nordic countries. The 30 largest Danish, Finnish and Norwegian corporations all have on the average 60-70% of their corporate turnover abroad, and one third or more of their employment in foreign subsidiaries.

Table 4.3: The international base of the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1990. Foreign billing in per cent of corporate sales; employment in foreign subsidiaries in per cent of corporate employment.

	Denmark	Finland	Norway	Sweden
Foreign billing; % of corporate sales	62	69	66	78
Foreign employment; % of corporate empl.	34	39	33	62

Source: The large-firm data base of the Nordic Perspective Group

Extending the issue of international footholds among the largest Nordic industrial corporations, we may examine how widely such foreign operations are distributed within the group of the 30 largest of the different countries. Table 4.4 sheds light on this by listing to what extent the turnover of the different corporations are based on foreign sales.

Table 4.4: Foreign sales in per cent of corporate sales for the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1990. Number of corporations.

Country	Foreign sales in per cent of corporates sales			
	0-29	30-49	50-69	70-100
Denmark	3	4	8	15
Finland	4	4	7	15
Norway	5	6	9	10
Sweden	2	2	7	19

Source: The large-firm data base of the Nordic Perspective Group

It is evident that the reliance on foreign markets is most widely distributed among the largest Swedish corporations: As many as 26 of the 30 corporations have more than half of their sales revenues from abroad. However, the serving of foreign markets is also broadly represented among the largest corporations of the other Nordic countries as well. Some 23 of the 30 largest Danish corporations have more than 50% of their corporate turnover abroad, while this is the case in 22 of the largest Finnish corporations. The similar figure for the largest Norwegian is 19.

Another aspect of international footholds is foreign production. Table 4.5 classifies the corporations on the basis of the extent to which they have employees in subsidiaries abroad. Actually, as many as 26 of the 30 largest Swedish corporations have more than 30% of their employment outside Sweden; 17 have more than half of their corporate employment abroad. The largest corporations of the other Nordic countries are more extensively based on production in their home country: The number of corporations with 70% or more of their employment domestically is quite high both in Norway, Finland and in Denmark. However, even among the 30 largest corporations of these countries there is a group of 6 to 9 firms which have more than half of their employment abroad.

Table 4.5: Employment in foreign subsidiaries in per cent of corporate employment for the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1990. Number of corporations.

Country	Foreign employment in per cent of corporate employment			
	0-29	30-49	50-69	70-100
Denmark	17	7	2	4
Finland	13	8	7	2
Norway	16	8	5	1
Sweden	4	9	8	9

Source: The large-firm data base of the Nordic Perspective Group

4.3.2 Internationalization Is Increasing

Comparing the information of the two tables, 4.4 and 4.5, it seems rather clear that the largest corporations of Denmark, Norway and Finland to a greater degree than those of Sweden, have based their international footholds on traditional exports. As far as the largest Swedish firms are concerned, foreign sales are more closely linked to foreign production. However, according to the distribution of employment, foreign production is definitely becoming more important for foreign sales also with respect to the largest corporations of Finland and Norway compared to the 1970s. This is probably also the case in Denmark, even though we lack data to document it firmly. This can be read out of Table 4.6 as the share of foreign employment is increasing relatively more than the share of foreign sales. The table further shows that the largest Danish, Finnish and Norwegian corporations in 1990 on the average now resemble the largest Swedish corporations of the mid-1970s in this matter of foreign operations.

Table 4.6: Foreign sales and foreign employment among the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1975/78 and 1990.

	Denmark		Finland		Norway		Sweden	
	1974	1990	1974	1990	1974	1990	1975	1990
Foreign sales, % of corporate turnover	-	62	41	69	49	66	66	78
Employment abroad, % of corporate employment	-	34	Less 10	39	6	33	37	62

Source: The large-firm data base of the Nordic Perspective Group

4.3.3 Nordic Corporate Growth Has Primarily Taken Place Abroad

In Figure 4.5 we have for the period 1975-1990 pictured employment in the 30 largest corporations of Denmark, Finland, Norway and Sweden. These employment figures, are with the exception for Denmark, split up between entities located in the corporations' country of origin and abroad.

The issue of world-wide corporate growth of the largest Nordic corporations is discussed in the section 4.2. However, regarding the distribution of employment between domestic and foreign-located entities of these corporations, another common feature regarding the operations of the largest Nordic corporations appears. The level of their domestic employment has not increased since 1975. All corporate growth as measured by employment has taken place abroad.

The main pattern of corporate growth as envisaged by Figure 4.5 is confirmed when the group of the 30 largest corporations are split up to show the development for the 10 and the 11-30 largest corporations. Employment figures for 1975 and 1990 are presented for these groupings of the corporations in Table 4.7, except for the largest Danish firms, where data from the mid-1970s is lacking.

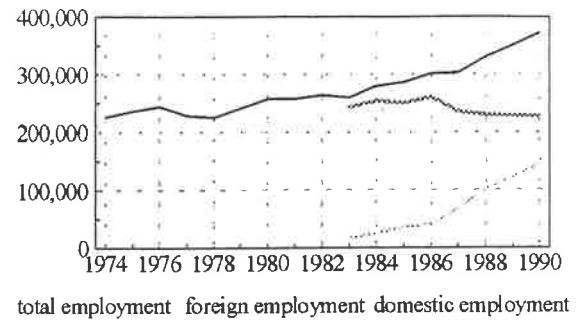
As discussed in section 4.2, the data on world-wide employment clearly envisages corporate growth for both groups of corporations in all Nordic countries. Even though the extensiveness of growth varies between the two groups of corporations and between their countries of origin, it is also evident that foreign employment has grown within both groups in all the countries.

Figure 4.5: Employment in the 30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1975-1990. World-wide, domestic and foreign employment. Number of employees.

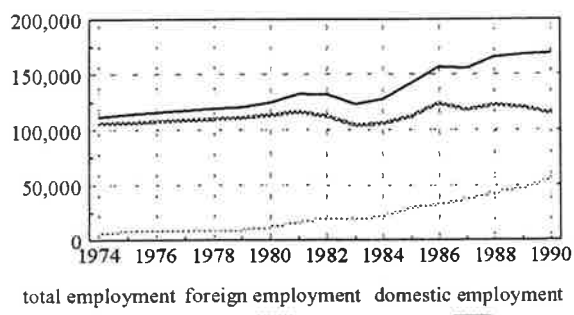
Denmark



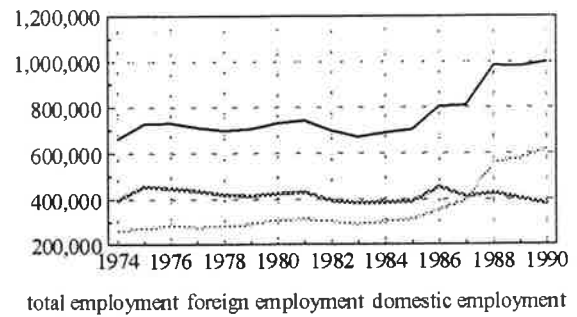
Finland



Norway



Sweden



Source: The large-firm data base of the Nordic Perspective Group

Table 4.7: Employment in the 10 and the 11-30 largest industrial corporations of Denmark, Finland, Norway and Sweden, 1974/75 and 1990. World-wide, domestic and foreign employment. 1000 persons.

Employment	Denmark		Finland		Norway		Sweden	
	1974	1990	1974	1990	1974	1990	1974	1990
Domestic:								
10 largest	-	ca.58	ca.126	100	64	78	273	254
11-30 largest	-	ca.49	ca.100	127	43	36	183	126
30 largest	-	ca.107	ca.226	227	107	114	456	380
Abroad:								
10 largest	-	ca.40	ca.5	95	5	42	218	473
11-30 largest	-	ca.14	ca.5	49	2	14	53	146
30 largest	-	54	ca.10	144	7	56	271	619
World-wide:								
10 largest	65	98	131	195	69	120	491	727
11-30 largest	52	63	105	176	45	50	236	272
30 largest	117	161	236	371	114	170	727	999

Source: The large-firm data base of the Nordic Perspective Group

However, there are huge differences regarding the domestic effects of this growth. Both the 10 and the 11-30 largest Swedish corporations have reduced their employment in Sweden. The 10 largest Norwegian corporations have increased their employment in Norway, whereas it has been reduced for the 11-30 largest. In Finland it is the other way around: The 11-30 largest corporations have increased their Finnish employment, while the 10 largest have reduced theirs. Nevertheless, it is evident that the overall picture of the largest Nordic industrial corporations is that corporate growth has taken place abroad throughout the 1980s in particular.

These data on the pattern of corporate growth, or internationalization, are in no way sufficient to conclude anything on whether the largest Nordic corporations are "leaving" their country of origin, or whether it just means that they are adapting to a new competitive environment in order

to maintain and improve their competitive edge. A brief discussion of possible effects of this internationalization on the national economic development is brought up in Chapter 5.

4.3.4 Foreign Ownership Control of the Largest Nordic Corporations

Internationalization is not only expressed through exports and outward foreign direct investments. The other side of the coin is imports and inward direct investments of foreigners. We lack data to elaborate on this at the corporate level. We do, however, know whether the corporations in our sample of large firms are majority owned from abroad or not.

Table 4.8 gives the information as to how many of the 30 largest corporations for the different Nordic countries were majority owned from abroad. Abroad in this sense also means other Nordic countries. For instance, ASEA of Sweden is the majority owner of one of the 30 largest corporations in all the other Nordic countries; ABB Denmark, Strömberg in Finland and Elekt-risk Bureau in Norway.

Table 4.8: Foreign ownership of the largest Nordic industrial corporations, 1975, 1983 and 1990. Number of corporations among the 30 largest of Denmark, Finland, Norway and Sweden which are majority-owned from abroad.

Year	Denmark	Finland	Norway	Sweden
1975	0	1	3	0
1983	1	0	5	0
1990	4	2	6	0

Source: The large-firm data base of the Nordic Perspective Group

It is evident that more of the largest Danish and Norwegian corporations are majority owned from abroad, than is the case with the largest of Sweden and Finland. This probably reflects differences in political regulations and the political practice regarding inward investments between these countries, and for Sweden compared to the others also differences in the strength

of domestic capital owners. It should, however, be mentioned that the largest Swedish corporation, ASEA (ABB), is 50 % foreign owned. This, it could have been classified differently without changing the pattern that large Swedish corporations are hardly ever majority owned from abroad.

If the Nordic economies are to be dynamic parts of the integrating European economy, inward investments should be expected and appreciated. However, this does not mean that all corporations, or all of the largest, will benefit from being part of a larger foreign constellation of businesses. This raises the complex issue regarding the role of ownership control in firm dynamics (Eliasson et al., 1988).

4.4 Industrial Competence Is Increasingly Becoming the Key to Competitiveness

Nobody will claim that knowledge and competence are to be regarded as new factors of production. Theory argues that human and organizational capabilities are becoming increasingly decisive to create value successfully, i.e. the capabilities of firms to innovate; to adopt and apply technological and organizational opportunities; to collect, systemize and interpret information; to develop competitive relations with suppliers; For product development; and for marketing and after- sale service.

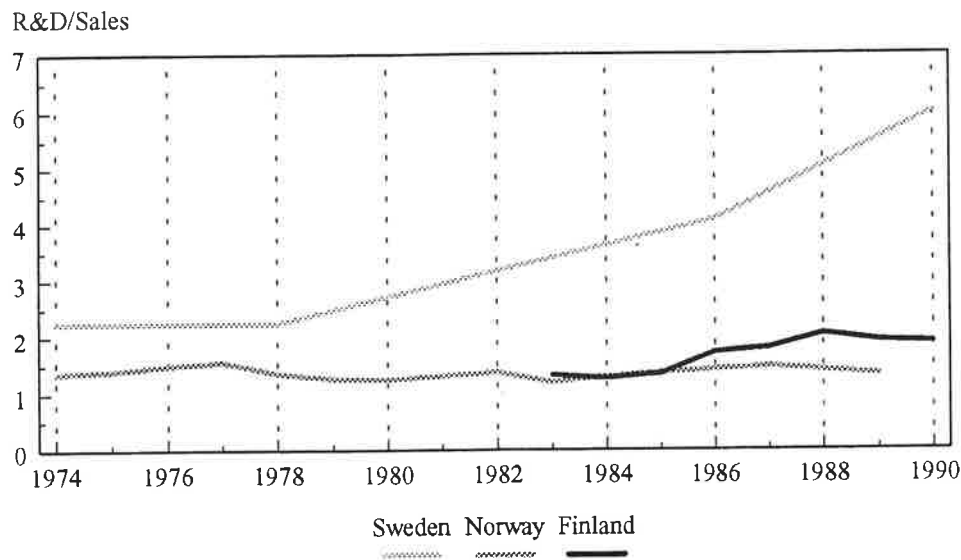
There are no statistics which can show how much business invests in industrial competence, or intangible assets. There is, however, information on R&D-expenditures in firms. R&D is a fraction of the multitude of investments in industrial competence (Eliasson et al., 1990). Nevertheless, we will make use of this information to illustrate the changing importance of such assets for modern business.

Figure 4.6 shows the R&D intensity of the largest industrial corporations of Finland, Norway and Sweden. The intensity is calculated by measuring R&D in per cent of corporate sales. It

would have been preferable to relate these investments to the value added of the corporations. Corporate sales are, however, chosen simply because the data coverage is better.

Due to missing observations, we have calculated the arithmetic mean of the R&D-to-sales ratio for those years when data is available. In addition we have demanded a minimum data coverage, which means that only some years are plotted for the largest Swedish corporations, and that the latter half of the 1980s is marked with a dotted line to indicate some uncertainty. It should also be noted that for Norway we only have R&D spent by domestic establishments of the largest corporations, while for Sweden and Finland we cover the R&D activities of these corporations world-wide. This means that we to some extent underestimate the R&D intensity of the Norwegian corporations. However, R&D in their foreign establishments is definitely not extensive. Only for a couple of corporations does it may play a noteworthy role. Thus, our underestimation should be of minor importance.

Figure 4.6: R&D in the 30 largest industrial corporations of Finland, Norway and Sweden, 1975-1990. Per cent of corporate turnover. Arithmetic average.



Source: The large-firm data base of the Nordic Perspective Group

Despite these warnings, the figure should give a fairly good indication of differences in the R&D intensity and its development for the largest corporations of these countries. It is evident that R&D is relatively more predominant within the largest Swedish corporations, than in the largest of Norway and Finland. It also shows that the R&D intensity throughout the 1980s has been increasing among the largest corporations of Sweden and of Finland. In Norway, the R&D-intensity seems to have been rather stable. However, this is due to the fact that oil companies with low R&D intensities have become more important within the group of 30 throughout the 1980s, counteracting the clear trend of a higher R&D intensity which has been documented for Norwegian manufacturing firms (Björklund and Heum, 1990; Hammervoll and Heum, 1992).

5. LARGE CORPORATIONS AND DOMESTIC MANUFACTURING

5.1 Growth Patterns

The growth pattern of the largest corporations over the period from mid-1970s to 1990 has been very similar in each of the Nordic countries. The growth in total number of employees has been 50 - 60 % or 2 -3 % p.a., which is clearly faster than that in total domestic manufacturing. However, there are slight differences across the countries and subperiods as indicated by Table 5.1.

Table 5.1 Growth of employment of the 30 largest manufacturing companies, 1974 - 1990, average annual change, %

	Denmark	Finland	Norway	Sweden
1974-1980	1.7*	2.1	1.8	1.7
1981-1990	3.6**	3.7	3.2	3.1
1974-1990	2.0	3.1	2.6	2.6
Total manufacturing 1974-1990	- 0.2	- 1.2	- 1.2	- 4.0

* 1974-1978

** 1983-1990

As shown in Chapter 4 the growth of the large corporations has mainly taken place abroad: The domestic employment in the top 30 group has either been stable (Finland and Sweden) or slightly growing (Norway). In the latter part of the 1980s the domestic employment of the largest Firms is showing a declining trend in all countries (data on domestic employment of top 30 in Denmark is not available). Contrary to that, the growth of foreign employment was accelerating throughout the 1980s, the Finnish firms showing the highest growth rates (cf. Chapter 4). The interesting question is, how has the rapid internationalization affected the growth performance of the domestic units of the large companies? Have they been growing

slower or faster than domestic manufacturing on average? The answers can be seen in Figures 5.1 - 5.3.

Figure 5.1 Employment of 30 largest corporations and of total domestic manufacturing in Finland, 1975 = 100

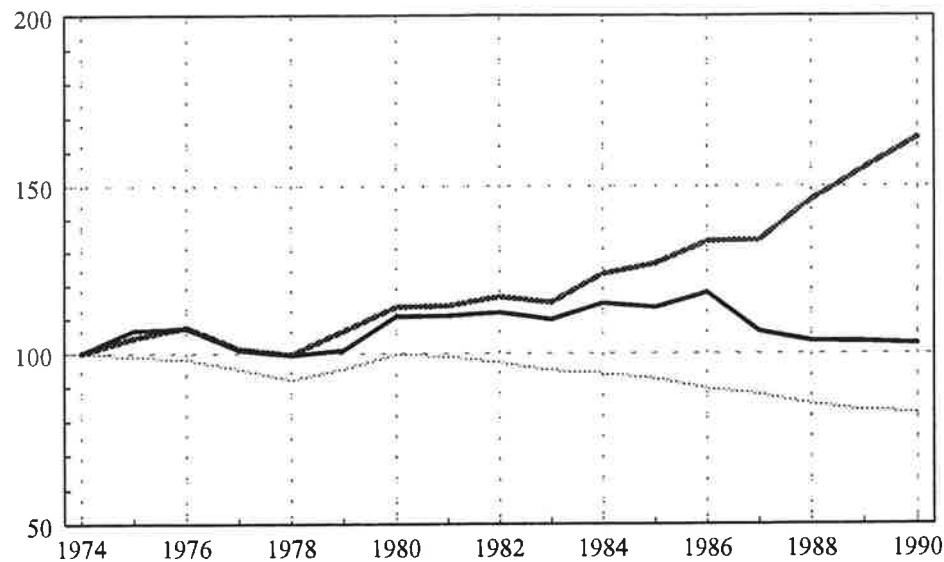


Figure 5.2 Employment of 30 largest corporations and of total domestic manufacturing in Norway, 1975 = 100

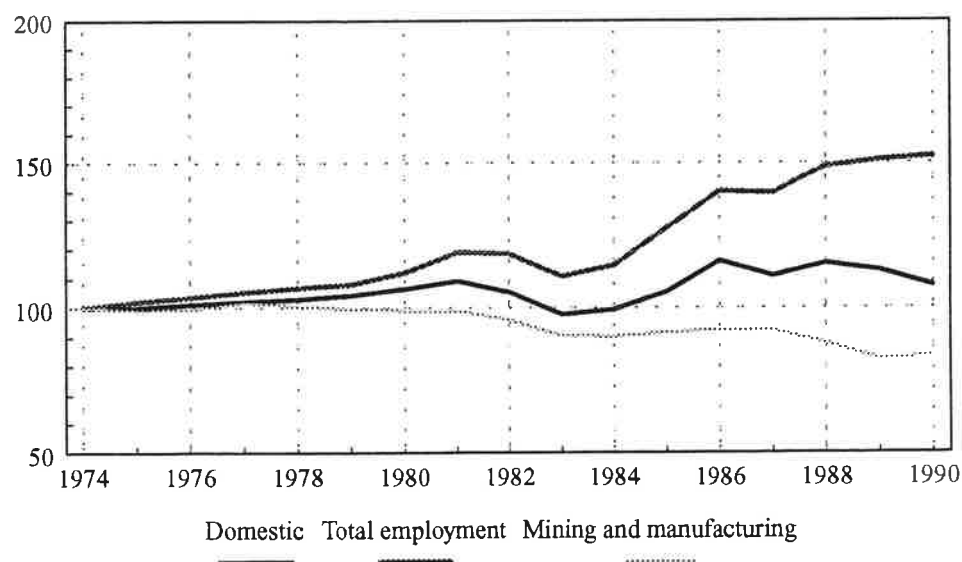
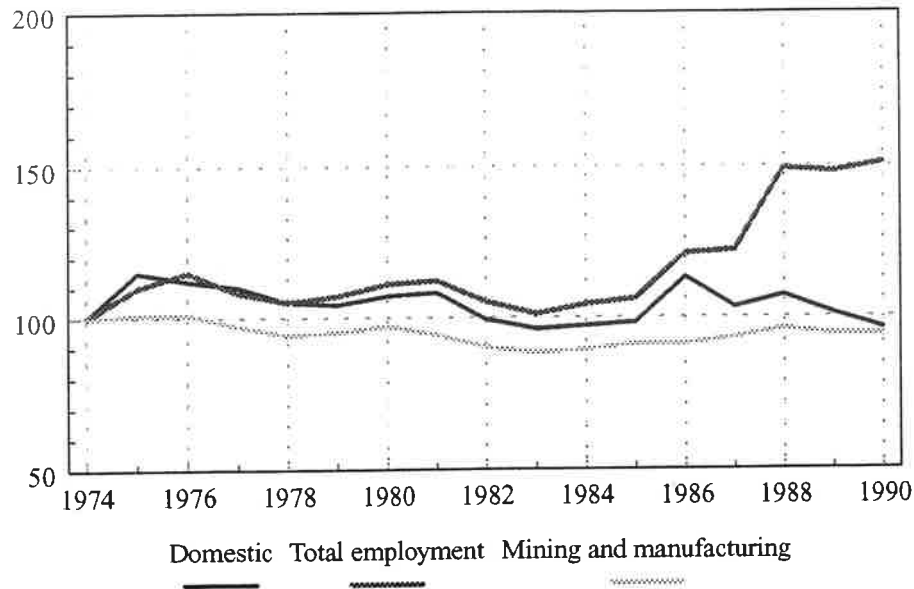


Figure 5.3 Employment of the 30 largest corporations and of the total domestic manufacturing in Sweden, 1975 = 100



Source: The large-firm data base of the Nordic Perspective Group

The growth of the domestic operations of the top 30 group seems to have been somewhat faster than the average manufacturing growth measured in terms of employment. So, in spite of the fact that most of the large companies' growth has been outside the national borders the contribution of these firms to total domestic manufacturing seems to have been growing. That becomes evident from Table 5.2, where the aggregate concentration ratios are presented. The concentration ratios based on domestic employment have only grown in each country over the period under consideration. However, in Sweden the contribution has decreased during the latter part of the 1980s (cf. Figure 5.4 and Figures 5.1 - 5.3 above). The employment of the domestic units of these highly internationalized companies has decreased more than the average manufacturing employment in the late 1980s.

The previous studies on the performance of the Swedish multinationals have shown that they have been performing better than domestic firms in terms of overall and domestic growth, productivity and profitability (see Swedenborg et al. 1988 and Swedenborg 1992). Our data seems to suggest that at least in terms of employment the growth performance has been worse during the late 1980s.

Table 5.2 Employment (total and domestic) of the largest manufacturing companies as a per cent of total manufacturing* employment, 1974 and 1990

	Denmark		Finland		Norway		Sweden	
	1974	1990	1974	1990	1974	1990	1974	1990
10 largest								
- total	12.7	19.5	21.8	42.2	17.2	37.4	44.4	76.4
- domestic	-	-	19.0	22.0	16.2	24.2	23.9	26.7
20 largest								
- total	18.6	27.2	33.2	68.3	24.2	47.0	57.4	97.9
- domestic	-	-	30.0	40.0	23.0	32.0	32.7	36.8
30 largest								
- total	22.8	31.8	40.3	80.5	28.8	52.7	65.3	105.0
- domestic	-	-	37.0	49.2	27.4	35.8	39.2	39.6

* Mining and manufacturing

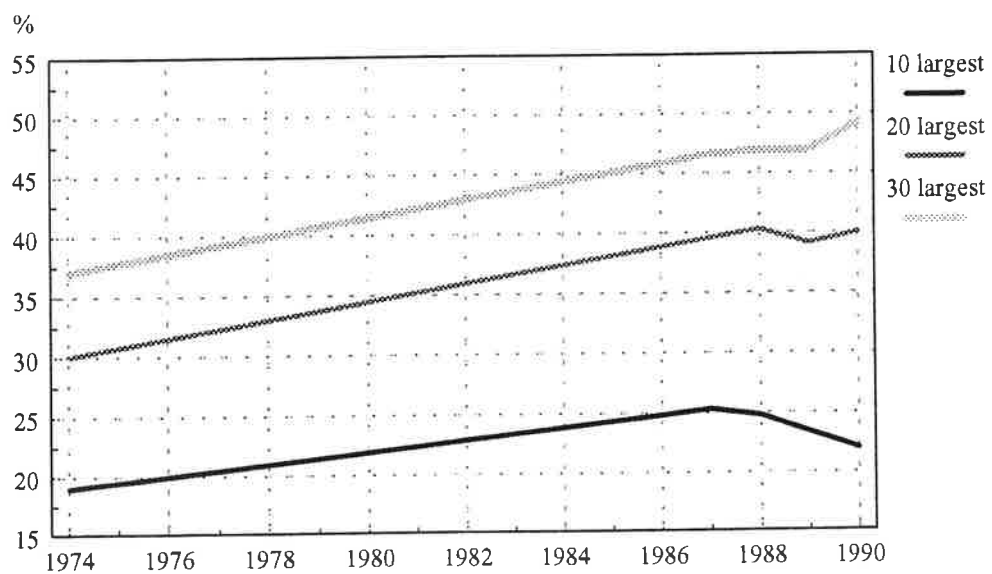
Source: The large-firm data base of the Nordic Perspective Group

The aggregate concentration ratios have been increasing clearly in each of the countries. If the overseas operations are included, the growth has been very rapid indeed: the ratios have doubled in all countries with the exception of Denmark. Nevertheless, the concentration trend is clear in Denmark too. If one focuses on domestic manufacturing activities alone, the trend is not so visible. This seems to correspond to the developments in the US, where the domestic aggregate concentration appears to have grown only insignificantly since the mid-1960s (see Scherer and Ross 1990, 61-62). The Nordic aggregate concentration ratios are quite high in international comparison, but comparable to ratios of other smaller countries (see section 5.3).

The clear conclusion is that, with an employment share of 40-50 %, the 30 largest industrial corporations are dominating the Finnish, Swedish and Norwegian manufacturing industries. There are, however, some interesting differences among these countries. The 10-firm concentration ratio is highest in Sweden whereas the 20- and 30-firm ratios are much higher in Finland than in the other two countries. Furthermore, the domestic concentration ratios have not any more increased during the past few years in Sweden.

Figure 5.4 Share of the largest manufacturing companies' domestic employment in total manufacturing employment 1974-90.

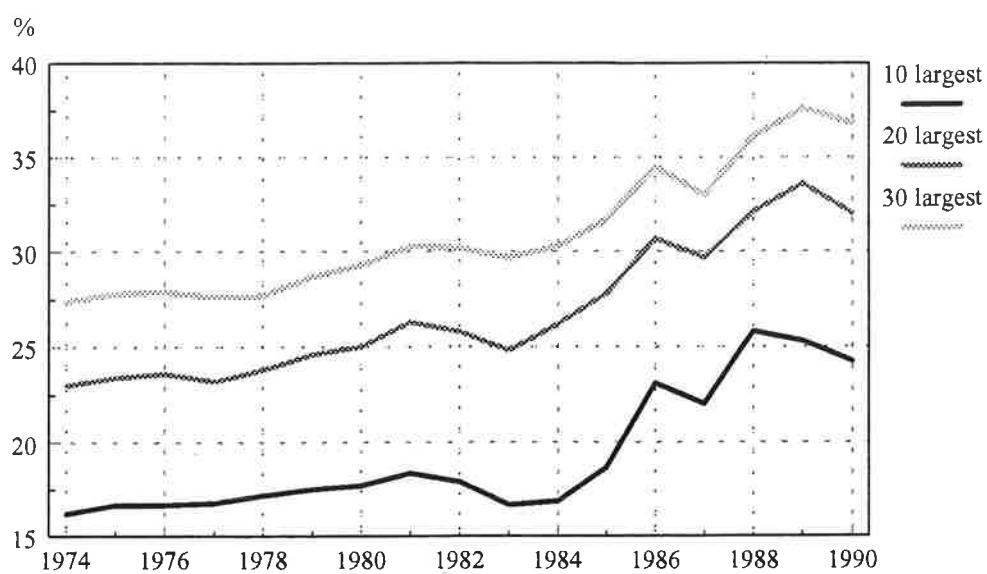
Finland



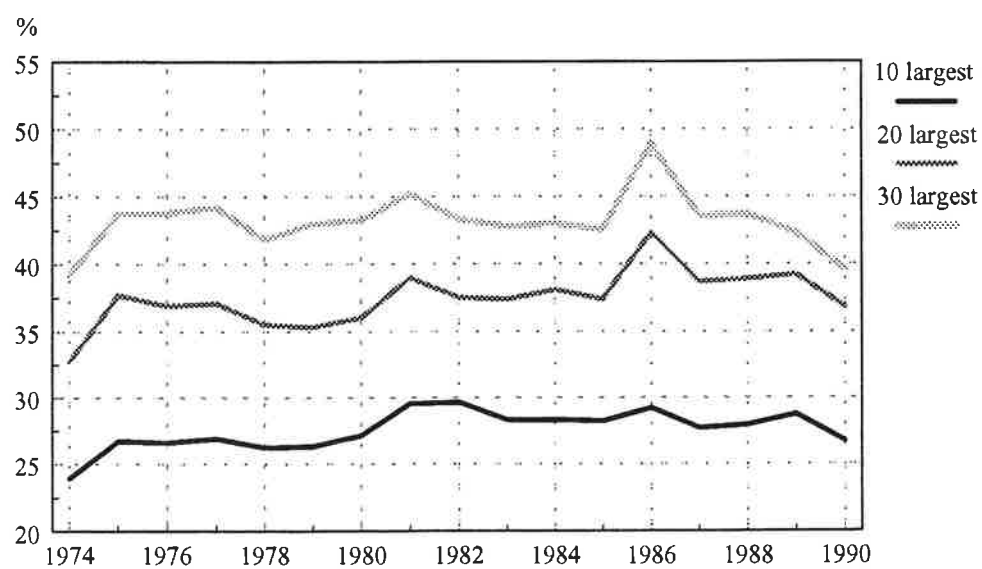
Source: The large firm data base of the Nordic Perspective Group

Figure 5.4 continues ...

Norway



Sweden



Source: The large firm data base of the Nordic Perspective Group

When looking at growth figures one has to keep in mind the caveats given in Chapter 3. There might be some spurious growth due to the changes in accounting and reporting practices of companies. Some of the companies in our sample did not report consolidated, corporate level information in the 1970s and early 1980s. It has been possible to control this problem only partly. Hence, we might have exaggerated the growth rates a little bit. However, the conclusions hold and the problem does not concern the data from the early 1980s onwards.

5.2 Internationalization and R&D Activities

Internationalization of business firms has not received proper attention in analyzing the competitiveness of firms, industries or countries. A growing proportion of international trade is controlled by large multinational corporations. The standard analysis of competitiveness, based on trade theory, neglects the role of multinationals. The mobility of capital, technology and other factors within multinational companies has major implications for policy considerations as indicated, i.a., by Blomström (1991). Sweden lost over 20 % of its share in world exports of manufactured goods from the mid-1960s to the late 1980s, while the export share of the large Swedish multinational companies increased more than 15 % (Blomström 1991). The large companies seem to have restored their competitive position by expanding their production outside the national borders. The comparative advantages of (internationally operating) firms and those of countries do not necessarily coincide. However, most of the studies carried out so far indicate that macroeconomic impacts of the internationalization of business are mainly positive (see Swedenborg et al. 1988, Swedenborg 1992 and Kinnunen 1991).

The contribution of large corporations to total manufacturing has been growing particularly in the fields where major risk taking is needed. International operations and R&D activity are the most obvious examples. Foreign operations of large companies have been growing faster than their domestic output or employment as shown in the previous chapters.

Table 5.3 indicates that foreign employment of the largest industrial companies has been growing sharply during the past 15 years. In Sweden the share of foreign employment is already about two thirds, in Finland about a half and in Norway around one third.

Table 5.3 Share of number of employees in foreign subsidiaries in total employment of the largest manufacturing companies, %

	Finland		Norway		Sweden	
	1974	1990	1974	1990	1974	1990
10 largest	13	49	5	35	46	65
20 largest	10	42	5	32	43	63
30 largest	15	40	5	33	40	62

Source: The large-firm data base of the Nordic Perspective Group

Table 5.3 already shows that there is a clear correlation between firm size and rate of internationalization even in the group of the 30 largest industrial companies. The role of large corporations as leaders of internationalization of business becomes evident when we compare the foreign employment of these companies to that of total national economies. The information on the foreign employment at the national level is quite hard to come by, but some data on Finland and Sweden exist. The foreign employment in our sample of the 30 largest Finnish companies - about 150 000 - is larger than the total number of employees in all Finnish owned subsidiaries as reported by the Bank of Finland (140 000). In Sweden the 30 largest industrial corporations are responsible for 90 - 95 % of total foreign employment of the Swedish owned companies (cf. Braunerhjelm 1991 and Swedenborg et al. 1988). Hence, it seems fair to conclude that the internationalization of the Nordic industries translates more or less to the international operations of large manufacturing companies.

The same conclusion about the leading role of the large companies applies to R&D activities. Table 5.4 gives information about the employment and research spending of the five largest industrial corporations in Finland and Norway.

Table 5.4 Employment and R&D expenditure of the five largest corporations in relation to total domestic employment and R&D expenditures in manufacturing, 1983 and 1987, % (companies ranked according to size of employment in 1987)

Country	Employment		R&D expenditure	
	1983	1987	1983	1987
Finland	17.1	19.7	32.3	33.7
Norway	14.4	22.5	31.3	50.1

Source: The large-firm data base of the Nordic Perspective Group

The relative size of large firms' R&D spending clearly exceeds their contribution to total employment and output in each country. Moreover, the dominance of these companies seems to have increased in recent years. This is in line with findings of many other studies (see, e.g., Vuori and Ylä-Anttila 1987 and references therein). The literature gives two main explanations for the concentration of R&D investment. First, there are obvious scale economies in R&D to be reaped. Secondly, the failure of capital markets to diversify the risks associated with R&D lead to expansion of research activities in the large companies, since the risk diversification can, to some extent, be done if the firm is simultaneously engaged in several uncorrelated projects. There is no doubt that both of these mechanisms have been at work in the Nordic countries.

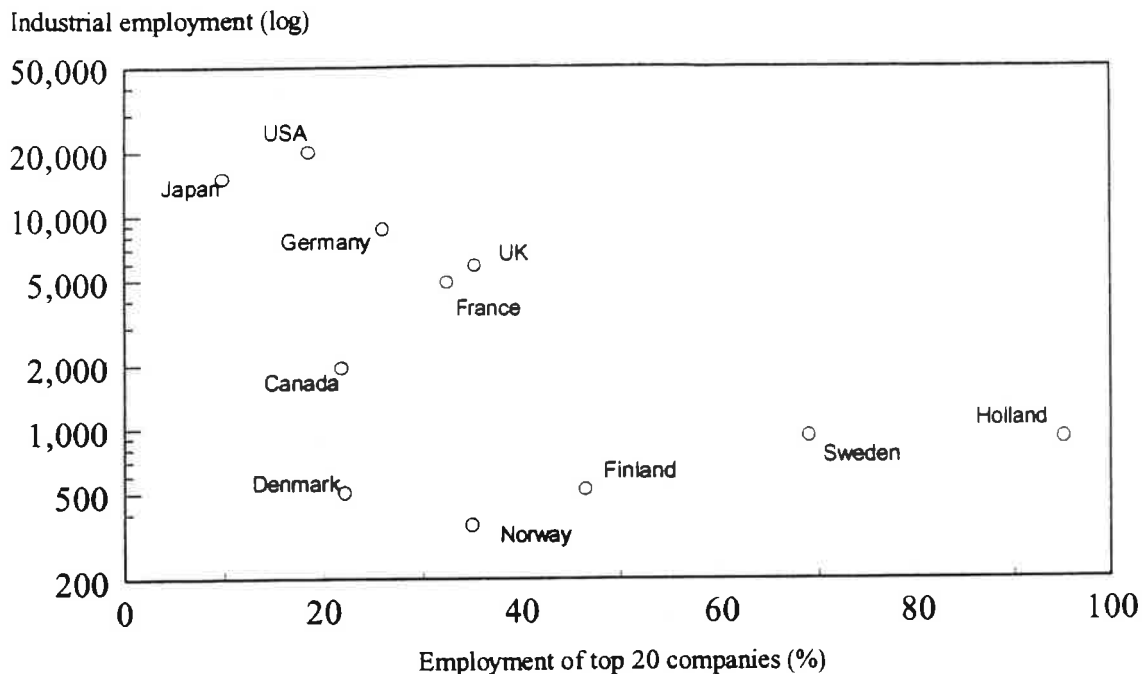
5.3 Is Large Firm Dominance a Small Country Phenomenon?

The largest manufacturing corporations seem to have increased their role with respect to all the variables studied above: employment, output, foreign operations and R&D activities. The contribution of these companies has been particularly important to growing internationalization and knowledge intensity of the Nordic industries. These are the features that industry level studies have indicated as most important factors behind the structural changes of manufacturing industries in these countries (cf. Chapter 1 and the references therein). Is the dominance of large companies a small country or a Nordic phenomenon? This issue is looked at in Table 5.5 and in Figure 5.5

Table 5.5 Aggregate industrial concentration patterns in selected countries, 1985

Country	Average size of top 20 firms (number of employees)	Employment of top 20 firms as a per cent of total industrial employment
USA	219 748	18.6
Japan	72 240	9.9
Germany	114 542	26.0
UK	108 010	35.3
France	81 381	32.5
Canada	26 414	21.9
Switzerland	36 602	60.2
Holland	47 783	95.1
Denmark	6 049	22.2
Finland	12 095	46.6
Norway	6 194	35.0
Sweden	31 690	68.9

Sources: Scherer - Ross (1990) and the large-firm data base of the Nordic Perspective Group

Figure 5.5 Aggregate concentration ratios and country size *

*Aggregate concentration ratio = 20 largest companies' share in total manufacturing employment.

Country size = Total national mining and manufacturing employment.

The average size of the largest companies is positively correlated with country size (measured by total industrial employment), whereas the aggregate concentration ratio is negatively correlated with country size.

Hence, there seems to be some reason to interpret the large firm dominance as a small country phenomenon. Switzerland, Holland, Sweden and Finland show clearly above - average shares of leading companies in total industrial employment. This suggests that economies of scale (or other factors related to size) push large firms toward being larger relative to their national industries in small countries than in large (cf. Scherer and Ross, 1990).

There are, however, a lot of definitional problems involved, as indicated in Chapter 3. The definition of a corporation might vary considerably across the countries. Japan, showing surprisingly low concentration in the table, is a good example. There are family groupings and holding companies having ownership interests in several firms which are, however, reported as separate companies. In fact these companies might form a large, centrally controlled corporation whose boundaries are not easy to define from outside.

6. PERSISTENCE WITHIN THE GROUP OF LARGE NORDIC CORPORATIONS

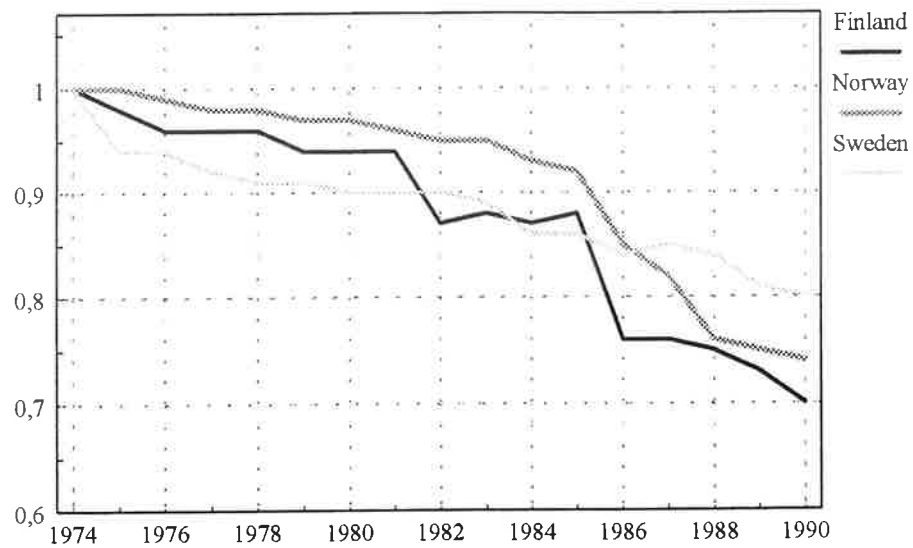
6.1 A 15-Year Perspective: Stability in Rankings 1974-90

As stated in chapter 2 it is our view that firms actively pursue growth. If growth and size are among the goals of firms, it is interesting to ask how stable is the microstructure in the group of large companies? Or do firms pursue strategies of maintaining their rank positions in the group of leading companies? A further question is whether the largest firms (or those ranking highest in size) tend to keep their positions more firmly than those with lower rankings. These questions are dealt with below. We are also interested to look at whether there are differences across the countries and whether the behaviour of firms has changed over time.

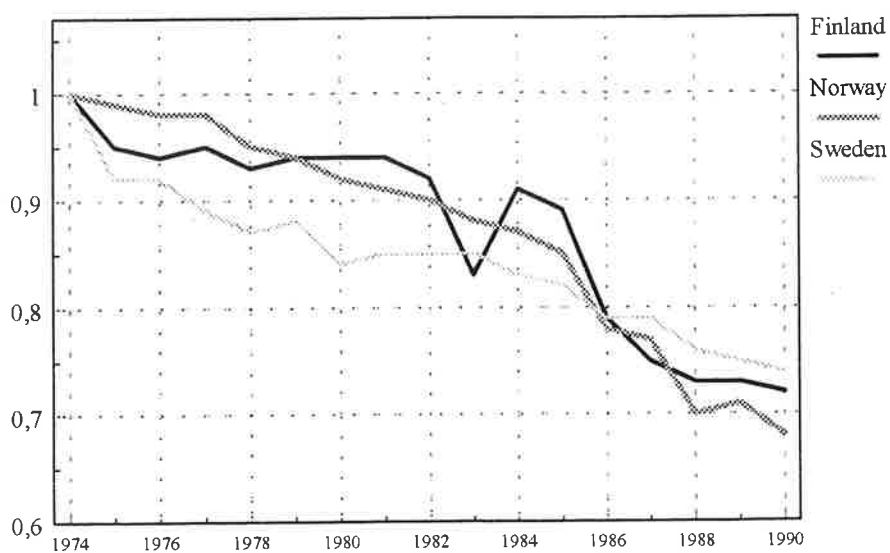
We employ basically two methods in answering the questions above: changes in rank correlations within the group of top 30 companies and the number of exits and entries in the group. The persistence analysis based on Spearman rank correlation coefficients is summarised in Figure 6.1. It has to be noted that when making the stability analysis we employ the information on the whole sample of firms (about 50 companies from each country). All companies which do not qualify among the top 30 in certain year are ranked as 31. (for the required adjustments to correlation analysis, see Ruefli and Wilson 1984 and 1987). The figures display the rank correlations between the starting year (1974) and the subsequent years.

Figure 6.1 Persistence of size structure (rank stability) among the top 30 corporations in the Nordic countries, 1974 - 1990

(Spearman rank correlation coefficients, firms ranked according to employment)



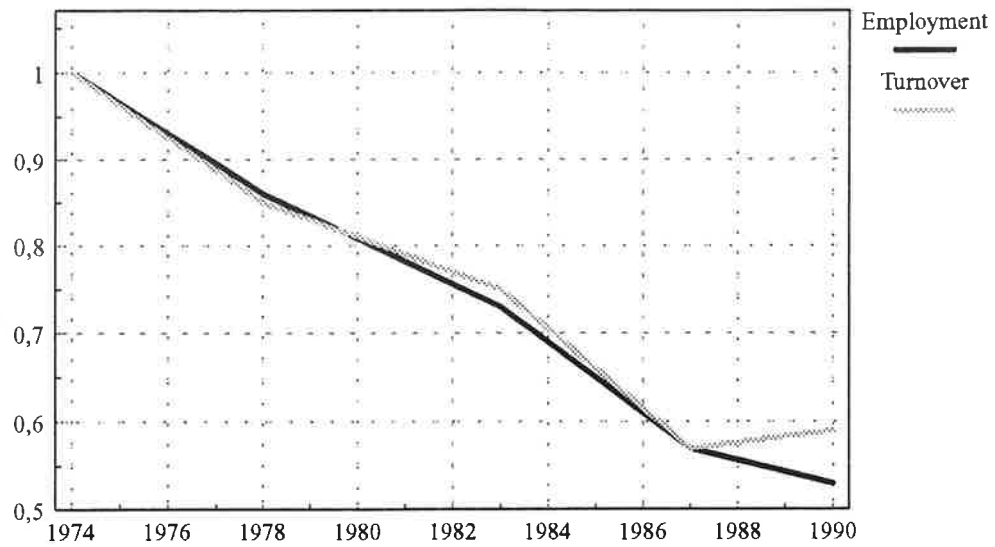
(Spearman rank correlation coefficients, firms ranked according to sales)



Source: The large firm data base of the Nordic Perspective Group

Figure 6.2 Persistence of size structure (rank stability) among the top 30 manufacturing corporations, by countries, 1974 -90 (Spearman rank correlation coefficients, firms ranked according to employment and turnover)

Denmark



Finland

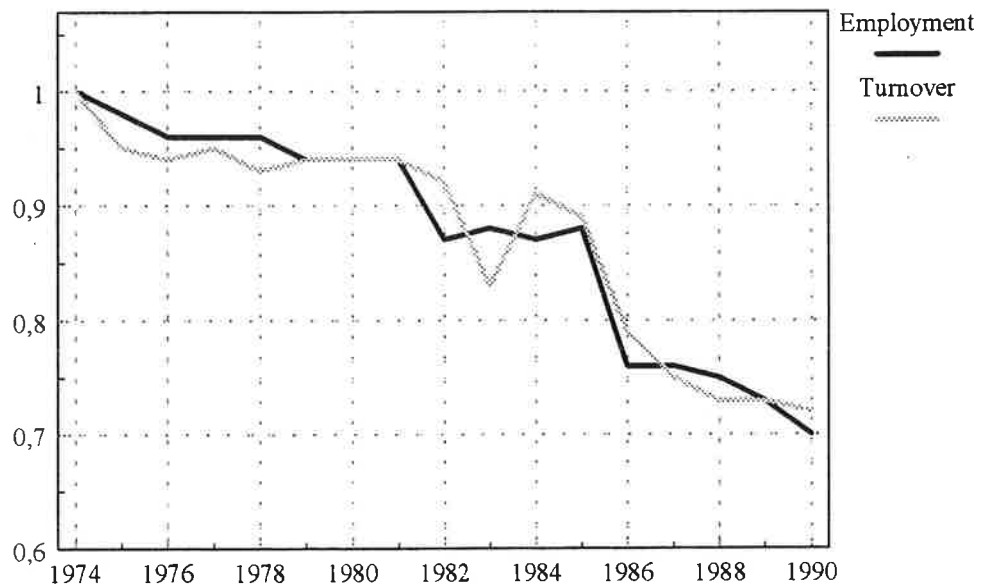
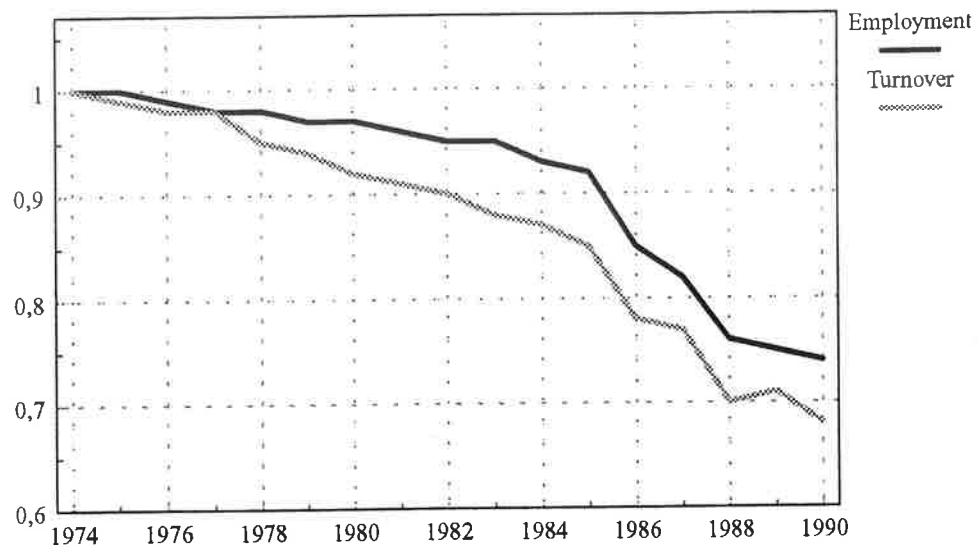
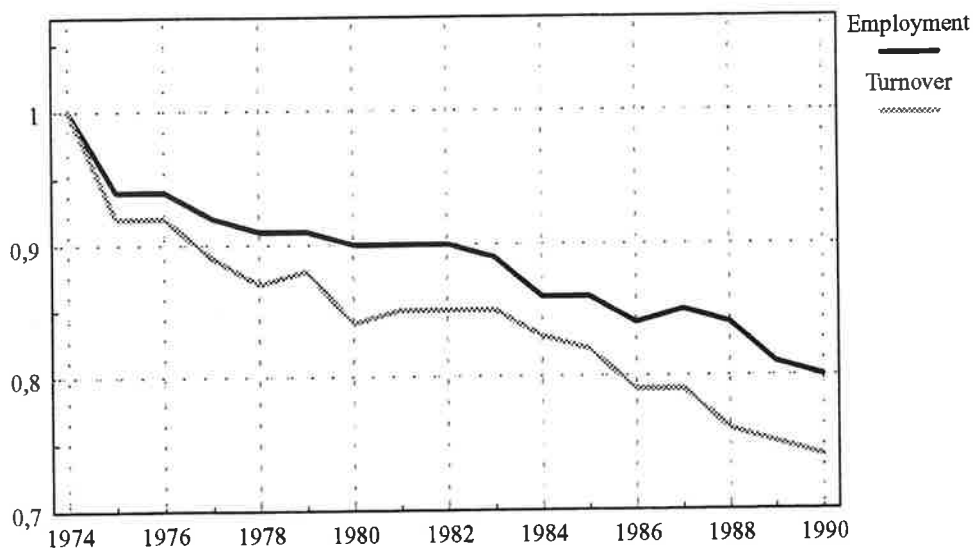


Figure 6.2 continues

Norway



Sweden



Source: The large-firm data base of the Nordic Perspective Group

The first conclusion is that the size structures are rather stable in all countries: The rank is almost identical over the first ten years under consideration and changes even thereafter only slight. There are, however, some interesting differences between the countries. The group of Swedish companies is showing the highest stability and the Danish group the lowest among the four. It can be concluded that the Swedish and Norwegian firms are pursuing a strategy of keeping their employment more stable than their sales. In Denmark the situation seems to have been the other way round. The group of Finnish firms, in turn, is showing more or less similar changes in rankings based either on employment or sales. Hence, it can be concluded that Finnish firms tend to adjust their labour force according to fluctuations in sales.

Tables 6.1 and 6.2 show the number of exits (and entries) in the group of the 30 largest. On average there are about two exits and entries per year in each country in the period under consideration. This shows, again, a high stability of leading positions. Exits/entries have, however, increased during the latter half of the 1980s. That concerns in particular Sweden and Norway, where the number of exiting firms per year in the latter half of the 1980s is twice as high as in preceding decade. The differences between the subperiods is due to mergers and acquisitions. If these are excluded there are no major differences either between subperiods or across countries. The average number of natural exits per year is approximately one for each country over the whole period from 1974 to 1990.

Table 6.1 Exits from the group of 30 largest corporations in 1974 - 1990 (Firms ranked according to size of employment)

A = All firms

B = Firms leaving the group due to bankruptcy or merger.

YEAR	SWEDEN		FINLAND		NORWAY		DENMARK	
	A	B	A	B	A	B	A	B
1975	2	0	1	0	2	0	-	-
1976	1	0	0	0	2	0	-	-
1977	2	0	1	0	1	0	-	-
1978	3	0	2	0	4	1	6	0
1979	1	1	1	0	2	0	-	-
1980	1	1	0	0	1	0	-	-
1981	2	0	1	0	2	2	-	-
1982	1	1	4	0	1	1	-	-
1983	0	0	3	0	2	0	5	0
1984	3	2	1	0	1	1	-	-
1985	1	1	1	0	4	1	-	-
1986	5	1	2	0	5	3	-	-
1987	5	4	3	0	4	4	7	1
1988	2	0	1	0	5	4	-	-
1989	2	2	1	0	4	3	-	-
1990	1	1	2	0	2	2	6	2
AVERAGE								
75-90	2	0,9	1,5	0	2,6	1,4	1,5	0,2
75-84	1,6	0,5	1,4	0	1,8	0,5	-	-
85-90	2,7	1,5	1,6	0	4	2,8	-	-

Source: The large firm data base of the Nordic Perspective Group

Table 6.2 Exits from the group of 30 largest corporations in 1974 - 1990 (Firms ranked according to sales)

YEAR	SWEDEN		FINLAND		NORWAY		DENMARK	
	A	B	A	B	A	B	A	B
1975	3	0	0	0	1	0	-	-
1976	1	0	2	0	3	0	-	-
1977	1	0	1	0	1	0	-	-
1978	1	0	1	0	4	0	6	0
1979	1	0	1	0	2	1	-	-
1980	1	1	1	0	1	0	-	-
1981	2	1	1	0	2	1	-	-
1982	1	0	1	0	1	0	-	-
1983	1	0	1	0	2	0	5	0
1984	3	2	2	0	2	2	-	-
1985	2	1	1	0	3	1	-	-
1986	4	1	2	0	5	3	-	-
1987	5	3	3	0	5	4	7	1
1988	3	0	1	0	6	3	-	-
1989	5	4	2	0	2	2	-	-
1990	1	1	2	0	3	2	7	2
AVERAGE								
75-90	2,2	0,9	1,4	0	2,7	1,2	1,6	0,2
75-84	1,5	0,4	1,1	0	1,9	0,4	-	-
85-90	3,3	1,7	1,8	0	4	2,5	-	-

Source : The large-firm data base of the Nordic Perspective Group

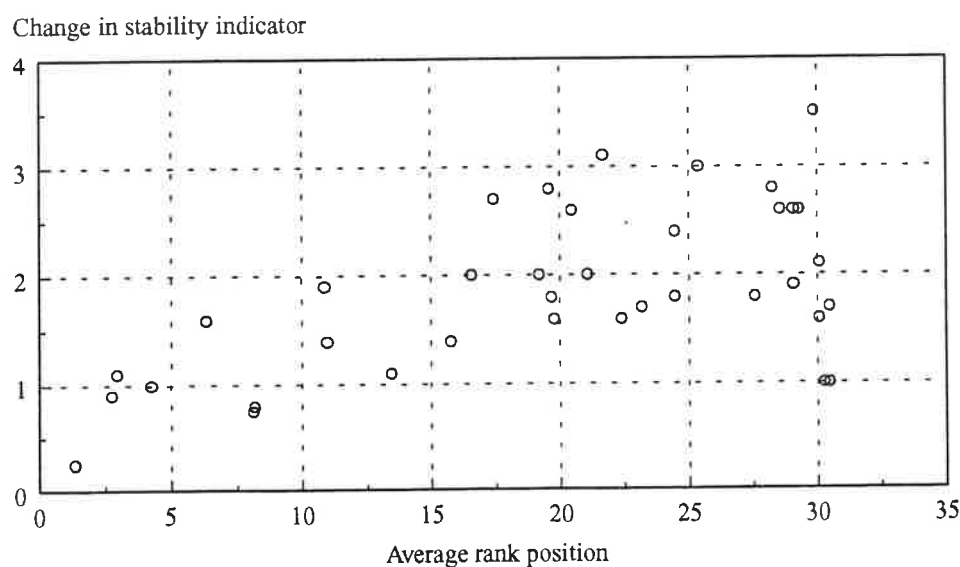
The results in Tables 6.1 - 6.2 are in line with some previous studies. Data from the US industry shows that the average number of exits from the group of 100 largest companies has been about 3 during the same period from the mid-70s to late 80s (see Scherer and Ross, 1990). In the standard industrial organization literature the high stability of leading firms' positions is usually interpreted to be an indicator of lack of dynamic competition. In the case of open Nordic economies and high rate of internationalization of firms we have, however, to be rather cautious with this conclusion. Most of the leading companies are competing outside the natio-

nal borders in very different types of markets. If anything, one can conclude that no major changes have taken place in terms of dynamic competition in the groups of leading Nordic companies over the period from the mid-70s to 1990.

6.2 Stability vs. Size

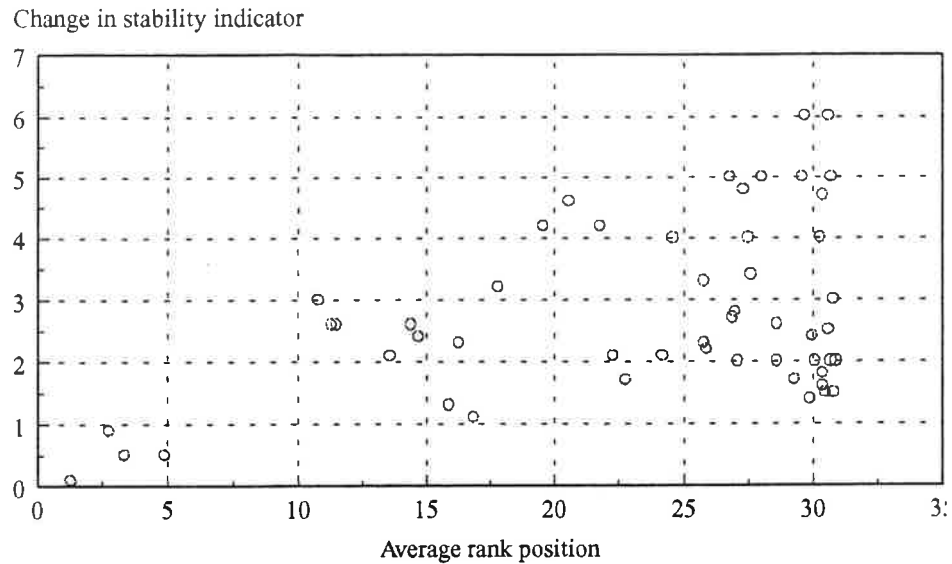
Next we turn to the question whether the largest firms - i.e. those ranking highest in the group of leading companies - tend to be more stable in their rank positions than the smaller ones. This issue is looked at in Figures 6.3 to 6.5. The indicator of firm-specific stability is calculated simply as an average of changes in rank positions over the period 1974 to 1990.

Figure 6.3 Stability in rank positions vs. company size in the group of Finnish companies (companies ranked according to employment)



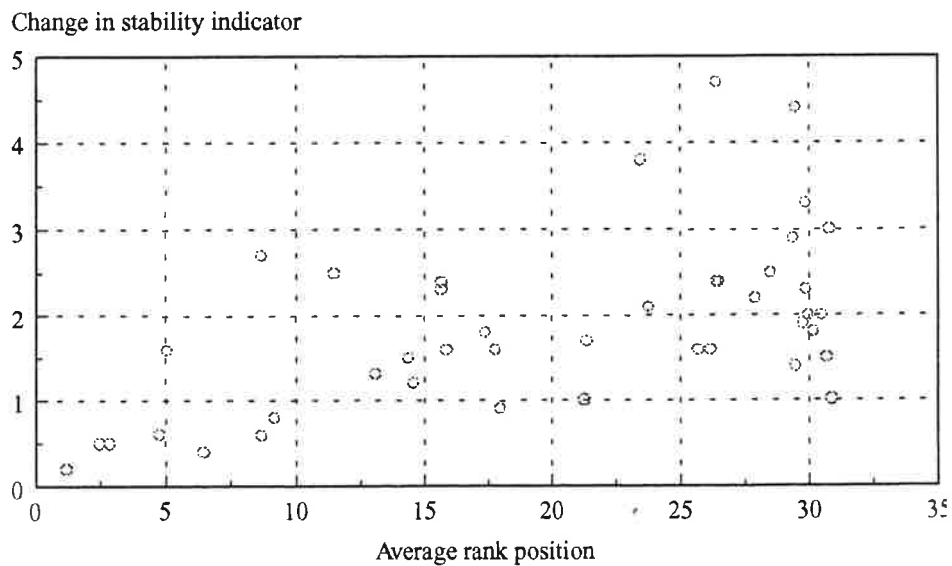
Source: The large-firm data base of the Nordic Perspective Group

Figure 6.4 Stability in rank positions vs. company size in the group of Norwegian companies (companies ranked according to employment)



Source: The large-firm data base of the Nordic Perspective Group

Figure 6.5 Stability in rank positions vs. company size in the group of Swedish companies (companies ranked according to employment)



Source: The large-firm data base of the Nordic Perspective Group

The message from the figures is clear: The bigger the firm, the more likely it is to keep its (high) rank position - the correlation is very clear and statistically significant. This is in accordance with expectations. The persistence of rank positions seems to be a very long-run phenomenon as indicated in the next section.

6.3 A Long-Term Perspective

The 15-years perspective certainly reveals changes in all the Nordic countries regarding the composition of corporations that qualify for the group of the 30 largest. However, the group of the largest in 1990 is by no means completely different from the similar group in the mid-1970s. A significant number of the largest at the start of this period is also among the largest at the end.

A period of 15 years is, however, rather short when considering how the basis for deeply rooted organizations, like large corporations, usually change. The existence of firms are based on organizing human capital, industrial competence, real assets and financial resources, which all may be applied for different business opportunities. This means that a firm may continue to exist while the businesses in which it is engaged, may change. Or, at least, the ways it operates its businesses are changed in order for the firm to stay competitive.

Large firms can usually refer to a long industrial history. This may be illustrated by considering the age of the largest industrial corporations in 1990, or what we have called their founding year. In our interpretation, however, the founding year does not refer to the year in which a corporation was legally established in its present form. A merger, for instance, means in some sense the legal establishment of a new corporation without necessarily liquidating the businesses in which the merging partners were involved. Thus, we consider the founding year to be the year of establishment for the oldest business unit from which the business engagements of the present corporation directly have evolved.

As we have left the problems of operationalizing this rather unclear definition to the discretion of the project participants from each country, our information on this matter ought to be interpreted with some caution. Nevertheless, it is rather obvious from Table 6.1 that the operations of the largest Nordic corporations generally can be traced long back a long time. Only in rare cases are they based on a business that first was established over the previous 25 years. This is the case for all Nordic countries. It is further a common feature for the 30 largest corporations of all the countries that only some 20% has evolved from a business unit which was not well established at least 50 years ago. Actually, in all countries a significant number of the 30 largest corporations of today seems to have a history of at least 100 years.

Table 6.1 Founding year for the oldest business within the largest Nordic industrial Corporations of 1990. Number of corporations.

Founding year	Denmark	Finland	Norway	Sweden
1965-1990	5	2	3	2
1940-1964	4	4	3	5
1915-1939	7	10	3	7
1890-1914	4	4	11	11
- 1889	10	10	11	5

Source: The large-firm data base of the Nordic Perspective Group

The history of the largest corporations illustrates the long-term character of business development. Furthermore, it underlines the prerequisite of continuity in industrial transformation: New businesses evolve from the current industrial base. Only rarely does something distinctly new emerge. Except for the discovery of unknown natural resources, as happened in Norway with oil and gas in the early 1970s, nothing comes out of the blue.

The continuity which characterizes industrial transformation, does not imply that the largest corporations of today were also the largest in previous periods. Smaller firms may have grown and surpassed those which were the largest in the earlier days. This was the case when we discussed the development of the largest corporations since the mid-1970s, and it ought to be even more so if a longer time perspective is applied. This we will consider by

comparing the largest corporations of the period prior to World War II, as they are presented in Table 6.2, with the largest of today (cf. Table 4.1). The ranking of the largest more than half a century ago is for Denmark from 1938, and it is based on Thomsen (1992); also for Finland it is from 1938, based on Ripatti, Vartia and Ylä-Anttila (1989); for Norway it is for 1936, based on Walderhaug (1992); and for Sweden it is from a decade earlier, for 1925, based on Jagrén (1988).

Table 6.2: Largest industrial corporations of the Nordic countries, pre-WWII.**Denmark, 1938.**

STORE NORDISKE TELEGRAFSKAP
 DE DANSKE SUKKERFABRIKKER
 DE FORENEDE BRYGGERIER
 NORDISK KABEL OG TRAAD
 BURMEISTER & WAIN

 ÅLBORG PORTLAND
 DE FORENEDE PAPIRFABRIKKER

 AARHUS OLIEFABRIK
 SUPERFOS
 F.L.SMIDTH & Co

 CARL ALLER
 DE DANSKE SPRITFABRIKKER
 DANSK CICORIE
 NORDISK FJER
 HELSINGØR SKIBS- OG MASKINBYGGERI
 KRYOLITH MINE OG HANDEL
 FISKE & NIELSEN
 GYLDENDAL
 GLUD & MARSTRANDS FABRIKER
 BALLIN & HERTZ

 STJERNEN
 TITAN
 KASTRUP GLASVÆRK
 HENRIQUES & LØVGREN TRIKOTAGE
 DANSK MEDICINAL- OG KEMI
 KØBENHAVNS BRØDFABRIK
 KONGELIG PORCELLAIN
 VØLUND
 LAURIDS KNUDSEN
 BRANDTS KLÆDEFABRIK

Finland, 1938.

ENSO-GUTZEIT
 WÄRTSILÄ
 A. AHLSTRÖM
 FINLAYSON-FORSSA
 TAMPEREEN PELLAVA- ja
 RAUTATEOLLISUUS
 KYMIN
 VALTIONRAUTATEIDEN KONE
 PAJAT
 W. ROSENLEW & Co.
 WILH. SCHAUMAN
 SUOMEN GUMMITEHDAS

 PORIN PUUVILLA
 SUOMEN TRIKOOTEHDAS
 YHDISTYNEET VILLATEHTAAT
 YHTYNEET PAPERITEHTAAT
 KAUKAS FABRIK
 ARABIA
 SOK:n TEOLLISUUSLAITOKSET
 PARAISTEN KALKKIVUORI
 VAASAN PUUVILLA
 KEMI

 HACKMAN & Co.
 RAUMA
 SUOMEN SOKERI
 OTK:n TEOLLISUUSLAITOKSET
 STRÖMBERG
 JOHN BARKER
 OULU
 VUOKSENNISKA
 VEISILUOTO
 H:kin KAUPUNGIN TEOLLISUUS-
 LAITOKSET

Norway, 1936

BORREGAARD
O. MUSTAD & SØN
NORSK HYDRO
UNION
FREIA CHOCOLADEFABRIK
ASKIM GUMMIVAREFABRIKK
CHR. BJELLAND & Co.
AKERS MEK. VERKSTED
ORKLA GRUBE
SAUGBRUKSFORENINGEN

SYDVARANGER
CHRISTIANIA SPIGERVERK
CHRISTIANIA GLASMAGASIN
FREDRIKSTAD MEK. VERKSTED
SULITJELMA GRUBE
ELEKTRISK BUREAU
DE FORENEDE ULDVAREFABRIKER
NORSK ALUMINIUM COMPANY
NYLANDS VERKSTED
NYDALENS COMPAGNIE

ELECTRIC FURNACE PRODUCTS Co.
NORSK ELEKTRISK & BROWN BOVERI
STRØMMENS VERKSTED
DET NORSKE ZINKKOMPANI
RAUFOSS AMMUNISJONSFABRIKKER
DALE FABRIKKER
THUNES MEK. VERKSTED
TOFTE CELLULOSEFABRIKK
ARNE FABRIKKER
KONGSBERG VÅPENFABRIKK

Sweden, 1925

ASEA
STORA KOPPERBERG
SWEDISH MATCH
GRÄNGES/LKAB
SKF
SOCKERBOLAGET
UDDEHOLM
HÖGANÄS-BILLESOLM
TOBAKSMONOPOLET
ERICSSON

YTTERSTFORS-MUNKSUND
HOLMENS BRUK
HUSQVARNA VAPENFABRIK
GIMO-ÖSTERBY BRUK
SANDVIK

Source: Thomsen (1992), Ripatti, Vartia and Ylä-Anttila (1989), Walderhaug (1992), Jagrén (1988).

Several of the names on these pre-WWII are easily recognized when considering the names of the largest corporations in 1990. Thus, it is by no means so that the corporations in the group of largest in one country, is completely replaced by other corporations over a period of more than 50 years.

Actually, when we examine the current situation of the largest from the pre-WWII period, a great number can be traced to the largest firms of today. This is summarized for the 30 largest of Denmark, Finland and Norway in the latter half of the 1930s in Table 6.3.

Table 6.3: Current situation of industrial corporations that were largest in the late 1930s. Denmark, Finland and Norway.

	Denmark	Finland	Norway
Among the 30 largest of 1990 as an independent corporation	9	14	8
Merged to be part of one of the 30 largest corporations of 1990	5	6	11
Still in business	9	4	10
Closed down	7	6	1

Source. The large-firm data base of the Nordic Perspective Group

Obviously large firms seem to be rather persistent. In Finland and Norway roughly two thirds of the 30 largest corporations in the late 1930s are represented within the group of the 30 largest in 1990. In Denmark this is the case for almost half. Less than one fourth of the 30 largest firms from the late 1930s are completely closed down. In Norway this concerns only one of the whole group of 30.

The persistence among large firms from the late 1930s is even more evident when considering the largest of the large: 8 of the 10 largest in Denmark are found among the 30 largest also in 1990, of which 4 still are independent corporations; in Finland it is 9 of the 10, and 6 as independent; and in Norway it is 7 of the 10, and 5 as independent. Of the 10 largest from Sweden in the mid-1920s, 7 are among the 30 largest in 1990, and of these 4 are still independent.

Thus, it seems fair to summarize that there is a noteworthy persistence within the group of the largest industrial corporations in all Nordic countries. Of the largest in 1990, some are

almost a one-to-one extension of one of the largest more than 50 years ago; some represent restructured constellations involving one or more of the largest at that time; others are new to the scene of the largest. However, only rarely these are "newcomers" directly based on business units that were not in operation 50 years ago. Similarly, only a few of the largest half a century ago can be classified as completely out of business today, even though their lines of production may have changed.

These findings clearly indicate that the largest industrial corporations at any point in time must be playing an important role in the renewal and restructuring of Nordic business. This does not mean that they are the innovators, nor that the operations of small and medium-sized firms are of no significance. What it means is that a significant share of the largest, at one time or another, seems to engage successfully in the process of industrial transformation. This involvement, however, may either be based on innovations and creativity originating in each of the large corporations, or it may be based on what others actually have initiated.

REFERENCES

- Aoki, M., Gustafsson, B. and Williamson, O. E.,(eds.), *The Firm as a Nexus of Treaties*. London: SAGE Publications 1991.
- Berrefjord, O.; Heum, P. and Tvedt, K.O. "Norway: On the Track of Long-Term Balanced Growth" in ETLA et.al. *Growth and Integration in a Nordic Perspective*, Helsinki: ETLA, 1992.
- Björklund, T. and Heum, P. "Corporate R&D in Norway", Bergen: *NOM*-Working Paper No. 23/1990.
- Braunerhjelm, P. *Svenska industriföretag och EG 1992 Förväntningar och planer*, Stockholm: IUI 1990.
- Carlsson, B. "The Evolution of Manufacturing Technology and Its Impact on Industrial Structure: An International Study", *Small Business Economics*, No.1/1989.
- Carlsson, B. and Stankiewicz, R. "On the Nature, Function and Composition of Technological Systems", Mimeo 1990.
- Caves, R.E. "International Corporations: The Industrial Economics of Foreign Investment", *Economica*, 1971.
- Dahmén, E. *Svensk industriell företagarverksamhet (Swedish Industrial Business Firms)*, Stockholm: IUI, 1950.
- Dahmén, E. "Development Blocks" in *Industrial Economics*", in Carlsson (ed.) *Industrial Dynamics. Technological, Organizational, and Structural Changes in Industries and Firms*, Boston: Kluwer, 1989.
- de Jong, H. W. (ed.), *The Structure of European Industry*. Kluwer Academic Publishers. 1988
- Diwan, R. "Small Business and the Economics of Flexible Manufacturing", *Small Business Economics*, Vol.1, No. 2, 1989.
- Dunning, J.H. "Explaining International Production", London, 1988.
- Edquist, C. and Jacobsson, S. *Flexible Automation. The Global Diffusion of New Technology in the Engineering Industry*, London: Basil Blackwell, 1988.
- Eliasson, G. "Deregulation, Innovative Entry and Structural Diversity as a Source of Stable and Rapid Economic Growth". *Journal of Evolutionary Economics* 1/1991.
- Eliasson, G.; Fölster, S.; Lindberg, T.; Pousette, T. and Taymaz, E. *The Knowledge Based Information Economy*, Stockholm: IUI, 1990.
- Eliasson, G.; Örtengren, J.; Lindberg, T.; Jagrén, L.; Bjuggren, P.O. and Björklund, L. Expansion, avveckling och företagsvärdering i svensk industri - en studie av ägarformens och

finansmarknadernas betydelse för strukturomvandlingen (Expansion, Contraction and the Value of the Firm in Swedish Manufacturing - a Study on the Importance of Markets for Ownership and Control for Structural Adjustments), Stockholm: IUI, 1988.

Freeman, C. The Economics of Industrial Innovation, London: Penguin, 1974.

Grossman, G.M. and Helpman, E. Innovation and Growth in the World Economy, Cambridge, MA: The MIT Press, 1991.

Hammervoll, T. and Heum, P. "Endring i selskapsstrukturer på 1970- og 1980-tallet" (Changes in Company Structures in the 1970s and 1980s), Bergen: SNF-Report_No. 39, 1992.

Hay D. and Morris D., Industrial Economics. Theory and Evidence. Oxford University Press 1979.

Hymer, S.H., "The international Operations of National Firms: A Study of Direct Foreign Investment. Cambridge, Mass, 1976.

Jagrén, L. "Företagens tillväxt i ett historiskt perspektiv" (Growth of Firms in a Historical Perspective) in Eliasson et.al._Expansion, avveckling och företagsvärdering i svensk industri, Stockholm: IUI, 1988.

Johnstone, R. and Lawrence, P.R. "Beyond Vertical Integration - the Rise of the Value Adding Partnership", Harvard Business Review, July-Aug. 1988.

Kajaste I., Parviainen S. and Ylä-Anttila P. Foreign Direct Investment of Finland in the 1990s. Helsinki: Government Institute for Economic Research, Discussion Papers No 28.

Kristiansen, F. "Nyetableringer og nedlegginger i norsk industri. Årene 1977-1986" (Entries and Exits in Norwegian Manufacturing, 1977-1986), Bergen: SNF-Working Paper No. 94, 1992.

Machlup, F., "Theories of the Firm: Marginalist, Behavioral, Managerial", American Economic Review, March 1967.

Mansfield, E. Industrial Research and Technological Innovation, New York: Norton, 1968.

Nelson, R.R. and Winter, S.G. An Evolutionary Theory of Economic Change, Cambridge, MA: Harvard University Press, 1982.

Oxelheim, L. "The Largest Nordic Manufacturing Companies" in "Economic Growth in a Nordic Perspective". ETLA et al. 1984

Pelikan, P. "Economic Competence as a Scarce Resource - An Essay on the Limits of Neoclassical Economics and the Need for an Evolutionary Theory", Stockholm: IUI Working Paper No. 191, 1988.

Perroux, F. "The Phenomenon of Growth Observed in an Industrial Pole: the Ruhr", in Cahiers ISEA Matériaux pour une Analyse de la Croissance Economique, Book No. 1, Series D. No. 8, 1955.

Piore, M.J: and Sable, C.F. *The Second Industrial Divide: Possibilities for Prosperity*, New York: Basic Books, 1984.

Porter, M.E. (ed.) *Competition in Global Industries*, Boston: Harvard Business School Press, 1986.

Porter, M.E. "From Competitive Advantage to Corporate Strategy", *Harvard Business Review*, May-June 1987.

Porter, M.E. *The Competitive Advantage of Nations*, New York: The Free Press, 1990.

Porter, M.E. and Fuller, M.B. "Coalitions and Global Strategy", Ch. 10 in Porter (ed.) *Competition in Global Industries*, Boston: Harvard Business School Press, 1986.

Ranta, J, and Tchijov, I. "Economics and Success Factors of Flexible Manufacturing Systems: The Conventional Explanation Revisited", *International Journal of Flexible Manufacturing Systems*, No. 2/1990.

Rebelo, S. "Long Run Policy Analysis and Long Run Growth", *Journal of Political Economy*, No. 99, 1990.

Reve, T. "The Firm as a Nexus of Internal and External Contracts", in Aoki, Gustafsson and Williamson (eds.) *The Firm as a Nexus of Treaties*, Newsbury: SAGE Publications, 1990.

Ripatti, A.; Vartia, P. and Ylä-Anttila, P. "Suomen talouden ja yritysrakenteen muutokset 1938-1988" (Changes in the Finnish Economy and Company Structure, 1938-1988), Helsinki: ETLA Discussion Paper No. 297, 1989.

Romer, P.M. "Increasing Returns and Long-Run Growth", *Journal of Political Economy*, No. 5, 1986.

Rosenberg, N. *Perspectives on Technology*, Cambridge: Cambridge University Press, 1976.

Ruefli, T.W. and Wilson C. , "Ordinal time series methodology for industry and competitive analysis", *Management Science*, vol. 33, no. 5, 1987.

Ruefli, T.W. , Salazar, R. and Wilson C. " Relative Rank Analysis:Theory and Application" IC Institute, University of Texas, Austin, 1984.

Rumelt, R.P., Schendel, D. and Teece, D.J. "Strategic Management and Economics" *Strategic Management Journal*, Vol. 12, 1991.

Salter, M.S. and Weinhold, W.A. "Diversification via Acquisition: Creating Value", *Harvard Business Review*, July-Aug. 1978.

Scherer, F.M. "Corporate Takeovers: The Efficiency Arguments", *Journal of Economic Perspectives*, No. 2, 1988.

Scherer F.M. and Ross, D. "Industrial Market Structure and Economic Performance", Houghton Mifflin Company, 1990.

Siegel, D. Österreichs Grossindustrie: Profile der 30 grössten Industriegruppen (Austria's Large Industry: Profiles of the 30 Largest Industrial Corporations), Wien: Industriewissenschaftliches Institut, 1991.

Swdenborg B., "Internationalisering och productivitet , FIEF, Stocholm, 1992.

Swedenborg B., Johansson-Grahn G. och Kinnwall M., Den svenska industrins utlandsinvesteringar 1960 - 1986. Stockholm: IUI 1988.

Thomsen S., Storindustri og transaktionsomkostninger. PhD thesis Copenhagen Business School 1992.

Tirole, J. The Theory of Industrial Organization, Cambridge, MA: The MIT Press, 1988.

Walderhaug, K. "Storforetakenes betydning i norsk industri. En sammenlikning mellom 1936 og 1990" (The Importance of Large Firms in Norwegian Manufacturing. Comparing 1936 and 1990), Bergen: SNF-Working Paper No. 70, 1992.

Vuori, S. and Ylä-Anttila P., " Structural Change in Finnish Manufacturing" , Bank of Finland Monthly Bulletin, 1987.

Ylä-Anttila, P. and Lovio, R. "Flexible Production, Industrial Networks and Company Structure - Some Scandinavian Evidence", Helsinki: ETLA Discussion Paper No. 338, 1990.

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