

Mergers in Swedish Industry

Bengt Rydén





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Mergers in Swedish Industry

The Industrial Institute for Economic and Social Research

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An Empirical Analysis of Corporate Mergers
in Swedish Industry, 1946–69

Bengt Rydén

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FOREWORD

In the structural changes which have taken place in the Swedish economy in the postwar period, mergers and acquisitions of firms as well as cooperative agreements between firms have come to play an important role. These phenomena have received attention in the economic and political debate also. However, until now the extent and causes of mergers in Sweden have been subjects of only limited investigation. It is the aim of this study to try to fill this gap.

Through a systematic process of information gathering from daily newspapers, professional magazines, annual reports, and lists of members of trade and industrial organizations, data from nearly 4,000 industrial mergers and cooperative agreements have been collected. These collaborative arrangements are analyzed from various viewpoints in the present investigation. Motives and reasons behind the observed development of mergers are discussed. The importance of mergers for the growth and profitability of firms listed on the Stockholm Stock Exchange is analyzed. Among the factors considered in the causality analysis are differences in merger intensity between expanding and stagnating industries and the profitability, liquidity, solvency, and growth rate of the acquired firms.

The investigation has been carried out by Bengt Rydén, MBA. It has been presented as a dissertation at the Stockholm School of Economics. Financial support has been received from the Ministry of Industry as an expression of the common interest of the Institute and the Government in directing more efforts into studies of industrial structure.

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THE INDUSTRIAL INSTITUTE FOR
ECONOMIC AND SOCIAL RESEARCH

Lars Nabseth
(Director)

"The tendency to consolidation
is irresistible."
(Thorstein Veblen)

CHAPTER 1

BACKGROUND, OBJECT AND OUTLINE OF THE STUDY

ECONOMIC GROWTH AND CHANGE

The full emergence of industrialism in Sweden is customarily dated to the years around 1870. Thus, Swedish industry has by now experienced a century of rapid and relatively continuous growth. At the same time, however, the structure of the economy has been fundamentally transformed and this change has affected the relative significance of different branches of economic activity, the composition of industrial output, the size, location, organization and specialization of firms, the methods of production and so on.

That growth and structural change go hand in hand is of course not peculiar to Sweden. The pattern has been and is pretty much the same in all industrial countries. Gradual change as reflected in the reallocation of productive resources is not only a consequence of economic growth but also one of its determinants. The growth of output of different commodities seldom proceeds at the same pace. To a large extent growth is sustained by the arrival of new products which supplement or replace old ones. The development of new production methods also permits resources to be utilized more efficiently and consequently a greater output with given input. Hence structural change is going on all the time in that firms and industries manage to attract productive resources in varying degree. The cause of such change is, in turn, changes in relative prices and in technology. Competition on the factor and commodity markets, moreover, means that firms deliberately strive to develop new processes and products, and thereby help to initiate structural change.

Obviously, measuring the rate and extent of structural change does not lend itself to the same "simple" technique as, say, the growth of production. The forms and manifestations of change are infinite in number, and any attempt to impart a meaningful definition to the concept of "structural

change" tends to become a futile exercise in semantics. Most empirical studies in this field have necessarily been partial in the sense that they have focused on one or a few of its manifestations, e.g. the births and discontinuation of firms, changes in locational patterns, innovations in products and processes, productivity changes in different industries, etc.¹ Nor is a stringent definition of the concept of structural change really necessary for our own purposes. The above examples should suffice to make clear the type of problems contemplated here.

For several reasons the problems involved in structural change has received increasing attention in Sweden during the past decade, especially since the mid-1960's. This seems to be chiefly related to certain changes that have occurred in the community's "political" values and with the heightened level of aspirations of the politicians in various respects. As economic policy has become more effective in stimulating economic activity so that the "unavoidable" depressions of yesteryear are now no more than distant memories, it has become natural for economic policy-makers to devote greater attention to questions of growth. Promoting the fastest possible growth has become a generally accepted political goal, as a way to confer rapidly improved standards of material well-being on the country's citizens. The allocation and organization of productive resources have crucial bearing upon the growth rate. Every influence which results in a more efficient utilization of resources - a process that is sometimes called "structural rationalization" - tends to increase the rate of growth. It is partly the desire to affect the allocation of resources in this way which explains the fairly recent emergence of an "industry policy" in Sweden and in some of the leading European industrial countries. Besides, the ideas underlying this policy have been forcefully expressed by the Swedish labor movement, especially the Confederation of Trade Unions (LO), ever since the beginning of the 1950's.²

¹ Probably the most comprehensive study of structural change made in Sweden so far is that by Dahmén [1950].

² See e.g. *Samordnad Näringspolitik*, LO [1961].

Economic policy has thus taken on an added ingredient of "structural policy", and it is not only in Sweden that a separate ministry or government department has been created to deal with "structural" and related matters. At the same time, however, aspirations have steadily increased as regards the level of employment. Since structural change often manifests itself in such things as relocations or shutdowns of production lines, plants or whole firms, it is evident that the employment goal can come into conflict with a spontaneous or centrally initiated process of structural change. This is to say that such change is intimately bound up not only with growth policy but also with employment policy, which in turn has come to embrace measures of regional development and manpower redeployment as natural responses to the employment effects of structural change.

The increased interest in problems of structural change may accordingly be explained by the fact that political aspirations, as embodied in "structural policy", are concerned to make private business more efficient and thereby increase its wage-paying ability and growth rate; and also, by pursuing an active labor market policy etc., to moderate the negative effects of change. In addition, the firms themselves - sometimes voluntarily, sometimes reluctantly - have increasingly undertaken far-reaching changes of their own. Increased international trade and competition, accelerated technological advance and diffusion of innovations, shortened economic lives of products, mounting costs of labour and capital for which it has been impossible for the most part to compensate by charging higher product prices, and a whole string of other phenomena of decisive importance to many manufacturing firms: all these things have compelled firms to make "agonizing reappraisals" and, on occasions, to reorganize the whole of their operations - which may involve abandonment of product lines, total or partial relocation of the firm or, in the worst of cases, going out of business. Sometimes these measures have found concrete expression in transfer of ownership to some other firm that has been better qualified to run the business, or through merging with another firm and the reorganization this has permitted.

But the development has also had a "positive" aspect. New products, plants and firms have appeared on the scene, and some firms have rapidly expanded their operations. Here again mergers, i.e. acquisitions of firms, have come to the forefront as action alternatives for growth-minded firms, just as combinations in more or less complete form have become a way of making operations more efficient or to limit competition. In that way the activist "structural policy" has also become a weapon in the hands of firms. Through concerted efforts politicians, employee organizations and corporate managers have imparted a more dramatic course to structural change during the past decade than during the one which preceded it. The object of this study is to investigate a limited segment of that course, namely the transfers and consolidations of firms - to which we shall collectively refer henceforth as "mergers".

MERGERS IN HISTORICAL PERSPECTIVE

The newly-awakened interest in mergers during the 1960's in Sweden must not be taken to mean that the phenomenon is new as such. On the contrary, the coordination and consolidation of economic entities are very old occurrences. Many are the political leaders and land-owners who over the span of centuries have found it compatible with their political or economic interests to assemble territories or estates into larger holdings. Not a few of these "mergers" were made possible by a contract of marriage between representatives of the two interested parties.

Mergers have probably occurred in the manufacturing industry ever since industrial activity began to be pursued on an appreciable scale during the 19th century. In the United States, which has by far the most detailed merger statistics, it is quite clear that mergers were a widely known and often observed phenomenon during that century's latter half. Although the years around the turn of this century witnessed a massive merger activity, a tremendous "merger wave" had already swept across American industry before the 1880's drew to a close. It was in those decades that some of today's industrial giants were formed through

large-scale consolidations. A similar trend could be observed in Great Britain during the same period.¹

In Sweden there are no merger statistics which permit exact comparisons either with other countries or with later periods. This makes it difficult to compare the merger activity of the postwar years with that of earlier periods. Even so, the occurrence of mergers in Sweden ever since the end of the 19th century is an incontrovertible fact. Many of today's large Swedish firms owe their origins to the consolidation of previously separate entities. In order to provide a background to the collection and presentation of postwar merger data in this study, a few words will be said here about this earlier merger activity. In the absence of a consistent set of data the treatment will be mostly confined to general remarks on selected periods and to exemplifications of the more important mergers. Our exposition does not purport to be complete.

The iron industry is one of Sweden's oldest industries. More than 500 ironworks were already in existence at the turn of the 19th century. But during the century the technical determinants of the industry's production were radically altered by a number of innovations, among them the Lancashire, Bessemer and Martin processes, which conferred vast economies of scale. The upshot was a great reduction in the number of ironworks, amounting in the 1870's and 1880's to as much as 70 percent. A part of this process took the form of amalgamating firms and production units. Thus Domnarfvets Jernverk, which was founded in the late 1870's, replaced 19 plants at different places in Dalarna Province (Söderlund [1961], p. 51).

However, it was only in the 20th century that mergers assumed any considerable dimensions in Sweden. Under the pressure of increased competition, caused by such things as excess capacity and advances in transportation, many firms opted instead to cooperate by forming cartels. This happened, for instance, in the sugar, margarine and cement industries. The fact that domestic consumption of cement absorbed only 60

¹ More will be said on this subject in Chapter 3.

percent of domestic output in the 1890's induced the country's three largest producers to form a cement cartel in 1893 (Jörberg [1961], p. 183). This was enlarged several years later to embrace all the cement-making firms and eventually laid the foundation for Skånska Cement AB (Cemeta) in its present day form (Ljunggren [1912], pp. 72-73).¹ Attention should nevertheless be called to some important mergers that were consummated before 1900: in 1886 the consolidation of Stockholms Allmänna Telefon AB and Stockholms Bell Telefon AB (both of which were later merged to form L M Ericsson); and in 1896, incorporation of the ore-carrying firm, Trafik AB Grängesberg-Oxelösund, a transaction that included acquisition of a mining enterprise, Grängesbergs Gruf AB, and a number of railway companies. Only a few years later (1903) Gränges took over the majority shareholding in the iron ore-producing companies, AB Gellivare Malmfält and Luossavaara-Kiirunavaara AB (LKAB). Before long it also bought out an explosives firm, AB Express-Dynamit, some electric utilities and a shipping line, AB Luleå-Ofoten. A third example of private empire building through mergers is offered by the stone and clay products industry in Skåne Province. Billesholms-Bjufs AB, established through a merger in 1895, joined forces one year later with Höganäs Stenkolsverks Nya AB to form a marketing cartel, which in 1903 culminated in a total merger of these firms. Over the next few years Höganäs-Billesholms AB absorbed the remaining firms in this industry, thereby achieving its complete concentration.

The first decades of the 20th century, especially prior to the outbreak of World War I, seem to have been characterized by exceptionally hectic merger activity. "Free competition is now a bygone stage of development in broad sectors of the economy. The contemporary watchword is association" (Ljunggren [1912], p. 5). The buoyancy of new business starts around the turn of the century, especially in the decade from 1900 to 1910, had resulted in overproduction and razor-sharp price competition in many industries. The stage had been set for profitable operation of multiplant firms, and hence for mergers on a bigger scale, by technological advances, improved communi-

¹ Most of the examples mentioned here have been taken from this source.

cations (including postal and telephone services) and the advent of an organized capital market (the corporation or limited liability company had become an accepted and widespread form of business organization). On top of that certain tax regulations acted as a powerful inducement to merge: corporations paid income tax at a progressive rate that was based on earning power, i.e. the proportion of profits to equity capital. In other words, the tax could be lowered by raising the capital stock, but this was only permitted in connection with the formation of new entities, e.g. through mergers (Trustlagstiftningskommitténs betänkande, 1921, pp. 197-201). There was therefore every incentive to merge, even for highly profitable firms.

During these years, too, mergers laid the foundation for a number of large Swedish firms other than those mentioned above. In 1902 Jönköpings och Vulcans Tändsticksfabriks AB was formed by bringing together six independent manufacturers of matches. This firm then accounted for 70 percent of the Swedish match output. In 1917 the entire Swedish output was taken over by Svenska Tändsticks AB (Swedish Match), a new firm formed by Ivar Kreuger. Another firm whose origin may be traced to this period is Svenska Sockerfabriks AB; although itself the result of a merger in 1907, concentration in the sugar industry had already commenced back in the 1890's, mainly through the formation of Sockerfabriks AB Union in 1897. The few competitors to the leading firm, Sockerbolaget, merged in their turn in 1914, and in 1936 the merger process climaxed with a complete concentration of all firms in the sugar industry. Incidentally, the formation of Sockerbolaget in 1907 is usually cited as a good example of the merger-caused "overcapitalization" or "dilution" that occurred during these years. This company's capital stock amounted to SKr 135 million as against a combined SKr 57 million prior to merger for the component firms. Of the latter amount, moreover, only SKr 35 million had been paid up (Ljunggren [1912], p. 53).

Examples of other firms that sprang from major mergers during the first years of this century are AB Svenska Kristallglasbruken (in crafted glass, 1903) and AB Svenska Metallverken (in nonferrous metal products, 1907). The last-named firm emerged from the amalgamation of Nordiska Metall AB,

Skultuna AB and AB Granefors Koppar- och Mässingsverk. In the field of lumber and wood products, Nordiska Trävaru AB was formed in 1902 by bringing together a number of sawmills in Norrbotten Province (Gasslander [1959], p. 109)

The period 1910-13 seems to have represented a peak in merger activity. In 1910 alone the following major mergers took place, among others. In liquor distilling, Reymerholms Gamla Spritförädlings AB was established on the basis of an earlier cartel. Eight firms went into the merger, among them the "Ödåkra" and "OP" distillers. Virtually all the breweries in Stockholm were absorbed by AB Stockholms Bryggerier and similar concentrations took place in Gävle, Linköping and other towns. The production of stout was concentrated in a single firm. AB Förenade Chokladfabrikerna was established through a merger in the confectionery industry, as was AB Stille-Werner in the production of medical equipment. Much of the shipbuilding industry was concentrated through the merger of Bergsunds Mekaniska Verkstads AB, Motala Verkstads Nya AB and Lindholmens Verkstads AB. In the following year, 1911, AB Scania-Vabis was formed by amalgamating two automobile plants, Scania in Malmö and Vabis in Södertälje. In 1913, finally, 13 separate firms in the printing and publishing industry combined to form AB Sveriges Litografiska Tryckerier (SLT) and 20 firms did the same in knitwear to form AB Sveriges Förenade Trikäfabriker.

Jörberg ([1961], p. 196) presents a table listing the largest firms in Sweden as of 1912. This table gives a good idea of the size of some of the mergers mentioned. The largest Swedish firm in 1912 was Sockerbolaget with 8,100 workers and value of shipments of SKr 107.5 million.¹ Jönköpings och Vulcans Tändsticks AB employed 4,500 workers (3rd largest) and shipments valued at SKr 12.7 million (10th). Svenska Metallverken, Stockholms Bryggerier and Reymerholmsbolaget were also among the ten largest firms.

The period up to 1920 saw the emergence of more large firms and groups of associated companies due to acquisitions

¹ In 1889 five of the eight largest firms were sugar manufacturers (Jörberg [1961], p. 195).

and mergers. Among the more noteworthy examples are Billerud (pulp), Vargön (pulp), Separator (dairy equipment), SKF (ball bearings), Svenska Järnverksverkständerna (railway equipment), Nitroglycerin (explosives), Wicanders Korkfabriker (cork), Nordiska Armaturfabrikerna (pipe fittings), Plåtmanufaktur (metal cans), Svenska Jästfabriks AB (yeast), Förenade Tobaksfabrikerna (tobacco products), Mälardalens Tegelbruk (brick), Förenade Piano- och Orgelfabriker (pianos and organs) and Sveriges Förenade Filfabriker (filing tools). Typically, the majority of these examples and the ones mentioned earlier were called "monopolistic" mergers, i.e. "trusts" embracing all or nearly all firms in the same industry. But in some sectors mergers were being increasingly undertaken to achieve vertical integration, and apart from the spectacular mergers there seems to have been considerable merging and grouping in parent-subsidary relationships on a more modest scale. Acquisitions of this kind were impelled by various motives: a desire to restrict competition or to gain economies of scale; a desire to increase output within the framework of a cartel, which often could be done only by taking over another cartel member, within the forest industry, a desire to obtain standing timber, which owing to the "Norrländ Act" could only be done by acquiring a firm owning forests. Moreover, in order to rationalize logging and manufacturing of forest products, the forest companies aspired to land holdings that were all of one piece. Yet another motive for these non-monopolistic mergers was to take advantage of the tax allowances allowed for "over-capitalization", already referred to above. Added to these motives was the need of a broadened depreciation base generated by the severe inflation during World War I. Specifically, a merger transaction could be invoked to write up the capital assets to replacement values and the amounts of depreciation could be increased up to the rates allowed for this purpose (*Trustlagstiftningskommitténs betänkande* [1921], pp.194-202).

It would appear from the foregoing that structural change was very pervasive within industry during the decades just before 1920, and it was a change that frequently involved mergers and other combinations. The cited examples

have shown that merger activity affected a large number of industries and firms, and that many of today's big firms owe their very existence to mergers that were consummated during these years. Hence structural change and merger activity are far from being events unique to the 1960's or 1970's. "If one takes a look around in our modern societies, one immediately finds that the whole structure of society has been fundamentally altered in the past few decades." "... of our time it can probably be said more than ever that it is an age of coalescence and association." "And the modern era, which loves the huge dimensions, has witnessed the emergence of enormous combinations." (Ljunggren [1920], p.3.)

A significant proportion of the many mergers and other combinations which occurred in the first decades of the 20th century appear to have been relatively unsound financially and sometimes unjustified economically. Integration during these years became something of a fad (Ljunggren [1920], p. 25). Then, too, there was the lively business transacted by the "issue-underwriting houses". The shortage of "suitable material" became especially pronounced during periods of intense business activity, which together with the prospects of fat commissions stimulated the underwriting house to initiate and consummate mergers and trusts (*Trustlagstiftningens kommitténs betänkande* [1921] p. 197). It has even been said that the business, particularly during the speculative boom of 1919-20, often built upon "literally fraudulent illusions" (Dahmen [1950], p. 30). The early 1920's came to be marked to some extent by a phase-out of these combinations, often in the form of financial reorganizations and breakups of firms. This process was accelerated by the crisis of 1920-21 and at the same time aggravated the crisis (Dahmén [1950], pp. 366-367).

If the years up to 1920 can be called a period of build-up and financial reconstruction, the 1920's were more a period of recovery, adjustment and financial reconstruction. "... large disturbances in old relations between firms and combinations, countless transfers of ownership and financial reconstructions etc. characterized the conditions..." (Dahmén [1950], p. 379). This means that the 1920's must also have experienced their share of acquisitions and amalgamations of firms. However, these were not of the same

grandiose and spectacular character as many of the mergers in earlier years. Perhaps the ambitious schemes of financial empire building had been dealt a blow of public lack of confidence, at least temporarily. Nor, perhaps, was there enough potential for mergers on an industry-wide scale. Some of the previously built-up companies set out instead to make acquisitions designed to enlarge their markets. This was true, for instance, of SLT (in printing and publishing) and the large breweries in Stockholm and Göteborg.

Around 1930, however, a number of important mergers occurred, some of them as a consequence of the depression. With Ivar Kreuger as the "innovator", Svenska Cellulosa AB was organized as the parent company of a large group of affiliated companies embracing timber firms in central Norrland (Northern Sweden). With Fagersta Bruk as the core, a number of iron and steel mills in central Sweden were brought together during the 1920's and 1930's in "Brukskoncernen", now Fagersta Bruks AB. In 1930 Bolidens Gruv AB was formed from two firms that had been set up during the 1920's to extract and refine copper and other nonferrous metals in Västerbotten Province. In 1931 a number of superphosphate factories were merged to form AB Förenade Superfosfatfabriker.

As mentioned earlier, the 1920's were marked by numerous transfers of ownership and smaller mergers in the form of piecemeal acquisitions. The same can be said of the 1930's. To be sure, the concentration of firms was no more than rudimentary in many industries; but concentration now took the form of reviving many of the old cartels that had been dissolved during and after World War I. This lessened the need of mergers undertaken in restraint of trade, or to reduce competition. The merger process seems instead to have mainly involved the acquisition by large, consolidated firms of smaller ones, many of them more or less recently founded. This holds in particular for the machinery industry, where the formation of firms was brisk during the interwar period (Dahmén [1950], p.387). Out of 105 newly set-up machinery firms enumerated by Dahmén, 20 were taken over during this period according to

him (op.cit., pp. 234-238).¹ Unless this industry is highly exceptional in terms of merging activity, his findings suggest that merger activity, as manifested by absorption of small firms into larger entities, was fairly common during the interwar period and especially so during the 1930's.

Since most of the mergers in this decade involved relatively small and unknown firms, another detailed recital of instances would not have much interest. A few examples are worth mentioning, however. In the pottery industry there were several important mergers that laid the foundations for today's leading firms in this sector. Skånska Cement-Iföverken, themselves established through mergers, bought out Lidköpings Porslinsfabrik, which in its turn later purchased Rörstrands. The Cooperative Union and Wholesale Society (KF) acquired Gustavsbergs Fabriker in 1937, and Uppsala-Ekeby acquired Gefle Porslinsfabrik in the late 1930's and Karlskrona Porslinsfabrik in the 1940's.² Some examples in other industries: Bofors' purchase of W. Dan Bergman (Wedaverken, later sold to Metallverken) and of Tidaholmsverken; Bultfabrikens acquisition of AB Kanthal; KF's purchase of Domkraft AB Nike; Volvo's purchase of Ulvsunda Verkstäder; Atlas Diesel's acquisition of Ecco-verken; and Plåtmanufaktur's acquisitions of Göteborgs Bleckvarufabrik and of Lysekils Emballagefabrik. These mergers by acquisition were all of the same type that has dominated the development during the postwar period (see Chapter 2). The age of industry-wide consolidations was definitely past.

MOTIVES AND AIMS OF THE PRESENT STUDY

It should be apparent by now that mergers have been going on for a very long time. The postwar merger activity in Sweden may therefore be considered a sequel to a long and old story. However, its intensity seems to have increased considerably in recent years. Certain studies made by the author before this project was initiated indicate that mer-

¹ According to the data collected for this study, 43 more of these firms were acquired during the period 1946-69.

² The concentration continued in 1964 when Uppsala-Ekeby bought Rörstrands from Iföverken.

ger activity in Swedish industry during the 1960's was tending to grow and that no signs of a major change in this tendency could be detected for the foreseeable future (inter alia, Höglund & Rydén [1964]; Rydén [1965] and [1966]). For various reasons this warrants a closer study of latter-year merger activity in Sweden.

Mergers may be assumed to have different kinds of effects: effects on efficiency and the rate of growth; on the distribution of incomes, wealth and power; on the parameters of competition inside the country and vis-à-vis the rest of the world; on employment in the short and in the long run, as well as locally and nationally. These effects, of which some have been clearly demonstrated or experienced while others are more questionable or imaginary, have given rise to successively increased interest among politicians, civil servants, organizations and mass media in merger problems as a discrete segment of the structural-change continuum. But before the effects of mergers can be discussed and seriously analyzed, a series of specific questions should be asked. Are mergers more frequent now than in the past? What types of firms are involved in merger activity - small or large, family-owned or "anonymous", Swedish-owned or foreign-owned, successful or unsuccessful? Does merger activity spread evenly across all industries or are there great differences from one industry to another? How will merger activity develop in the future? And so forth and so on.

Questions of this nature are not satisfactorily illuminated either in previous research or in other sources. Nor are the empirical data presented in earlier studies sufficiently complete to give a fair picture of merger development in Sweden. Not only that, but the data cover only a shorter period - from 1958 onwards - which naturally makes it difficult to judge the strength of the recent merger wave in relation to those of earlier periods. Hence, one cardinal motive for undertaking this study was our own belief that not enough is known about the salient features of the merger development in Sweden. A primary object of this study, therefore, is to describe that development by

penetrating theoretical analysis of mergers. The guiding idea here is to find reasonable explanations of why two persons - or groups of persons - may put different appraisals on one and the same firm, which is a necessary condition of merger. We conclude that the different appraisals of buyer and seller, what we call the "value gap", is explained by market imperfections of one kind or another. Two types of value gap may be distinguished: value gaps arising from differences in target rates of return, liquidity preferences etc., and value gaps arising from coordination gains.

This framework for analysis forms the layout of Chapter 5. With the aid of traditional economic theory, previous research on mergers and certain observations on the collected empirical data, we proceed to discuss different aspects of the "explanatory model" at greater length. The discussion leads to formulation of a number of hypotheses on the causes of and motives for mergers. These motives can be assembled in a few categories: efficiency improvements, monopoly profits and appraisal gaps owing to certain powerful disturbances or other important structural changes which affect the determinants of the appraisals of firms by their owners and potential buyers. Such things as liquidity shortage and tax gains are included under more specific or "partial" causes. The feasibility of testing these hypotheses is discussed, as are the problems connected with selecting suitable explanatory variables.

A statistical test of the formulated hypotheses is performed in Chapter 6. The test draws upon both an industry analysis and a firm analysis. In the industry analysis we set up and fit three regression equations, one for each of the three hypotheses. The corporate analysis builds upon information about the profitability, liquidity, etc. of acquired firms. The result of the industry analysis is uncertain and hard to interpret, but the firm analysis ought to provide evidence for surer assessments of different merger motives and their relative significance.

Acquisition through merger is one way for a firm to grow. For various reasons the choice of expansion form - external or internal - is a matter to which neither individual firms nor the economy as a whole can remain indifferent. In Chapter 7, therefore, we analyze the postwar

growth of some 60 manufacturing firms listed on the Stockholm Stock Exchange. Considerable interest is devoted to developing and improving previously used methods to estimate the contribution of mergers to the growth of individual firms. The analysis discloses that external expansion has greatly varying importance from one firm to another. For the 60 firms investigated as a single group, however, mergers have played a major role for pushing sales and employment to higher levels. The results are presented in detail both for the group as a whole and for each firm, and comparisons are made with some counterpart studies made abroad. By way of filling in on the causal analysis in Chapter 6, we also undertake certain analyses of the relationship between merger activity on the one hand and growth (total and internal) and profitability on the other.

Chapter 8 summarizes the main elements of the empirical data and the causal analysis. An attempt is made to evaluate the results obtained and to identify a number of unanswered questions that are recommended for future research. The determinants of merger activity in Sweden in the course of the next few years are discussed and a general, qualitative forecast is presented. Lastly, on the basis of past events and the forecast findings, a summary is given of what we believe to have been and to be the most important positive and negative effects of merger activity in Sweden.

CHAPTER 2

MERGERS AND OTHER COMBINATIONS IN SWEDEN DURING THE POSTWAR PERIOD: DEFINITIONS, SOURCES AND PRESENTATION OF THE MERGER DATA

In this chapter we shall present the result of the inventory taken of mergers and other combinations in synoptic form. Although primary attention will be paid to the criteria for sorting out the empirical data set by the analysis of causes in the following chapters, we shall also consider some matters other than those in which this study is mainly interested. In connection with the presentation of our sample we shall raise a number of questions and hypotheses which directly bear upon the arrangement and substance of the following chapters.

First of all, however, we shall discuss definitions and problems of method.

DEFINITIONS

T h e f i r m

The firm has been defined in a great many different ways in the economics literature. A commonly held view regards the firm as an organizational entity whose activity is planned, directed and controlled by a single management, and which is in business to produce goods and services for sale.

This general definition of the firm fits in well with our study's aim to inquire into certain types of decisions taken by firms and the motives behind them. Hence primary interest will attach to the enterprise considered as an economic decision-making unit, and not to the technical (establishment, plant) or the legal entity (corporation, partnership, cooperative). To be sure, these three concepts of the firm often coincide in practice, i.e. the decision-making entity consists of a legal person and a plant. None the less it should be stressed that this study is mainly concerned

with the firm's decision-making behavior, for which reason the firm is primarily regarded as an economic unit.

Even if a firm is composed of a number of legal and technical entities, it is here perceived as being a single, coordinated, independent economic unit which makes decisions about its current and future activities. As used in this study, therefore, the "firm" refers to, *first*, independent legal entities that do not form a corporate group bound together by formal ownership ties; and *second*, this latter type of business organization (the affiliated group). No restrictions are imposed on account of ownership patterns. Enterprises owned by individuals, cooperatives, central government and local authorities are all covered by the concept of "firm" we use, and all are represented in our empirical data. The "firm" is operationally defined with reference to Swedish law which gives the substance to the terms, "sole proprietorship", "partnership", "commandite", "corporation", "economic association" and "group of affiliated companies". Our use of the term "affiliated company" builds upon the relationship between parent company and subsidiary as defined by the Swedish Stock Corporation Act, 1944. Such a relationship exists when a firm holds more than 50 % of the share capital (shares representing more than 50 percent of the number of votes) in another firm or, if the holding amounts to 50 percent, has a majority on the board of directors (in case of an equal division on the board, occupies the post of chairman).

This definition of the firm naturally but inevitably entails a simplification of the real world. No decision-making entity can be regarded as a completely autonomous unit, considering that its actions are affected by external circumstances which often lie beyond its power to influence decisively. In the first place every firm, big and small, forms part of an intricate social order, in which role it has to adapt itself to government interventions of various kinds and also abide by the majority decisions that are taken within different types of interest groups, cartels and other organizations to which most firms belong. For these reasons alone the autonomy of firms must be regarded as more or less sharply circumscribed.

Even more important, however, is the network of contacts and relations that operates between apparently "independent" (i.e. as defined above) decision-making entities. These relations may be based, for instance, upon an ownership structure dominated by minority interests, with no formal ties between a parent company and subsidiary; upon interlocking directorates; upon dependence on creditors, one or more major customers, suppliers, etc. Relations and dependencies of this kind may greatly restrict the independence of an economic entity that is formally autonomous. Owing to the complicated and changing pattern of such interdependent relationships as exist in the business community, it is virtually impossible to give a definition of the "firm" that fixes, in all conceivable situations and for all firms, a valid boundary line between independent and non-independent decision-making entities.

The fact that different firms apply different organizational principles, e.g. varying degrees of decentralization, further complicates the matter. In some cases a firm which is quite independent by the ownership criterion may, because of other strong dependency relationships, be so much bound by another firm in more important decisions that for decision-making purposes it functions in practice as a subsidiary, while in other cases a fully owned subsidiary may function as a nearly totally independent entity in terms of its ability to take important decisions on its own.

Ideally, a definition of the firm as a decision-making unit should also allow for differences in organizational form, informal dependency relationships and other factors that differentiate firms. However, we did not deem this to be a feasible proposition. In spite of the shortcomings mentioned, the affiliated group of companies has been considered a better approximation of the economic decision-making unit than the legal concept of the "firm" and, naturally, even more so than the "plant". It should be especially pointed out that one consequence of the definition of firm used here is that the acquisition of a firm (decision-making unit) consisting of several legal entities and/or establishments is regarded in principle as a single merger irrespective of how many legal entities and establishments have entered into the merger.

S w e d i s h a n d f o r e i g n f i r m s

The terms of reference for this study embrace mergers and other combinations of firms within Swedish industry. We must therefore make clear first of all what we mean by a "Swedish firm". In principle, two criteria can be imagined for determining a firm's nationality: geographic location of the head office and nationality of the majority owner.¹ If, as in this study, one is interested in the causes of mergers, the fact that the one party is owned by foreign interests could be a significant piece of information for the analysis of motives. But it may also be essential to know the geographic locality. For purposes of discussing the various effects of mergers on the Swedish industrial structure, the geographic locality will be decisive, whereas an analysis of (say) power concentration and foreign proprietary influence will require selection of the nationality criterion. Obviously, our merger data ought to be presented in accordance with both these criteria, which imposes special demands of precision on the nationality concepts in those cases where they are used. Firms in which Swedish and foreign interests each hold a 50 percent ownership are regarded as Swedish-owned if they are fitted into the organization of the Swedish-owned parent company, and as foreign-owned if the reverse is true. However, these double nationality criteria are solely applied to combinations through merger. In the case of pools formed between Swedish and foreign firms, only the firm's geographic location has been used as the nationality criterion.

I n d u s t r i a l f i r m s

"Industrial firm" is understood in this study to refer to a firm (concern) whose activities include manufacturing.² The consequence of this definition is that firms which are normally regarded as non-industrial (e.g. Ahlsell & Ågren) enter into the study insofar as they are also engaged in

¹ The former criterion usually agrees with the locality where the firm's board of directors is registered.

² In certain statistical tabulations utilities (electricity, gas and water) and construction firms are also classified as industrial.

manufacturing and have taken part in a combination with some other industrial firm. If such a firm combines with another firm that does no manufacturing at all, the combination is held to fall outside the industrial sector.

According to the definitions used, therefore, a combination within industry may take place both between industrial firms and between industrial and non-industrial firms. This means that our merger data includes cases of vertical integration either forward or backward in the chain which leads from manufacturing to distribution. Vertical integration is also made to include acquisitions of retailing firms that are carried out by another retailing firm which in turn is owned by an industrial firm (a case in point is SAAB-ANA's acquisition of car dealerships). Purchases by foreign firms of trading companies located in Sweden also enter into the sample as vertical integration, even though such acquisitions can scarcely be said to affect Swedish industry directly. However, they comprise no more than a limited number.

To qualify as a "merger" in accordance with the foregoing criteria, either the acquiring or acquired firm must have been partly engaged in manufacturing at the time of the merger and this activity must have some connection with the merger. This criterion will exclude, for instance, the case where an industrial firm sells a trading subsidiary to some other trading company.

C o m b i n a t i o n s

The term "combination" is used in this study as a general designation of a firm's activity which implies a more or less far-reaching, long-ranging coordination of resources with one or more other firms. As a rule it may be assumed that such coordination is sanctioned by a contract between the parties which regulates economic and other terms, the aim and extent of the coordination, a possible limitation over time, etc. However, the means of coordination can also be created when a firm more or less ruthlessly usurps control over another firm by acquiring an ownership influence. Such situations are sometimes referred to as "mergers by rape" in contrast with the more peaceful "en-

gagements" and "marriages of convenience".¹ This study does not distinguish dissimilarities of this kind between combinations and combinations have been recorded whenever they have become known in one way or another.

Another important distinction is that the selection criterion has not been determined by the actual outcome of the coordination but by the intentions that were explicit or implicit in making the combination. On the other hand, the collected data does not include merger bids rejected by the majority of stock owners or separations carried out during the time a merger contract is signed until it comes into force or coordination gets under way. Nor is any attention paid to short-run, goal-oriented combinations formed to carry out individual projects of limited duration (e.g. in connection with executing a large order, major construction work, and the like) unless these form part of a longer-ranging cooperation between the firms concerned. It is obvious that this drawing of lines can give rise to formidable practical problems.

The coordination of resources that is the primary focus of this study can relate to many different functions of a firm: handling of raw materials, purchasing, research, development, production, distribution and other marketing, exporting, financing, servicing, training, administration and so on. The combinations covered by this study may pertain to one, several or all of these functions. The coordination may be "horizontal" (embracing identical functions in all the firms involved), "vertical" (embracing successive functions performed by participant firms in the manufacturing process) or "diversifying" (embracing functions that do not involve any of the other relationships).

¹ Extreme cases of this kind are the oft-dramatic takeover bids that occur from time to time in the U.S., Britain and France (Opération public d'achat, O.P.A.). These are efforts by outsiders to obtain control of a firm by making the shareholders an offer, often in open conflict with the firm's management. If the bid is to succeed, the shareholders must believe that the "raider" will do a better job of running the firm or the offer (the exchange ratio or the cash consideration) must mean that they will be better off financially even in the short-run from accepting the bid than from retaining their shares.

In principle, resources may be coordinated in two different ways: first, when two or more parties divide the control over a previously sovereign function; second, when the one party takes over complete control of the function. In practice, the former usually does not entail a change of ownership while the latter does, that is a pool and merger respectively. The requirement in both cases is for the firms to have been formally independent of one another prior to the combination so as to have relevance for this study. Accordingly, working agreements between affiliated firms or mergers between such firms are excluded from our investigation. This definition means that combinations of firms which in practice have been highly interdependent - or at least where one of the firms strongly depends on the other - as a result of interfirm transfers, franchises, financing arrangements and the like will be found in the empirical data. It also means that legal aspects of mergers which are interesting in their own right will not be considered.

A coordination of resources between firms should be seen as a process that extends over time, even though the methods of data collection employed in this study may readily imply a more static approach. The process may begin with a superficial exchange of experiences on matters specific to the industry when two competitors/associates establish their first, perhaps casual, contact. It ends when the merger has resulted in a complete coalescence at all levels and in all functions between these firms, so that both have lost their original identity and function as a single decision-making entity both internally and externally. Falling between these extremes are a number of successive stages of increasing coordination and cooperation that the firms can pass more or less quickly.

One of the data-collecting principles adopted in this study has been to capture combinations whose ambition and scope has been such as normally to warrant formal regulation by a contract between the parties. Once such a combination has been "registered" it is not further entered in the data should the participating companies intensify their cooperation except at the point where a significant change of ownership occurs, i.e. a merger takes place. For this reason com-

binations that have evolved from loose working agreements into mergers can be found twice in the empirical data.¹ Incidentally, the same applies to (sporadic) cases of mergers where one and the same firm has changed hands several times during the period under investigation. Other examples of this phenomenon occur when large and diversified firms form pools, switch product lines or buy and sell operating divisions to one another on several occasions and in different industries, it being impossible to relate these combinations directly to one another. Product switches are counted as two cases of combination. A product switch signifies that two firms acquire and sell an operating division each at one and the same time. Although the transaction may be regulated by one contract, it still entails two coordinating operations in practice. Lastly, when more than two firms merge the number of combinations is equated with the number of acquired firms, i.e. in practice the number of firms entering into the merger minus one (the largest firm has been normally defined as the buyer).

It will have become clear from the foregoing that this study is concerned with two types of combinations, namely mergers and pools where the latter does not involve decisive changes of ownership between the participating firms. Mergers, in turn, are of two kinds: total and partial.

A *complete* or *total merger* refers to one firm's acquisition of a controlling influence over another firm, usually by acquiring shares which gives it a majority of the share capital (number of votes).² At the time of merger the acquired firm may find itself on any point along an intensity scale in its coordination with the acquiring firm, provided that this point falls below the limit for "formal majority control". This means that the mergers which have met the criteria for inclusion in our study pertain at the one extreme to firms that were more or less unknown to one another prior to the merger negotiations and, at the other extreme, to firms that cooperated closely with one another before merging

¹ Mergers not preceded by any (known) working agreement are of course counted only as one combination.

² Purchase of a firm by a private person is not counted as a merger except when he has already owned one or more firms with which some form of coordination could be presumed to arise.

without being formally affiliated. Thus, the latter case in its extreme form means that a merger can take place when the buyer increases his shareholding in the acquired firm from 49 to 51 percent.¹ But a merger can also come from acquiring less than half the share capital (number of votes), namely when the remaining proprietary interest is so fragmented that a minority interest will suffice to obtain control and when the acquisition evidently aims at or results in such control.²

A complete merger may also result from acquiring all the physical assets of a firm. Yet another form of complete merger occurs when two or more previously independent firms combine all their assets and liabilities in a new or reorganized firm formed for this purpose. Such mergers are especially common when the firms involved are equally large or number more than two. They are often marked by including the names of both merged enterprises in the new entity (Monark-Crescent, Korsnäs-Marma, Pripp-Bryggerierna, ABBA-Fyrtornet, Saxylle-Kilsund) or by the formation of a new, often industry-wide entity (e.g. Skånemejerier in dairying, 7 Skomakare AB in footwear and Sveriges Förenade Trikfabriker in knitwear).

Of these different types of complete mergers, acquisitions preponderate in the collected empirical data. Alternatively they are called acquisitions, purchases, takeovers, or buyouts. In contexts where it is justified to distinguish them from mergers between "equivalent" firms, the latter will be referred to as consolidations or amalgamations.³

Partial merger designates the acquisition of but one segment of a firm's entire activity. Referred to herein as an "operating division", this may embrace a special function (a distribution arm, access to a raw materials source and

¹ A case of this kind occurred at the beginning of 1970, when Fosfatbolaget increased its holding of shares in Barnängen from just below to just over 50 percent.

² Mergers of this kind, which are very rare in our data, have been separately accounted for in certain tabulations.

³ This usage ties in well with the English terminology, which often distinguishes between merger by acquisition (takeover) and merger by consolidation (amalgamation).

the like) or all functions pertaining to a specific product (manufacturing, selling, servicing, etc. including premises, personnel, machines, inventories, etc. or parts of these). In practice, partial mergers often take place as purchases of branch plants or subsidiaries, and from the buyer's viewpoint are probably scarcely distinguishable from complete mergers by acquisitions. Also classified as a partial merger is the consolidation of branches, operating divisions or subsidiaries belonging to two or more firms in a new firm especially formed for this purpose. Purchases of building sites, empty factories, insolvent estates, patents, licenses and the like are not regarded as partial mergers and do not enter at all into this study. One requirement is that the taken-over activity shall be, or at least immediately preceding the acquisition shall have been, in operation and relatively complete in its necessary array of functions. Any interest that the buyer may have shown in taking over all these functions is a matter that has not affected our assessment of whether or not to include the merger in the sample.

Summing up, the following may be said of *mergers*: for purposes of this study they are regarded as *one means of changing patterns of ownership and control over resources within industry that is organized in the form of firms or operating divisions*. Any change of this kind may aim at various objectives, e.g. a coordination of resources between the firms involved, an enlargement of resources for the acquiring firm, etc. It has not been possible to judge whether these and similar changes were actually carried out, and if so whether the intended result was achieved or whether the coordination potentials, etc. were unrealistically assessed by the parties before the merger. This view of the merger concept implies that the data may include mergers which have failed in some sense or which never aimed at coordination between the firms. Cases of this kind, however, are considered exceptional in relation to the large volume of empirical data.

Compared with mergers, *pools* lend themselves much less readily to a reasonably simple and operational definition. As employed in this study, the term "pool" generally denotes

a long-ranging coordination of resources between two or more firms, not related by ownership, on the strength of a combination that does not decisively change the pattern of control over any of the firms. This definition excludes, for instance, interfirm cooperation that strictly and exclusively aims to restrain trade (by dividing markets, maintaining common prices, cutting back production, etc.). It also excludes agreements whereby firms sell goods and services to one another even if that takes place under the provisions of licenses, cross-patenting, subcontracts, agency agreements, franchises or similar long-term agreements. The main criterion has been whether a working agreement has been deemed to aim at a long-range pooling and coordination of resources by the contracting parties, i.e. a type of cooperation which in many cases may be considered an alternative to merger.¹

A combination formed by pooling may be horizontal, vertical or a mixture in terms of products and functions. It may pertain to earlier or newly established activities. It may embrace one or more products or functions. It may be relatively loose in form and substance ("a general exchange of experiences concerning research and development of product X") or be bound up with a firm newly formed for the purpose (e.g. exporting company, production and marketing company for a new product, etc.). It may mean that the parties continue to remain at arm's length financially or that one of them (perhaps both) acquires a minority interest in the opposite party. The number of alternatives is very large, which in practice has tended to blur the boundary lines between pools included in the collected data and those left out. The formulation and application of our criteria for collecting material necessarily reflect a certain arbitrariness, which is much less true in the case of mergers.

That pools have nevertheless been included in the study - despite the probable incompleteness of the assembled data - is because, as already noted, many of them can be seen as

¹ Outright cartel agreements can naturally be seen as alternatives to mergers for purposes of restricting competition, but have nevertheless not been defined as pools.

close substitutes for mergers. Accordingly, the picture of merger activity in different industries will become seriously incomplete unless at least the more important non-merger combinations are also taken into account. Due to the shortcomings of the data, pools will, however, only be considered as complementary to the presentation and analysis of merger data. This means that the figures nevertheless shown for pools should be read with reservation for incompleteness.

S o m e t y p i c a l c a s e s o f c o m - b i n a t i o n s

So as to impart more substance to the combination concepts discussed above the present section will describe some typical cases of combinations. These cases also provide the basic building blocks for the merger models that will be developed later in this study.

1) An industry producing non-durable consumer goods is dominated by two firms and in addition consists of a relatively large number of small and medium-sized family-owned firms which cater to local markets. Demand for the industry's products does not grow very fast, normally at about 3 percent per annum. There are some imports of these products and these signs of increasing. Technological advance in the industry has moved rapidly in recent years and new manufacturing processes have made it possible to achieve considerable production economies. Technological innovations have also permitted distribution over longer distances at no sacrifice of quality. At the same time requirements for efficient marketing have been raised in consequence of structural changes in retailing, especially the trend towards fewer purchasing units through the advent of large chain stores, etc. Owing to these tendencies the optimum size of plant and firm in the industry has become much bigger. For that reason Company A, which used to be dominant in its community and the surrounding region, has found it more and more difficult to hold its own in competition with Company B, one of the industry's giants with headquarters in Stockholm but with obvious ambitions to carve out a larger geographic market. A's owner and manager decides he will have to invest heavily in both production and marketing, and figures on rising marketing costs if he is going to be able to compete effectively with Company B and with imports. He also knows that more product and process innovations are imminent in his industry. Profitability and liquidity are relatively weak and have been declining the past few years. His chances of generating internal funds to finance the necessary investments are negligible, nor does his family have any capital for this purpose. "A" must therefore resort almost entirely to external borrowing, a prospect he deems to be neither attractive nor realistic. The ratio between equity and debt is already unsatisfactory.

The present owner started and worked up his business by himself and is now nearly sixty years old. Before long the firm's future management and growth may well become an acute problem, since no natural heir to the top position is to be found among the next of kin. Hence the owner is compelled to arrange somehow for the firm's continued existence, at the same time making reasonable provisions for its 100 or so employees and for the problems of different kinds that may arise if an estate is to be distributed. Should that happen, different views on how to run the business are liable to assert themselves, especially since the owner has many heirs who do not readily agree. The owner therefore thinks it safest to take matters in his own hands, the more so since he feels he can personally get the most out of his firm by selling it to a larger firm in the industry while his firm is still earning profits and enjoys goodwill, for instance in a well-established trade mark and a stable local market. So he gets in touch with "B", whose expansionist plans and apparently strong financial position are generally known and is therefore thought to be interested in an acquisition. Not only that, but about a year ago "B" bought out another local firm in the industry at a place not far from "A".

The initial contact is mediated by the bank that both firms deal with. After the exploratory talks are concluded and show promise, concrete negotiations commence led by an officer in the bank. These talks start out in a harsh atmosphere and are on the verge of collapse because the parties stand far apart on the price that should be attached to "A": A's evaluation of the scrap value of plant and equipment having resulted in a much higher price for "A" than "B"'s estimate of return on investment would justify. However, the moderating bank officer manages to bring the variant opinions into line, and the bargaining finally concludes with a contract under which "B" acquires all shares in "A" at a price that comes much closer to B's opening bid than A's own. The consideration is paid in cash. In addition "A" is assured of certain guarantees, involving among other things that the 100 or so employees are promised continued employment in the event of operational changes and that A's firm will not be closed down during the next five years. "A" also gets certain pension benefits for himself and his family. Deference is also paid to his wish to have the trade mark he himself built up retained for at least ten years.

A little over five years have passed since the merger. A's manufacturing is discontinued and part of the premises are then converted into a warehouse for B's products. Some of the employees at "A" are afforded continued employment. Manufacturing at "A" as well as at a number of other firms bought out by "B" is transferred to a large, new factory. Some of the products made there carry the trade marks originating with the closed-down firms and are sold on the local markets. (M e r g e r b y a c q u i s i t i o n)

2) Another industry, also producing non-durable consumer goods, is dominated by two big firms, B and C, both listed on the stock exchange and in keen competition both at home and abroad. Signs of intensified competition have also come from foreign manufacturers. Both firms have grown fast over a ten-year period, partly by acquiring a relatively large

number of locally oriented firms in the same industry. They have reached a stage where their own growth rate is primarily determined by market growth and by their competitiveness in relation to one another and to foreign giants.

The idea of combining B and C in some form has been informally discussed between their managing directors for a very long time and even came up once or twice at board level. But for various reasons the matter has never been seriously considered. Then, more or less simultaneously, new men take over at the top of each firm and set the stage for concrete negotiations. They soon get around to perceiving that the best thing to do is to merge completely, such that one of the firm offers to take over the other's shares in return for its own new issue on a one-for-one basis. The procedure is simplified by the fact that the share prices of both firms are quoted fairly close to one another. But as rumors circulate on the stock exchange the prices tend towards parity, and this in fact happens when the exchange offer is made public. However, a majority of the shareholders take advantage of the offer and the merger can be consummated. The combined enterprise, which by virtue of the merger becomes about twice as large as each of the two previously separate firms, adopts a new name based on the two earlier ones and after the merger carries out a technical, administrative and marketing reorganization on a big scale. A complete coalescence of the two previously independent firms is achieved in a short time, and the newly created firm manages to hold its own fairly well in competition with the foreign giants, carry out major investments and make the stock market take notice. (M e r g e r b y a m a l g a m a t i o n)

3) After the first hectic post-merger years have passed, Company BC finds that the market is not growing fast enough to satisfy its heightened ambitions. It is also felt that better use could be made of its large-scale investments in market know-how and distribution capacity. The idea of acquiring another firm producing supplementary products and common customers begin to take shape. Attention soon focuses on Company D, now the leader in its sector after an earlier merger, whose assortment of products has clear marketing connections with BC's own. D, whose shares are traded over the counter but is still under family control, likewise views the domestic market growth as unsatisfactory but lacks the resources to build up a strong marketing organization abroad. For several years the firms have had the same chairman of the board, which provides the natural first step towards a mutual approach. Both firms soon find that they ought to gain more from combining than from continuing to operate as before. Besides, BC's management has anxiously noted a growing interest among foreign firms for acquisitions as a means of establishing themselves in Sweden in the particular product lines. The management thinks it an essential goal to preserve Swedish ownership for firms in the industry. BC takes over D by issuing new shares against the old D shares on a one-for-one basis. This ratio is deemed highly favorable by D's owners. After the merger D operates as an independent subsidiary within the BC concern. (M e r g e r b y a c q u i s i t i o n)

4) Company E is a listed firm with old traditions. Profits have been declining in recent years, so E formulates a plan which calls for very heavy backing of a special product within its broad line. The object is to increase its sales and market share substantially both in Sweden and abroad and become the leading firm in the industry. E has two alternatives: either to make its own new investments and try to outdo the two or three Swedish competitors in this field, or to buy out their production capacity and market shares. Decision is made to opt for the latter course. Negotiations are undertaken with F, another listed firm with a wide spread of activities both geographically and product-wise. After a relatively short period agreement is reached for E to buy F's factory making the products in which E is interested. The purchase includes buildings, machinery, raw materials and inventories, and F's employees are to be offered new jobs with E.

Shortly thereafter negotiations are taken up with G, likewise a big firm listed on the stock exchange with geographically dispersed operations and a varied product mix. Some years earlier G acquired a nearby firm whose output includes products of particular interest to E. After making an analysis G's management finds that the acquired factory has poor profitability and that heavy investments will be needed to improve profits in the long run. G also plans to rationalize operations at the factory, which means cutting off unprofitable segments. At the same time it wants to expand the profitable segments, for which purpose it will have to release capital and other resources. After brief negotiations an agreement is reached under which G sells its factory to E on more or less the same terms as F had sold its factory to E. In due course E intends to concentrate all production of the particular product at its main factory, to which it will transfer certain machines and personnel. These transactions leave E as the market leader in Sweden, with only one competitor of importance to take into account. (P a r t i a l m e r g e r)

5) Companies G and H, both large listed firms with dispersed ownership, function as parent companies in fairly diversified concerns. They are of old and established companies and play an important role in sustaining employment in most of the communities where they have plants. They "belong" to different banking groups. In some products they compete fiercely, in others they supplement one another, and in still others they have nothing to do with each other. Both have been affected in recent years by toughening international competition due to, among other things, excess capacity with adverse impact on profitability. This trend is expected to continue during the next few years. An interfirm coordination of certain activities would appear to open up very good profit prospects, but this cannot be arranged in the form of a merger, at least not in the short run, since neither firm wants to give up its independence.¹ Moreover, the managements feel

¹ Obviously, one can imagine a merger against the wishes of one management. However, offers to shareholders in larger firms that are not recommended by management - so-called takeover bids - are debarred by the ground rules of doing business in Sweden.

uncertain about the feasibility of coalescing two very large organizations within a reasonable period without substantial problems and costs. A process of slow, gradual coordination therefore seems most appropriate. After initial contacts at top-executive level, some of them held under the auspices of a trade association, formal negotiations get under way to coordinate certain functions in the firms. Several months of talks culminate in a five-year agreement which provides for the coordination of development planning, investments, research and development (R&D), inventory management, data processing, etc. Export sales of certain products will be handled by a jointly owned marketing company. Information and know-how will be exchanged continuously, and the firms will cooperate on solutions to concrete problems of mutual interest. The agreement covers about half the operations of both firms. Among other things, it will permit a more rational use of certain plants, more efficient marketing, specialization through the avoidance of duplicate investments, and better utilization of common resources for research, development, data processing, etc. The agreement is regarded by the firms as ushering in a long period of cooperation between them. (P o o l)

D a t i n g t h e c o m b i n a t i o n s

As indicated earlier, a combination can be regarded as a process rather than an isolated event. Dating the combinations may therefore give rise to problems. To be sure, dates have been assigned in this study on an annual basis only, but considering that the combining process may stretch out over a number of years clear-cut criteria will be required for dating.

Any of the following criteria could conceivably be used:

- (a) When the combination is planned
- (b) When the plans are made public (e.g. through "leaks", rumors on the stock exchange, etc.)
- (c) When the negotiations are conducted
- (d) When the negotiations become public (possibly through "leaks")
- (e) When a normative agreement is reached (i.e. on principles)
- (f) When the normative agreement is made public
- (g) When the definitive contract is signed or confirmed by the general meeting of shareholders or the like
- (h) When the signing (confirmation) is made public

- (i) When the contract comes into force
- (j) When the contract's operative date is made public
- (k) When the combination actually begins to be implemented
- (l) When the implementation is made known.

These twelve dates may indeed be very close to one another, but it is just as likely that several years intervene between them.

Owing to the methods of data collection employed (described in the next section), it has not been possible to fix these various points of time consistently and thereby obtain a perfect congruence in the data with reference to dating. The greater part of the data was collected from press notices, but many combinations were tracked down by other means, which meant they became known at a late stage in the described process, often even after date (l) in the schedule. To deal with cases of this kind, we have made an ex post estimate of the course of events that has relevance for dating.

As a matter of course, the choice of criterion for dating combinations must be determined by the object in collecting data. When the object is to analyze the causes of mergers, the criterion should be adapted to the motives that have borne upon the decision to merge. This suggests that dates should be assigned rather early in the process. However, it would be unreasonable to include combinations that are only being planned or negotiated, even if these activities should become known in one way or another. After all, it is not certain that the plans will be realized. Nor has it been thought proper to include combinations which, for all their having been formally and perhaps even ceremoniously proclaimed, never get beyond date (h) in the schedule but are subsequently dissolved for some reason.¹

On the basis of this line of reasoning, combinations have been considered as taking place in the period (e) - (h), which normally would be relatively short. The few projected

¹ Cases of this kind are rare. One example involves the chocolate manufacturers, Mazetti and Cloetta, who in September 1968 announced plans to merge but called them off in April 1969.

combinations that according to available information aborted before (g) have been sorted out. But since cases that have not become known until long after the merger is consummated are difficult to reconstruct accurately, there may be a tendency to date some of them closer to the end of the timetable than would be desirable. However, these inconveniences can hardly vitiate the research findings, partly because their occurrence may be considered exiguous in proportion to all combinations, and partly because the "delay" need only signify a change in time during the "right" year.

The course taken by a combination as it unfolds may of course vary immensely from case to case. Even so, we have outlined a model which traces the process for a hypothesized typical case of merger. The model is shown in Figure 1 and ties in most closely with case history (2) in the previous section. The outline does not lay claim to being exhaustive and significant deviations, enlargements or abridgments may occur in specific cases.

METHOD OF DATA COLLECTION AND SOURCES

M e t h o d

Very little systematic, updated information is available in Sweden about combinations of firms. The only empirical data that have some bearing upon the terms of reference in this study are to be found in the Cartel Register kept by the National Price and Cartel Office, which (though the firms involved are not required to furnish particulars) records and in certain cases further investigates restraint-of-trade agreements reached between independent firms. The principal source consists of newspapers and other press publications. Mergers have not been officially registered during the time period here under review, unless exception is made for instruments of conveyance which contain a "non-competition" clause (whereby the vendor undertakes not to resume activity in the line of business covered by the contract). Such clauses are particularly common in connection with transfers of operating divisions, i.e. partial mergers.

Figure 1. Outline of the process for a combination (Merger by amalgamation)
 (t1 - t9 represent consecutive time periods)

| | | | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Stage 1, internal and preparatory.</i></p> <p>The project is fitted into the firm's development program.</p> | t1 | t2 | t3 | |
| | <p>The idea germinates with one or more initiators, who begin in various ways, e.g. by persuading directors, promoting the combination, etc.</p> | <p>Internal reactions: the idea penetrates and is accepted by the decision-making center (directors and/or officers).</p> | <p>Formulation of goals, means and terms for carrying out the combination (real and legal form, maximum and minimum prices, etc.).</p> | |
| <p><i>Stage 2, external.</i></p> | t4 | t5 | t6 | t7 |
| | <p>Contacts are established with the merger partner. Briefing sessions to determine positions and exercise of mutual influence before opening bids are submitted.</p> | <p>Economic and financial assessments. Valuation of the firms. Price and legal form are fixed by each. Outside legal and financial experts are brought in. Risks of "leaks" increase.</p> | <p>Negotiation strategy is selected and real negotiations commence.</p> | <p>Negotiations are concluded. A contract is signed and made public. The idea is "sold" to different publics (employees, shareholders, lenders, customers, suppliers, authorities state, municipalities, etc.</p> |
| <p><i>Stage 3, internal and follow-up.</i></p> <p>The project is fitted into the "new" firm's development program.</p> | t8 | | t9 | |
| | <p>Immediately necessary organizational changes are carried out.</p> | | <p>Long-term changes of corporate structure: Goals are reformulated and management adapts to the new organization. Rationalizations from discontinuing unprofitable lines, weeding out duplicate products and functions, etc. New investments and other measures flowing from the merger.</p> | |

Some earlier investigations, in which the author participated, have sought to survey combinations in industry for a limited portion of the period here studied, namely 1958-67.¹ These surveys are no doubt for some of the years relatively incomplete. When the present study started out, therefore, there was a dearth of empirical data on corporate combinations in Sweden. Indeed, it was this deficiency that acted as one of the main inducements to its removal by research. We felt that knowing more about this field has intrinsic merits, not least in view of the great interest that mergers and other combinations have aroused in recent years. That left the question of how to go about collecting the data.

In principle, two different collection methods can be postulated: the one is to obtain information directly from firms through a questionnaire; the other is to study public sources such as newspapers and periodicals, annual and interim reports from firms, monographs and other special reports, corporate directories, etc. The questionnaire method was ruled out at an early stage for several reasons; considering the scope and aspirations of this study, it would have required a lot of time and expense without for that reason guaranteeing a high degree of coverage. On the contrary, it is known from experience that this type of inquiry entails a high degree of non-response, especially among small and medium-sized firms. It could also be feared that some respondents might be loath to disclose implemented combinations or that a course of events far back in time could not be reconstructed.

The guiding rule for data collection has been to track down as many industrial combinations as possible in the period from 1946 to 1969 by every reasonable means. Opting for this method turned out to inflict almost interminable detective work. In this respect it corresponds to the more ambitious investigations of mergers in other countries, especially the United States, and therefore permits certain comparisons with these.

¹ The findings of this project, which was sponsored by the Industrial Council for Social and Economic Studies (SNS), are contained in three publications: Höglund & Rydén et al [1964]; Rydén [1965]; Albinsson & Rydén et al [1968].

S o u r c e s

The SNS publications pertaining to 1958-67 drew mostly on the press for information in the collection of data. For purposes of the present study it has seemed natural to proceed from this material and to concentrate on enlarging it, first of all for the periods 1946-57 and 1968-69, but also with amplifications for 1958-67, this because there was cause to suspect certain imperfections in the SNS data, especially for the earlier years of this period.

The most important sources were newspapers, selected business journals and the annual reports and accounts of listed industrial firms. In the newspaper category, every issue of "Svenska Dagbladet", regarded as the leading organ of the Swedish business community, was studied from the outset of the period under review (i.e. since 1946). "Dagens Nyheter" was similarly monitored beginning in 1962,¹ as was "Stockholms-Tidningen" until it ceased publication in the beginning of 1966. Some other large dailies were also followed from 1962, but not systematically; this applies particularly to "Göteborgs Handels- och Sjöfartstidning". The experiences gained from these parallel studies have shown that very little further information can be obtained from other sources, which is by way of saying that "Dagens Nyheter" and "Svenska Dagbladet" are very exhaustive in their coverage of mergers.

The annual reports examined pertain to 119 manufacturing and holding companies that were quoted on the Stockholm Stock Exchange either during the whole or part of the 1946-69 period. These firms also number some that were acquired by other listed firms during the period, e.g. Addo and Reymersholms Gamla Industri AB. The annual reports were studied for all years in the investigated period, including those put out by firms which made their stock market debuts during the period. Principal attention was devoted to the section entitled "Report of the Directors" (The Swedish equivalent of "Letter to our Stockholders"), since that is the section where most firms, at least during the 1960's, have regularly

¹ The year when SNS first started to collect data on a continuous basis.

accounted for mergers as well as major pools. To double-check this information, comparisons were also made where appropriate between the annual specifications of shareholdings in subsidiaries. This control revealed that full disclosures are not always made by the directors in their reports.

In addition to the newspapers named above, the continuous monitoring that has taken place since 1962 has embraced economic and financial journals such as "Affärsvärlden", "Finanstidningen" and "Veckans Affärer", together with trade periodicals such as "Grafiskt Forum", "Emballage", "Läder och Skor", etc. However, the information given by these sources over and above that contained in newspapers and annual reports is meager. To check up on and, if necessary, augment the information given by "Svenska Dagbladet" and the annual reports for the 1946-62 period, "Affärsvärlden" and "Finanstidningen" were nevertheless studied afterwards.

A feature common to the press and the annual reports is that they usually give only as much information about combinations which the firms see fit to make public or which the press deems to be newsworthy. Naturally, this leaves a wide margin for discretionary behavior: attitudes to mergers may vary considerably between different firms and between persons in the same firm, between different newspapers and between editors who work for the same paper, etc. These variations derive from differences of policy as to degrees of candor vis-à-vis shareholders, politicians, readers and others in regard to "delicate" matters - and mergers and pools are often considered delicate. This policy is of course subject to change over time depending on the state of public opinion, the employment level, the aspirations of government economic policy, and so on. It appears as though the course of events during the investigated period has, for various reasons that will not be discussed here, moved towards greater willingness by firms to disclose their combination activities to the outside world, as well as towards increased interest among newspapers to inform about and shed light on such phenomena.

So as to further minimize the risk of systematic bias in the sample, we have utilized additional supplementary sources. The annual issue of "Svenska Aktiebolag" lists all corporations having a specified minimum capital stock, often with identification of the firms by group affiliation, a brief history (where mergers are usually noted conspicuously) and specification of shares held in subsidiaries. In order to detect even more mergers, we compared all industrial firms in three annuals of "Svenska Aktiebolag", dating from the beginning, middle and end of the investigated period. This search turned up an additional 50 mergers or so for the period preceding 1960, an admittedly insignificant number in proportion to the total (about 2 percent) yet corresponding to the number of mergers in an average year during the period before 1959.

Newspaper articles and various statements have indicated considerable merger activity in the cooperative food processing industry during the investigated period, especially among the dairies. But the information obtained from press notices seems to have been not only incomplete but also erroneous in certain respects. We therefore addressed inquiries to the Swedish Dairies' Association (SMR), the Swedish Farmers' Meat Marketing Association and the Cooperative Union and Wholesale Society (KF), asking them to account for all mergers involving members or other associated firms that they knew to have taken place since 1946. It turned out that the press material covered slaughterhouse mergers adequately, but yielded a highly incomplete picture of mergers for baking, meat-packing and dairying. None of the 36 slaughterhouse mergers reported by KF entered into the original data. As for the dairies, the number of mergers rose from 30 to 482. The overwhelming number of these had involved small dairies catering exclusively to local markets. This was also true of the fifty or so bakery mergers which according to KF took place within the consumer cooperative movement and were not reported in the press. Obviously, mergers of this kind are likely to interest newspapers of nationwide circulation only in the exceptional case, assuming they find out

about them in the first place.¹

The analyses of newspapers and annual reports indicated that there has been considerable merger activity in the brewing industry. To check up on the coverage of this material we sent an inquiry to the industry's dominant company asking for a detailed account of all mergers that had involved entities of the company since 1946. In this case we could establish that the original coverage was very good.

A minor number of combinations were traced through channels other than those mentioned so far, e.g. in company-written histories, feature articles about firms, advertisements in situations-vacant columns and the like, as well as through personal contacts with spokesmen for the business community where the question came up more or less by chance. Such fill-ins, plus the remaining material emanating from sources other than newspapers and company reports, relate almost entirely to small mergers with very limited impact on industry as a whole or with little significance for the industry groups into which the collected data are divided.

Several objections can be raised against the method of collecting data. The main problems concern (1) the extent to which the method guarantees coverage of all *publicized* combinations; and (2) the proportion of all combinations which actually *occurred* that these represent. The great effort that went into the collection of data and the controls that were performed ought, however, to guarantee adequate coverage of the publicized combinations in general and of the non-publicized combinations involving large firms, especially the listed ones, but also those listed in "Svenska Aktiebolag" during the period. As for combinations involving mainly small industrial firms, the data may well leave something to be desired. This incompleteness certainly applies to pools, which for various reasons can be assumed to hold lower informational value. Conse-

¹ The status of food cooperatives as independent decision-making entities is open to debate, and it may be assumed that the main organizations named above have acted as prime movers towards merger activity among the "member firms". But since our reference point is the definition of "firm" chosen for this study, these cooperatively owned enterprises must be regarded as independent units as long as they are not formally owned by "their" main organizations.

quently, firms are less likely to inform the press and, in applicable cases, the press is less apt to inform the general public about them.

Pools in different forms are often regarded by many firms as more or less commonplace. To a great extent, presumably, issuing press releases about pooling agreements or telling the shareholders about them in annual reports is considered superfluous except when they have major importance for the firm's future, for the region's employment, etc., in other words combinations of the kind that constitute close substitutes for mergers. In all likelihood, therefore, the majority of large-scale and more important pools, above all those in which a listed firm has taken part, are to be found in the data. But as mentioned earlier the statistics given for pools must be interpreted with much greater caution than for mergers. The following presentation and analysis also focus on the latter.

Our method of collecting data has precedents in various foreign studies of mergers. One of these, pertaining to Australia (Bushnell [1961]), obtained merger data from perusals of leading newspapers, the Australian Financial Review, the annual reports of listed firms and the publications put out by the stock exchanges in Melbourne and Sydney. Bushnell considered the coverage of merger activity among the large listed firms good, but expected that it was less complete among the small firms and among those which were not organized as corporations.¹ Nelson's comprehensive work on merger development in the United States from 1895 to 1956 (Nelson [1959]) is also based on information given in the press but does not go into any discussion of data completeness.

Similar methods were employed in a U.S. study covering the period from 1940 to 1947 (Butters, Lintner & Cary [1951]). They are described and discussed at fairly great length. All mergers reported in financial dailies and specialized journals were recorded. The list was filled out by perusals of annual reports, stock exchange reports, financial annuals and corporate directories. In addition

¹ These were fairly common in Australia even among large and medium-sized firms.

two corporate registries were compared, one from the beginning and one from the end of the period. If a firm disappeared, changed its name or could otherwise be suspected of having participated in a merger, the case was further investigated. In spite of this extensive research, the authors contend that their merger list is reasonably complete only for the larger firms. In checking their list on the textile industry against a detailed census made by a trade association, they found that it covered only 30 percent of all consummated mergers. However, this proportion was deemed to be decidedly worse than the average since small firms are relatively more common in the textile industry than in other industries. Comparison of the list with a census for a geographically defined territory (New England) disclosed a coverage of 55 percent. The authors accordingly concluded that their list embraced at least half of all the mergers that had occurred.

In the U.S. mergers are registered as they occur by the Federal Trade Commission (FTC). Sources are the financial press, subscription to an information service,¹ and the weekly edition of Moody's Manual of Investments. It has been estimated that this system of recording mergers covers from 65 to 80 percent of all the mergers consummated in U.S. manufacturing (Gort [1969], pp. 631-632).

In view of what has been said, it might be asked how much coverage has been attained with the methods of collecting data used in this study. Several factors suggest that it ought to be considerably higher than the good 50 percent estimated by Butters & Lintner & Cary. Our study has drawn upon more sources and the research methods adopted would appear to be more thoroughgoing than theirs. The

¹ A similar monitoring service is available in Sweden, based on subscribing to certain key words, e.g. "merger". A comparison of our collected data with press cuttings on mergers obtained by two subscribers to this service disclosed that the cuttings supplied only a very few mergers which were not already known to us, and these were very small combinations. Actually, our material contained a great many cases that the cutting service had missed. However, the comparison pertained to a relatively short period (October 1, 1969, to May 31, 1970).

Swedish investigation covers a time period when willingness to disclose mergers was presumably greater than in the United States from 1940 to 1947. The continuous work of registration has gone on longer (more than eight years) and was handled by one and the same person. For this reason the degree of coverage in our study should be at least as high as that of the FTC, probably even a bit higher. Several arguments can be advanced for this supposition. The number of potential mergers in Sweden is much smaller than in the U.S., which for a given "monitoring input" naturally raises the monitoring intensity per firm. The corporation as a form of business organization is more common in Sweden than in other countries, including the U.S. Finally, the leading Swedish newspapers enjoy considerably more nationwide circulation than leading newspapers in the U.S.

According to interviews with executives of some ten leading industrial firms and commercial banks, extremely few mergers occur among large or medium-sized industrial firms without their becoming public knowledge in some way. For these firms, therefore, the Swedish merger data ought to have very good coverage, presumably at least 90 percent and close to 100 percent for the listed firms counted in number of mergers.¹ Thus, if there is a positive correlation between degree of coverage and corporate size, the quality of the data should be somewhat inferior for the small firms - just how inferior is hard to say with any claim to precision. A guess, based on the arguments set forth above, is that the collected research data cover 75-85 percent of all mergers which occurred during the post-war period. When merger activity is weighted by our size measure, the degree of coverage should be even higher, in all likelihood over 90 percent.²

¹ The listed firms account for about half the number of mergers.

² These assessments pertain to total mergers. Greater uncertainty attaches to the degree of coverage for partial mergers, especially those which embody relatively insignificant product switches. As for the pools, it has already been noted that the coverage is probably low.

PRESENTATION OF THE EMPIRICAL DATA

Due to the broad interest that various quarters have shown in mergers and other combinations in recent years, we think it justified not to confine our presentation of data to the requirements imposed by the following analysis of the causes of mergers. This interest primarily focuses on the possible effects of mergers with respect to employment, capital formation, degree of competition, allocation of resources and power, and growth. It has not been possible for us to give detailed consideration to what would have to be done to adapt the empirical data to these and other plausible research objectives.¹ However, some of the requirements coincide with those of this study, while others necessitate relatively small adjustments. This applies, for instance, to accounting for the number of employees affected in merged firms, the number of firms acquired in connection with mergers for the whole manufacturing sector and for specific industries, and the extent to which mergers have occurred between firms in the same industry or in different industries.

Survey of the development of combinations, 1946-70

It became evident from our earlier discussion of definitions that great weight has been attached to the distribution of combinations over time and by different types: total mergers, partial mergers and pools. The data is presented in Table 1 with reference to these variables. For whole the period 3,912 combinations were tracked down which satisfied the reported criteria. Of these 774 are pools, but this figure no doubt underestimates the actual number. Of the 3,138 mergers 679 (22 percent) are partial, i.e. acquisitions and consolidations of operating divisions and subsidiaries, and the remaining 2,459 are total. According to the data, therefore, acquisitions and consolidations of whole firms have been the dominant form of combination in Swedish industry during the postwar period, measured in number of combinations.

¹ For a further discussion of this matter, see Kemp [1969].

A striking feature of the combination trend is the much livelier activity during the 1960's compared to the earlier postwar years. This holds with particular force for the latter part of the 1960's. Nearly half of all combinations during the 24 years occurred between 1966 and 1970. Another way to express the same phenomenon is that, on an average, there have been five times as many mergers during the last five years of the investigated period than during the first five.

As will be seen from Table 1, combining activity held at a constantly low level right up to the end of the 1950's, when a sharp upswing set in. This trend had not yet been broken by the end of the period under review.¹ From 1946 to 1957 the number of mergers ranged between 44 and 68 per annum with the exception of 1952-53, when merger activity declined by about half. From 1954 to 1957 the number of mergers held more or less steady (at 52-54). Since then each year has seen relatively steep increases except for 1961, 1967 and 1970. However, the reduced number of mergers in 1967 must be seen in relation to 1966, the year in which there was the largest number of combinations in the whole period. This very high level was no doubt largely induced by the change in capital gains taxation of shares (which came into force on July 1, 1966), which was generally interpreted as signifying increased taxation.² In the absence of this change the mergers might well have been postponed a year or two; as it happened, activity was accelerated and the mergers were clustered in 1966.

The measure of merging and combining activity presented so far are marred by certain limitations. Measuring such activity in terms of number of combinations is relevant to an analysis of the causes of mergers, since the decision-making process involved in every single merger then becomes the primary consideration rather than the size of the merger. But if one wants to gauge the economic effects

¹ Preliminary figures indicate a decline in mergers during 1970.

² Subsequent events have shown that the tax change need not result in higher taxes, since the rules for granting exemptions appear to have been construed rather liberally, particularly in connection with mergers.

Table 1. *Combinations in Swedish industry, 1946-70*

Number of mergers (acquisitions and consolidations) and pools in which Swedish industrial firms have taken part.

| Year | Total mergers | Partial mergers | Pools | Total |
|-------|---------------|-----------------|-------|-------|
| 1946 | 48 | 0 | 5 | 53 |
| 47 | 65 | 3 | 4 | 72 |
| 48 | 53 | 3 | 3 | 59 |
| 49 | 41 | 3 | 2 | 46 |
| 1950 | 51 | 12 | 2 | 65 |
| 51 | 60 | 3 | 2 | 65 |
| 52 | 21 | 2 | 7 | 30 |
| 53 | 20 | 9 | 1 | 30 |
| 54 | 44 | 10 | 5 | 59 |
| 1955 | 46 | 8 | 7 | 61 |
| 56 | 50 | 2 | 6 | 58 |
| 57 | 46 | 7 | 14 | 67 |
| 58 | 62 | 12 | 19 | 93 |
| 59 | 77 | 15 | 29 | 121 |
| 1960 | 105 | 28 | 39 | 172 |
| 61 | 78 | 41 | 40 | 159 |
| 62 | 126 | 35 | 46 | 207 |
| 63 | 123 | 41 | 45 | 209 |
| 64 | 131 | 46 | 46 | 223 |
| 1965 | 195 | 33 | 52 | 280 |
| 66 | 232 | 79 | 76 | 387 |
| 67 | 184 | 65 | 72 | 321 |
| 68 | 186 | 75 | 82 | 343 |
| 69 | 221 | 89 | 86 | 396 |
| 1970 | 194 | 58 | 84 | 336 |
| Total | 2,459 | 679 | 774 | 3,912 |
| 1971* | 144 | 31 | 32 | 207 |

* Preliminary numbers. The final number is normally around 25 percent higher than the preliminary.

Sources: Newspapers, periodicals, annual reports, directories, etc.

of merger activity, a weighted merger measure is preferable. The above measure has therefore been augmented with two size measures, namely employment and value of shipments in the acquired firms. This yardstick of the extent and development of mergers is presented in Table 2. It embraces all industrial firms located in Sweden that have been acquired. Partial mergers in the form of bought-out operating divisions are accordingly left out, as are foreign firms that have been acquired by Swedish firms as well as non-industrial firms bought out by industrial firms. Nor is account taken of mergers in "electric utilities" and the "construction industry". This leaves 1,835 acquired industrial firms out of the original 2,886 mergers. Of the 1,835 size data are lacking for 181, but these are undoubtedly mostly small firms. Besides, 60 percent of the 181 is represented by very small dairies which probably employ less than five people each. For purposes of assessing the development of weighted merger activity over time, however, it should be borne in mind that the loss of coverage is concentrated in the earlier part of the period: nearly half the loss relates to the first five of the years investigated, whereas the last five years show an insignificant loss.

With these reservations in mind it can be established that the weighted merger activity does not appreciably differ from the unweighted as regards distribution over time. According to our sample, about 265,000 persons worked for industrial firms that were acquired in connection with mergers during the period 1946-69.¹ By this measure, too, about half the total merger activity during the period is shown to have taken place during the last five years, 1965-69. The average for the last five years exceeds that of the first five by a factor of about six (25,000 and 4,000 employed, respectively).

A different picture emerges when we look at the year-to-year variations instead. The weighted merger activity turns out to exhibit much larger variations than the unweighted. As will be seen from Figure 2, the weighting in

¹ This figure includes a minor proportion of double-counts, i.e. of persons employed by firms which were acquired more than once. See also footnote 1, p. 67.

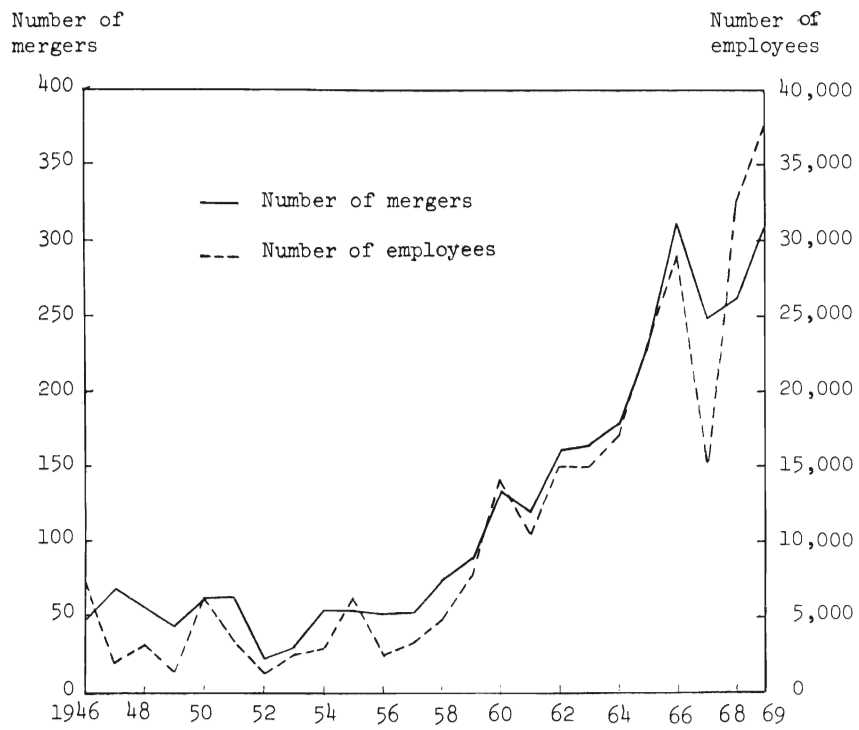
Table 2. *Weighted merger activity in industry for each year of the period 1946-69*

| Year | Number employed in acquired firms | Share of total industrial employment (%) | Value of shipments in acquired firms (SKr million, current prices) | Share of industry's total value of shipments (%) | Number of acquisitions and firms | |
|--------------|-----------------------------------|------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------|----------------------------------|---------------------------------|
| | | | | | total | for which size data are lacking |
| 1946 | 7,711 | 1.01 | 133.4 | .87 | 42 | 15 |
| 47 | 1,901 | .24 | 49.3 | .28 | 59 | 14 |
| 48 | 3,126 | .40 | 39.8 | .20 | 49 | 20 |
| 49 | 1,382 | .18 | 41.1 | .20 | 35 | 14 |
| 1950 | 6,193 | .78 | 170.2 | .74 | 56 | 24 |
| 51 | 3,791 | .47 | 97.0 | .31 | 57 | 15 |
| 52 | 1,299 | .16 | 38.8 | .12 | 19 | 5 |
| 53 | 2,533 | .32 | 73.3 | .24 | 22 | 4 |
| 54 | 2,981 | .37 | 177.0 | .52 | 49 | 4 |
| 1955 | 6,354 | .75 | 229.2 | .62 | 41 | 7 |
| 56 | 2,629 | .31 | 170.6 | .43 | 45 | 3 |
| 57 | 3,404 | .40 | 159.8 | .38 | 42 | 6 |
| 58 | 4,751 | .56 | 199.7 | .47 | 51 | 4 |
| 59 | 7,722 | .91 | 407.9 | .91 | 55 | 1 |
| 1960 | 14,013 | 1.56 | 636.8 | 1.27 | 86 | 7 |
| 61 | 10,519 | 1.13 | 942.8 | 1.75 | 61 | 8 |
| 62 | 14,982 | 1.60 | 1,034.8 | 1.80 | 101 | 4 |
| 63 | 14,950 | 1.59 | 1,170.4 | 1.91 | 87 | 4 |
| 64 | 17,146 | 1.75 | 1,293.4 | 1.87 | 103 | 3 |
| 1965 | 23,266 | 2.35 | 1,702.0 | 2.22 | 140 | 1 |
| 66 | 28,834 | 2.94 | 2,401.5 | 2.99 | 194 | 6 |
| 67 | 15,261 | 1.61 | 1,163.2 | 1.40 | 122 | 6 |
| 68 | 32,517 | 3.55 | 2,916.3 | 3.39 | 161 | 5 |
| 69 | 37,583 | 4.38 | 4,304.0 | 4.63 | 158 | 1 |
| Total | 264,848 | | | | 1,835 | 181 |

Note: 60 percent of the firms for which size data are lacking is made up of very small dairies. The remaining 40 percent probably consist of small firms as well.

Sources: The basic data for Table 1; the annual volumes of "SOS Industri"; annual reports, manufacturing directories, etc.

Figure 2. *Number of mergers and number of employees in merged firms, 1946-69.*



Sources: Tables 2 and 3.

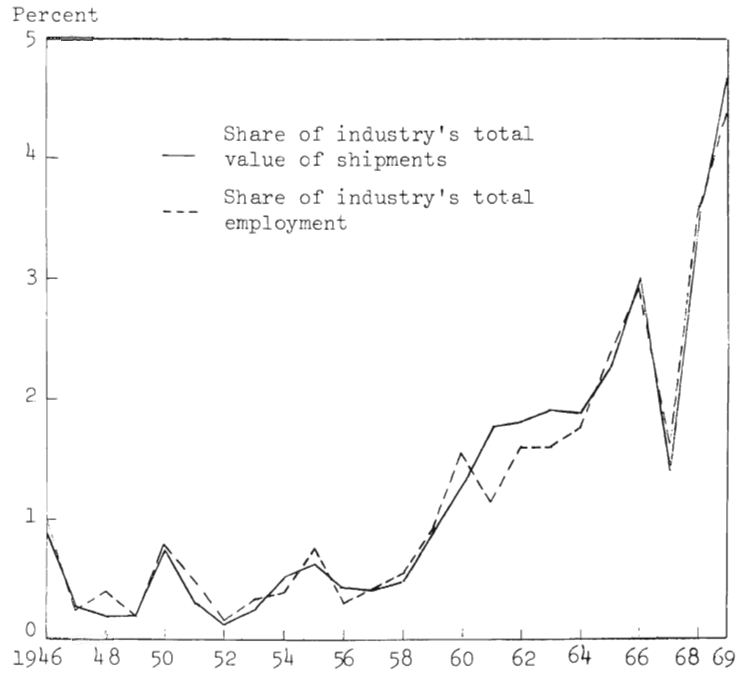
some cases has even resulted in a change between two years in a direction opposite to that shown by the unweighted merger measure. This applies, for instance, to 1946-47, when the number of mergers rose from 42 to 68, i.e. by 42 percent, whereas the weighted merger activity actually fell by 75 percent. In subsequent years the changes also went in opposite directions - downwards according to the unweighted measure, upwards according to the weighted. In studying the short-run fluctuations of mergers, the choice of merger measure can obviously have decisive bearing upon results and conclusions.

Table 2 also shows the relative extent of merger activity ("merger intensity"), measured as the sum total of number of employees and value of shipments, respectively, for the acquired firms (including subsidiaries) in relation to the total value of both measures for the whole manufacturing sector in each year.¹ First of all it can be established that the share works out about the same irrespective of the size measure used with exceptions for two years, 1948 and 1961.² This will be clearly seen from Figure 3. The merger intensity ranges from 0.1 to 4.4 and 4.6 percent, respectively, with an annual average of 1.2 percent. In terms of the annual employment measure the merger intensity for the whole period under review comes to 29.3 percent, which means that nearly one-third of the average industrial employment during the postwar period has been directly af-

¹ The data on corporate employment levels and value of shipments/sales have been obtained from various sources, mainly annual reports, the Swedish Industrial Directory, "Kompass", the industrial statistics published by the Central Bureau of Statistics, and directly from the firms themselves. Estimates have been made in certain cases. The data usually pertain to the year of merger or the year preceding merger. Wherever possible taxes have been removed from the turnover figures even though past experience shows these figures to work out somewhat higher than the values of shipments. In consequence the shares given for value of shipments turnover may be slightly overestimated in relation to the employment shares.

² The exceptions can be explained by abnormally many or large bought-out firms with a value of shipments per employee that greatly deviates from the mean.

Figure 3. *Share of merged firms in total employment and value of shipments, 1946-69.*



Source: Table 2.

ected by mergers.¹

If it were possible to estimate employment for the 432 acquired operating divisions, the number and proportion of those "affected" would of course increase correspondingly. On the assumption that the acquired operating divisions employed an average of 50 persons each, the number affected rises from 264,900 to 286,500 and the proportion from 29.3 to 32 percent. This increase is primarily concentrated in the most recent years. If we similarly estimate employment of those firms for which data are lacking at an average 10 persons each, the number rises further to 288,300, with the increase concentrated in the earlier years of the study.²

T y p e s o f c o m b i n a t i o n s

Up to now the combinations have been accounted for by three main types: total mergers, partial mergers and pools. But as indicated earlier, the data were also analyzed after a more discriminating schema in order to shed light on and, if possible, answer more specific questions. The classification schema used, which is also given by the headings in Table 3, looks as follows:

¹ The denominator of this measure includes the number of persons employed in industry in the middle year of the period (1958). An identical proportion will result when the average annual number of employees is entered in the denominator. The measure must not be taken to mean that one-third of those employed in manufacturing during the postwar period have been affected by mergers, since the number employed during this long period obviously exceeds the number employed in any given year. If anything, it expresses the proportion of industrial jobs that have been "affected".

² It should be stressed that these figures cannot substantiate any conclusions as to how many employees have been *actually* affected by mergers in some sense. Note, too, that the employees of acquiring firms are not counted even though they may also be "affected".

Mergers

Total mergers

- 1a. Acquisition of, or consolidation with firms owned and located in Sweden by firms owned and located in Sweden through purchase of at least 50 percent of the share capital (number of votes) or of all assets and liabilities.
- 1b. Same as 1a. except that control over the acquired firm has been obtained through purchase of less than 50 percent of its share capital.
- 1c. Same as 1a. except that the buyer consists of more than one firm.
- 4a. Purchase by Swedish-owned firms of foreign-owned firms, subsidiaries or operating divisions located abroad.
- 4b. Purchase by Swedish-owned firms located in Sweden of foreign-owned firms or subsidiaries located in Sweden.
- 5a. Purchase by foreign-owned firms located abroad of Swedish-owned firms, subsidiaries or operating divisions located in Sweden.
- 5b. Purchase by foreign-owned firms located in Sweden of Swedish-owned and firms in Sweden.

Partial mergers

- 2a. Purchase by Swedish firms of operating divisions not organized as independent legal entities of other Swedish firms.
- 2b. Purchase by Swedish firms of subsidiaries of other Swedish firms.

Pools

3. Pools between firms located in Sweden.
6. Pools between firms located in Sweden and firms located abroad.

One of several purposes with this classification has been to permit an assessment of how merger activity affects the number of decision-making units in Swedish industry. Mergers of categories 1, 4b and 5 will reduce the number of such units in Swedish industry, though 4b will leave

Table 3. Number of combinations in industry, 1946-70, by type and year.

| Year | Total mergers | | | Partial mergers | | Swedish purchases of foreign firms | | Foreign purchases of Swedish firms | | Pools | | Subtotals | | Total combinations |
|-------|---------------|----|----|-----------------|-----|------------------------------------|----|------------------------------------|----|---------|---------|-----------|-------|--------------------|
| | 1a | 1b | 1c | 2a | 2b | 4a | 4b | 5a | 5b | Swedish | foreign | Mergers | Pools | |
| | | | | | | | | | | 3 | 6 | | | |
| 1946 | 45 | - | - | - | - | 3 | - | - | - | 2 | 3 | 48 | 5 | 53 |
| 1947 | 60 | - | 1 | 3 | - | 1 | - | 1 | 2 | 2 | 2 | 68 | 4 | 72 |
| 1948 | 46 | - | - | 3 | - | 1 | 5 | 1 | - | 1 | 2 | 56 | 3 | 59 |
| 1949 | 38 | - | - | 2 | 1 | - | 3 | - | - | - | 2 | 44 | 2 | 46 |
| 1950 | 47 | - | - | 4 | 8 | 2 | 2 | - | - | 2 | - | 63 | 2 | 65 |
| 1951 | 56 | - | - | 2 | 1 | 3 | 1 | - | - | 2 | - | 63 | 2 | 65 |
| 1952 | 19 | - | - | 1 | 1 | 1 | - | 1 | - | 5 | 2 | 23 | 7 | 30 |
| 1953 | 20 | - | - | 6 | 3 | - | - | - | - | 1 | - | 29 | 1 | 30 |
| 1954 | 40 | - | - | 7 | 3 | 4 | - | - | - | - | 5 | 54 | 5 | 59 |
| 1955 | 41 | - | 1 | 2 | 6 | 4 | - | - | - | 3 | 4 | 54 | 7 | 61 |
| 1956 | 48 | - | - | 1 | 1 | 2 | - | - | - | 2 | 4 | 52 | 6 | 58 |
| 1957 | 39 | - | - | 5 | 2 | 7 | - | - | - | 7 | 7 | 53 | 14 | 67 |
| 1958 | 51 | - | 1 | 7 | 5 | 8 | 1 | 1 | - | 13 | 6 | 74 | 19 | 93 |
| 1959 | 61 | - | 1 | 11 | 4 | 11 | - | 4 | - | 14 | 15 | 92 | 29 | 121 |
| 1960 | 82 | - | 4 | 23 | 5 | 12 | 1 | 5 | 1 | 19 | 20 | 133 | 39 | 172 |
| 1961 | 55 | - | 1 | 36 | 5 | 11 | 1 | 10 | - | 17 | 23 | 119 | 40 | 159 |
| 1962 | 95 | - | - | 26 | 9 | 6 | 1 | 20 | 4 | 23 | 23 | 161 | 46 | 207 |
| 1963 | 105 | - | 3 | 24 | 17 | 12 | - | 3 | - | 20 | 25 | 164 | 45 | 209 |
| 1964 | 115 | - | 2 | 38 | 8 | 10 | 1 | 3 | - | 16 | 30 | 177 | 46 | 223 |
| 1965 | 153 | - | 4 | 26 | 7 | 25 | - | 11 | 2 | 33 | 19 | 228 | 52 | 280 |
| 1966 | 185 | 2 | 7 | 46 | 33 | 18 | 1 | 13 | 6 | 47 | 29 | 311 | 76 | 387 |
| 1967 | 143 | 1 | - | 56 | 9 | 30 | 3 | 6 | 1 | 41 | 31 | 249 | 72 | 321 |
| 1968 | 136 | - | 1 | 46 | 29 | 27 | 4 | 15 | 3 | 38 | 44 | 261 | 82 | 343 |
| 1969 | 160 | 1 | - | 57 | 32 | 42 | 1 | 15 | 2 | 41 | 45 | 310 | 86 | 396 |
| 1970 | 161 | 0 | 1 | 38 | 20 | 20 | 0 | 10 | 2 | 39 | 45 | 252 | 84 | 336 |
| Total | 2 001 | 4 | 27 | 470 | 209 | 260 | 25 | 119 | 23 | 388 | 386 | 3 138 | 774 | 3 912 |
| 1971* | 105 | 0 | 1 | 23 | 8 | 22 | 1 | 15 | 0 | 21 | 11 | 175 | 32 | 207 |

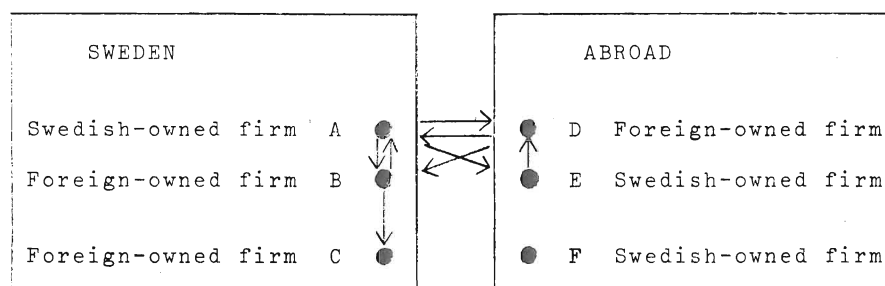
* Preliminary numbers.

Source: The basic data for Table 1.

the number of Swedish-owned firms intact. Category 2 does not entail any change, nor of course does category 4a. It is important to make these distinctions considering that unspecified merger data are sometimes taken to substantiate assertions about the impact of merger activity on the total population of firms and on concentration ratios in manufacturing and other branches of economic activity.

Mergers across Sweden's frontiers are separately accounted for inasmuch as for political and economic reasons special interest often attaches to the internationalization of firms. However, the fourfold division of classes carried out for such mergers amounts to a simplification. A complete classification in accordance with the nationality definitions described earlier would require some additional classes. The classification adopted is shown in Figure 4.

Figure 4. *Schema for classifying mergers between Swedish and foreign firms.*



The arrows indicate which types of international mergers enter into the data, with each arrow emanating from the acquiring firm.

In the classification shown above, 4a = AD, 4b = AB, 5a = DA and 5b = BA. In addition ED and a few cases of AE have been assigned to 4a, and a few cases of DB to 5a. The very few cases of BC have been assigned to category 1. The remaining combinations are excluded from the data, though a few examples of EF and DE have been observed. It should be pointed out, however, that it may be difficult to adequately determine the nationality of foreign-owned firms located in Sweden, since sometimes there is no cause to

suspect any nationality other than Swedish. For this reason an occasional merger of category 4b or 5b may well have crept into 1a. owing to insufficient information. But if that has happened the firms involved are probably small.¹

Concerning the pools it has not been thought necessary to apply the double nationality definition, one reason being that the incompleteness of data does not permit any more detailed analyses. Still, pools do not affect the number of decision-making units in industry.

Table 3 sets forth the empirical data in accordance with the classification presented above. Among the total mergers 1a, i.e. acquisition of a majority interest by one buying firm, completely dominates; only four mergers through acquisition of less than 50 percent of the share capital are included and no more than 27 in which the acquirer consists of more than one firm. Of the partial mergers, purchases and consolidations of operating divisions account for the greater part: 470 out of a total 679. The remaining 209 accordingly represent purchases of subsidiaries. It is worth noting that the partial mergers increased much more rapidly than overall merger activity during the last years of the study. Half of all partial mergers occurred in 1967-70. The majority of the firms in category 1 acquired by merger have been what are often referred to as "family businesses", i.e. firms whose ownership is limited to one or a few members of a single family and whose management is often drawn from the same circle. Between 500 and 600 of the acquired firms have been economic associations (usually cooperatives), most of them in the dairying industry. An additional ten or so comprise firms owned by central government or local authorities and a good 20, lastly, were listed firms prior to merger with rather dispersed ownership as a rule. The relative importance of family businesses in the merger data is a fact that may bear upon the subsequent analysis of causes behind the observed merger development.

Of the 2,459 total mergers, 427 involved one Swedish firm and one foreign firm in accordance with one of the

¹ An important source for determinations of nationality has been Johansson [1968].

two nationality criteria. The Swedish acquisitions number 285, of which 260 relate to firms located abroad and 25 to foreign-owned firms located in Sweden. The number of foreign acquisitions comes to 142, with 119 of these made by a buyer firm located abroad and 23 by a firm located in Sweden. Nearly half the Swedish purchases of foreign-owned firms in Sweden took place between 1948 and 1951. These cases mainly concern sales by the Foreign Capital Control Office of German property that was confiscated during the war.¹ The foreign purchases of Swedish firms are concentrated in the 1960's, i.e. that part of the investigated period marked by liberalized and fast-growing foreign trade and the advent of large international trade blocs, among them the European Free Trade Association.

The registered pools, numbering 774, are very evenly distributed between those formed in Sweden and those formed between Swedish and foreign firms. As was noted for the partial mergers, the number of pools grew much more rapidly towards the end of the period, though this may also be a matter of reporting: the press might have been less complete in its coverage of pools during the first part of the period. Before 1957 the annual number of pools of both categories never exceeded seven, whereas the number for the last five years averaged 80. But as we have emphasized, these figures must be regarded as very much on the conservative side.

D i s t r i b u t i o n o f m e r g e r s b y i n d u s t r y

We have deemed it important for various reasons to find out how combining activity has developed in different branches of economic activity or industries. Among other things, a breakdown by industries can simplify - indeed, it may even be imperative for - the following causal analysis since it can be assumed that merger propensity varies from one industry to another. Such a classification is also necessary if one seeks to assess the need to promote structural changes in different industries through economic policy or to predict the future merger trend.

¹ One example is the sale of AB Landsverk, Landskrona, to Kockums Mekaniska Verkstads AB.

The industry classification has been made, first, for each firm or operating division acquired in connection with merger; and second, for each merger regarded as a *single* step taken by several firms. In classifying the mergers by industry we have let the industry affiliation of the acquired firm decide in cases where the firms have operated in different industries, with exception made for purchases of non-manufacturing firms, in which cases the buyer's industry affiliation decided the classification. Mergers of operating divisions and subsidiaries have naturally been grouped after their own affiliation and not after that of the selling company, which may have been a different one. Pools were classified on the basis of the object of cooperation (function, product) and not the industry to which the contracting firms belonged on the basis of their overall activities.

The classification we finally adopted reflects a compromise between different desiderata and restrictions. Thus it would have been desirable to obtain a "market-oriented" classification by the use of products rather than by raw materials or processes, as is often true of the official Swedish industry statistics. We should also have liked the product groups to be as homogeneous as possible. The restrictions are imposed by having to adapt to already existing sectorial data with which the merger data can be compared for various purposes, by the difficulty of assigning diversified firms to a single industry, and by the need to keep the material within manageable limits. The compromise we opted for is the industrial classification used in the 1965 Long-term Survey (Bentzel & Beckeman [1966]), with two more industries added in certain tabulations. Thus, each acquired firm and combination has been assigned to one of the following 19 industries:

1. Mining
2. Primary metals
3. Fabricated metal products
4. Machinery (Mechanical engineering)
5. Electrical machinery
6. Transportation equipment

7. Shipbuilding
8. Stone, clay and glass
9. Lumber and wood products
10. Pulp, paper and board
11. Paper products, printing and publishing
12. Food and kindred products
13. Textile mill products
14. Apparel and related products
15. Footwear and leather
16. Rubber products
17. Chemicals and allied products
18. Utilities (electricity, gas and water)
19. Building and construction.

For a more detailed description of these industries (with the exceptions of 18 and 19) by structure, size and other parameters, reference is made to Bentzel & Beckeman [1966]. Suffice it to mention here that the Committee's classification of plastics processing will not be followed in this study. To permit comparability with other industry statistics this activity has been assigned to "chemicals and allied products" instead of to "fabricated metal products."

In this study, as in Bentzel & Beckeman [1966], the classification of firms by industry has adhered to that of the official statistics put out by SCB, the Central Bureau of Statistics. Since no complete lists of firms have been available for the different industries, the full adequacy of the classification cannot be guaranteed. Particular difficulties arose in making assignments to industries 2-5 and 9-11. For this reason, the data presented for these industries must be read with some reserve even though principal features and tendencies can be assumed to be correctly identified.

Table 4 shows how the mergers break down year by year in the 19 industries. The greatest number of mergers have taken place in food processing: 826 out of a total 2,886. Of these the majority are to be found in dairying (482) and another large number in malt liquors-soft drinks and in bakery products (about 80 each). As will be seen

Table 4. Number of mergers in industry, 1946-69

| Industry | 1946 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | To- tal | 70* |
|-----------------------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------------|-----|
| Mining | - | - | - | 2 | 5 | 1 | - | - | 1 | 1 | - | 2 | - | - | - | - | 2 | - | - | - | - | 3 | 2 | 3 | 22 | - |
| Primary metals | 2 | 2 | - | 1 | 1 | - | - | - | 1 | 2 | - | - | 1 | - | 2 | 1 | 1 | 1 | - | 2 | 3 | 4 | 4 | 2 | 30 | 2 |
| Fabricated metal products | 3 | 5 | 3 | - | 4 | 5 | 3 | - | 5 | 5 | 5 | 2 | 8 | 9 | 13 | 6 | 11 | 22 | 18 | 26 | 38 | 25 | 47 | 52 | 315 | 20 |
| Machinery | 7 | 4 | 3 | 1 | 6 | 7 | 4 | 1 | 2 | 4 | 6 | 3 | 10 | 12 | 11 | 8 | 16 | 20 | 11 | 36 | 36 | 31 | 18 | 27 | 284 | 28 |
| Electrical machinery | 3 | 2 | 3 | 1 | 1 | 3 | - | 1 | 2 | 1 | 1 | 6 | 5 | 5 | 6 | 6 | 13 | 5 | 7 | 12 | 14 | 14 | 28 | 30 | 169 | 11 |
| Transportation equipment | - | 1 | 2 | - | 1 | - | - | 1 | - | 1 | 2 | 2 | 5 | 2 | 4 | 6 | 5 | 3 | 9 | 9 | 13 | 8 | 13 | 10 | 97 | 5 |
| Shipbuilding | 1 | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 | 1 | 2 | 1 | 4 | 3 | 2 | 3 | 2 | 3 | 25 | 6 |
| Stone, clay and glass | 2 | 3 | - | - | 1 | 2 | - | 2 | 2 | 5 | 1 | 1 | 1 | 3 | 5 | 4 | 6 | 7 | 14 | 10 | 20 | 11 | 8 | 17 | 125 | 3 |
| Lumber and wood products | 2 | 1 | 2 | 1 | 4 | 9 | - | 4 | 5 | 3 | 3 | 5 | 1 | 4 | 4 | 3 | 4 | 1 | 4 | 18 | 21 | 14 | 8 | 21 | 142 | 23 |
| Pulp, paper and board | 3 | 4 | 2 | 1 | 2 | - | - | 1 | 3 | 3 | - | 1 | 4 | 2 | 6 | 8 | - | 8 | 8 | 12 | 18 | 15 | 17 | 15 | 133 | 6 |
| Paper products, printing and publishing | - | 2 | 2 | 1 | 2 | 1 | - | 1 | 3 | 3 | 3 | - | - | 1 | 7 | 7 | 5 | 6 | 6 | 17 | 21 | 10 | 16 | 18 | 132 | 20 |
| Food and kindred products | 22 | 32 | 32 | 31 | 29 | 29 | 10 | 5 | 22 | 20 | 26 | 21 | 29 | 35 | 55 | 44 | 64 | 55 | 52 | 33 | 45 | 45 | 35 | 55 | 826 | 19 |
| Textile mill products | 1 | 1 | 2 | 1 | 2 | - | 1 | 3 | 1 | 1 | - | - | 1 | 2 | 2 | 4 | 6 | 3 | 6 | 2 | 11 | 4 | 9 | 4 | 67 | 8 |
| Apparel and related products | 1 | 1 | 1 | - | 1 | - | 1 | 3 | 2 | - | 1 | 1 | 1 | 2 | 3 | 3 | 6 | 6 | 7 | 5 | 7 | 11 | 10 | 6 | 79 | 12 |
| Footwear and leather | - | - | - | - | - | - | 1 | - | - | - | - | 1 | 2 | 2 | - | 1 | 1 | 2 | 1 | - | 4 | 11 | 5 | 3 | 34 | 3 |
| Rubber products | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | 2 | - | 2 | - | 2 | 1 | 1 | 2 | - | 4 | 16 | - |
| Chemicals and allied products | 1 | 3 | 3 | 1 | 1 | 2 | 1 | 4 | 2 | 3 | 4 | 4 | 5 | 8 | 12 | 11 | 13 | 13 | 12 | 23 | 31 | 13 | 19 | 19 | 208 | 20 |
| Utilities | - | 5 | 1 | 3 | 3 | 2 | 2 | 3 | 3 | 1 | - | 1 | - | 5 | - | 3 | 3 | 9 | 12 | 12 | 18 | 3 | 7 | 8 | 104 | 7 |
| Building and construction | - | - | - | - | - | 1 | - | - | - | 1 | - | 3 | - | - | - | 3 | 1 | 2 | 4 | 7 | 8 | 22 | 13 | 13 | 78 | 6 |
| Total | 48 | 68 | 56 | 44 | 63 | 63 | 23 | 29 | 54 | 54 | 52 | 53 | 74 | 92 | 133 | 119 | 161 | 164 | 177 | 228 | 311 | 249 | 261 | 310 | 2886 | 199 |

* Preliminary figures. Daries are not included, inter alia.

Note: The table covers total and partial mergers inside and outside Sweden, i.e. all combinations except pools.

Sources: Newspapers, periodicals, annual reports, industrial directories, etc.

from the table, the number of mergers in the food processing industry has held at a comparatively high level every year. Fabricated metal products and machinery each exhibit considerably less than half as many mergers as food processing (315 and 284, respectively), and the number is much lower yet for the chemical industry (208). The lowest number of mergers is recorded for rubber products (16), mining (22) and shipbuilding (25).

As was noted earlier, the number of mergers does not yield an exhaustive description of merger activity. For 17 of the industries, therefore, weighted merger measures were also calculated in the same way as the time series reported above for all industries (Table 2). Table 5 shows that the weighting gives a rather different picture of the relative extent of mergers in the different industries (merger intensity) and of how the industries rank on that score. For the investigated period as a whole, we have already mentioned that merger intensity hovered around 30 percent for all industries when this is weighted with the size measure. Food processing, which had nearly three times as many mergers as any other industry, also exhibits very high merger intensity: 46 percent according to the employment measure and 45 percent by value of shipments.¹ But merger intensity has been even higher according to the employment measure in pulp, paper and board and according to value of shipments in fabricated metal products (49 percent). Big differences between the rank orders can also be noted for machinery with considerably lower weighted relative measures, as well as for shipbuilding and rubber products (much higher rank numbers according to the weighted relative measures). The lowest merger intensity according to both size measures is shown by mining and by paper products, printing and publishing. It is also worth observing that the two size measures give quite different rank orders between industries in certain cases. This is especially true of fabricated metal products, pulp and paper, and chemicals. The

¹ Note the large loss of coverage (126 of 695 firms). However, it consists of very small firms and affects the tabulated figures only negligibly. Note, too, the high values for dairying (72 and 73 percent) and brewing (81 and 86 percent).

Table 5. *Merger intensity in 17 manufacturing industries, 1946-69*
 The number of employees and value of shipments of firms acquired
 in mergers as a percentage of the total in each industry.

| Industry | Employment | | | | | Value of shipments | | | | | Number of firms | |
|-----------------------------------------|------------|---------|---------|---------|---------|--------------------|---------|---------|---------|---------|-----------------|---------------------------------------|
| | 1946-51 | 1952-57 | 1958-63 | 1964-69 | 1946-69 | 1946-51 | 1952-57 | 1958-63 | 1964-69 | 1946-69 | total | for which size data are lacking |
| Mining | 4.34 | 3.50 | 3.10 | .89 | 11.83 | 1.47 | 1.99 | .96 | .33 | 4.75 | 9 | - |
| Primary metals | 2.21 | 6.50 | 4.11 | 6.37 | 19.19 | 1.40 | 4.51 | 4.20 | 3.12 | 13.23 | 16 | 2 |
| Fabricated metal products | 2.25 | 1.37 | 8.21 | 22.80 | 34.63 | 3.23 | 1.87 | 9.38 | 34.96 | 49.44 | 194 | 9 |
| Machinery | 1.68 | 1.42 | 4.99 | 8.87 | 16.96 | 1.74 | 1.11 | 4.62 | 9.64 | 17.11 | 188 | 7 |
| Electrical machinery | 15.56 | 1.44 | 5.64 | 15.12 | 37.76 | 11.39 | 1.63 | 6.68 | 11.88 | 31.58 | 77 | 5 |
| Transportation equipment | 7.57 | .67 | 6.82 | 24.56 | 39.62 | 6.57 | .64 | 8.65 | 24.17 | 40.03 | 37 | 3 |
| Shipbuilding | 1.71 | .00 | 13.65 | 10.34 | 25.70 | .98 | .00 | 18.77 | 9.13 | 28.88 | 13 | - |
| Stone, clay and glass | 1.60 | 1.98 | 7.57 | 24.34 | 35.49 | 1.24 | 2.46 | 9.28 | 26.26 | 39.24 | 96 | 7 |
| Lumber and wood products | 2.51 | 5.03 | 1.99 | 8.73 | 18.26 | 2.15 | 3.96 | 1.78 | 10.31 | 18.20 | 111 | 5 |
| Pulp, paper and board | 4.75 | 4.98 | 13.11 | 31.09 | 53.93 | 4.10 | 2.59 | 10.70 | 19.88 | 37.27 | 66 | 4 |
| Paper products, printing and publishing | .46 | .37 | 1.38 | 11.44 | 13.65 | 1.61 | .31 | 1.17 | 8.06 | 11.15 | 68 | 3 |
| Food and kindred products | 2.48 | 3.33 | 18.24 | 22.05 | 46.10 | 1.72 | 3.58 | 17.97 | 21.61 | 44.88 | 694 | 126 |
| (Dairying) | 3.21 | 5.48 | 20.69 | 42.26 | 71.64 | 2.88 | 5.43 | 26.63 | 38.06 | 73.00 | 482 | 109) |
| (Brewing) | 10.80 | 8.41 | 22.64 | 39.21 | 81.06 | 10.29 | 10.41 | 31.34 | 33.59 | 85.63 | 83 | 6) |
| Textile mill products | 4.16 | 2.26 | 4.95 | 9.36 | 20.73 | 3.69 | 1.85 | 5.06 | 10.13 | 20.73 | 49 | 1 |
| Apparel and related products | .64 | .43 | 5.14 | 11.79 | 18.00 | .34 | .28 | 5.24 | 10.91 | 16.77 | 54 | 3 |
| Footwear and leather | .00 | 1.12 | 4.24 | 22.95 | 28.31 | .00 | 1.48 | 5.40 | 20.44 | 27.32 | 28 | 1 |
| Rubber products | .00 | .00 | .31 | 30.65 | 30.96 | .00 | .00 | 2.00 | 35.70 | 37.70 | 8 | - |
| Chemicals and allied products | 3.59 | 2.70 | 10.88 | 23.95 | 41.12 | 2.25 | 3.67 | 7.94 | 17.05 | 30.91 | 127 | 5 |
| All manufacturing industries | 3.08 | 2.31 | 7.35 | 16.58 | 29.32 | 2.60 | 2.31 | 8.11 | 16.50 | 29.52 | 1,835 | 181 |

Note: The 181 firms for which size data are lacking, and as such do not enter into the tabulated totals, are in all likelihood very small in terms of employment and value of shipments. None of the 109 dairies presumably had more than four employees.

Sources: The basic data for Table 1; the annual volumes of "SOS Industri" (employment and value of shipments for 1969 are estimated).

explanation, of course, is that the acquired firms in these industries have deviated from the industry average with regard to value of shipments per employee. This value falls short of the average in the chemical industry and exceeds it in the two other industries mentioned.

Each industry's share was estimated for every year of the study. In Table 5 these estimates are assigned to four periods of six years each. As indicated earlier, the first twelve years were marked by a relatively stable trend in merger activity for the manufacturing industry as a whole and the later twelve years by a considerable increase. Out of the overall merger intensity of about 30 percent, 5 percentage points were absorbed during the former subperiod and 25 points during the latter; in other words, the average merger intensity for industry was about five times greater during the period 1958-69 than 1946-57. The segmentation of the former subperiod does not result in any appreciable difference between the two six-year periods. But in the latter twelve-year period merger intensity was twice as high during the last six years as during the first six. None the less, as will be seen from Table 5, there are considerable industry deviations from these averages. According to the employment measure, merger intensity in the mining industry fell off for each six-year period and only a minor portion of the value relates to the period's latter half. For electrical machinery only small differences emerge between the two periods, but what is remarkable is that nearly the whole industry value can be assigned to the first and last six-year segments of the period with an even distribution between the two. On the other hand, virtually none or no merger activity at all during the first twelve-years period is recorded for rubber products, footwear and leather, paper products, printing and publishing, and apparel. Merger intensity was then also very low in shipbuilding, fabricated metal products, machinery, and stone, clay and glass compared with the latter period and with the

total average.¹

The last merger measures took account of differences in industry size and in the size of merged firms. To supplement these measures we have calculated unweighted relative merger measures for the different industries - i.e., merger frequencies. These measures express the proportion of the number of firms in a given industry represented by the acquired firms within it. Because of inadequate (indeed, almost nonexistent) statistics during the investigated period on the number of firms in different industries, we found it necessary to select data that approximates as closely as possible the average number of firms during the period and parts of it.² These data were estimated in the following manner. Information about the number of firms in 1951 was taken from or estimated on the basis of the 1951 Business Census.³ To analyze the latter subperiod of the study we selected data from 1964 contained in the Central Business Register (CFR).⁴ The average values for 1951 and 1964 have been made to represent the number of firms in the different

¹ It should be mentioned that the values shown for certain shares have been pushed upwards because one and the same firm takes part in several mergers. This will happen when a firm that has bought out other firms is acquired in its turn. To illustrate, there was the large-scale brewing merger in 1963 between Pripp & Lyckholm and Stockholms Bryggerier, both of which had acquired a great many brewing firms before then. Another example is afforded by Svenska Metallverken, which successively bought out other firms during the 1960's until it was itself taken over by Grängesbergsbolaget in 1969.

² Note that the reference here is to firms, i.e. legal entities or groups of affiliated companies, and not to plants.

³ The estimation was necessitated by the fact that data on the number of firms are given only for ten industries. In adopting the 17-industries division for this study we proceeded from the distribution of industries by number of plants (SOS, Industri[1951]) published every year.

⁴ The concept of enterprise embodied in CFR refers to "firms with employed personnel", i.e. to employers who have remitted ATP (national supplementary pension scheme) contributions for employees to the National Social Insurance Board. While this definition of the firm would appear to be most closely identifiable with the legal entity, groups of affiliated companies may submit only one statement covering parent companies and all their subsidiaries. Certain estimates have also been made for CFR's data by apportioning the sector called "other manufacturing industry" to some of our 17 industries.

industries at mid-period, i.e. 1957-58. It was here assumed that new entries after 1958 and the elimination of firms merged before 1958 cancel out. To control the effect of any bias of the latter kind, the number of firms merged during the whole period has also been related to the number of firms at the beginning of the period (1951). The result is set out in Table 6.

The table shows that the unweighted merger frequency differs only negligibly from the weighted rate ("merger intensity", set out in Table 5) in its effect on interindustry ranking. For the period as a whole (columns 9 and 10) merger frequency is greatest in the pulp and paper industry, where more than half of the number of firms were merged during the period. Next come the chemical and rubber products industries (one-fourth of the firms) and mining. The lowest merger frequencies are recorded for lumber and wood products, apparel, footwear, printing and publishing, and textiles. Throughout the 24 years under review only between three and six percent of the firms in these industries disappeared through mergers. For the whole of manufacturing industry the frequency measure barely reaches 10 percent.

E x a m p l e s o f m a j o r m e r g e r s

The type of material and figures presented above readily tends towards the stereotyped, with little to fire the imagination of anyone who is well informed about the course of events that lies behind the mergers of recent decades in Sweden. So as to compensate for this to some extent, we have highlighted the more outstanding industrial mergers during the investigated period in Table 7. The biggest mergers cluster towards the very last years of the period and relate chiefly to metalworking or engineering activities: SAAB's purchase of Scania-Vabis in 1968 and Gränges' acquisition of Svenska Metallverken in 1969.¹ Other major

¹ The Saab-Scania merger makes a good example of how the dating criteria have been applied. Saab's offer to take over Scania was made public in December 1968. The deal was finalized in May 1969, when the annual general meeting of Saab's stockholders approved the new issue of Saab shares that was meant to finance the acquisition. In regard to the Gränges-Metallverken merger, the corresponding events were enacted in the course of one year (1969).

Table 6. Merger frequencies in 17 manufacturing industries, 1946-69

| Industry | Number of firms, 1951 | Number of acquired firms, 1946-57 | Relative merger frequency (%) 1946-57 (2)/(1) | Number of firms, 1964 | Number of acquired firms, 1958-69 | Relative merger frequency (%) 1958-69 (5)/(4) | Number of firms, 1958 (1)+(4) (2) | Number of acquired firms, 1946-69 (2)+(5) | Relative merger frequency (%) 1946-69 (8)/(7) | Relative merger frequency (%) 1946-69 (8)/(1) |
|-----------------------------------------|-----------------------|-----------------------------------|--------------------------------------------------|-----------------------|-----------------------------------|--------------------------------------------------|-----------------------------------------|----------------------------------------------|--------------------------------------------------|--------------------------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Mining | 41 | 6 | 14.6 | 21 | 3 | 14.3 | 31 | 9 | 29.0 | 22.0 |
| Primary metals | 74 | 7 | 9.5 | 212 | 9 | 4.3 | 143 | 16 | 11.2 | 21.6 |
| Fabricated metal products | 1,848 | 34 | 1.8 | 2,122 | 156 | 7.4 | 1,985 | 190 | 9.6 | 10.3 |
| Machinery | 1,733 | 26 | 1.5 | 1,328 | 160 | 12.1 | 1,531 | 186 | 12.2 | 10.7 |
| Electrical machinery | 497 | 25 | 5.0 | 412 | 51 | 12.4 | 455 | 76 | 16.7 | 15.3 |
| Transportation equipment* | 206 | 9 | 4.4 | 210 | 28 | 13.3 | 208 | 37 | 17.8 | 18.0 |
| Shipbuilding | 169 | 2 | 1.2 | 128 | 10 | 7.8 | 149 | 12 | 8.1 | 7.1 |
| Stone, clay and glass | 1,552 | 15 | 1.0 | 1,035 | 78 | 7.5 | 1,294 | 93 | 7.2 | 6.0 |
| Lumber and wood products | 3,819 | 38 | 1.0 | 2,649 | 70 | 2.6 | 3,234 | 108 | 3.3 | 2.9 |
| Pulp, paper and board | 131 | 19 | 14.5 | 79 | 47 | 59.5 | 105 | 66 | 62.9 | 50.3 |
| Paper products, printing and publishing | 1,146 | 8 | .7 | 1,183 | 57 | 4.8 | 1,165 | 65 | 5.6 | 5.7 |
| Food and kindred products | 4,110 | 104 | 2.5 | 2,092 | 351 | 16.8 | 3,101 | 455 | 14.7 | 11.1 |
| Textile mill products | 986 | 11 | 1.1 | 512 | 36 | 7.0 | 749 | 47 | 6.3 | 4.8 |
| Apparel and related products | 1,189 | 7 | .6 | 1,464 | 47 | 3.2 | 1,327 | 54 | 4.1 | 4.5 |
| Footwear and leather | 790 | 3 | .4 | 401 | 25 | 6.2 | 596 | 28 | 4.7 | 3.5 |
| Rubber products | 112 | 0 | .0 | 41 | 7 | 17.1 | 77 | 7 | 9.1 | 6.3 |
| Chemicals and allied products | 525 | 20 | 3.8 | 404 | 104 | 25.7 | 465 | 124 | 26.7 | 23.6 |
| All manufacturing industries | 18,928 | 334 | 1.8 | 14,293 | 1,239 | 8.7 | 16,611 | 1,573 | 9.5 | 8.3 |

* Excludes workshops for repairs of cars and bicycles.

Note: The figures do not include firms employing less than five persons.

Sources: The basic data for Table 1; 1951 Business Census; Central Business Register.

Table 7. *Examples of major industrial mergers, 1946-69*

| Firm | Year |
|-----------------------------------------------------------|------|
| AKZO-koncernen - Lilla Edets Pappersbruk | 1969 |
| Alfa-Laval - Zander & Ingeström | 1969 |
| ASEA - AB Elektroskandia | 1946 |
| ASEA - Kohlswa Jernverk | 1967 |
| Atlas Copco - Svenska Diamantbergborrnings AB | 1960 |
| Bahco - AB Mekanprodukter | 1965 |
| Batakoncernen - Skofabriks AB Oskaria | 1968 |
| Billerud - Hellefors Bruk (forestry division) | 1958 |
| Boliden - Reymersholms Gamla Industri AB | 1963 |
| Bonnierföretagen - Billingsfors-Långed | 1949 |
| Cementa - Iföverken | 1967 |
| Electrolux - Elektroheliös | 1962 |
| Eriksbergs Mek. Verkstad - Lindholmens Varv | 1969 |
| Esselte - Nordisk Rotogravyr | 1965 |
| Facit - Addo | 1966 |
| Gamlestaden - Norrköpings Bomullsväveri (Tuppen) | 1961 |
| Grängesbergsbolaget - Oxelösunds Jernverk | 1955 |
| Grängesbergsbolaget - Bröderna Hedlund | 1961 |
| Grängesbergsbolaget - Nyby Bruk | 1962 |
| Grängesbergsbolaget - Svenska Metallverken | 1969 |
| Hydrauliska Industri AB (Hiab) - Foco | 1967 |
| Iggesund - Boxholm | 1965 |
| Iggesund/Bergvik och Ala - Ström-Ljusne AB | 1967 |
| ITT - Stenberg-Flygt | 1968 |
| Klippan - Häfrestrom | 1967 |
| Kockums Mek. Verkstad - Söderhamns Verkstäder | 1964 |
| Kohlswa Jernverk - Björneborgs Jernverk | 1960 |
| Korsnäs - Marma-Långrör | 1960 |
| Monark - Nymanbolagen (Crescent) | 1960 |
| Mo och Domsjö - Svenska Oljeslageri AB (SOAB) | 1963 |
| Mo och Domsjö - Forss AB | 1964 |
| Motala Verkstad - Björneborgs Jernverk | 1966 |
| Nestlé - Findus | 1962 |
| Plåtmanufaktur - Surte Glasbruk | 1960 |
| PLM - A/S Hastrup's Fabriker, Denmark | 1969 |
| Pripp-Bryggerierna - Abba-Fyrtornet | 1968 |
| Pripp & Lyckholm - Stockholms Bryggerier | 1963 |
| SAAB - Nordarmatur | 1968 |
| SAAB - Scania-Vabis | 1968 |
| Sandvikens Jernverk - See Fabriks AB | 1959 |
| Saxylle - Kilsund | 1966 |
| Socketbolaget - Felix | 1962 |
| Stockholms Superfosfat Fabriks AB - AB Casco | 1964 |
| Stora Kopparberg - Stjernfors-Ställdalen | 1961 |
| Stora Kopparberg - Wikmanshytte Bruk | 1965 |
| Stora Kopparberg - Grycksbo Pappersbruk | 1966 |
| Svenska Cellulosa AB (SCA) - Kungsgården-Mariebergs AB | 1955 |
| Svenska Cellulosa AB (SCA) - Wifstavarf | 1965 |
| Svenska Fläktfabriken - AB Evaporator | 1968 |
| Svenska Järnvägsverkstäderna (ASJ) - Svenska Maskinverken | 1969 |
| Svenska Kullagerfabriken (SKF) - Hellefors Jernverk | 1957 |
| SKF - RIV Group, Italy | 1965 |
| SKF - Malcus Industri AB | 1969 |
| Svenska Tändsticks AB (STAB) - Åkerlund & Rausing | 1965 |
| Södra Sveriges Skogsägare - Strömsnäs Bruk | 1955 |
| Trelleborg - Tretorn | 1965 |
| Uddeholm - Mölnbacka-Trysil | 1967 |
| Uppsala-Ekeby AB - AB Rörstrands Porslinsfabriker | 1964 |
| Volvo - Bolinder-Munktell | 1950 |
| Volvo - Arvika-Thermaenius | 1960 |
| Volvo - Svenska Stålprensings AB, Olofström | 1969 |

mergers took place in the forest industry (saw-milling + pulp and paper): Korsnäs took over Marma-Långrör in 1960, Stora Kopparberg acquired Stjernfors-Ställdalen in 1961, SCA bought out Wifstavarf in 1965, Iggesund teamed up with Bergvik och Ala to absorb Ström-Ljusne in 1967, and Uddeholm took over Mölnbacka-Trysil in the same year. Among the leading mergers that have crossed Sweden's frontiers, we can mention SKF's purchase of the Italian RIV Group in 1965, American ITT's takeover of Flygts Pumpar in 1968 and AKZO's (Holland) acquisition of Lilla Edets Pappersbruk in 1969.¹

M e r g e r f r e q u e n c i e s i n d i f f e r e n t s i z e g r o u p s

It was mentioned earlier that merger frequency may be assumed to taper off with the size of the acquired firm. An investigation of this relationship was considered worthwhile in order to permit at least a tentative assessment of how well the sample covered different size groups of firms. At the same time it could give some idea of the significance that acquiring firms attach to firm size in their calculations.

As expected the merger frequency is very low (1.4 percent) in the smallest size group (< 5 employees), which of course may be due both to poor coverage and weak buyer interest.² It will be seen from Table 8 that the correlation between merger frequency and firm size is strongly positive up to the size limit of 500 employees, after which the proportion of acquired firms again declines. Among the firms having between 200 and 500 employees, as many as half were acquired in connection with merger. The pattern is more or

¹ For detailed descriptions of the merger trend during 1958-69 see Höglund & Rydén et al [1964]; Rydén [1965]; [1966]; [1967]; [1968a]; [1968b]; [1969]; [1970].

² The very likely low degree of coverage in the smallest group explains why it has been excluded from the estimates in Table 6.

Table 8. Merger frequencies for different size groups of firms

| Average annual number of employees | Number of firms, 1964* | Number of acquired firms | | | Merger frequency (%) | | |
|------------------------------------|------------------------|--------------------------|---------|---------|----------------------|------------|------------|
| | | 1946-57 | 1958-59 | 1946-69 | 1946-57 | 1958-69 | 1946-69 |
| | | (2) | (3) | (4) | (2) (1) | (3) (1) | (4) (1) |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| 1-4** | 18,231 | 165 | 97 | 262 | .91 | .53 | 1.44 |
| 5-24 | 9,657 | 95 | 328 | 423 | .98 | 3.40 | 4.38 |
| 25-49 | 1,700 | 48 | 237 | 285 | 2.82 | 13.94 | 16.76 |
| 50-99 | 1,077 | 46 | 251 | 297 | 4.27 | 23.31 | 27.58 |
| 100-199 | 590 | 54 | 154 | 208 | 9.15 | 26.10 | 35.25 |
| 200-499 | 383 | 34 | 150 | 184 | 8.88 | 39.16 | 48.04 |
| 500- | 266 | 19 | 85 | 104 | 7.14 | 31.95 | 39.10 |
| No information** | 0 | 38 | 34 | 72 | | | |
| Total | 31,904 | 499 | 1,336 | 1,835 | 1.56 | 4.19 | 5.75 |
| Total 5- | 13,673 | 334 | 1,239 | 1,573 | 2.44 | 9.06 | 11.50 |

* Excludes car repair shops, includes mines and quarries.

** The 109 dairies for which size data are lacking have been assumed to belong to the group employing 1-4 persons.

Note: As noted earlier CFR's data relate to the legal unit of enterprise. The number of acquired firms has therefore been adjusted upwards to take account of subsidiaries belonging to the larger acquired firms (provided the subsidiaries were not in their turn acquired during the period). Firms that were acquired several times are only counted once in this table. These two adjustments happen to cancel each other out so that the total number of acquired firms (1,835) becomes exactly the same as in Table 5.

Sources: The basic data for Table 1, the Central Business Register.

less identical for both subperiods of the study.^{1 2}

T y p e s o f i n t e g r a t i o n

A survey of combinations with reference to the types of activity of the firms involved may provide valuable information for the analysis of the causes of mergers, and also help to evaluate the effects of combinations on the state of competition, degree of concentration, etc. in different industries. For instance, a combination between two manufacturers of paper pulp ought to have other effects on competition in the pulp industry than in one firm which produces pulp acquires a forest-management company, a saw-mill, a paper mill or a plant making machinery. Even the causes of these combinations may totally differ in character.

Four main types of combination with reference to form of integration are distinguished in this study: horizontal, vertical, diversifying combinations and acquisitions by holding companies. *Horizontal* combinations refer to mergers and pools between industrial firms with similar output, i.e. products which constitute close substitutes for one another. In practice this means that the firms involved are (potential) competitors on the product markets and often also on the factor markets for, say, raw materials, intermediate goods and certain categories of labor. In principle, a horizontal combination should always take place between firms in the same "industry", but whether that actually happens will, of course, depend on how the industry in question has been defined. As we pointed out earlier, conventional industry classifications are not primarily intended to subsume only those groupings of firms which make closely substitutable

¹ The merger frequencies for 1946-57 (column 5) must be hedged in with some reservation since the denominator is made up of the number of firms in 1964. No suitable size-distributed firm data is available for the earlier years of the period.

² Size data for the acquiring firms was not systematically collected. In connection with other research, however, estimates were made of the size relation between acquiring and acquired firms for mergers consummated from 1958 to 1966. In 13 percent of the mergers the acquiring firm was smaller or just as large as the acquired entity, in 9 percent twice as large, in 16 percent 3-5 times larger, in 16 percent 6-10 times larger, in 12 percent 11-20 times larger, in 16 percent 21-50 times larger, and in 18 percent more than 50 times larger (size measure = turnover). (Rydén [1968a], pp. 48-49)

products. This would require revising existing classifications on a large scale and also break down each industry into small product groups.

Our analysis of the data by type of integration could not accommodate these requirements, but neither did we think it appropriate to follow the previously presented industry classification slavishly. A more pragmatic approach was adopted instead. The guiding rule was to regard as horizontal combinations those which involved firms in the same industry, with reference made to the 19-fold division presented earlier. But whenever it became obvious that the integrated activities bore a very close relation of substitutability even though they were not classified under the same industry, the combination was deemed to be horizontal nevertheless. Examples can be taken from the packaging sector, which the Central Bureau of Statistics (SCB) puts in four different industries (glass = clay and stone industry, tinsplate = fabricated metal products, board = pulp, paper and fiberboard industry, plastics = chemical industry). Despite differences in "industry affiliation", combinations between such firms, e.g. tinsplate and glass makers, have been regarded as horizontal.¹ By the same token, combinations between firms in the same "industry" were not considered horizontal if it was evident that substitutability between the activities/products is nonexistent or very slight. Cases of this kind have been particularly common in the following industries: fabricated metal products; machinery; electrical machinery; stone, clay and glass; and chemicals and chemicals and allied products. Naturally, this pragmatic method invites risks of arbitrariness - unless one has thoroughgoing knowledge of products and markets, it is often difficult if not impossible to make an adequate assessment of substitutabilities; none the less, it was judged as giving the study more relevant results than other methods.

Vertical combinations take place when one firm acquires or initiates cooperation with another firm whose activity represents an earlier or later stage in the production chain

¹ The example alludes to AB Plåtmanufaktur, which has acquired a number of different firms in the packaging sector.

(considered in a broad sense) for a given product, in the manufacture of which both are directly or indirectly involved. This relationship is sometimes expressed by identifying the bought-out firm as the buyer's (potential) customer or supplier. In the former case the combination is called "forward integration", in the latter "backward integration" - in both cases with the acquiring firm as reference point.¹

The combinations that are neither horizontal nor vertical are designated "*diversifying*". The basic rule was designated as "diversifying" combinations between firms within different industries, where the industries are defined in accordance with the previously presented classification but with the exceptions noted in connection with horizontal combinations. To distinguish between these two types, we speak of diversification between different industries and diversification within the same industry. The latter type of combination often involves a certain relationship between the coordinated activities such that they might be called "complementary combinations".

Over and above these three types of integration, an additional type is separately accounted for, namely acquisitions by holding companies, which involves acquisitions of industrial firms by holding companies or so-called development companies. In practice, to be sure, integration in one of the forms named takes place between the subsidiaries of such firms. But for several reasons, practical difficulties among them, we did not deem it appropriate to apportion acquisitions by holding companies among the three integration types. For one thing, it would have been impossible to avoid a residual.

To divide the combinations into different forms of integration often amounts to a simplification of the real world. That is because some combinations contain elements of several forms of integration. This of course is due to the fact that many firms even prior to a merger are multi-product enterprises and/or vertically integrated, perhaps

¹ In the case of pools, the reference point can be regarded as the "initiating" firm or simply the firm that is largest.

in consequence of combinations carried out in the past. In such cases the primary motive for the combination, whether explicit or implicit, has determined the integration type.

The number of combinations break down by form of integration as follows:

| | | |
|-----------------------------------|-------|--------------|
| Horizontal integration | | 79.8 % |
| Diversification | | 8.8 % |
| a) within the same industry | 5.3 % | |
| b) between different industries | 3.5 % | |
| Vertical integration | | 7.6 % |
| a) backward | 3.5 % | |
| b) forward | 4.1 % | |
| Acquisitions by holding companies | | <u>3.8 %</u> |
| | | 100.0 % |

Horizontal integration thus stands out as the quite dominant type in connection with combinations. However, it is probable that the high proportion of 80 percent is somewhat overestimated due to the difficulties of making an adequate classification without thoroughgoing knowledge of industries, products and processes. This overestimate may have been at the expense of both the vertical and diversified combinations. Even so, it cannot decisively alter the overall picture.

CHAPTER 3

THE MERGER TREND IN SOME OTHER COUNTRIES

INTRODUCTION

Some salient features of the merger trend abroad will be described in this chapter. Our main object here is to ascertain whether the postwar trend in Sweden has been typical in some sense or whether it must be explained by specific Swedish conditions. A comparison of this kind may offer guidance to choosing frames of reference in the following chapters.

Data on mergers abroad are collected in various ways. In some countries firms are required to file merger plans with an administrative agency; the plans thus become a matter of public record and form source documentation for official statistics. By far the most common method of collecting data, however, which serves both to register mergers as they occur and to provide source material for special investigations, is the same one that has been used in this study - the perusal of newspapers and business journals. As was mentioned in the previous chapter, the highly comprehensive U.S. merger statistics that are regularly published by the Federal Trade Commission rest on this basis.

To all intents and purposes, therefore, comparisons between Swedish and foreign merger data should not be materially impaired by differences of sources and registration procedure. A presumably greater risk attaches to disparities in definitions and the identification of lower size limits for firms that enter into registered mergers. Unfortunately, the published material from books, periodicals and newspaper articles, on which the statistics in this chapter are based, is only sporadically equipped with definitions and specifications. For instance, it is sometimes unclear whether published merger data embrace legally recognized mergers of firms belonging to the same group or concern - mergers which are not covered by the economic

definition of merger in this study. Nor is it always clear whether mergers across national frontiers and partial mergers are included. If marked deviations from the Swedish sample as regards definitions, etc. occur in the foreign statistics, attention will be called to these as far as possible.

By and large, aggregated merger data are presented in the same manner in most countries. The basic information is the absolute number of announced mergers. It has not been deemed feasible here to do any weighting of the foreign merger data to allow for the size or "merger potential" of different countries. Differences between the countries in this respect must therefore be borne in mind for purposes of evaluating the reported data.

Our main ambition has been to present merger data from selected industrial countries for the period covered by the Swedish sample, i.e. the postwar period. No systematic attempt has been made to collect data from earlier years, but in cases where such data were found in conjunction with data for the relevant period they have been included. This holds chiefly for Great Britain and the United States. For quite a few countries, however, no data could be traced for the entire postwar period. In such cases we report the data that have been available.

GENERAL SURVEY OF THE MERGER TREND ABROAD

The most characteristic feature of the merger trend abroad, and one which Sweden shares, is the sharp increase during the past decade in the number of mergers and/or their combined volume as measured by employment, assets of acquired firms and the like. There are intercountry variations, of course, but it is hard to escape the impression of a long-term change in international merger activity within manufacturing industry since the late 1950's. The upswing appears to have been especially pronounced by the mid-1960's and holds true of Sweden, the rest of Europe, the United States and several other countries. The fact that the change has been so relatively uniform has particular relevance for inquiring into the motive forces behind the mergers in Sweden.

The uniformity suggests that these forces may be bound up with factors of different kinds - social, technological, economic, etc. - which are or have been typical of the larger industrial countries in the West during the past few decades.

But as will be seen from the following country-by-country survey, the international merger picture contains some disparate elements. One of them has to do with the forms in which mergers are consummated. Especially in the Anglo-Saxon countries, a not inconsiderable number of mergers, often involving large listed firms, are consummated after a takeover bid that is resisted (sometimes attended by sensational publicity) by the management of the target firm. Now and then the latter may win the day, i.e. the merger offer is rejected by a sufficiently large number of stockholders; sometimes a third or even fourth party gets in on the act, after which the "raiders" successively raise their bids as at an auction.¹

Another disparate element has to do with the relationship between the activities of the merged firms. In the United States, for instance, the "diversifying" (conglomerate) mergers increased remarkably in extent and number towards the end of the 1960's. By contrast, the majority of mergers in the European countries, including Sweden, seem to have been horizontal and led to a concentration of resources that were formerly split up among many firms in the same industry.

THE SCANDINAVIAN COUNTRIES

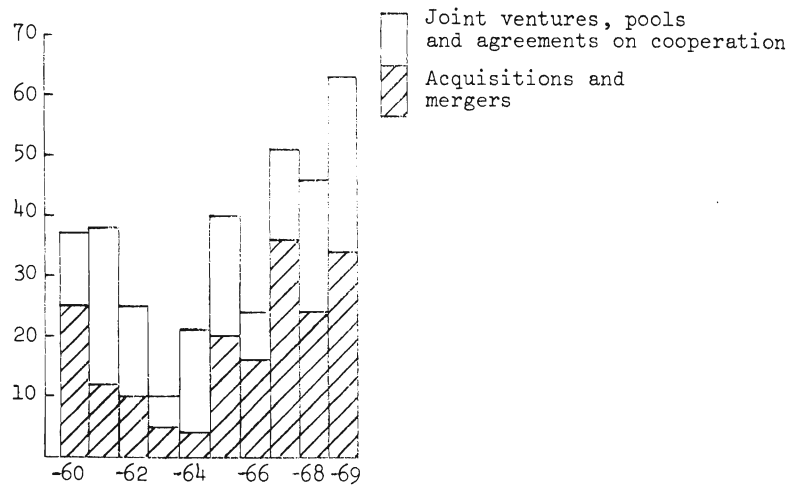
As far as is known, no compiled body of merger data has been published for Denmark. In Norway and Finland, on the other hand, announced mergers have been registered on a continuous basis since the mid-1960's, in both instances through the national federations of industries. These data have been

¹ Two widely publicized examples, both ending in failure for the bidders: in Great Britain, the attempt by Imperial Chemical Industries (ICI) in 1962 to acquire the shares of Courtaulds Ltd; in France, the attempt by Boussois-Souchon-Neuvesels (BSN) to take over Saint-Gobain in 1968.

supplemented by particulars from the first half of the 1960's. Methods of collection and definitions agree with those used in this study.

The combinations in *Norwegian* industry during the 1960's are set out in Figure 5. Interpreting the pattern is a bit difficult. From 1960 to 1964 the number of mergers dropped off in each year, after which an irregular upswing ensued. The largest number of mergers, 37, was recorded in 1967. However, the registered pools (with the same definitions as in the Swedish data) have tended to even out the interyear fluctuations. All told, 187 mergers and 168 pools were registered for the ten years as against 2,113 mergers and 584 pools in Sweden for the same period. Thus the distribution between the two types of combination has been much more evenly spread in Norway than in Sweden.

Figure 5. *Number of combinations in Norwegian industry, 1960-69*



Source: *Norges industri* 1970:3.

One-third of the Norwegian mergers has taken place in the metalworking sector (fabricated metal products, machinery, etc.). Merger frequency has been remarkably low in those industries which cater primarily to the home market (textiles, apparel, footwear and food), amounting to less than 20 percent of all mergers.

Detailed information on the firm level about combinations between Norwegian manufacturing firms is given at the beginning of each year in the periodical, "Norges Industri".

In *Finland* the press reports of announced mergers have been supplemented by responses to a questionnaire which the Federation of Finnish Industries circulated to its member firms. A compilation of these data indicates that, in the period from 1961 to 1969, 444 total and partial mergers were consummated and 407 pooling agreements reached in Finnish industry. Thus the distribution between these two combination types is the same as in Norway, but the number of known cases is much greater even though the investigated period begins one year later.

Table 9. *Number of combinations in Finnish industry, 1961-69.*

| Type of combination | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | Total |
|-------------------------------------------------------------------|------|------|------|------|------|------|------|------|------|-------|
| Acquisitions and/or mergers of firms in Finland | 16 | 13 | 15 | 22 | 31 | 46 | 37 | 40 | 53 | 273 |
| Acquisitions of production lines and segments of firms in Finland | 2 | 7 | 4 | 8 | 18 | 18 | 26 | 10 | 18 | 111 |
| Extraterritorial transactions affecting ownership* | 0 | 0 | 1 | 0 | 1 | 2 | 14 | 20 | 22 | 60 |
| Pools between firms in Finland | 12 | 11 | 11 | 10 | 30 | 37 | 72 | 30 | 63 | 276 |
| Extraterritorial pools* | 3 | 2 | 4 | 0 | 7 | 26 | 32 | 31 | 26 | 131 |
| Total | 33 | 33 | 35 | 40 | 87 | 129 | 181 | 131 | 182 | 851 |

* In more than half these cases all parties are from Scandinavian countries.

Source: Kaj Svensson, Federation of Finnish Industries.

As will be seen from Table 9, the number of combinations in Finland has developed in a way which - by contrast to Norway - corresponds rather well to the trend in Sweden. In both countries the sharp upswing set in during 1965 and 1966.

In regard to the extent of Finnish merger activity in different industries, data are available only for the period 1961-65. The number of cases was about equally distributed in the four sectors of metalworking, forest products, food processing, and chemicals and allied products.

GREAT BRITAIN

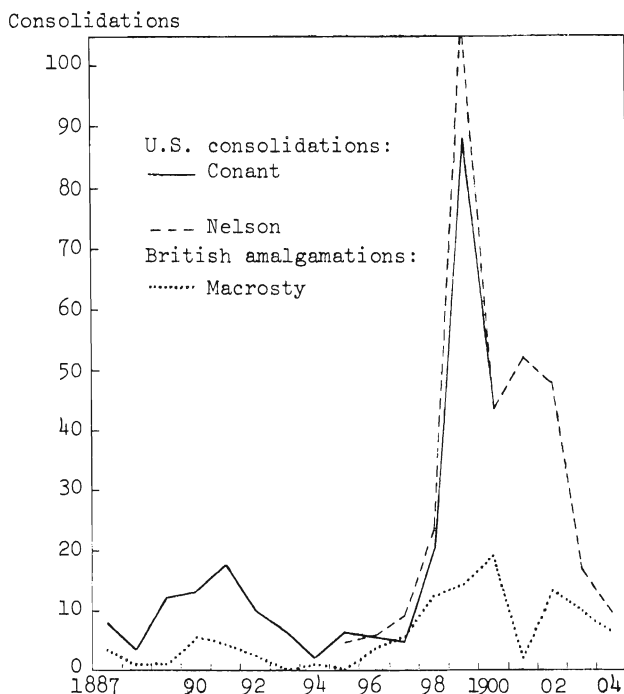
Great Britain together with the United States is the nation where the merger trend seems to have been best charted and most thoroughly researched. Both these countries, moreover, exhibit many features in common as regards the role played by mergers in industrial development.

Mergers in Great Britain are a phenomenon that is nearly as old as industrialism itself. Stacey ([1966], p.6) describes a wave of mergers that took place in British industry more than a hundred years ago. The closing years of the 19th century witnessed a series of industry-wide mergers that laid the foundation for several of today's large manufacturing firms (Evely & Little [1960], p.116). For the period 1887-1906, 113 major industrial mergers were recorded, embracing a total of 895 independent firms, of which 330 were in the textile industry (Nelson [1959], p.131). Figure 6 portrays the trend from 1887 to 1904 for *major* mergers in Great Britain and the United States (respectively referred to as "amalgamations" and "consolidations").¹

Great Britain had another merger wave in the 1920's, and while this one very much involved the service industries, among them banks and railroad companies, manufacturing was also affected. The latter sector contained a greater element of vertical and conglomerate mergers than earlier. It was during this era that Lever Brothers became a dominant enterprise in soaps and detergents by acquiring large-scale interests on the raw materials side, as well as in food processing and other industries. In 1929 came the formation of Unilever, which even then was a sprawling diversified conglomerate with more than 500 subsidiaries throughout the world. At about

¹ Consolidations and amalgamations embrace at least four firms in one and the same merger, hence the term "major".

Figure 6. *Number of major mergers in Great Britain and the United States, 1887-1904*



Source: Nelson [1959], p. 128.

the same time (1926), another of today's giants came into being, namely Imperial Chemical Industries, ICI, through a merger between four firms (Smith & Brooks [1963], pp.10-12).

During the 1930's and 1940's merger activity in Great Britain was modest compared with the two earlier hectic epochs and with what was still to come. However, mergers kept occurring all along as a normal event on the business scene (Evely & Little [1960], p.186). In a class by themselves were the concentration moves sponsored by the government authorities during World War II, designed to put the economy on a sound wartime footing. But the concentration, which in part provided for mergers, was not meant to be permanent (Heinertz [1942b]).

Merger development in the period 1954-68 is set out in Table 10. A new upswing of merger activity in British manufacturing began to be discernible around 1950. Several big mergers were consummated, as when Austin and Morris were amalgamated in 1952 to form the British Motor Corporation (BMC). More of the same followed in rapid succession, the number of mergers increasing annually almost without interruption up to 1966. In that year the steady upward trend was broken, after which it tapered off considerably. Even so, the mergers have related to firms of ever-increasing size; from 1967 to 1968 their volume doubled as measured by the considerations paid for the acquired firms, at the same time as the number of acquired firms fell off. For the period 1961-68 it is estimated that mergers reduced the number of listed firms in Great Britain by 31 percent, from 1,312 to 908. The book value of assets held by the

Table 10. *Merger development in Great Britain, 1954-68*

| Year | Number of acquired firms | Value of acquired firms (million pounds) |
|-------|--------------------------|------------------------------------------|
| 1954 | 275 | 105.2 |
| 55 | 294 | 88.6 |
| 56 | 246 | 131.3 |
| 57 | 301 | 135.6 |
| 58 | 333 | 120.2 |
| 59 | 559 | 307.3 |
| 1960 | 736 | 338.4 |
| 61 | 632 | 367.6 |
| 62 | 636 | 358.0 |
| 63 | 885 | 332.0 |
| 64 | 939 | 502.0 |
| 65 | 995 | 507.0 |
| 66 | 805 | 447.0 |
| 67 | 641 | 781.0 |
| 68 | 598 | 1,653.0 |
| Total | 8,875 | 6,174.2 |

Note: The figures include only those firms which have been acquired by listed firms. According to reports in the British press, merger activity went down sharply in 1969.

Source: Board of Trade. The table is taken from "The Financial Times", December 30, 1969.

bought-out firms represented one-fifth of the average book values for all listed firms over the period (The Monopolies Commission [1969], p. 48).

Data has also been published on the role played by acquisitions in overall investment activity. During the period 1949-66 the acquisitions made by listed manufacturing, trading and construction firms represent between 2 and 17 percent of the total investment expenditures made by all firms in these three sectors. The lowest proportions were recorded in 1950-51, while the figure has held between 13 and 17 since 1959 (Rose & Newbould [1967], p. 6).

The massive merger activity in British manufacturing during the last years of the 1960's has drastically altered the market structure of various industries in the direction of greater concentration.¹ In the automotive industry BMC has grown even more by acquiring Leyland, Rover and Jaguar. In the electrical industry the world's largest firm outside the United States was formed by amalgamating General Electric, Associated Electrical Industries and English Electric in 1967-68. In food manufacturing 1969 witnessed the marriage of two large firms, Schweppes and Cadbury, and in 1967 Bass and Charrington merged to create the largest brewing enterprise in Europe. A time-consuming inquiry by the British Monopolies Commission, however, prevented a planned merger in 1968 between Unilever and Allied Breweries. Lastly, a series of mergers has involved British and non-British firms. Examples are Chrysler's purchase of the car-making firm, Rootes, and the Dunlop-Pirelli merger, which created the world's largest rubber products manufacturer outside the United States.

THE EEC COUNTRIES

G e n e r a l s u r v e y

The creation of the European Economic Community (Common Market) drastically altered the ability of firms in many manufacturing sectors to compete. Previously protected

¹ For a detailed account of merger activity in Great Britain in the period 1950-65, see Knauss & Vogel & Hermanns [1967], pp. 49-58. Davis [1970], gives an informative and detailed account of the most important mergers in Great Britain during the 1960's.

domestic markets were thrown open to competition from the whole EEC area, at the same time as the dismantling of tariffs and other trade barriers conferred greatly enhanced marketing potentials on many firms. The adaptation of firm structure to the altered conditions which has occurred, and which is still in progress, has taken the form of mergers and other kinds of interfirm cooperation.

Statistics which shed light on this adjustment process in industry have been prepared by EEC headquarters in Brussels. The published figures indicate that acquisitions and mergers of EEC firms increased in number during the 1960's. Up to now the merger process has mostly involved combinations between firms within one and the same member country. The registered number of such mergers rose during the 1960's from more than 100 to about 250 per annum. Mergers between firms in different member countries are reported to have come to a few score per annum, with an upswing setting in towards the end of the period. Acquisitions of EEC firms by non-member nations have amounted to about 100 per annum without any tendency to increase during the 1960's, while acquisitions in the opposite direction have been much fewer. The figures are set out in Table 11, which also specifies the number of pools affecting EEC firms during the period.

The table shows that the number of registered pools greatly exceeds the number of mergers, which is contrary to the development observed for Sweden. However, the registered mergers relate to larger firms or transactions at or above a specified minimum size. Hence the figures are not directly comparable with the Swedish data.

The largest number of mergers between EEC firms has taken place within the chemical industry. Next in line come machinery, food processing, fabricated metal products and textiles ("La Politique Industrielle de la Communauté", [1970], p. 50).

Table 11. *Number of mergers and pools in the manufacturing sectors of EEC countries, 1961-69*

| | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969* | Total |
|--------------------------------------|------|------|------|------|------|------|------|------|-------|-------|
| <i>Mergers</i> | | | | | | | | | | |
| Within same member state | 131 | 162 | 157 | 172 | 228 | 221 | 253 | 272 | 265 | 1,861 |
| Between member states | 19 | 11 | 28 | 34 | 17 | 31 | 32 | 35 | 50 | 257 |
| Member state in 3rd country | 26 | 21 | 9 | 18 | 20 | 20 | 36 | 29 | 36 | 215 |
| 3rd country in member state | 102 | 85 | 82 | 110 | 70 | 93 | 115 | 106 | 57 | 820 |
| Total | 278 | 279 | 276 | 334 | 335 | 365 | 436 | 442 | 408 | 3,153 |
| <i>Pools</i> | | | | | | | | | | |
| Within same member state | 100 | 141 | 55 | 132 | 177 | 205 | 166 | 231 | 145 | 1,352 |
| Between member states | 104 | 114 | 61 | 123 | 140 | 112 | 104 | 160 | 83 | 1,001 |
| Between member state and 3rd country | 362 | 343 | 228 | 335 | 364 | 289 | 292 | 387 | 197 | 2,797 |
| Total | 566 | 598 | 344 | 590 | 681 | 606 | 562 | 778 | 425 | 5,150 |

* First six months.

Source: "La Politique Industrielle de la Communauté" [1970], p. 48.

F r a n c e

French industry has often been characterized as clearly oriented to the home market, protected from foreign competition, weighed down by dynastic traditions and split up among a vast number of small, inefficient entities. When the Common Market came into being in the late 1950's the increased liberalization of world trade was generally expected to compel French industry to adjust to the new competitive situation on a tremendous scale. An important link in this structural adjustment was assumed to be the consolidation of firms into larger, internationally competitive entities. Such a development has also been spelled out as a cardinal goal in the latest French economic plans (Knauss & Vogel & Hermanns [1967], p. 58; Lagandre [1967], pp. 4-12).

As matters turned out, the process of concentration was considerably less drastic than envisaged. Merger activity in French industry up to the mid-1960's has even been called surprisingly moderate with the exception of certain "pinpoint" changes (Wickham [1966], pp. 198-202). Since then, however, the process appears to have picked up speed and was moving at an accelerated pace towards the end of the decade.

The French merger statistics are unusually hard to interpret. Figures of two magnitudes circulate in the press, with the larger one apparently relating to all registered, legally recognized mergers and the smaller one to mergers between large manufacturing and mining firms. The larger figure is on the order of 1,000 mergers per annum, while the lower figure holds at around a hundred or so. Mergers on the grander scale seems to have greatly increased in number since the 1950's, when they ranged from 50 to 100 (the reports vary), soaring to about 150 per annum in 1960-65 and continuing to rise sharply thereafter. However, the published figures are so contradictory and abstruse that we have not deemed it important to reproduce them at greater length. Not even the general picture here outlined is altogether conclusive.

Since the mid-1960's the French government has taken a series of measures designed to accelerate the merger tempo. The "Steel Plan" from 1966 sanctions a great deal of economic concentration, partly subsidized, through mergers and closures, and the "Computer Plan" from 1967 is similar. Tax reliefs of different kinds have been granted to facilitate and stimulate mergers, and new legal forms of business organization have been created to the same end (Lagandre [1967], pp. 179-183). A government service agency, "Le Bureau des Fusions et Regroupements d'Entreprises", has been set up to promote mergers and interfirm cooperation (Le Fol [1969]). These measures, of course, may well have helped to intensify merger activity.

The industrial mergers that have attracted most attention in France in recent years have related to steel, motor vehicles, home appliances, electrical machinery, food and chemicals. In steel, two of the biggest firms in Europe

resulted from the mergers of Wendel-Sid lor-Mosselane de Sid rurgie and Usinor-Lorraine-Escaut, both with an annual capacity of about 7 million tons. Ugine and Kuhlman joined forces to form the largest chemical enterprise in France. Another major merger (partial) in this same industry took place when Saint-Gobain and P chiney combined their chemical operations. In motor vehicles, Renault and Peugeot are working together on the basis of a far-reaching pool. Citro n bought out Panhard (passenger cars) and Berliot (trucks), joined with German NSU to develop and produce a special engine, and in the end has been absorbed in stages by Italian Fiat. The manufacturers of refrigerators, cookers, TV sets, etc., Thomson-Houston and Hotchkiss-Brandt, first merged and later acquired the Claret Group and Compagnie de T l graphie Sans Fil. As a result of all these transactions, the enlarged firm became one of Europe's largest in a number of product lines. The manufacture of electrical machinery has been concentrated in the two giants, Jeumont-Schneider and C^{ie} G n rale d'Electricit -Alsthom. Lastly, the amalgamation of Champigneulle and La Meuse has given the EEC its largest brewing company (Knauss, Vogel & Hermanns [1967], pp. 59-61).

G e r m a n y

The process of concentration in German industry got off to an early start. A voluminous body of German literature on the subject tells of the trusts and cartels that were formed as early as the latter part of the 19th century, a trend that reached its peak during the 1930's. In no other country, it appears, was the concentration process carried to such great lengths and was so widely accepted (K nig [1960], p. 303 ff). During World War II various causes combined to touch off a sharp increase in German merger activity. A great many of these mergers were vertical (Heinertz [1942a], pp. 29-33).

After the war ended many of the dominant trusts and cartels were dissolved, of which perhaps the best known was I.G. Farben. Under American influence German enterprise was reoriented to the tenets of competition. Gradually, how-

ever, the trend towards larger groups of companies started anew and some of the companies that were forcibly partitioned after the war were revived in whole or in part. Incidentally, the breakup of Krupp never kept up with the timetable that was planned for it.

In spite of the comprehensive German literature on economic concentration, facts about the merger trend do not appear to have received the same attention as in most other industrial countries. It has not been possible to find any time series on combinations or similar material as it has for many other countries. A general impression, conveyed mostly by German and English-language newspapers, is that there was little merger activity in West German industry for a long stretch of the postwar period. According to one source, the total number of mergers in the whole West German economy even dropped steeply during the first half of the 1960's, from 1,300 in 1960 to 250 in 1964 (Stacey [1966], p. 17). But since then, as in France, a considerable upswing has got under way. We have not found any statistics that shed light on this change, however.

Articles in the foreign press have reported the following major West German combinations during the past few years. Siemens and AEG have established extensive cooperation in the production of turbines, generators, computers and nuclear power plants. August Thyssen-Hütte and Mannesmann have formed a joint company to produce steel pipes catering to one-third of the EEC market. Phoenix Rheinrohr had been acquired before then. Another noteworthy steel merger involved Hoesch and Dortmund Hörder Hütteunion. The chemical firm of Badische Anilin- und Sodafabrik (BASF) has bought out competing Winterschall AG, which puts BASF in the same size class as Farbwerke Höchst and Farbenfabriken Bayer (with annual sales volume of around 2 billion dollars). In carmaking, Volkswagen has acquired the Audi factory, thereby establishing a partnership with Mercedes. The production of trucks has been concentrated in two firms. Lastly, American interests have bought out a number of German firms, among them Braun AG (acquired by Gillette) and the Grundig-owned plants which make the Triumph and Adler typewriters (acquired by Litton).

T h e N e t h e r l a n d s

In the Netherlands merger data are collected after the same methods that have been used in this study. These data indicate a relatively sharp rise of merger activity in Dutch industry during the 1960's. Although information is not available for each year, about 250 mergers and pools were registered in 1967 and nearly 300 in 1968. During the period 1958-68, 689 mergers were registered in the four most important industries (chemistry, metalworking, textiles and paper). Of these 425 or two-thirds occurred during the period's last three years. About 30 percent of the mergers have involved a foreign partner, in most cases an American firm; only a few of the foreign partners have their headquarters inside the Common Market (Samenwerkingen en Fusies in 1968, 1969).

Judging from the responses to a nationally circulated questionnaire, a much higher rate of merger activity is expected in the Netherlands in the early 1970's. The number of mergers and joint ventures has been estimated to come to about 750 both in 1970 and 1971 (Handelsblatt, November 26, 1969).

UNITED STATES

By now mergers in the U.S. are thoroughly explored thanks to comprehensive investigations, some of them going as far back as the 1880's. Since 1940 the Federal Trade Commission has been continuously registering all mergers that come to its knowledge.

It is customary to speak of three merger movements in the United States. The first one occurred around the turn of the century, the second converged on the late 1920's and the third, which started during the 1950's, is still going on.

The first American merger wave was of relatively limited duration but it had enormous dimensions. It was dominated by huge, often industry-wide mergers (referred to as "consolidations"). From 1895 to 1904 75 percent of all merged firms took part in mergers that involved at least four firms at a time (Nelson [1959], pp. 28-29). This

period saw the birth of many American corporations that are now of gigantic size, among them U.S. Steel, American Tobacco, American Can, International Harvester and Standard Oil of New Jersey. It has been described as "the period when the pattern of concentration characteristic of twentieth century American business formed and matured" (Markham [1955], p. 155). The number of such consolidations is set out in Figure 6.

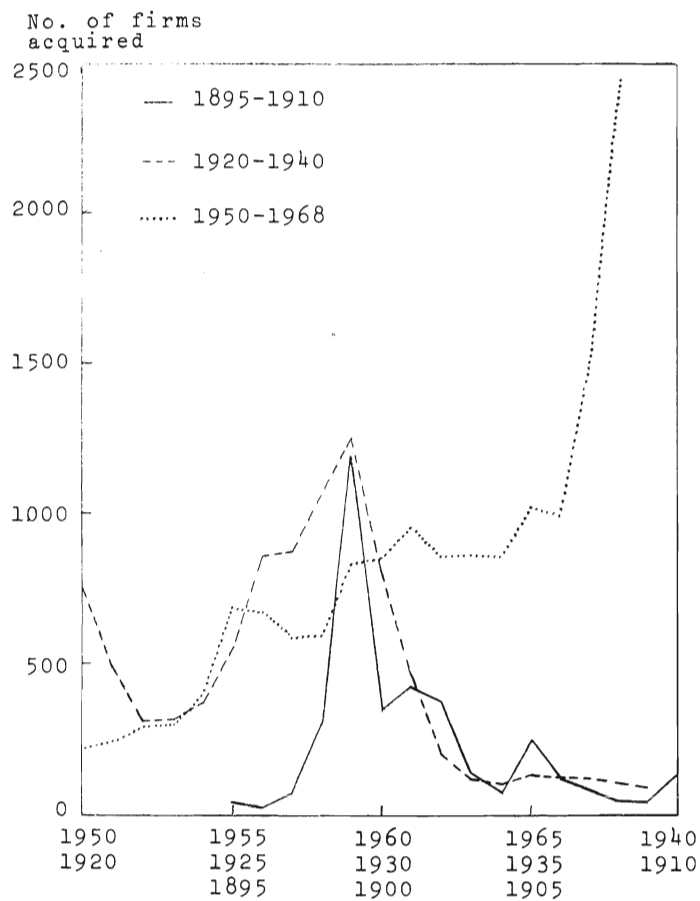
As will be shown later on in this book, the first American merger wave has been interpreted in many different ways. The causes most often cited are the monopoly motive, the desire to exploit technical economies of scale, and a widespread frenzy of speculation. Its more important determinants are usually identified as the expansion of the railroad network and the advent of larger capital markets.

From 1905 to 1920 merger activity was modest, numbering around twenty or thirty annually compared with several hundreds during the most hectic years before then.¹ Merger activity gathered renewed momentum in the 1920's, reaching its peak just before the Wall Street crash of 1929. Activity was especially buoyant in 1926-28, the years when the American stock exchanges were at their most bullish. Many of the mergers consummated during these years are specifically attributed to booming share prices, a trend that enabled brokers to earn huge profits from forming new companies through mergers and issuing the new shares on the exchanges. Other important explanations attribute to the automobile and radio broadcasting, the undermining of local markets and the need of vertical integration. A large part of the mergers involved banking and transportation. All told, 12,000 manufacturing firms, banks and public utilities were merged during the period (Markham [1955], pp. 168-173). Among the more important mergers which date from these years, mention can be made of Texaco, Gulf Oil, General Foods, National Dairy and Allied Chemical (Knauss & Vogel & Hermanns [1967], p. 46).

¹ Among the few mergers during this period the formation of General Motors in 1908 and IBM in 1911 are worth mentioning.

Figure 7 illustrates U.S. mergers during the whole period from 1895 to 1968. Merger activity during the 1930's was as insignificant as in the second decade.¹ Although the curve turned upwards again around 1945, it is not until the mid-1950's that one can begin to speak of a new merger wave in the true sense of this term. The total number of mergers in mining and manufacturing registered

Figure 7. *Number of mergers in American industry, 1895-1968*

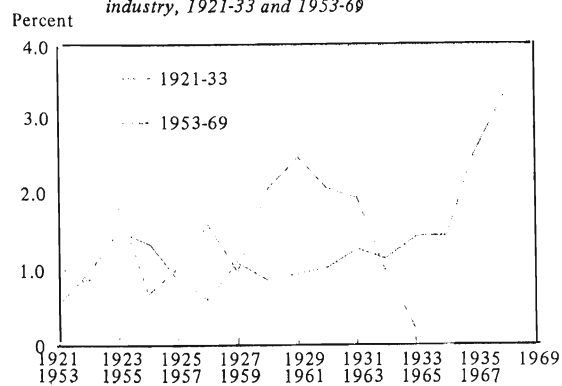


Source: *Economic Report on Corporate Mergers* [1969], p. 32.

¹ Source for the 1910's: Nelson [1959], pp. 34-35.

by FTC during the period 1945-68 amounts to 16,600 (Scherer [1970], p. 107). Measured by the annual number of mergers, the now-ongoing third merger wave has surpassed its two predecessors. However, it took until 1967 to set the new record: mergers in that year numbered 1,500. The figure soared beyond 2,400 in 1968.¹ In both these years the assets of firms acquired in mergers represented about three percent of the total assets held by American manufacturing industry. The corresponding proportions for 1921-33 and 1953-68 are shown in Figure 8, which is comparable with Figure 3. A comparison of the two diagrams discloses that Sweden and the United States have roughly paralleled one another in weighted merger frequency during the 1960's.

Figure 8. *Share of acquired firms in the total assets of American industry, 1921-33 and 1953-69*



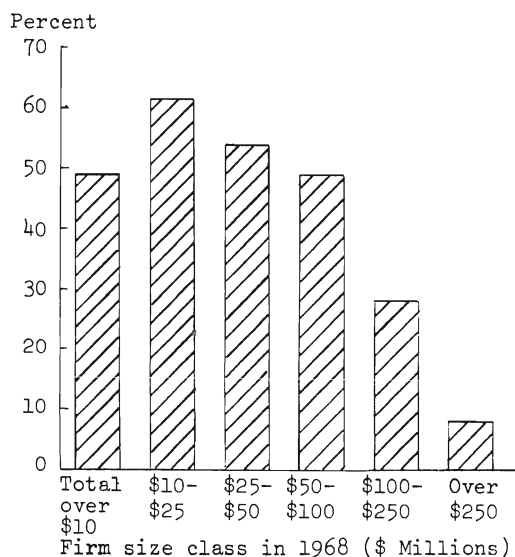
Source: *Economic Report on Corporate Mergers* [1969], p. 36.

¹ For 1969 the number of mergers is reported to have gone up by 37 percent over 1968 (Le Monde, January 8, 1970). For 1970, however, a decline by 15 percent has been reported (The Palo Alto Times, January 7, 1971).

Merger activity in the United States has been particularly extensive since the end of World War II. From 1948 to 1968 the number of acquired manufacturing firms with assets of at least 10 million dollars represent 49 percent of the total number of firms of this size as of 1968. The corresponding proportion for the assets held by the acquired firms comes to 13 percent. As will be seen from Figure 9, the merger activity has chiefly affected firms with assets in the range from 10 to 25 million dollars. 63 percent of these firms were bought out during the 20-year period. The proportion of acquired firms falls thereafter for each size class.

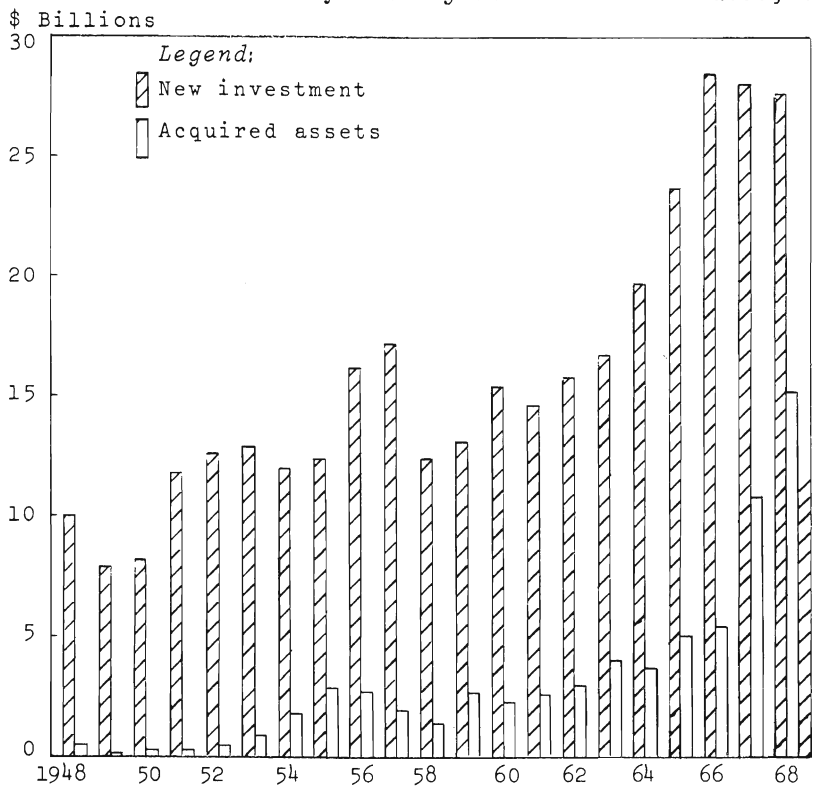
Mergers have also been considerable in relation to the size of new investments. In 1968 the assets held by acquired mining and manufacturing firms were equal to 55 percent of the new investments made in these sectors. The proportion in 1948 was 1.6 percent. Between 1954 and 1960 it was between 15 and 25 percent practically every year (*Economic Report on Corporate Mergers* [1969], p.668). This is illustrated in Figure 10.

Figure 9. *Merger frequencies in the United States, 1948-68.*
Acquired firms as percent of total in 1968.



Source: *Economic Report on Corporate Mergers* [1969], p.48.

Figure 10. *Assets of acquired firms and new investments in manufacturing in the United States, 1948-68.*



Source: *Economic Report on Corporate Mergers* [1969], p.41.

From 1948 to 1968 the machinery industry accounted for the largest number of "major" mergers (13 percent of the total).¹ Next come food manufacturing and the chemical industry (with 9 percent each). However, the weighted merger frequencies yield a different picture. Within the paper industry the assets held by acquired firms come to 35 percent of this sector's total assets in 1965. The proportion works out at around 20 percent for the textile, machinery and mining industries. The lowest proportions, below seven percent, are shown by the leather and rubber products industries.

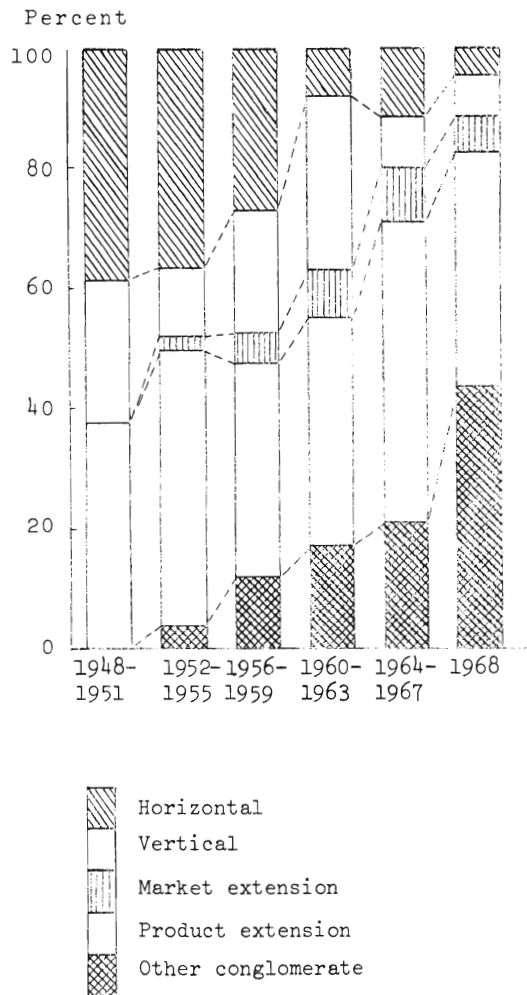
During the post-1948 period the American merger picture has undergone several important changes. One of them is the declining role played by horizontal and vertical

¹ The word "major" refers to acquisitions of firms with assets of at least 10 million dollars.

mergers in favor of the mixed-industry type known as "conglomerates". Between 1948 and 1951 horizontal mergers accounted for nearly 40 percent of all mergers and vertical mergers for close to 25 percent. By 1968 these proportions had fallen to 4 and 7 percent, respectively. The diversifications across industries ("other conglomerate") boosted their proportion from zero to 44 percent during the period. The distribution of mergers by type is set out in Figure 11.

Figure 11. *U.S. mergers by type, 1948-68*

Distribution of assets held by the large acquired firms



Source: *Economic Report on Corporate Mergers* [1969], p. 61.

To conclude the U.S. survey, we present in Table 12 a list of the largest mergers in American industry from 1948 to 1968, i.e. acquisitions of firms with assets of at least 250 million dollars. Note that no acquisitions on this scale were made before 1959. Of the 24 acquisitions listed, 21 occurred during the period's last three years and half in the last year. This gives a good picture of the intensity in today's American merger wave.¹

Table 12. *Acquired firms in the United States with assets of at least 250 million dollars, 1948-68*
Acquiring firm, year and size

| Year | Acquiring firm | Acquired firm | Assets \$ (millions) |
|------|-------------------------------------|--------------------------------------------------------------|-------------------------|
| 1959 | General Tel. & Electron | Sylvania Electric | 264.9 |
| 1963 | FMC | American Viscose | 334.8 |
| 1965 | Union Oil Co. of Calif. | Pure Oil | 766.1 |
| 1966 | Continental Oil | Consolidation Coal | 446.1 |
| 1966 | Atlantic Refining | Richfield Oil | 449.7 |
| 1966 | Philips Petroleum | Tidewater Oil (Western manufacturing & marketing properties) | 305.0 |
| 1967 | U.S. Plywood | Champion Papers | 335.3 |
| 1967 | McDonnell | Douglas Aircraft | 564.7 |
| 1967 | Tenneco | Kern County Land | 253.9 |
| 1967 | Signal Oil & Gas | Mack Trucks | 303.0 |
| 1967 | North American Aviation | Rockwell Standard | 391.2 |
| 1967 | Studebaker | Worthington | 296.6 |
| 1968 | Montgomery Ward | Container Corp. of America | 397.4 |
| 1968 | Colt Industries | Crucible Steel | 303.9 |
| 1968 | Singer | General Precision Equipment | 322.7 |
| 1968 | Occidental Petroleum | Hooker Chemical | 366.5 |
| 1968 | Ling-Temco-Vought | Jones & Laughlin Steel | 1,092.8 |
| 1968 | Loew's Theatres | P. Lorillard | 375.3 |
| 1968 | Kennecott Copper | Peabody Coal | 315.6 |
| 1968 | Northwest Industries | Philadelphia & Reading | 318.6 |
| 1968 | International Telephone & Telegraph | Rayonier | 296.3 |
| 1968 | Glen Alden | Schenley Industries | 570.7 |
| 1968 | Sun Oil | Sunray DX Oil | 749.0 |
| 1968 | American Standard | Westinghouse Air Brake | 302.7 |

Source: *Economic Report on Corporate Mergers* [1969], p. 674

¹ The significance of mergers for the 25 most active acquiring firms in the United States from 1961 to 1968 is described in Chapter 7, Table 34 (p. 261).

OTHER COUNTRIES

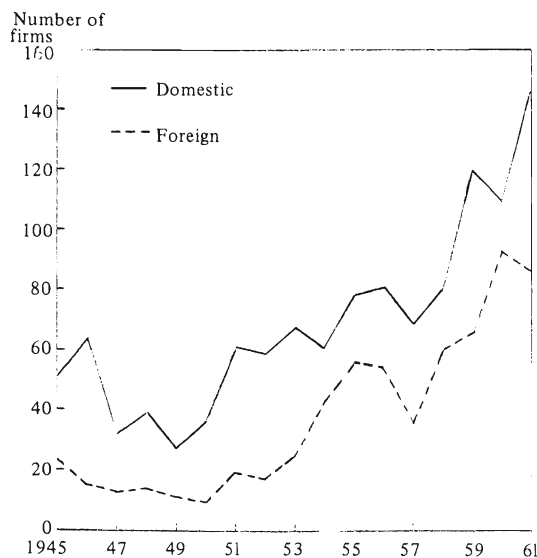
C a n a d a

Data on mergers in Canada during the period 1945-61 has been collected in a detailed questionnaire-based study (Reuber & Roseman [1969]). No other merger data from this country were available to us.

From 1945 up to and including 1961 more than 1,800 total and partial mergers were consummated in Canada. About half of them took place in mining and manufacturing. For slightly more than one-third of the mergers the acquiring firm was of foreign origin, most often from the United States. As of each merger date the acquired firms employed 220,000 persons, equivalent to 5.5 percent of the Canadian labor force in the period's mid-year. The bought-out firms comprised 1.8 percent of the total number of firms in Canada in 1961. About 70 percent of the mergers were horizontal, about 25 percent were vertical, and about ten percent were conglomerate. Not quite ten percent of the mergers were partial. In only some twenty or thirty cases did the merger involve the consolidation of two firms into a new entity. As in Sweden the typical merger was the acquisition of a smaller firm by a larger one. Payment in cash was by far the most common consideration. Most of the acquired mining and manufacturing firms, and here is another similarity with Sweden, were engaged in making foods and beverages (226 of a total 921). In descending order among 20 different industries, merger frequency was next highest in paper and chemicals (with 74 firms each), followed by fabricated metal products (with 70 firms).

The Canadian merger development is illustrated in Figure 12. It bears striking similarities with the development in Sweden, Great Britain and the United States. Up to 1957 there was not much of an increase that could be called a trend. As from 1958 a considerable upswing set in. Certain data suggest the curve kept moving upward during 1962-65. For these four years about 750 mergers have been reported in the press compared with slightly more than 400

Figure 12. *Number of domestic and foreign mergers in Canada, 1945-61*



Source: Reuber & Roseman [1969], p. 16.

during the three previous years.¹

A u s t r a l i a

Merger data are likewise available for Australia through a special study (Bushnell [1961]). It covers the period 1946-59 and is based, as was mentioned in the previous chapter, mainly on perusals of newspapers, financial journals, annual company reports and reports from the Australian stock exchanges. We have not found any information about the development after 1959.

Over the 13 years under review, 1,157 mergers were reported in Australia. Of these 765, or just short of 70 percent, took place in mining and manufacturing. The figure

¹ Since the completion of the present study another Canada merger study has been published (Martin et al [1970]). According to that study 410 listed companies made 998 acquisitions during the period 1960-68. 326 of those were consummated during the five last years of the period. The number of mergers in 1968 was three times higher than in 1960. The increase has thus continued, as in Sweden and other countries.

are somewhat lower than the Canadian and refer to about the same period - some 90 mergers per annum as against 105 or so. It is likely, however, that the Australian figures represent more of an underestimate than their Canadian counterparts.

The most common form of payment was the issuance of new shares,¹ and the most common type of merger was for a large firm to take over a smaller one. 45 percent of the mergers were horizontal, with about two-fifths of this proportion aimed at geographic enlargement of markets; 25 percent were intended to broaden the buying firm's product line; ten percent were vertical and more than ten percent were conglomerate.

J a p a n

The concentration movement in Japan bears a certain resemblance to the one in West Germany. Financial groups and concerns, often with interlocking directorates, were formed on a large scale before World War II. The immediate post-war period saw some divestiture of interests, but in due course the process of concentration gained renewed vigor.

Japanese antitrust laws resemble American legislation in frowning upon mergers in principle. However, official government policy has gradually swung around towards encouraging mergers in important exporting industries.

To judge from the information available, mergers increased greatly in number during the 1960's. For 1959 the figure was 400, for 1961 it was 600, for 1963 1,000 and for 1965 just about as many (Knauss & Vogel & Hermanns [1967], p. 63). Scattered newspaper reports suggest continued concentration thereafter, especially from the consolidation of already large existing firms. Some enormous mergers have taken place in the steel industry; one of them has given rise to the world's second largest steel producer: Shin Nihon Seitatsu, with an annual output of 30 million tons

¹ This may be because most of the mergers not covered in the Australian study relate to relatively small mergers that were paid for in cash.

(Neue Zürcher Zeitung, November 15, 1969). Big mergers have also been consummated in shipbuilding and motor vehicles. In 1968, for example, the world's then largest shipbuilding firm was formed with the amalgamation of Ishikawajima-Harima and Kure.

CHAPTER 4

CAUSES OF CORPORATE MERGERS - A BASIC THEORETICAL FRAMEWORK

This chapter will consider the fundamental prerequisites for mergers between firms. The exposition mainly aims at giving a general idea of the economic factors which determine purchases and sales of firms. On the basis of the theory outlined in this chapter, the next chapter will further develop the analysis and also tie in with earlier merger research as well as the empirical data. In this chapter we begin by stating the assumptions about firm behavior on which this study rests.

ASSUMPTIONS ABOUT FIRM BEHAVIOR

The subject of the goals and behavior of firms has been debated at length by economists in the past few decades. At the one extreme are the "marginalists", who look upon firms as profit-maximizers; at the other are the "behaviorists", who argue that firms, especially the large ones, set many different goals for their business whose fulfillment may conflict with profit maximization ("discretionary behavior").¹

It is not our intention here to discriminate between these two "schools". Besides, there would be no point in that since different theories often have different aims. The firm of the marginalists is an abstraction. It serves as a model only for analyses of changes in certain specific variables or parameters, such as wages, interest and taxes. In such a model the firm's only goal is to maximize profits, and on the basis of that goal it reacts monolithically to changes in the environment. Time problems are disregarded, and firms are assumed to be fully informed about their situation and their action alternatives.

¹ For a review of this debate, see Machlup [1967].

The model employed by the behaviorists serves other purposes. It is built up to permit analyses of relations, processes, etc. Their model must therefore embody more detailed descriptions of the "real world" and of "real" firms. The behaviorists, many of whom have backgrounds in business administration and allied behavioral sciences, regard the firm as a more complex organization made up of individuals and groups with varying value judgments and goals as between one another and over time. In addition the firm must consider the interests of different publics outside its walls: the shareholders, the families of employees, the customers, suppliers, lenders, central government, local authorities and so on. The task of management in a world of uncertainty is to balance these interests so as to avoid crisis situations. Management is thereby primarily called upon not to fail to achieve certain threshold values for variables such as profits, dividends, ability to pay wages, liquidity, solvency, growth and "image". The firm's behavior is therefore said to be best described as a process of searching for optimal solutions in which various lower limits impose constraints on action "satisfying". If one or more of these lower limits is not attained against the firm's wishes, an adjustment mechanism is triggered off that makes the firm strive back towards an "equilibrium".

The behaviorists stress the importance of uncertainty and inadequate information (both about the present and future) for the actions of firms. Goals are formulated to conform with prevailing levels of aspirations, but are successively changed when new information is received. Hence the searching process signifies to keep improving temporarily satisfactory solutions. In this process uncertainty is perceived as undesirable. Firms therefore usually prefer solutions that seek to minimize uncertainty.

Obviously, this brief description of two extreme theories of firm behavior is highly simplified. Hopefully, however, it will provide an adequate point of departure for an account, albeith vague, of the assumptions about firm behavior that are made in this study. To begin with, we can establish that behavioristic models should be appropriate to

analyses of mergers in terms of processes and causes, since they are specifically intended for studies of behavior, and decision-making.

However, this is not to suggest that the quest by firms for profits - in the form of maximizing or satisfying - is reduced to subordinate status. On the contrary, it is assumed that profit-seeking adequately describes the firm's behavior in the long run and that profits constitute a good measure of the firm's ability to meet several, perhaps most, of the formulated goals. On the other hand, and this is particularly true of large firms with dispersed ownership and bureaucratic control, the management enjoys considerable latitude for departing more or less markedly from the profit goal and for fulfilling other goals instead - temporarily, that is. Examples of such alternative goals of a noneconomic nature are concern for the work force (or part of it), rapid growth of turnover, a slow pace of work, high social status through "ostentatious buildings", a high ratio of white-collar employment, or other forms of "organizational slack". However, the alternative goals must not be met in a way that invites risks of falling short of the threshold value set for the profit level.

This type of goal conflicts and goal balancing may also occur in owner-managed firms - the "family enterprises". In our study the owner of a firm and his family are assumed to have a set of values that may entail rejecting an economic solution which is "best" for the firm if it leads to conflicts with other goals, e.g. security, pride, maintenance of tradition, the desire to be one's own master, "well-being" and health.

Now what do these assumptions mean in terms of the merger behavior of firms? A specific and detailed answer can naturally not be given. Even so, it follows from the behavioral assumptions that economically well-justified mergers can be prevented or delayed if any member of management deems them to collide with other vital interests such as the security of management or other employees, permanency, of tenure, and prestige ("to go along with a merger is to admit to failure", "it's like letting down earlier generations").

The implication of this kind of reasoning for the present study is that mergers are regarded as action alternatives, which for at least one of the parties may stand out as undesirable solutions - "expedients". In many cases they are not adopted until there is powerful compulsion and after alternative steps have been tried out unsuccessfully or are deemed inadequate. But they may also be adopted when the profit expectations from a merger look remarkably great. In other words, mergers are a sluggish process, and the causes must be either many or powerful (sticks or carrots) to trigger off a decision to merge.¹

Another conceivable consequence of the behavioral assumption may be to prefer mergers to economically better solutions if they are capable of meeting essential goals, e.g. rapid increase of turn-over or high social status, without necessarily vitiating the profit goal for that reason. In recent years it has been contended, especially in the United States, that mergers chiefly aim at such non-profit objectives.²

Summing up, it can be said that mergers are assumed to follow a law of inertia and that they may be initiated by goals which conflict with profit maximization. However, the profit goal is assumed to remain all along as a constraint upon corporate behavior. Hence assessments of profitability underlie merger decisions - as indeed of all other investment decisions - even though there may be leeway for a sometimes rather arbitrary timing of such decisions.

A further consequence of our behavioral assumptions is the presence of considerable leeway for differences between potential acquiring firms as regards their strength

¹ Different merger behavior may be assumed for different types of mergers. Inertia is presumably greatest among firms that are to be acquired in connection with horizontal mergers which aim at more or less extensive reorganization involving (expected) personnel changes. Conglomerate mergers may encounter less opposition because personnel need not anticipate negative changes to the same extent. As was noted in Chapter 2, 80 percent of the mergers in our sample were horizontal.

² See e.g. Reid [1968] and Mueller [1969].

and resolve to resort to the "merger weapon". One extreme is represented by the "raider", who is constantly on the hunt for acquisitions and even draws up lists of likely "victims". This type of businessman is more of an "entrepreneur" than "administrator": he successively raises his ambitions and those of his firm and acts as spearhead towards the surrounding world by initiating changes, e.g. in the form of acquisitions designed to establish footholds on new markets. The opposite extreme is represented by the passive businessman who runs his firm to the best of his ability and does not implement changes except in response to outside signals or to the firm's profit and loss statement. He seldom seeks out merger targets but rests content with the initiatives that potential sellers may take. These two types of businessmen might be called "aggressive" and "defensive", respectively.¹

The assumptions of incomplete information have two consequences for corporate merger behavior. First, the firms miss opportunities for noticing the advantages - or disadvantages - of combinations; second, they may lack information about the existence or interest of potential merger partners. This lack of insight or information may be explained in its turn by the firm's unwillingness to obtain information of the kind that will presumably conflict with alternative goals held by the decision-maker.

One problem with the behavioristic corporate models is their intractability to formalization.² In the subsequent analysis of the causes of mergers between firms, we have deemed it necessary to start from a relatively formalized model and in so doing assume at first a homogeneous and fairly uncomplicated firm behavior.

PREREQUISITES FOR MERGERS

The value gap: a fundamental merger condition

The term "merger" is defined in this study as a transfer of title and control over a firm or operating division to an-

¹ For a detailed discussion of these matters, see Ansoff [1965]. Also see Leibenstein's [1969] discussion of the behavior of firms with respect to innovation.

² See, however, Williamson [1963].

other firm. It has also been shown that the overwhelming proportion of consummated mergers involve acquisitions. So as to have a starting point for an analysis of the motives and causes behind mergers, it will therefore be convenient to regard these as business transactions no different in principle from any other kind of transaction.

The fundamental prerequisite for realizing a transaction is for the buyer and seller to value the object of trading differently. The buyer must put a higher value on the seller's offer than the seller does and vice versa. Accordingly, there must be a gap between the two parties in their appraisals - a valuation gap or, to put it more succinctly, a *value gap*. The presence of such a value gap is a *necessary antecedent* of a merger, as of every other business transaction. In the absence of value gaps there would be no mergers.

For this reason a fruitful reference point for an analysis of merger behaviors and causes of mergers should be to discuss how and why value gaps arise between potential buyers and sellers of firms. The value of a firm is thereby understood to be the present value of its future net income flows, i.e. the difference between its receipts and disbursements over an indefinitely long period. Under ideal conditions this value is reflected in the market price put on the firm's shares.

E q u a l i z i n g t h e v a l u e g a p i n t h e
c a s e o f p e r f e c t c o m p e t i t i o n

Theoretically the valuations assigned by potential and actual owners of firms to a given firm may be structured in various ways. An initial reference point may be an assumption that purchases and sales of firms take place in perfectly functioning markets. An abstraction of this kind may prove instructive for the following discussion. So let us assume that all firms function as profit-maximizing entities, from which it follows that they minimize their production costs and charge the given market prices which their products command. In that situation there are no prospects for improving the firm's result either on the cost or revenue side,

which is by way of saying that mergers aimed at raising profits cannot occur. The future net revenues are likewise unambiguously determined. Everyone, including potential and actual owners of firms, possesses full information about the future. They know exactly how revenues and costs will develop and completely agree on this assessment. They also have detailed and uniform information about the alternative opportunities for investment.

This lays the foundation for uniform expectations as to rate of return. The capital markets function perfectly and determine the yield requirements made by every investor. The present value of a firm's future net income flows, discounted by this rate-of-return expectation, determines the price to be paid for it. No owner will sell his firm at a price which falls short of this present value - for him, after all, no better investment is to be found and money can be obtained more cheaply by borrowing. A potential buyer, on the other hand, is not prepared to pay more than the owner's minimum price, inasmuch as a price that exceeds the firm's present value only slightly makes the buyer's alternative investment opportunities more attractive. Under these conditions there will always be one uniformly determined value and price, and only one, for each firm. The valuations set on a firm by the potential buyers and the actual owners will be completely identical with the firm's value.

This model, of course, carries to extremes an abstraction of a much more complex reality. Especially in the case of the market for firms, the assumptions of the perfect-competition model imply departures from the realities of economic life that are presumably even greater than in most other markets. A discussion of the causes of mergers can therefore be related to such deviations from perfect competition. Accordingly, we can proceed from those economic factors that tend to cause disparate valuations of one and the same firm.

CAUSES OF THE VALUE GAP

V a l u e g a p s d u e t o i n c o m p l e t e
i n f o r m a t i o n a n d d i f f e r e n t
r a t e - o f - r e t u r n e x p e c t a t i o n s

The first deviation from perfect competition might involve the assumption of complete information. Unless investors have the same *access to information*, their valuations of a given firm will differ and a merger-inducing value gap may arise. The information may pertain to the firm's historical or expected results, its investment plans and market prospects, the plans of competitors, etc. As soon as disparities of available information imply that potential buyers take a more "optimistic" view of the future for a given firm than its owners, a positive value gap will emerge between them - the *margin for settlement* that is the necessary prerequisite for a merger.

Suppose instead that the parties have the same information about a firm but interpret it differently. Disparities in the *interpretation and appraisal of given information* may be caused by unlike experiences, levels of knowledge, etc., and might therefore be equated with differences of access to information. However, the interpretation and appraisal may also be influenced by other circumstances. The way in which the parties appraise *risks* may lead to interpreting given information differently. If the owner of a firm takes a more pessimistic view than a potential buyer concerning information about the size of the firm's future net revenues, he will have put a lower valuation on his firm than the potential buyer and the merger condition will be met in that a value gap has been formed. The same applies if the owner's *liquidity preference* is higher than the buyer's.

As a result of differences in access to information, risk appraisal and/or liquidity preferences, the assumption of equalized *opportunity costs* must be abandoned. Taken together, these deviations from the perfect-competition model mean that a uniform and determinate target *rates-of-return* does not exist. To the extent owners of firms do not systematically have lower expectations of returns, i.e. a higher

discounting factor and thus a higher valuation, than potential buyers of firms, these *differences in target rates-of-return will constitute sufficient conditions* for the occurrence of *mergers*, provided no other obstacles intervene. In situations of this kind mergers are regarded as profitable for both parties without their entailing any change at all in the activities of the merged firms.

The significance of the departures made so far from the perfect-competition model for the emergence of value gaps, and thus for the occurrence of mergers, can be illustrated with some simple examples.

Suppose first that two firms, B and S, discuss a sale of S to B. Neither firm finds itself under compulsion. They agree that S will earn an estimated annual profit of five million dollars for all time to come. Having regard to alternative investment opportunities, risk assessments, etc., both firms employ a discount rate of 20 percent, i.e. they demand a payback on their investments in five years. In such a situation a merger would merely signify an exchange of two objects (the firm for money), from which no party would gain since both put the same valuation on S (25 million dollars). Hence the prerequisites for a merger do not exist. Suppose now that S discovers an investment opportunity outside the firm that is deemed capable of yielding an annual return of 25 percent. His opportunity cost thereby rises and he should, if he seeks to maximize his profit, reduce his discounting factor for S to four. As a result his valuation of S falls to 20 million dollars. If B's situation and assessment remain unchanged, a value gap of five million dollars has arisen and laid the basis for a merger which is profitable (increases welfare) for both parties. Identical consequences will follow from an increase of S's risk assessment or liquidity preference which makes him lower his discounting factor to four, i.e. he demands a payback on the invested capital one year earlier than before.

Suppose instead that the situation for S is unchanged but that the opportunity cost (the next best investment alternative) for B falls so as to set the rate-of-return expectation at 15 percent, i.e. the discounting factor is raised

to 6.66. This means that B's valuation of S, other things being equal, rises to 33.3 million dollars and that a value gap of 8.3 million dollars has been created. The same result will come from an abatement of B's risk aversion or liquidity preference in relation to S's.

The situations described can be schematically illustrated as follows.

Schematic illustration of the influence of selling and buying propensity in relation to mergers at given profits

| | | | | | | | | |
|---------|---|-----------------------------------------------------------|-----|----------------------------------------------------------------------|-----|-----------------------------------|-----|-----------------------------------------------------------------------------|
| Raised | { | opportunity cost risk aversion liquidity preference | } = | raised target rate-of-return (lowered dis- counting factor) | } = | lower value put on firm | } = | increased selling or decreased buy- ing propensity re- lating to S |
| Lowered | { | opportunity cost risk aversion liquidity preference | } = | lowered target rate-of-return (raised dis- counting factor) | } = | higher value put on firm | } = | decreased selling or increased buy- ing propensity relating to S |

The relationships set out above can be exemplified with the following table of figures:

| | Ex. 1 | | Ex. 2 | | Ex. 3 | | Ex. 4 | | Ex. 5 | | Ex. 6 | |
|-------------------------------|-------|----|-------|----|-------|----|-------|----|-------|----|-------|-----|
| | B | S | B | S | B | S | B | S | B | S | B | S |
| Estimated annual profit for S | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 5 | 5 | 5 |
| Target rate-of-return | 20 | 20 | 20 | 25 | 15 | 20 | 20 | 20 | 25 | 20 | 20 | 5 |
| Discounting factor | 5 | 5 | 5 | 4 | 6.6 | 5 | 5 | 5 | 4 | 5 | 5 | 20 |
| Value (price) | 25 | 25 | 25 | 20 | 33.3 | 25 | 25 | 20 | 16 | 25 | 25 | 100 |
| Value gap (maximum price) | 0 | | 5 | | 8.3 | | 5 | | -9 | | -75 | |

As the examples show, a value gap may arise between buyer and seller from various combinations of estimated profit and expected rate-of-return. In examples 1 and 5-6 there is no margin for settlement, whereas examples 2-4 meet the necessary conditions for merger by virtue of wide value gaps.¹

¹ In example 6 S's opportunity cost largely amounts to the interest rate earned on a bank deposit. In this case the low rate-of-return expectations may be due to the very high store that S sets on being "his own boss".

In common with other transactions, mergers can be consummated as a result of different or altered relations between buyer and seller in their access to and interpretation of information that bears upon a given firm's profit development, as well as in their rate-of-return expectations. Mergers may therefore be considered profitable for both buyer and seller even if the mergers do not confer any surplus value of themselves. Changes in these relations could therefore be regarded as important determinants of merger intensity during a given period or within a given sector, provided that the firms discover the existing value gaps and have both the resources and incentives to exploit them. For this reason a cardinal task for a discussion of the causes of varying merger intensity over time or between different industries would be to find out whether there are any features of the firm environment (e.g. technological advance, general economic or political changes) which may have systematically tended to affect certain firms in their assessment of information and rate-of-return expectations in relation to other firms.

This section can be summarized as follows. Mergers and acquisitions can take place because owners and managers take different views of the future. This may apply to transactions between two firms, between one firm and one person (family) or between two persons (families). Our study is exclusively concerned with the first two of these three cases. But the fact that the conclusion is also applicable to the third case proves that these transactions can still be profitable as such without conferring some kind of surplus value from coordinating the operations of existing firms. Mergers can be explained, at least in part, by relatively trivial circumstances: the varying ability of owner-managers to assess the future, varying willingness to take risks, varying appraisals of the trade-off between private saving and consumption, etc. On the basis of that hypothesis, differences of merger intensity from year to year or between industries could be explained by systematic differences or changes in the population of owner-managers having given attributes (proficiency, value judgments, etc.) or in the environment which systematically

influence these attributes and in that way induce value gaps between firms. Examples of such changes or differences are the following: younger owner-managers are better educated than their elders; technological advances and changes in markets are deemed to involve risks with which owners of (say) small firms consider themselves unable to cope; for political and "bureaucratic" reasons, the ownership of a firm is perceived to be less rewarding than before compared with other investment alternatives or with consumption; and so on.¹

Since over the long run value gaps should tend to even out for firms whose shares are traded on a major market (where other shares may also be bought and sold), the stated differences could primarily be explained by the presence of family-owned enterprises which normally cannot be sold "in part and parcel". In other words, one could expect most of the mergers belonging to the category discussed in this section to take place between family enterprises or between listed firms (as buyers) and family enterprises, whereas mergers between listed firms should wait until they lead to a market price for the shares of the combined firm that exceeds the sum total of quoted prices for the two firms separately, provided that the stock market functions perfectly and the firms maximize the wealth of their shareholders.² The mergers herein described could therefore be explained by inadequacies in the "market for firm ownership".

¹ It should be observed that the changes can also be imagined to move in a direction which creates or enlarges negative value gaps. That will happen, for instance, if owners of family enterprises systematically tend to adjust their rate-of-return expectations downward because being their "own boss" suits them fine even when the invested capital earns a low return. Obviously, such negative value gaps may even be so large as to neutralize positive value gaps that have arisen for other reasons and could therefore be regarded as an obstacle to mergers.

² According to the assumptions made so far no such value increments can occur.

v a l u e g a p s f r o m c o o r d i n a t i o n
g a i n s

The next step in our analysis will be to drop the assumptions of the perfect-competition model as to given technology, etc. and given (instantaneous) adjustment to *changes in technology*, costs, marketing, etc. Disturbed equilibria can affect not only the rates of return expected by investors but also the return actually earned by firms. Some owners adapt better to changes than others by reorganizing the firm more promptly and more efficiently in response to new conditions. A capable owner ought to value a given firm higher than one who is less capable, and should therefore attach a higher value to the firm he owns than the less capable owner does for his. This, too, can give rise to merger-inducing value gaps. But such a gap is fundamentally different from those that were attributed to differences in access to information and rate-of-return expectations. That is because it is the result of a *change of activity in the taken-over firm* owing to the installation of new management. The value gap is caused by a coordination of resources between the acquiring and acquired firms, i.e. the *merger increases the aggregate value of the merged firms* over and above the sum total of their earlier values. This type of value gap might be called *value gaps from coordination gains* to distinguish it from the former type, which may be called "pure" *value gaps* or *appraisal gaps*.

The bringing together of two (or more) firms can thus give rise to a surplus value which means that the parts taken together, i.e. the combined firm, has a value exceeding the sum total of these parts taken separately. This relationship, which is sometimes called the "2+2=5 effect",¹ constitutes an independent and quite adequate explanation for the emergence of a value gap, and hence also of economic prerequisites for mergers from which both buyer and seller will benefit, even if - contrary to expectations - they should happen to have exactly the same access

¹ In American literature the "2+2=5 effect" is sometimes called "synergy" or "synergism". (See e.g. Ansoff [1965] Chap. 5; Weston [1966], p. 130; Mueller [1969], p. 643 ff.)

to information and anticipate the same rate-of-return. This merger effect will henceforth be alternatively referred to as coordination gains, combination gains or integration gains from mergers, it being understood that these terms are fully synonymous.

Naturally, coordination gains follow as the net result of revenues and costs occasioned by a merger. Coordination gains can arise in more ways than from a change of management alone. Suppose perfect competition does not prevail but that, owing to market imperfections, firms may employ practices that rule out an optimal utilization of resources and still be able to survive. Actually, these are the prevalent forms of competition in modern economics due to product differentiation, incomplete consumer information, barriers to entry, etc. Even this departure from the original model is enough to generate very great potential coordination gains from merger. A merger can then become one way of improving efficiency and by reducing costs increase the firms' aggregate profit.

The assumption of imperfect competition also means that mergers can be consummated for the purpose of restricting competition. A merger can transform a divergence of interests into a convergence, i.e. the merged firms stop competing with one another. This can lead to market gains from price increases ("monopoly profits").

Market imperfections may induce mergers in other ways, too. If, say, the capital market functions so as to systematically disfavor small firms in the allocation of credit, this may mean that their growth potentials are better realized by merging with firms which are well supplied with capital. The financially strong firm therefore puts a higher valuation on the weak firm than the latter puts on itself. Similarly, the buying propensity may be relatively higher for expanding firms with financing difficulties, since unlike other investments acquisitions of firms can often be financed by an exchange of shares. Acquisitions of firms may also be one way of getting around other imperfections in factor markets. For it is by buying out an operating division or a whole firm that the buyer obtains scarce or otherwise unobtainable factors of production

such as natural resources, building land, professional staff, patents, etc.

Another consequence of market imperfections is to give individual firms scope to upset the present competitive equilibrium, e.g. cutting prices or waging an advertising campaign. Market imperfections also make it possible for firms to perform in ways that conform with the behavioristic patterns described above. Thus stability and security may be seen as more important goals than profit maximization. Such goals can help to generate value gaps from coordination gains and therefore induce mergers.

The coordination gains to which mergers can give rise may be summarized under five main categories as follows:

- (a) *Efficiency improvements*, i.e. reducing the input requirements per unit of output. These include advantages of access to strategic factors of production which, due to indivisibilities, require financial strength on the part of the buyer as well as a large output to be used efficiently.
- (b) *Financial advantages*, e.g. because financial strength represents an advantage in exploiting given growth potentials.
- (c) *Stability advantages* arising from the ability of the merged firm to sustain losses (temporarily on the whole operation or on risky projects), deter from or respond to aggressive acts of competition (or threats of such), spread risks, etc.
- (d) *Improved market position*, i.e. price effects on commodity and factor markets ("monopoly profits" or "monopsony profits").
- (e) *Fiscal and other institutional advantages* which systematically tend to favor mergers in preference to comparable action alternatives.

These coordination revenues cannot be directly translated into coordination gains, but represent no more than potentials for reaping such gains. In order to realize the coordination revenues costs will normally have to be incurred for such things as financing, information, declining

productivity due to anxiety about reorganization, a higher rate of labor turnover, disrupted operations, early retirements pensions and sundry planning and coordinating work which may demand great efforts from a hard-pressed management with high opportunity cost. Nor can the market share held by an acquired firm always be transferred with certainty to the buyer without some portion of that market being lost. The coordination gains may require certain standardizations of the product line, a step that could drive customers away. For some customers the acquiring firm may not represent the best purchasing alternative after a merger, considering their purchasing habits, brand loyalties, etc. The coordination gains may require overhauling the distribution system and compel the merged firm to relinquish intentionally a certain segment of the combined market. Obviously, the size of a lost market will vary from case to case. However, unsystematically gathered interview statements suggest the size may be considerable. Losses amounting to between 25 and 50 percent of the acquired firm's market have been mentioned.

The potential revenues and costs arising from coordination are assumed to be subject to the assessments and valuations made by both merger parties. The decision to merge will then be taken accordingly. This will be favorable if the revenues are deemed likely to exceed the costs, i.e. if $2+2 > 4$, from which it may be inferred that economically unprofitable mergers can occur just as well as the profitable variety. However, there appears to be great risk for underestimating market losses, reorganization costs, etc. This would mean that the coordination costs do not impede mergers in the first place but rather reduce their gains ex post, i.e. raise the frequency of "abortive" mergers.¹

The question of whether mergers succeed or fail need not have any direct bearing upon the analysis of motives and causes which is a central task of this study. However,

¹ Several foreign studies (among them Kitching [1967], and Bjorksten in "Economic Concentration" [1965], pp. 1940-54) plus personal observations of Swedish mergers point to a not inconsiderable rate of failures.

it will become important for an evaluation of the mergers as well as for the choice of testing method in a causal analysis. Such empirical tests of merger motives which try to evaluate results of mergers may run risks of not measuring the motives, i.e. the anticipated results, but only the attained, and perhaps unexpected, results. Theories of merger motives should therefore preferably be tested first of all by other means.

No penetrating discussion of the five different categories of coordination gains from merger will be pursued in the present chapter. That task will be set instead for Chapter 5.

DETERMINING THE PRICES OF FIRMS

Yet another departure that must be made from the perfect-competition model relates to *price-formation*. According to that model the price put on a firm, as well as on every other transaction object, is given and cannot be influenced.

This assumption of price formation is perhaps especially unrealistic in the market for firms. A price fixed by the market as envisaged by the perfect-competition model only exists for firms whose shares are bought and sold on a functioning stock market - and not even then need the pricing of marginal shares say anything about the value of the firm to a potential buyer of the whole enterprise. In the eyes of a seller, the number of possible buyers for his firm is limited - often no more than one. For whole firms, therefore, there is no market on which prices are determined in the same way as, say, on the stock market.¹

Nor does there exist any required rate-of-return which can be conclusively established. To be sure, the money markets can provide a frame of reference, but they seldom if ever impose a compelling standard. On the contrary, as was noted earlier, there is reason to believe that buyers and sellers of firms differ very much from one another in required rates-of-return. The seller may not even be aware that he requires a given rate-of-return. Perhaps that will

¹ Similar arguments have been advanced by Heflebower [1963], pp. 554-555.

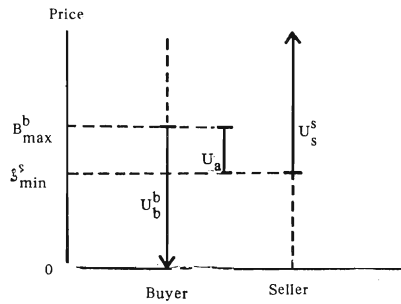
become apparent only indirectly as a result of the lowest price at which he is willing to sell his firm. This indirectly revealed rate-of-return requirement may in its turn change over time more or less unrelated to the changes that take place in other investment markets. In practice it is probably not unusual for the required rate-of-return to adjust to the actual return that the capital asset, e.g. the firm, earns at a given price. In other words, the price is the rigid magnitude to which profit expectations are adjusted.

Normally, therefore, the price of a firm is not given but becomes a matter of bargaining at a session where buyer and seller seldom have any clear notion of one another's appraisals - and sometimes not of their own, either. Hence there may be scope for considerably flexibility in the pricing of firms, a flexibility that introduces an element of "discretion" in the proceedings and that can both enhance and diminish the prospects for a deal. Whether or not a firm is going to change hands will be decided by the ratio between the subjective appraisals made by the parties: the buyer must put a higher value on it than the seller, i.e. there must be a positive value gap.

The assumption that prices of firms are not given means that the actual negotiations are of strategic significance to whether mergers are accomplished. It therefore becomes especially important to treat the negotiating situation within the framework of a general discussion on the prerequisites of mergers.

In Figure 13 two vertical lines are plotted, the one at the left representing the buyer's appraisal situation, the one at the right the seller's. The buyer's appraisal of the merger object is shown by the continuous vertical line U_b^b (margin for purchase as seen by the buyer) and reaches its maximum at B_{max}^b , the highest price that the buyer is willing to pay in the given situation. The prices represented by the broken segment of the line are too high to keep the buyer interested in an acquisition, given his alternatives (to buy another firm, to invest in a new plant, to buy investment trust shares, etc.). The seller's appraisal is illustrated by the continuous vertical line U_s^s , which reaches its minimum at S_{min}^s .

Figure 13. Appraisal relations in a firm transaction with merger conditions fulfilled (self-assessments of the parties)

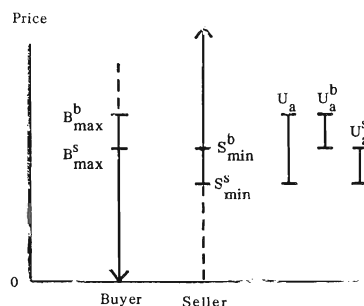


The broken segment of his line represents prices that he, given his own alternatives, considers too low to induce him to go ahead with a sale. The common segment of the continuous lines, U_a , represents the margin for settlement.

The figure illustrates those appraisal assessments made by decision-makers of their own respective situations. Whenever a transaction is being negotiated, however, the assessments by the parties of one another's appraisals also take on importance. Actually, it is these assessments that will crucially determine the parties' actions and the course of the negotiations. By seeking out information before the negotiations and during the preparatory contacts - which are often taken for this very purpose - the buyer tries to estimate the seller's lowest price, while the seller similarly tries to figure out how high the buyer is likely to bid. Once these estimates are made, each party will have formed his idea of the presence of a value gap and how large this is. The situation is illustrated in Figure 14.

In the figure the seller's assessment of the buyer's maximum price (B_{max}^s) has been assumed to fall below the buyers' own assessment of this (B_{max}^b). The buyer's assessment of the seller's minimum price (S_{min}^b) has been assumed to exceed the seller's own assessment of this (S_{min}^s). Accordingly, we have three types of value gap: the actual

Figure 14. *Appraisal relations in a firm transaction (parties assessments of one another).*



margin for settlement (U_a , the same as in Figure 13), the buyer's conception of the margin for settlement (U_a^b), and the seller's conception of this (U_a^s).¹ The presence of these "subjective" margins for settlement or value gaps may be described as prerequisites for inducing both parties to get down to serious merger negotiations.

The models presented so far have been static in the sense that they apply to a moment of time when each of two merger parties assesses both his own situation and that of the other. These assessments are in their turn assumed to be based on a comparison between the alternative of buying and selling respectively and on other alternatives. In that respect the decision-making situation in a merger can be compared with that of a conventional investment decision.

¹ The first task of a moderator may be said to form an idea of U_a and to bring the parties in line within this range.

However, a merger situation unfolds within the framework of a negotiation between two or more parties in which these naturally have conflicting interests. This has been indicated in the figures by having the arrows attached to the buyer and seller lines pointing in opposite directions. Thus the parties may also be assumed to strive to influence one another's assessments, such that the buyer tries to reduce the seller's minimum price and at the same time persuade the seller to believe that his own maximum price (B_{\max}^b) is lower than it actually is. The seller in his turn tries to raise B_{\max}^b and at the same time persuade the buyer to believe that S_{\min}^s is higher than it actually is.

The conflicts and game-theory situations to which merger negotiations may give rise on the basis of the outlined prerequisites will not be elaborated in the present context.¹ It should suffice to exemplify some of the instruments the parties can use in influencing one another's appraisals of the object of transaction. First of all, they can start their bidding at a level that is more favorable than the limit value for each decision-maker.² In so doing some persuasion already can be brought to bear. Further, the seller may let it be understood that the buyer has competitors or that he can continue in business as before without major difficulties. The seller may also try to convince the buyer that his firm has very favorable future prospects and that a merger would confer great integration gains on the buyer. For his part the buyer may pretend to view these prospects less optimistically and even let it be understood that he too has alternatives. He may contend that the plans to invest within the seller's sphere of operations in any event, i.e. that the alternative to merger for his part is internal expansion with concomitantly intensified competition for the seller. He may also try to prove that expected technological advances and market changes within the sector will put such a high premium on availability of capital and know-how, as well as willingness to take risks, that the seller can scarcely hold on unless he combines with a firm that has these resources and characteristics.

¹ See Lundman [1966], who inspired some of the ideas in this section.

² That is to say, both are ready to bargain on their initial bids or "feelers".

Naturally, all these circumstances may be known to the other party from the very outset. The effect of that information will then be for both parties to know that they have about the same evidence for their assessments, which will tend to narrow the gap between B_{\max}^b and B_{\max}^s and between S_{\min}^s and S_{\min}^b . In other words, the subjective value gaps will tend to converge. Whether the convergence will occur, and if so to what extent, is determined by the relative negotiating skills of the parties, their ability to make their information or threats credible, relevant and convincing, their ability to interpret this information, the degree of latitude each enjoys in the negotiating situation, etc.

A negotiating model that lays claim to being realistic ought to be dynamized, i.e. allow for the significance of time. Such dynamization introduces further complexities. Among other things, it means that scope can be given for divergent opinions between the parties as to the most appropriate moment for consummating the merger. The seller can figure on obtaining a higher price if he postpones the settlement, while the buyer may similarly try to bring down the price. This means that a positive value gap, which in a given situation and when viewed from a static angle, was a sufficient condition for merger may close and even turn negative if new factors are given time to affect the parties' appraisals before the contract is signed.

Making the negotiating model dynamic may thus make it less probable that an existing and *discovered* value gap will actually lead to a merger. That is because the parties (either or both) misjudge one another's appraisals and forecasts and misjudge the advantages and disadvantages of waiting.

SUMMARY

This chapter has identified those conditions under which mergers will occur. Under perfect competition all target rates-of-return are equal and information is free. All firms are perfectly adjusted to a given technology and operate with maximum efficiency.

However, the perfect-competition model has few counterparts in the real world. If the unrealistic assumptions on which the model rests are changed, incentives for mergers will arise. Differences in access to information and target rates-of-return result in different appraisals put by investors on investment objects. If a potential buyer attaches a higher appraisal to a firm than its owner, a positive value gap will arise between them: this is a necessary and, under certain assumptions, also a sufficient condition for a merger. If competition is imperfect, firms can improve their efficiency or obtain price advantages by merging. The merger has then produced a surplus value or a coordination gain, which is a sufficient condition of merger even if the parties should have exactly the same access to information and identical target rates-of-return.

A distinction can accordingly be made between two types of valuation or value gap - an *appraisal gap* and a *value gap from coordination gains*. One of these two must be present for a merger to occur. Hence the value gap makes a necessary condition of merger. In practice both types of value gap can no doubt often be assumed to exist concurrently and reinforce one another. But they may also cancel each other out. The appraisal gap can be negative and eliminate a positive surplus value gap. Conversely, a positive appraisal gap can be neutralized by expected coordination losses of the same or greater magnitude.

When matters are viewed from this angle, it is possible to imagine that a number of value gaps relating to firms perpetually exist in an economy which does not meet the criteria of perfect competition. Changes in the environment affect the access of investors to information and their expected rates-of-return, and therefore also constantly affect the frequency and size of appraisal gaps. Then, while these tend to close, new changes take place which create new gaps, and so on. In the same way the quest for profits calls upon firms to adapt to a given technology and other production determinants as well as to changes in these. To the extent a better adjustment is achieved from coordinating two or more firms, mergers generate a surplus value ("2+2=5") that profit-seeking firms should strive to turn to their benefit.

But before mergers come to pass these "anonymous" value gaps have to be discovered, stimulate action and go through the grinder of protracted and difficult negotiations over price and other transaction terms. This "filtering" process might be said to represent a potential obstacle to mergers. Because of inadequate information about potential buyers and sellers of firms, fear of taking the first step, prestige and the like, existing value gaps may never be discovered or merger negotiations never get started. Comparable obstacles are lack of resources in the would-be acquiring firm, a lack of capable mediators and miscalculations by one or both of the parties as to the most favorable moment for striking a bargain. Yet another type of obstacle may be interposed by the institutional environment of firms, e.g. legislation or the "state of public opinion".

On the other hand, circumstances which keep value gaps from arising at all cannot be called merger obstacles in a strict sense. This holds true, for instance, of coordination costs which exceed the coordination revenues. Naturally, it also holds for such value judgments and attitudes on the part of, say, company owners which prevail on them to keep lowering their required rate-of-return as profits actually deteriorate. Lastly, it holds for disparities between the parties in their methods of appraisal. Many an owner can be assumed to be influenced by historical rather than future results, by historical rather than current investment expenses, etc. Emotional values may be blended into the price calculation. As a result the seller's price may end up at a much higher level than the buyer's, which in the normal case is based on the present value of the firm's future net revenues. The value gap will therefore turn negative instead of positive and no merger will be consummated.¹

¹ For a discussion of different appraisal principles in connection with mergers, see Höglund & Rydén et al [1964], pp. 70-76.

CHAPTER 5

CAUSES OF CORPORATE MERGERS - FORMULATION OF HYPOTHESES

INTRODUCTION

Some hypotheses on the underlying causes of the merger trend in Sweden will be formulated and developed in this chapter. For this purpose the variations in mergers over time and between industries described in Chapter 2 ought to be able to give essential information and also offer possibilities for testing the hypotheses. The analysis proceeds from the general theoretical outline presented in the previous chapter. Here this general theory will be elaborated and made more concrete. First, we shall discuss whether any empirical support can be lent to the appearance and size of value gaps in mergers. Consideration will then be given to mergers which create a surplus value on account of coordination gains: this type of combination is the one that has been most subjected to analysis in the available literature on mergers and their causes. Next, we discuss mergers that do not embody coordination gains - or are not intended to take advantage of these - but which can be consummated anyway owing to the presence of an appraisal gap. The chapter concludes with a summary of those merger causes which are deemed relevant to the course of events in Sweden and to be feasible for testing. The formal testing of hypotheses follows in Chapter 6 and partly in Chapter 7.

CAN THE VALUE-GAP THEORY BE PROVED?

The main idea in the previous chapter was that a gap between buyer and seller appraisals of a given firm is a necessary prerequisite for bringing about a transfer of that firm, i.e. a merger. A first important question to resolve, therefore, is the extent to which this hypothesis gains support from our own empirical data. Answering that question will not be easy since not even the actual considerations paid in connection with consummated mergers are available in systematic form.

Finding out about the buyer's and seller's maximum and minimum prices is even more difficult. To be sure, one might venture to identify these levels by studying consummated mergers in greater depth. However, the practical and methodological problems involved are so formidable that such an investigation has not been deemed feasible.

Still, the value-gap theory could be considered so self-evident in explaining why transactions take place that it can also be taken for granted where mergers are concerned. But certain possibilities may still exist for providing the theory with empirical support and at the same time assess the size of the value gap. Acquisitions of firms whose shares are traded on the stock market and hence continuously priced can offer such possibilities. An investigation of some ten acquisitions of listed Swedish industrial firms during the 1960's shows that the buyer paid a premium averaging at 20 to 25 percent above the market price of the acquired firm's shares (Rydén [1968c]. The premium ranges in size from zero to nearly 100 percent. Foreign investigations have arrived at very much the same results (Gort [1969], p. 639; Mueller [1969], p. 652; Weston [1966], pp. 136-137; Rose & Newbould [1967], p. 23). If we assume that buyer and seller in the normal case meet halfway, i.e. at midpoint in the value gap, the gap could be estimated at an average 40-50 percent of the minimum price asked by the seller (S_{\min}^s).^{1 2} This could be interpreted to reflect the size of estimated coordination gains from mergers between listed firms.³ However, these investigations and figures do not lend themselves to drawing any conclusions about value-gap size for acquisitions of, say, family-owned businesses.

COORDINATION GAINS FROM MERGERS

Chapter 4 mentioned various conceivable types of causes that can yield coordination gains from mergers, and indeed

¹ For listed shares the prevailing market price will of course be S_{\min}^s .

² Rose & Newbould [1967] found that British merger bids which met with resistance from the management or a third party (contested bids) resulted in average premiums of 50 percent.

³ This argument naturally presumes that the acquired firm's shares are not "undervalued". Another snag is that stock market prices pertain only to marginal shares.

from other combinations. These causes were divided into five different groups. We shall largely adhere to this grouping in the somewhat more penetrating discussion of coordination gains by causes and contents. The grouping was made only in order to simplify the analysis; it must not be interpreted to mean that a merger has either one cause or another.

It should be repeated that the term "coordination gain" is used herein to refer to the "surplus value" generated by a merger and which finds expression in that the merged firms together represent a greater value than the aggregate value of the firms without merger (" $2+2=5$ ").

I m p r o v e m e n t s i n e f f i c i e n c y

Efficiency improvements through merger can arise in many ways and, in principle, within any company function. First and foremost, a distinction can be drawn between cases where both firms already operated at the lowest average cost curve as separate entities, and cases where one firm did not do so. Provided the latter firm is the one that is sold, S, such a merger ought to result in efficiency improvements from the mere takeover of S's management by the buyer, B. In other words, the coordination gain relates solely to the function of management. This type of merger has been called "mismanagement bargains" (Alberts [1966], p.276) and occurs when the management for a firm, B, thinks it can do a better job of running another firm, S, than the latter's own management. If S's minimum price is based on its own target rate-of-return (which reflects S's judgment of its own competence) and B's maximum price is based on B's assessment of its ability to make S pay off, there will arise a positive value gap between the parties that makes a merger economically attractive for both even if B and S have the same target rates-of-return.¹

¹ If S's management judges itself to be more competent than S's owner (and B) does, B will be compelled to turn directly to S's owners to carry out the merger. The latter may then be motivated to sell their shares because B, thanks to his superior skill, finds it profitable to pay more than the market price for S's shares. Such takeover bids, which often meet with resistance from S's management, are relatively common in the U.S. and Great Britain but have not occurred at all in Sweden during the postwar period. They might be re-

If there is room in any economy for variations between firms as to the ability of managements to run their firms efficiently, i.e. with minimum inputs of resources for a given output, there is also room for efficiency improvements through mergers for this reason alone. Such improvements are achieved when an efficiently run firm acquires an inefficient entity and at the same time takes over its operation; the long-run result is a more intensive utilization of the factor of production management.

In principle, "mismanagement mergers" can occur between firms engaged in widely separate activities. An estimate of their actual extent will depend on how one assesses the spread of management skill between the different firms in an economy and on how that skill is evaluated in relation to a particular industry. The fierce debate of recent years, especially in the United States, on the desirability of so-called conglomerate mergers, i.e. diversifications into outside industries, demonstrates the extent to which these assessments diverge in practice (see e.g. Manne [1965], pp. 110-120; Gort [1969], p. 654; Economic Report on Corporate Mergers [1969], p. 95 ff). It should be possible to measure the extent of this type of merger in various ways, for instance by studying the profitability of acquired firms. American investigations suggest that, in profitability terms, the firms acquired by conglomerates represent a cross-section of American industry (*Economic Report on Corporate Mergers* [1969], p. 97). From this is drawn the somewhat debateable conclusion that efficiency gains from a change of management cannot be a common merger motive.

Unless acquisitions and mergers are studied on an individual basis, it is scarcely possible to say anything

garded as a supplement to or replacement of owner control, especially in firms with widely dispersed ownership. In cases of this kind the threat of becoming the target of a merger bid sets the lower limit for "mismanagement" or managerial discretion. Marris [1967] accords a significant role to this restriction in his theory of the firm. Manne [1965], pp. 110-120) even looks upon mergers ("the market for corporate control") as the only remaining method of guaranteeing an efficient allocation of resources when neither the competition on product markets nor the owner influence can deter the management of large firms from behaving inefficiently.

about the extent of "mismanagement mergers" in Sweden. Militating against the notion that they would be of major importance are the relatively great variations between industries, which in that case would require an assumption of unevenly distributed management skill between industries. On the other hand the mismanagement theory is consistent with variations in mergers over time; thus a business downturn, a credit squeeze and the like can exert a relatively more severe impact on the worst managed, i.e. least profitable, firms and force them to sell so that they can survive. Observations of individual cases in Swedish mergers also suggest that mismanagement mergers occur now and then. In connection with press releases on composition schemes, bankruptcy proceedings, advance notices of plant shutdowns, etc., it is sometimes said that one is looking for, or already has found, a buyer who is interested in continuing the operations of the threatened firm. It will be the task of the analysis of individual firms in the next chapter to find out just how common this merger motive is.

But efficiency can of course also be improved by combining firms who already operate at the cost minima or revenue maxima that their size, prevailing demand patterns and given technology permit, yet are underdimensioned in relation to the efficiency criterion (i.e. their average costs are higher than minimum on the long-run average cost curve). Such efficiency improvements relate to what are normally called economies of scale in production, distribution, administration and other functions. That is to say, they depend on the degree of adjustment to existing technology and other factors that are significantly affected by forms of company organization, and as such can be designated *static* or *technical economies of scale* in contrast to *dynamic economies of scale*, which refer to adjustment to changing technology, etc.¹

The question of *technical* economies of scale can be seen in several different ways, for example:

¹ For a detailed discussion of the concept of economies of scale, see Scherer [1970], pp. 72-103, and *Stordriftsfördelar inom industriproduktionen* [1970], p. 14 ff. and Chap. 2 (put out by the Swedish Committee on Economic Concentration).

- (a) Is the output of a given product large enough to permit achievement of minimum average costs for that product? (Length of the production run)
- (b) Is the product mix such that it permits maximum efficiency of administration, purchasing, inventory management, advertising, transports, servicing, etc? (Degree of horizontal integration)
- (c) Is the firm organized in a way that permits achievement of minimum costs at each stage of production? (Degree of vertical integration)

If the answer to a) is "no", there may be an incentive for a horizontal merger. In the case of b) diversification (presumably within one industry) may be profitable while c) may call for a vertical merger. But instead of merger or fusion, a "fission", i.e. cleaving a firm into parts, may be warranted if any of the questions is answered in the negative. That is because the firm may fall too far to the right of the average-cost curve (assuming this is U-shaped) or be vertically structured in a way that rules out average-cost minimization at all stages of production.

Coordination gains from **mergers** which increase efficiency may arise if the combined activities relate to products which are substitutes or are related on the supply or demand side in e.g., product development, purchasing, production, materials handling, marketing (both physical distribution and sales promotion) and other essential functions. The coordination of both merged firms means that their total resources will be utilized more efficiently than if they continued as separate entities. Particular emphasis should be put on the elimination of overcapacity, i.e. the scope for reducing the fixed costs at a given output or for increasing the output with retained capacity. It is probable that such merger effects can also arise from coordinating products that are very heterogeneous on grounds of production technique or conventional industry classifications.

Greater efficiency can also come from the higher revenues which follow product coordination. This will be the case, for instance, with products that meet complementary

wants of buyers. The coordination may then lower the costs of buyers for information, contacts, transports, etc. (Alberts [1966], pp. 260-262).

Other things being equal, the possibilities of realizing efficiency gains from merger ought to increase with the extent of interdependency between the merged firms. Efficiency gains should therefore be relatively larger for combinations between underdimensioned firms engaged in the same activities, i.e. from horizontal mergers. But as already indicated the potential for this type of coordination gains may also be great if the merging firms operate in different industries. This applies both to vertical integration and diversification.¹

A number of investigations imply that it is realistic to expect technical scale economies of different kinds to assert themselves in the manufacturing sector.² As far as Swedish industry is concerned, the Committee on Economic Concentration has identified advantages of this kind in many industries that often are not fully exploited (*Industrins struktur och konkurrensförhållanden* [1968], p. 25; *Stordriftsfördelar inom industriproduktionen* [1970], Chap. VIII-XVI). There is therefore reason to pursue the discussion further and ask to what extent mergers represent the best way of achieving economies of scale.

Technical scale economies of the described types may provide incentives to mergers in various competitive situa-

¹ The functional relationships of two merged firms may often be hard to detect. It is possible that a conglomerate merger of firms having no visible connection with each other harbors as many efficiency improvements as a horizontal merger (Narver [1967], p. 76). This case has been illuminated from another angle by an American economist, Blair: "...the determination of whether the acquired firm is what could be regarded as functionally related to the acquirer usually requires a very large measure of arbitrary judgment and subjective evaluation. Therefore, I question the wisdom and the usefulness of the distinction between product extension and other conglomerate mergers" (*Economic Concentration* [1965], p. 528).

² For a more complete account of theoretical and empirical studies dealing with economies of scale, see *Stordriftsfördelar inom industriproduktionen* [1970], Chap. VII, and Scherer [1970], pp. 72-103.

tions. In the case of atomistic competition, all firms in an industry will automatically attain optimal size and organizational structure. Given certain assumptions, this process can be accelerated by mergers.¹ In industries with less than perfect competition the firms are usually not compelled to aim at the size which allows cost minimization, but many of them still do so more or less automatically.² In oligopolistic industries, where firms can operate inefficiently but survive anyway owing to restraints of trade (e.g. barriers to entry or product differentiation), mergers can serve to improve efficiency. If these inefficient firms maximize their profits, they should be expected a priori to combine so as to improve their profitability. Hence inefficient profit-seeking firms, of the underdimensioned type for example, should be expected to merge or to establish more limited cooperation (as by agreeing to specialize or setting up a common purchasing organization) in order to profit from efficiency improvements, provided the combined revenues are deemed likely to exceed the costs and provided greater benefits are imputed to external than internal expansion.

These two prerequisites are crucial. Where information is incomplete or the profit goal is departed from, a merger that increases efficiency for both (all) parties is not likely to occur. Economies of scale can also be of the character that makes successive expansion via the *internal* route *cheaper*. This may be particularly true of scale economies in production, which are often better attained by enlarging existing capacity or new investment

¹ Mergers could be seen in such situations as an alternative to an otherwise unavoidable shutdown. The underdimensioned firm that for some reason cannot grow internally to optimal size attains it instead by growing externally, i.e. by joining forces with another (underdimensioned) firm in the industry. This saves both since underdimensioned firms cannot survive in atomistic competition.

² The automatic process has been said to work so well that most industries have nothing to gain from efficiency-motivated economies of scale because the size optimum has already been reached (Alberts [1966], p. 255).

in larger plants than by increasing the number of plants based on "old technology".¹ Mergers, on the other hand, should be able to yield fairly immediate efficiency improvements within such functions as purchasing, inventory management, transportation, marketing and administration. However, economies through mergers can be achieved when a planned expansion is difficult to carry through efficiently in the short run with given technology owing to an insufficient market share or an overly slow (expected) growth rate.² Firms that already have excess production capacity may also find it profitable to make greater use of that capacity and lower the average cost by transferring the production from an acquired firm, whose real capital is then scrapped, sold or deployed by the buyer for some other activity.³

In any event, efficiency improvements through merger can be gained by interfirm coordination that saves resources. Especially interesting is the evening-out of capacity excesses - and shortages. A coordination which has these effects not only makes for better utilized resources in the short run but can also reduce for both firms the need to undertake new investments *pari passu* with a continuing expansion of demand.

The foregoing arguments suggest that technical economies of scale in *production* are less often achieved through mergers than other types of scale economies. This finding

¹ Among other things, the choice between internal and external expansion will depend on the size of transport costs in relation to marginal costs within the relevant size interval. If transport costs are prohibitive or other obstacles prevent a transfer of increased output from the site of production to the market (e.g. tariffs, import quotas or other official controls), internal expansion will be rendered impossible. Similar arguments can no doubt be linked to horizontal mergers across national frontiers. That is to say, they may not increase the efficiency of production but very well that of other functions.

² The many mergers in brewing and dairying probably admit of this explanation, at least in part. It may also apply to certain mergers in the forest industry. It must be mentioned, however, that this kind of mergers is also caused by a desire not to increase the degree of competition by internal expansion of productive capacity (Scherer [1970], pp. 116-117).

³ About ten percent of the plant-shutdown notices that were given to the National Labor Market Board during the period 1963-68 can be assigned to mergers that took place after 1957.

is not contradicted by the few empirical analyses of the causes of mergers. These indicate that economies of scale generally come pretty far down on the list of merger motives. A comprehensive Canadian poll suggests that cost reduction due to achievement of economies of scale has been a relatively unimportant motive for mergers in Canada during the postwar period. In only five percent of the cases was the reportedly most important merger motive "to achieve economies of scale or to reduce costs" (Reuber & Roseman [1969], p. 78). Nor did this motive receive any support from a statistical test of the correlation between the relative merger frequency and the presence of scale economies (measured, for instance, as the change of firm size) in a number of American manufacturing industries during the 1950's (Gort [1969], p. 637). Weiss [1965] found, however, that an average of 90 percent of the productive capacity acquired by merger in six important industries during the period 1929-58 was of sub-optimal scale. Weiss' definition of suboptimality - he uses the "survivor technique" - is, however, highly questionable.

Many merger studies have not touched on the economies of scale motive at all or have ignored it by citing lack of data or methodological difficulties. Among the few that have treated this matter more or less exhaustively, some incline to the view that this motive has been of subordinate importance or that its significance could not be verified (Nelson [1959], pp. 103-104; Weston [1953], pp. 68-81), while others argue that the quest for economies of scale has been a prime motive behind many or even most mergers (Weston [1953], p. 66 and 85; Bushnell [1961], pp. 59-63; Höglund & Rydén et al [1964], pp. 43-45; Stacey [1966], pp. 43-44). What these studies mainly seem to have in mind are economies of scale at the level of the firm, with particular reference to the functions of management, research and marketing, while similar economies at the plant level are accorded a minor role.¹

¹ Economies of scale at the level of the firm are often achieved through conglomerate mergers. As was shown in Chapter 2, "diversifications within the same industry" has been estimated to account for a bit more than five percent of all the mergers in Sweden. That proportion may well be on the low side, made at the expense of the horizontal mergers. The American merger statistics generally do not distinguish between different kinds of diversifications, but ac-

Several of them have presumably also defined the term more broadly than has been done so far in this section. Scale economies of the broader type - dynamic and of more strategic character - are considered later on in the chapter.

80 percent of the mergers consummated in Sweden have been classified as horizontal. This could be interpreted to mean that the quest for technical economies of scale has been an essential merger motive. But horizontal mergers can have quite other motives, chiefly geographic extension of markets and restraint of trade. Somewhat stronger support for the hypothesis comes instead from the incidence of partial mergers, especially in the form of product switches. These seem to have occurred to a great degree in fragmented industries and between highly diversified firms with broad product lines and short production runs, e.g. within the iron and steel industry. Naturally, such mergers can also be motivated by efforts to restrict competition.

A conceivable but far from problem-free way to study the element of efficiency improvements in possible merger motives is to find out to what extent efficiency-raising reorganizations have been carried out after mergers. In the absence of detailed firm studies, such investigations are of course difficult to perform. As regards reorganized production, however, one indication could be given by the frequency of plant shutdowns in merged firms. We therefore examined the advance notices received by the National Labor Market Board for the period from 1963 to 1968. It turned out that about 20 percent of the notices announcing production cutbacks (partial or total) were given by firms who had combined by merging since 1958.¹ Put differently, about 30

according to one report "circular mergers" ("nonsimilar products that utilize the same distribution channels") between 1948 and 1964 would have accounted for no less than 50 percent of all major industrial mergers (Reid [1968], p. 23 and 76). In Canada, the motive stated for about ten percent of the mergers was "to diversify by adding related or complementary products or services" (Reuber & Roseman [1969], p.79). An Australian study gives a corresponding share of 35 to 40 percent.

¹ In half the cases production cutbacks were tantamount to plant shutdowns.

percent of the firms merged from 1958 to 1968 have, either immediately or a few years after the merger, closed down one or more of the plants brought together in the decision-making entity. This could be interpreted to mean that the merged firms have sought to exploit economies of scale and reduce costs by lengthening their production runs.¹

In Chapter 2 it was shown that the proportion of merged firms in Sweden has been lowest in the smallest size group of firms and that it has risen steeply for each size group. The same pattern in American industry has been held to signify that the achievement of economies of scale does not matter very much as a merger motive there (Gort [1969], p. 632). However, the relatively low merger frequency among the smallest firms could have quite different explanations, e.g. poor coverage in the sample or weak demand for the very small firms inasmuch as every merger requires a certain minimum input of scarce managerial talent. The conclusion would therefore appear to be audacious. But if the size distribution, with its very clear evidence, is to be at all useful in assessing the significance of scale economies as a merger motive in Sweden, we must conclude that it at least does not lend support to the scale hypothesis.

It is fairly common, both among economists and businessmen, to justify mergers with reference to the efficiency improvements that technical economies of scale can give. However, the available empirical inquiries into the significance of such economies as a merger motive are clearly inadequate and unsatisfactory. This is hardly surprising in view of the formidable methodological problems involved. Polls or questionnaire studies have serious limitations, the more so considering that the "social utility" imputed to resource-saving mergers makes it natural and attractive for many businessmen to point to this motive. For this reason, public statements of similar purport must also be interpreted with caution.

Be that as it may, if the economies of scale motive has indeed played an appreciable role as an incentive to merge in Swedish industry, this should be inferable from the varia-

¹ Other interpretations also suggest themselves, of course, among them a reduction of overcapacity.

tions of merger frequency between different industries and years. As far as the variations over time are concerned, it can be established that several American studies have found a positive correlation between changes in merger frequency and in the business cycle (Nelson [1959]; Weston [1953]). A similar connection has been observable for the development in Sweden. Provided that firms can be expected to try to save resources ("rationalization") through mergers to a higher degree during downswings than upswings, the correlation ought to be the other way around. However, the question is complicated by the risk of time-lags intervening between the impulse to merge and the announcement of the merger.¹

If a lag of one or two years is allowed for in such calculations, the correlation would naturally be quite different. Considering that the introduction of a time-lag inevitably entails the exercise of discretion, we have not undertaken any further analyses of mergers for their short-run fluctuations.² The results could be interpreted to support quite contradictory hypotheses.

For that matter, cross-section analyses of industry data are not free of problems, either, though they appear to offer a more traversable road. Thus, what characteristics should be expected from an industry that is marked by economies of scale? In other words, if the achievement of such economies has been a cardinal merger motive, which industries ought to show the highest merger frequency? Several hypotheses can be formulated.

If lowering the average total costs by using the best technique has been an important merger motive, then *merger-intensive industries* ought to show a faster increase of average firm size or a *faster decrease in the proportion of small firms* than less merger-intensive industries. Analogous correlations at plant level could test the significance of technical economies of scale in *production* as a merger motive.³

¹ See Figure 1 on page 38.

² The only information we found on length of the time-lag gives a figure of 10 months (Ansoff et al, p. 1:6).

³ A better measure would have been the change in productivity structure of different industries in accordance with the method used by Wohlin [1970] for the whole manufacturing sector. However, measures of this kind are not available.

Another distinguishing feature of merger-intensive industries ought to be *slow production growth*. If demand grows rapidly there will be more scope for building cost-minimizing plants with a given technology than if demand grows slowly or not at all. In the latter case the plant structure is more likely to be adapted to cost-reducing technical changes via mergers rather than internal expansion. Hence the more slowly production grows in a given industry, the more probable it is that firms opt for adjusting to changes in various parameters, including production technique, through mergers instead of internal expansion if the hypothesis on technical economies of scale is to receive support.¹

In the third place, if technical economies of scale have played a major role as a merger motive, we should expect industries marked by *keen competition* and *deteriorating profit rates* to show a relatively high merger frequency. This argument is based on the assumption that the firms in such industries are compelled to try to narrow the gap between existing and "optimal" industry structure, which can be done by merging. Unfortunately, profitability data for the period of investigation in question are not available for a sufficiently large number of industries. As indirect and admittedly rough gauges of the competitive pressure, one could resort instead to some measure of the industries' dependence on foreign competition, e.g. the import share or a combined import-export share measure.²

A statistical test of the connection between merger frequencies in different industries and some of the aforementioned variables will be carried out in the next chapter.

The efficiency improvements discussed above have pertained to adjustments to *given* technology, etc., i.e. static or technical economies of scale. Efficiency-motivated economies of scale may also be of a *dynamic* character, which

¹ The relatively slow increase in demand for milk and beer, taken together with technical changes of production and distribution in dairying and brewing, can offer a major explanation for the high frequency of mergers in these two industries.

² These measures are bound to be very rough. For instance, they take no account of the competition from substitute products and potential imports.

means paying more direct attention to the ability of firms to adapt themselves or to initiate important technical and other changes. For example, large firms may be in a better position than small ones to acquire and make more rational use of resource-saving, indivisible factors of production, such as special machines, specialized skills and certain types of marketing inputs (e.g. nationwide advertising), etc., which require large financial resources and large production volume to be taken advantage of. In many cases company size may crucially determine which firms in an industry are going to be at all able to apply a given production or selling technique and thus survive in the long run.¹

Mergers which occur to exploit this type of "dynamic" scale economies are typical instances of market imperfections (e.g. on the capital market) and of how technological change raises the minimum optimum plant or firm size. This motive is mentioned rather often when mergers are made public, e.g. in announcements of this type: "... this and that minimum volume is necessary if we in this industry are going to be able to carry out a long-term research and development program and devote ourselves to international marketing".

This type of "threshold-thinking" is no doubt a reality behind quite a few mergers. However, it has not been susceptible of proof in the empirical studies that have been made of the connection between firm size on the one hand and research intensity and innovation propensity on the other. In the United States large firms have been found to spend as little or even less a proportion of their sales revenue on research and development than small firms, and the same would apply to diversified firms compared with undiversified (Mansfield [1966]; Schmookler [1959]; Adams & Dirlam [1966]; Scherer [1965]).²

¹ In certain cases indivisible production factors (such as consultant services, data processing and "brokerage houses") can be bought from the outside of access gained to them by cooperating with one or more other firms.

² Accounts of these investigations are given in the *Economic Report on Corporate Mergers* [1969], pp. 89-95. However, it may be doubted whether the company sizes indicated therein for small firms are really so small as to make them fall below the "threshold" for certain types of activities. Besides,

The "dynamic" economies of scale can be assumed to have special importance in industries marked by capital-demanding and rapid technological advance and rapid or pervasive market changes. Examples are the computer industry, certain segments of the transport equipment industry (e.g. aircraft) and the nuclear power industry. The barriers to entry into these industries are extremely high, the concentration of firms is very high and difficulties for the smaller firms are often considerable. These same industries have also been characterized by a spate of very large mergers and other combinations, both in Europe and the United States.¹

If this hypothesis is correct and if this type of economies of scale-motive has been essential, then industries where *technology and market conditions have undergone rapid, pervasive and capital-demanding changes* ought to show especially high merger frequencies. To measure such changes with reasonable precision is naturally very difficult. A rough measure of technological intensity and the significance of technical changes might be obtained by singling out the proportions of technical personnel employed in different industries. The market changes could be measured analogously. An attempt will be made in the next chapter to test the relationship between these measures and a merger rate in different industries.

S t a b i l i t y a d v a n t a g e s

Large firms are often thought to enjoy considerable economies of scale which cannot be attributed to the efficiency improvements that have been discussed so far. These advantages could also be described as dynamic or *strategic*, and are especially important in industries marked by strong oli-

the measure used is questionable. The investigations are therefore hard to interpret with respect to the significance of the described type of scale economies as a merger motive. The Federal Trade Commission has cited their findings as arguments against the need to merge in response to research, technological advance, etc. (*Economic Report on Corporate Mergers* [1969], p. 95).

¹ Examples: The Anglo-French Concorde project; General Electric's purchase of Bull, a French computer firm; nuclear cooperation between AEG and Siemens; the U.S. aerospace merger between McDonnell and Douglas.

gopolistic competition where relative positions of strength held by the member firms will determine their ability to act independently.

The stability of a firm is very much bound up with its financial strength. A strong financial base makes it possible to undertake risky commitments to research, product development, promotion of new markets, etc. If such projects fail or take a long time to pay off, the financially strong firm can cope better than a weaker one with the strains without jeopardizing its existence. Hence large firms, other things being equal, may also be expected to be more inclined than small firms to carry out risky projects of this kind.

On oligopolistic markets financial strength has particular importance when it comes to deterring potential or existing rivals from upsetting the state of competition. Every firm tends in such sectors to "throw its weight" in a way that prevails upon competitors to consider carefully the risks of countermeasures before they decide to act aggressively. In consequence, the costs of disturbing a given market structure go up for all firms in the aggregate, at the same time that greater security is conferred on the large firms. Analogously it follows that disturbances in markets characterized by oligopolistic competition furnish incentives to those firms whose competitive situation has been worsened to attempt to restore the balance. This may require increased financial strength.¹

In that "game" mergers can play an important role in two ways. First, firms that have been adversely affected by a changed competitive situation may find it compatible with their interests to join forces to restore the balance or to alter it to their own advantage. Mergers on oligopolistic markets may thus have cumulative effects. Second, the rigidity of industry structure and the high costs of changing it may leave the acquisition of a competitor as the only means whereby a growth-minded firm can increase its market share.

¹ Analyses of such "Monte Carlo" situations have been taken to sophisticated lengths by the research on operational gaming and conflict theory that also covers the relations between animals, individuals, nations, etc.

The spreading of risks that diversification can achieve may similarly be counted among the stability advantages of mergers. If a firm allocates its resources to several unrelated lines of business or operating divisions, it will reduce the probability of losing on the total business. This may be the case even if the acquired line is associated with higher risks than the original line, but subject to one proviso: the profit prospects for both lines must not be positively correlated (Alberts [1966], pp. 269-270). Vertical integration may also confer this type of stability advantages.

The reduced risk of loss for the whole enterprise that can come from merger enhances the possibilities of taking risks in every single market area.¹ An increased spread of risks can also relate to seasonal or cyclical fluctuations in demand. If two firms run risks that are temporally out of phase, both of them will gain from a merger. Sharp fluctuations on product markets can also be evened out through vertical integration.

The quest for greater security and a capability to assume more risks has been identified as a cardinal motive behind many mergers and other combinations (*Industrins struktur och konkurrensförhållanden* [1968], p. 153). But this hypothesis is also hard to prove without detailed studies of individual firms.² None the less, some indications as to the significance of this motive are given by the incidence of straightforward diversifications in the total merger picture. In Sweden diversifications across industries have accounted for just over 7 percent of the total number

¹ If the management of a firm maximizes the welfare of its owners, it should leave it to them to minimize risks by selecting a diversified share portfolio (Alberts [1966], pp. 270-272). However, that conclusion can only apply to firms whose shares are traded on a market.

² Some empirical studies have demonstrated pretty much the same average profitability for firms in different size groups (or even higher profitability for small than large firms), but at the same time found considerably greater profitability variations over time and between firms among the small firms (Singh & Whittington [1968]; Samuels & Smyth [1968]). This could be interpreted to mean that large firms do a better job of stabilizing profits and spreading risks. Another admissible explanation, however, is that large and small firms have different goal functions.

of mergers, of which nearly 4 percent represent acquisitions by holding companies. As was shown in Chapter 3, the corresponding proportion for the major mergers in the U.S. rose during the period 1948-68 from zero to 44 percent. In Canada, a principal motive stated for five percent of the mergers was "to diversify into a new field" (Reuber & Roseman [1969], p. 79). For Australia, lastly, the proportion has been estimated at over ten percent for the period 1946-59 (Bushnell [1961], p. 82). The straightforward diversifications thus account in most of the investigated countries for around ten percent of the postwar mergers.

To be able to test the significance of the risk-spreading motive one should have access to data on the extent of diversification mergers in different industries. Unfortunately, no such information is to be had either in Sweden or elsewhere. Another possibility would be to test the connection between merger frequency and an industry's susceptibility to economic fluctuations, where the latter could be measured by, say, its share of exports. The measure is based on the assumption that economic fluctuations are primarily spread via international trade, as in Sweden.

However, probably the best way to test the significance of stability as a merger motive would be to tie in with what was said above about the expected correlation of the competitive situation and the growth rate with merger frequency in different industries.

These considerations suggest that industries with *weak expansion* and/or *oligopolistic competition* ought to have relatively high *merger frequency* if any major weight is attached to the stability motive. The growth rate enters into that group of explanatory variables which were discussed in the section on technical and static economies of scale, for which reason it may be difficult in a statistical test to distinguish them from the dynamic economies of scale. However, the analysis of merger activity among large firms given in Chapter 7 may offer a better instrument for getting at the connection between merger frequency and expansion or growth rate.

The degree of concentration is a problematical explanatory variable, too, because it will be used to test other merger motives.

F i n a n c i a l c o o r d i n a t i o n g a i n s

The different kinds of scale economies that were taken up in the preceding sections have tied in with financial aspects. However, the linkage has been indirect. Besides, certain other financial merger advantages did not lend themselves to treatment under the chosen headings. A separate section to consider financial advantages that stand to be gained from mergers which have not been discussed so far is therefore deemed to be in order.

Given the manner in which the Swedish capital market functions, financing difficulties of different kinds may arise when expansive family-owned firms pass certain critical stages - "tresholds" - in the process of growing. Specialized skills must be engaged, raw materials, intermediate and finished products in inventories require increased operating capital, office and factory space becomes too cramped, market investments must be made, extensions of credit to customers and suppliers may be necessary, and so on.

For family-owned enterprises with potentials for growth on the demand side, financing may well pose a serious impediment to continued expansion. If the business is to grow and also pay for necessary rationalizations and enlargements, more capital must be raised. An often unfavorable ratio between equity and debt, may make potential lenders unwilling to advance necessary credit even if the so-called grey market can sometimes offer a solution, at least temporarily. Besides, family-owned firms enjoy no more than limited access to the long-term credit market nor, as a rule, can they appreciably increase their capital stock by issuing new shares. The low number of family-owned firms that have made stock market debuts in recent years suggests that this route is not open to very many firms, either. If in a situation of acute capital shortage the family-owned firm does not get help from any of the special credit intermediaries that serve small firms (trade associations, the Industrial Credit Bank, State-guaranteed loans, the Swedish Federation of Crafts and Small and Medium-Sized Industries, etc.), a sale may become unavoidable as an alternative to defaulting payments or going out of business. If insufficiency of capital thwarts an otherwise favorable development, a transfer of ownership to

a larger firm or to a holding company may be an economically better alternative than to go on as before without any chance to exploit the expansion potential.¹

Shortage of liquidity in the selling firm may constitute one motive for the supply of firms on the corporate market but not the demand for them. That is to say, the buyer must be impelled by some other motive if a merger is to be consummated. Shortage of liquidity may therefore be designated a "partial" merger motive, one that primarily stems from imperfections in the functioning of the capital market.² The effect of liquidity-shortage should therefore be tested on another dependent variable than merger frequency, namely the supply of firms.

Obtaining empirical data on the supply of firms is obviously impossible. And even if the merger frequency is taken as a proxy for that supply, it is probably difficult to obtain cross-section data for industry aggregates that sheds light on the availability of funds. Indeed, in testing the role of liquidity-shortage, time series analyses ought to be a more appropriate method. However, the empirical data does not permit construction of a merger-frequency time series with specific reference to family-owned firms. Besides, the method would not solve the problem of a time lag discussed earlier. It therefore seems as though the most appropriate method for testing the *liquidity-shortage hypothesis* is to study the *financial situation and the sales growth* of individual firms that have been acquired. Such an analysis will be undertaken in the next chapter.

¹ Out of 91 mergers carried out by Swedish holding companies during the period 1962-66, the principal inducement to sell reported for 17 of them was "financing motives" owing to "rapid expansion", "financing difficulties", "difficulties of expanding", etc. (*Kreditmarknadens struktur och funktionssätt* [1968], p. 70. This is one of the reports put out by the Committee on Economic Concentration.)

² A situation where shortage of liquidity constitutes a "complete" merger motive could occur when two or more firms, each hard up for capital on its own, merge and thereby attain sufficient size to enable them to mobilize the necessary capital increments on the open market. The same can also be said of the international capital market. Then, too, a merger may well lay the foundation for a stock market debut and thereby open up opportunities for contributions of equity capital. An example of such a merger is the formation of Coronaverken in 1959.

"M o n o p o l y" p r o f i t s

Coordination gains due to price effects can be created by curtailing competition in a market or by measures which counteract a foreseen intensification of competition. A merger that changes competition in the direction of greater imperfection is defined here as trade-restraining ("monopoly merger") and its coordination gain consists of increasing the ability of the merged firm (compared with the sum total of the unmerged firms) to behave monopolistically in different markets. In other words, the reference here is to a partial short-run merger effect. Whether market performance improves in the long run on account of the merger is a question that, while admittedly important from a more general view point, is scarcely relevant to an assessment of motives for individual mergers.

The probability that "monopoly mergers" will be consummated will of course depend on the possibilities for reaping monopolistic profits in a given market. However, this does not mean that "monopoly mergers" could not occur in industries characterized by perfect competition: for if all or most firms in such an industry are merged in a single entity, the entry of new firms (attracted by the prospect of monopolistic profits) will take so long that the merger monopoly will have time to earn profits before the new equilibrium is established. The size of monopolistic profits is determined by the size of barriers to entry, but also by the flexibility of capital equipment and the rate of growth of demand. Both the latter factors will determine how fast the merged firm reduces its production capacity in response to the entry of newcomers, and indeed of whether it needs to do this in the first place.¹

The perfect-competition model is assuredly irrelevant for purposes of describing the *actual* merger behavior of firms. Markets where competition is perfect are easily counted, and the practical difficulties of carrying out industry-wide mergers are no doubt particularly great in

¹ For a detailed description of this mechanism, see Stigler [1950].

those very industries with a huge population of firms.¹ However, the model has been used - by Stigler [1950] - in trying to explain the heavy merger wave in the United States around the turn of the century, when industry-wide consolidations were the most common merger type (Nelson [1959], pp. 28-29). Between half and two-thirds of all the firms that were merged from 1895 to 1904 thus came to be market leaders who controlled at least 50 percent of the industry in question, which has been interpreted to mean that the monopoly cum restraint-of-trade motive accounted for the greater part of merger activity during this period (Nelson [1959], pp. 100-103). Other writers have arrived at similar conclusions on other grounds.²

Yet the monopoly-merger model has merit because it has shown that monopolistic profits can arise from mergers even if nearly perfect competition is assumed. When the model is adapted to more realistic assumptions as to form of competition, the probability of mergers with restraint-of-trade motives becomes even more likely. This applies above all to the assumptions governing barriers to entry and degree of concentration. The greater the barriers to entry and the higher the degree of concentration (i.e. the less perfect competition is) in a given industry, the greater is the probability of mergers that aim to restrain trade. This means that markets characterized by oligopolistic competition ought to have relatively great merger propensity just because the market form permits more or less decidedly monopolistic or oligopolistic corporate behavior. According to the Committee on Economic Concentration, this market form is the most common in Swedish industry (*Industrins struktur*

¹ The Swedish merger data includes only a handful of mergers embracing more than two firms.

² "Thus the great merger movement at the turn of the century was asserted to be the immutable product of large scale requirements. Only after radical and irreversible changes in the industrial structure had been accomplished did we learn the transparency of these arguments. The principal motive of the first movement was monopoly" (*Economic Report on Corporate Mergers* [1969], p. 85). Also, see Bain [1968], p. 200 ff; Markham [1955]; and Scherer [1970], p. 112.

och konkurrensförhållanden [1968], p. 21).¹

The monopoly model here discussed relates to the effects of horizontal mergers in the product markets. But as already noted, market advantages through restraint of trade can also be gained "vertically". This can happen in two ways. The "monopoly firm" can carve out a monopsony in relation to suppliers of raw materials, intermediate goods, transportation services, etc. As a result price reductions, "captive" discounts and "buck-passing" are forced on these firms by the "monopsonist". The monopsonist is also given broad scope for playing off competing suppliers against one another by overt or covert threats to take his business elsewhere.²

Restraints of trade through mergers can also arise in connection with vertical integration. A producer of finished products (e.g. cars) can, by buying out a dominant producer of essential material inputs (e.g. bodies), influence price, quality and other terms of his delivery to his own advantage as against his own competitors on the finished products market. The advantages of competitive strategy attendant upon such vertical mergers will be especially great if the input article is scarce, very expensive or otherwise hard to substitute. This will hold true for a non-reproducible raw material such as iron ore or one that is slowly reproducible, such as standing timber. The effect of this type of vertical integration will be to replace the allocation of resources that is normally determined in a competitive market with an administrative allocation within the firm. The same applies to vertical forward integration. A firm that takes over the purchasers

¹ The Committee's concentration data cannot be directly translated into the facts of competition in different industries since they disregard the impact of competition from imports and substitute products. By and large, however, it may be assumed that the Committee's data and conclusions point in the right direction.

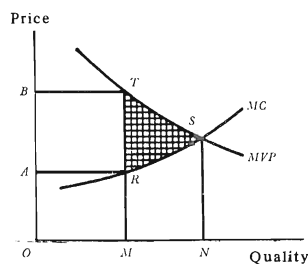
² If the monopsony profits are considered overly unfair by those who are affected by them, countermoves may be triggered off in the form of vertical integration. For example, supply cartels of raw material producers have often run into trouble from customers who try to integrate backwards (Stigler [1951], p. 191).

of its products can protect the whole or a part of its sales by a segmentation of the market. Examples can be taken from the forest industry (pulp-paper), the paint industry and the automotive industry (producer-dealer).¹

Similar arguments are applicable to vertical mergers whose animus is to avoid heightened competition. Examples are situations where a supplier or customer may be expected for some reason (dissatisfaction, weak financial position, "family reasons" for selling the firm) to curtail or sever business relations with a producer. The latter will risk being cut off from important deliveries or from a part of his market outlet when a competitor takes over or reaches a delivery agreement with the earlier supplier/customer. This can motivate a takeover which will preserve the "vertical restraint of trade". The argument can also be applied to situations where a supplier/customer is deemed to be on the verge of bankruptcy. The bankruptcy could still impair the producer's competitiveness even if there were no competing buyer.

Vertical integration may be considered as having special importance on oligopolistic markets as well as where the relations between successive links in the chain of production are vital to the profitability of each link. In

¹ A special case of vertical integration is when allocation of resources through the market is replaced by an administrative one through interventions in the pricing process, e.g. public price control or monopolistic pricing. The diagram below shows that vertical integration may then pay off as a means of circumventing the price control (Stigler [1951], pp. 190-191).



At the controlled price OA, the quantity produced is OM. This quantity has a marginal value of OB to the buyer. Market pricing (price NS) would give buyer and seller an extra profit, represented by the hatched triangle TSR. This profit can be easily realized by vertical integration.

such a situation the integration of different links in one decision-making entity can confer considerable advantages in the form of increased security and the degree of integration will bear decisively upon the relative strength of the firms (*Industrins struktur och konkurrensförhållanden* [1968], p. 43).

The last-discussed type of strategic advantages from restraints of trade appears to be treated in a rather off-hand manner in the literature on mergers. However, it can be supposed that particularly great store is set by these effects in an economy where oligopoly is the prevailing mode of competition and where the primary concern of the anti-trust agencies is to monitor and control the price effects of restraints of trade. By virtue of mergers that entail horizontal or vertical expansion, a firm can improve its relative strength and its capability for taking risks, invest in research and product development, differentiate products with the aim of protecting market positions, etc. For purposes of analyzing the competitive advantages that firms can gain from merger it would appear to be more fruitful to have such a somewhat broader definition of the restraint-of-trade concept instead of regarding the degree of monopolization in an industry as a narrow measure of the possibility for firms to exploit a sloping demand curve. This view implies that the boundary line between mergers which aim at restraint of trade and stability, respectively, will be rather fluid. It is also consistent with the assumptions of firm behavior set out in Chapter 4, where great weight was attached to management's search for stability, security and the like as complements to the profit goal.

Evaluations of the role played by the restraint-of-trade motive in foreign merger activity vary. As far as the United States is concerned, the conclusions reached on this matter seem to be strongly influenced by attitudes on the part of the observer to the monopoly problem in general.¹ As has already been noted, some investigators contend that the achievement of a monopoly position was a prime

¹ This is illustrated, for instance, by the discussion pursued with reference to Markham [1955], pp. 182-212.

mover of the merger wave around the turn of the century, and that it continued to exert a considerable influence even later notwithstanding the supervision of anti-trust legislation.¹ Others argue that the monopoly motive was and still is of relatively minor significance and that other merger motives are and have been more important. Even so, it seems to be generally agreed that the role played by the monopoly motive in U.S. merger activity has diminished over the years. To be sure, some large-scale horizontal combinations did take place during the second great merger wave of the late 1920's, but the element of vertical and diversified mergers was much greater than before.²

The restraint-of-trade motive is thought to have stayed just as weak - or grown even weaker - during later periods. Thus the former head of the Antitrust Division of the Department of Justice, Willard F. Mueller, in testifying at a Senate hearing, doubted whether this motive now has any importance worth mentioning (*Economic Concentration* [1965], p. 522). By the same token the 1940's have been described as a merger period without appreciable aspirations to monopoly. One indication of this would be that most mergers took place with one big firm acquiring a much smaller one and that the seller took the initiative in the majority of instances (Butters, Lintner & Cary [1951], pp. 308-309).³ Better support for this claim

¹ Stigler dates the end of "monopoly mergers" at 1904, "when the Northern Securities decision made it clear that this avenue to monopoly was closed by the antitrust laws". (Stigler [1950], p. 27). This decision was taken within the framework of the Sherman Act, one of whose aims was to prevent monopoly mergers. "The ghost of senator Sherman is an ex officio member of the board of directors of every large company" (Stigler [1950], p. 31).

² As has been shown, however, even such mergers may be dictated by endeavors to restrict competition.

³ These arguments must be considered rather untenable: the fact that the seller has taken the initiative does not rule out that calculated gains from restraint of trade may have materially influenced the buyer in his decision, and the fact that the buyers have been the larger parties may reflect their possession of a broader product line; thus the buyer's output within the seller's product field need not have been greater for that reason.

comes from a statistical test of the correlation between merger frequency and industry growth in the U.S. during the 1950's. The correlation turned out to be positive, i.e. contrary to what one should expect if the restraint-of-trade motive had been essential, since in the absence of more stringent competition firm may grow more easily in faster than in slower growing industries (Gort [1969], pp. 629-637).

The relatively sharp increase in merger activity in Australia since World War II is held to have been no more than negligibly affected by the restraint-of-trade motive. That motive has been considered cardinal for less than ten percent of nearly 700 mergers that were consummated in Australia from 1946 to 1959.¹ In Canada, the main inducements reported for barely two percent of about 1,200 domestic manufacturing mergers from 1945 to 1961 were "reasons directly related to the competitive situation" (Reuber & Roseman [1969], p. 78).²

What significance have the endeavors to restrain trade had for mergers in Sweden? Several examples may be cited of industries that have attained a high degree of concentration over the years on account of mergers. Cases in point are the match industry, which was concentrated in a single firm as far back as 1917; the cement industry; the sugar industry; and in recent years the brewing industry; the packaging industry (tin and glass); the stone processing industry; and the manufacture of lead accumulators, taximeters, wallpaper and bottled-gas equipment, to mention just a few examples chosen at random. It seems probable that the mergers which produced this concentration have been dictated, at least in

¹ By contrast with conditions in the United States, firms that wanted to restrain trade were not deterred by law from reaching cartel agreements instead of merging (Bushnell [1961], pp. 77-78).

² These qualitative statements should be interpreted with great caution. There is risk that the respondents have consciously or unconsciously tended to underestimate the importance of the restraint-of-trade motive.

part, by restraint-of-trade considerations.¹ However, no accurate assessments of the significance of the "monopoly motive" in Sweden can be made on this loose foundation.²

If the probable incidence of monopoly motives can be assumed to fall with a rising proportion of mergers initiated by the seller, that would indicate a relatively small component of pure monopoly mergers in Sweden.³ Even so, no decisive weight can be attached to this argument. After all, while the buyer's interest in the transaction may well have been dictated by restraint-of-trade considerations, this motive need not have played any role for the seller's inclination to put his firm on offer.

It is obviously impossible to say anything with reasonable certainty about the significance of the restraint-of-trade motive for Swedish mergers without a more detailed analysis. Thus, what characteristics would typify an industry with high merger frequency if the "monopoly motive" has played a major role in quantitative terms?

For reasons discussed earlier, the *barriers to entry* should be *high*. The industry's *degree of concentration* and *share of imports* can be used to measure this.⁴ It has also

¹ Long before the packaging firm of AB Plåtmanufaktur started to concentrate the production of tin and glass containers by absorbing the manufacturers, the then managing director, Knut Laurin, publicly declared that he intended to carve out a monopoly position for his firm in Sweden.

² The official Swedish policy of protectionism in the late 19th and early 20th century, which among other things embodied prohibitive tariffs on food products, is believed to have contributed to the advent of some monopolistic firms in Sweden during this period (Jörberg [1961], p. 192).

³ A survey of 91 firms acquired by development companies from 1962 to 1966 shows that 54 of these acquisitions were initiated by the seller, who was also identified as the probable initiator in the majority of 14 more cases (*Kreditmarknadens struktur och funktionssätt* [1968], p. 70). Impressions from conversations and interviews with managers involved in merger projects, as well as from press comments and statements in connection with mergers, also suggest that the seller initiative has been important.

⁴ For a penetrating discussion of this matter, see Bain [1956].

been shown that competition ought to be imperfect, i.e. the industry is characterized by oligopoly. This variable can be expressed by the same concentration measure.¹ Further, the industry's *growth rate* ought to be *slow* since the internal expansion of firms would otherwise tend to increase competition on account of overcapacity in the industry. Whether any connection can be detected between these measures and merger frequency in the industries investigated is a matter that will be tested in the next chapter.

C o o r d i n a t i o n g a i n s o w i n g t o l e g a l a n d i n s t i t u t i o n a l f a c t o r s

If taxation or other institutional factors systematically favor mergers, that will confer coordination gains for this reason alone. In Sweden such a systematic stimulus to merger was provided up to July 1, 1966, and to some extent thereafter as well, by the clear tax favoritism accorded to capital gains compared with incomes from employment and capital. Before that date shares and other certificates of ownership interest in firms could be sold tax-free after being held for five years, whereas dividends and salary withdrawals were taxed on top of other incomes, i.e. at marginal rates of up to 80 percent.² Provided that plowed-back profits are mirrored in the value of a firm and thereby raise its price in a sale, such tax rules can encourage firms to plow back their profits to the greatest possible extent. The shares can then be sold at a convenient time without having to subject the resultant capital gain to a tax levy. In that way the farsighted owner of a family business, who figures early on that he may some day sell his firm for one reason or another, can plan for a sizeable growth of his private fortune. Even an unplanned

¹ In the ideal case such a measure should also allow for the incidence of competition from substitutes.

² The current rules stipulate a maximum ten percent tax on the selling price. Exemptions are permitted in certain cases, and according to tax lawyers considerable advantage has been taken of this facility.

sale can, owing to the plow-back stimulus in a given situation, stand out as highly profitable, e.g. if the owner's total wealth has a poor risk spread or if he wants to withdraw a part of it for consumption. Hence the total effect of the ratio between capital-gain and capital-income taxes will be to push the seller's minimum price downward, perhaps even below the present value of future profits. The taxation system thus tends to widen the value gap between buyer and seller and consequently, other things being equal, increase the margin for settlement. In spite of the more stringent capital gains taxation of shares adopted in 1966, a great deal of this imbalance remains.¹

Another type of coordination gain from merger is related to the possibility of carrying over losses between parent companies and subsidiaries. This permits taking advantage of historical or expected losses that are otherwise not deductible. As a result a firm with a negative present value can still be appraised above zero by a buyer who wishes to avail himself of this facility. That this type of transaction occurs is evident from advertisements for "losing companies" in newspapers and trade journals.²

The inheritance tax is sometimes mentioned as a merger incentive. Even though the estate tax does not help to create coordination gains, it is legitimate to say a few words about its possible merger effects. Since 1959 the inheritance tax is levied at the rate of, for example, 28.5 percent on the portion of an estate amounting to 500,000 Skr and at 36.3 percent on a portion of one million Skr (Bratt & Fogelklou [1960], p. 120).³ Obviously, having to pay these rather considerable sums can impose heavy strains on liquidity. If the heirs have no funds of their own to pay the inheritance tax, or should they be disinclined to do so if the

¹ For a penetrating discussion of this matter, see Mutén [1968], Chap. 2-3. One indication of the incidence of the described effect is the sharply increased number of mergers that took place while the tax change was being debated at the end of 1965 and the beginning of 1966.

² For a detailed discussion of this matter, see Ekehorn [1969].

³ Pertains to tariff class 1, i.e. next of kin (spouse and children). A proposed amendment was put forth in 1970 calling for a change of tax classes and tax rates.

firm does not have a sufficiently large liquidity reserve of its own and if no endowment insurance has been contracted for to cover the tax, a sale of the firm may appear necessary or desirable to its owners. Naturally, this effect will be reinforced if the heirs disagree over the firm's future, if none of them cares to take over its management, and the like.

Presumably the only way to investigate the merger-inducing effects of taxation is to analyze firms individually. That has not been done in the present study. However, a hint that this motive may have had some importance is given by the great increase in the number of mergers in 1965, the year before capital gains tax was "tightened". A very simple test of the tax motive will therefore be performed in Chapter 6. It proceeds from the hypothesis that, on an average, the owners of acquired firms are relatively old and above all older than company owners in general.

MERGERS WITHOUT COORDINATION GAINS

As was shown in Chapter 4, mergers can turn out profitably for both buyers and sellers of firms without giving rise to coordination gains. The presence of a value gap between buyer and seller is a necessary condition for merger. Inasmuch as a value gap can exist whether coordination gains are anticipated or not, it is also a sufficient condition, given that lack of information does not prevent this.

The arguments for this were set out at length in Chapter 4 and will therefore not be repeated here in detail. It will suffice to recall that a value gap without coordination gains can be mainly traced to differences between existing and potential owners of firms in regard to access to information and desired rates of return, which in their turn are determined by opportunity cost, attitudes to risk, and liquidity preference. These differences would tend to even out in a perfectly functioning market for corporate ownership. But first of all this market does not function perfectly: indeed, the vast majority of firms in Sweden will not be found on any such market; and in the second place, market equilibrium would constantly tend to be disturbed by

changes in the environment of investors and their assessments of the future. Given these caveats, what type of changes can be thought of as prompting an increased frequency of value gaps or a greater discovery of existing value gaps?

Gort [1969] has contended that value gaps of the type required for mergers to occur are produced by certain economic shocks. This happens in two ways. First, these disturbances *randomly* change the rank-order between different investors in terms of their appraisal of a certain firm, which means that some potential corporate buyers will be induced by the disturbance to appraise the firm higher than they did earlier and/or higher than its actual owners. Second, economic disturbances make it harder to predict the future. The increase in the number of value gaps, however, is not due to the fact that the disturbance has made every investor more unsure - or sure - of his future assessment. The main reason is that historical data on which to base forecasts become less useful than before, which tends to increase the range of alternative forecasts as investors form new expectations. Provided that the changed assessment of the future by investors does not *systematically* lead to reduced appraisals of firms by potential buyers in relation to the actual owners, the result will be to increase the number of positive value gaps; in other words, more potential buyers of firms will attach higher values to them than their own owners. If this effect is to arise, it will suffice to have a random change in assessments of the future made by investors (Gort [1969], p. 627).

The "forecasting structure" can be changed by a succession of different disturbances. Gort contends that the most common are rapid changes in technology and in the prices of securities.

This analysis can readily be linked to the discussion in Chapter 4. It can also be amplified at several points. Gort assumes that economic disturbances *randomly* change the rank-order between investors on the value scale, whereby value gaps are created. However, it can be considered likely that changes of this type do not only have random effects, but that they also *systematically* push the rank-order towards

a greater number of value gaps than would follow from a random influence alone. Hence the changes between investors in terms of their appraisals would predominantly serve to raise the appraisal of a potential company buyer to a higher degree than that of its present owner (or the latter's appraisal is lowered more than that of the potential buyer), through which the probability of mergers would increase as compared with the case of a randomly operating "disturbance". The explanation for this bias would be that the great number of owners of family firms are less capable than potential buyers of adjusting to and foreseeing the consequences of different kinds of economic disturbances, e.g. rapid changes in production techniques or in markets. The potential buyers of firms are here assumed to be professionals, usually employees of large listed firms well endowed with financial and manpower resources to finance assessments of and adjustments to different kinds of disturbance effects. As it happens, the majority of mergers in Sweden have involved the acquisition of a small or medium-sized family business by a large listed firm.

A similar kind of bias is traceable to the effects of disturbances on the ability to predict the future. Here again Gort assumes the operation of a random influence, which of itself suffices to make value-gap producing "economic disturbances" probable as a sole cause of mergers. But this hypothesis will become even more probable if one assumes that the difficulties of making forecasts increase more among existing owners of firms than among potential buyers of these firms. Such an assumption is not as far-fetched as it sounds considering the just-mentioned differences between the buyers of firms (read "large firms") and the owners of firms (read "family businesses"). Hence the disturbance effect would not be proportional across the whole value scale.

These two amplifications strengthen the appraisal-gap theory as an independent and sufficient explanation of why mergers take place. To them a third can be added. The appraisal-gap producing "disturbances" need not be confined to the "economic" variety. One can imagine other types of "disturbances" having similar effects, e.g. social, political and institutional changes. Given below are a few examples,

which do not reflect our own evaluations but are based on observations of the Swedish public debate in recent years.

The pessimism felt by some proprietors can systematically increase more than that felt by others in consequence of changes in their assessments of the political future ("the government is unfair to small business", "rates of net wealth tax will go up", etc.). These businessmen may perceive changes in the social climate in terms of "a growing clamor for public control of private enterprise and for worker participation in management", "increased demands for social benefits", "employees are less willing to work and to assume responsibility", "less sympathy for the contribution of small business to the community", "more bureaucracy and red tape", and so on and so forth in a way that makes them less inclined to go on owning and running a firm. As a result their liquidity preference and desired rates-of-return are raised, which makes them even more disposed to sell the firm. Naturally, similar reactions are not permitted to make themselves felt in the same way in the large firms, most of which can be described as "going concerns" with dispersed ownerships and salaried managements. It appears not improbable that the great increase of mergers in Sweden, especially since the mid-1960's, can be partially explained by these and similar changes of attitudes, caused by certain "non-economic disturbances".

Similar effects could also arise in the absence of external disturbances as discussed above. It can be surmised that as a proprietor grows older, he will raise his liquidity appraisal and probably also begin to plan for how his firm should shape out when he retires. The greater store he sets by sure cash in hand today over less sure cash in hand tomorrow may be reason enough for him to put an appraisal on the firm lower than that of a potential buyer. If on top of that come difficulties of solving the succession problem satisfactorily when a new generation is ready to move in - or already has - the owner's relative appraisal of his firm may drop even more. Such an effect can arise, for instance, if the family lacks a qualified or willing successor, if a qualified successor does not have the wherewithal to buy out other heirs who demand this, if ordering the suc-

cession causes discord, or if the heirs cannot pay the inheritance tax without selling the firm.¹

Empirical support for the occurrence of such effects has come from several foreign studies of mergers. Out of a number of specially analyzed mergers in the United States during the 1940's, half of sold firms with assets of less than 15 million dollars were reported to have been motivated by considerations of the above-discussed type ("management considerations") in the selling firm. Among the larger firms that were sold this motive recurred once every four times (Butters & Lintner & Cary [1951], p. 214). In Australia, at least five percent of the mergers during the 1950's occurred in connection with the death of the owner/manager, and management reasons for selling are deemed to have weighed just as heavily in Australia as in the United States (Bushnell [1961], pp. 49-50). Very great importance has also been ascribed in Australian sales of firms to tax considerations. In the American study tax motives are estimated to have mainly prompted the sale of 40 percent of the firms in the size class with assets of 15-50 million dollars, one-third to one-fourth of the firms in the group 5-15 million dollars, one-fifth of the group with assets of 1-5 million dollars and only a handful of the very smallest firms (Butters & Lintner & Cary [1951], p. 205). Since the greater part of the firms bought out in Sweden have been family businesses, the same type of considerations may be assumed to have been relevant here, too. However, the picture is complicated by the imponderabilities of different tax laws. None the less, support for the hypothesis on the significance of succession problems comes from a special investigation of acquisitions made by holding companies from 1962 to 1966. In 42 of 91 cases these problems were specifically pinpointed as the selling motive in whole or in part (*Kreditmarknadens struktur och funktionssätt* [1968], p. 70).²

¹ Since a buyer is normally interested in no more than a controlling ownership interest, the issue in such situations usually boils down to selling the whole firm or making no sale at all.

² For a detailed discussion of succession problems in family-owned firms, see Christensen [1953].

It follows from the foregoing that *appraisal gaps* as triggers of mergers will tend to arise *during periods and in industries* that are characterized by certain *economic, technical* and *social "disturbances"*. Accordingly, such periods and industries would be marked by higher merger frequency than technically, economically and socially calmer and more stable periods and industries.¹ Generally speaking, we can then first of all note the oft-made assertion that changes in the economy are moving faster and faster and that the 1960's, more so than the 1950's, was a "decade of change" in a great many respects. The surge of technological advance is said to be gathering more and more speed; new raw materials, products, processes, etc. are emerging and old ones disappearing at a more rapid rate. Since the late 1950's markets have changed faster. Technology and changes in the relative costs of transportation, tariff reductions and the dismantlement of other trade barriers, convertibility of currencies, the elevation of real incomes - all this has contributed towards a market change that some firms perceive as a threat ("increased competition") while for others it is the beckoning of opportunity ("bigger market"). The social changes have unfolded more rapidly, involving a greater questioning of traditional values, augmented criticism of the "business community" (which for the most part consists of family enterprises), increased employment alternatives for younger members of the family owners' immediate circle who could be their potential successors, and so on.

A great many and often vouched-for changes have thus successively occurred or increased in tempo during the 1960's. At the same time the number of mergers has risen sharply. This connection at any rate does not give reason to reject the theory of value gaps through disturbances as an important cause of mergers. However, a more formalized test of this connection would be desirable. But the type of changes exemplified here are extremely difficult to measure in time series.

¹ We did not deem it possible to give a precise definition of the term "disturbances". However, these must not be of the kind that systematically influence all or most investors in the same direction, since that would only induce a parallel displacement on the "appraisal scale". This rules out eventualities such as war or danger of war.

The social disturbances are both difficult to measure as such and to evaluate in different industries. If they are to be capable of explaining variations in merger frequency from one industry to another, it will be necessary to demonstrate that the social attitudes of proprietors, their political values, "stamina", age distribution, access to eligible or willing successors, etc. vary correspondingly. This would have required a questionnaire-based investigation of such magnitude that we had to rule it out as infeasible.

On the other hand, it should be possible to measure technical and economic disturbances in some way. *Technological change* could be measured, say, by the *number of technical personnel* relative to the total number employed in different industries. The reasoning is that rapid technological change in an industry requires relatively more engineers in the firms and that a high proportion of engineers generates especially rapid technological change (Gort [1969], p. 634). By analogy, the extent and significance of *market disturbances*, an aspect that Gort does not discuss, could be measured by the *number of sales personnel* relative to total employment.

Industries with many or large value gaps may be assumed to have some more characteristics that distinguish them from other industries. In an industry where entry barriers are low the value of a firm will tend to fall close to its replacement costs. This narrows the range for value gaps in the industry (since the buyer's appraisal is determined in part by his opportunity cost, which in turn is determined by the cost of internal expansion) and hence lessens the probability of mergers (Gort [1969], p. 628).

Gort also contends that merger frequency ought to be positively correlated with the growth of output. Provided that value gaps exist in an industry, acquisitions of firms may be the cheapest way to expand for a firm that wants to enlarge its capacity. The more firms that need new capacity on account of increased demand, the more value gaps will be discovered, by virtue of which the probability of mergers would increase.

However, a simple correlation between output growth and merger frequency cannot be expected without assuming that value gaps already exist. That is to say, over the long run the growth of output can explain merger frequency only in combination with some other variable, e.g. technological change. In the second place, and more importantly, this line of reasoning predicates an either-or: (1) The acquired firm, owing let us say to financial restrictions, is unable to meet increased demand to the full, i.e. it has idle capacity which can be used thanks to the merger. If this constraint is removed by merging, the result will be an addition to capacity. Or (2) the merger must bring with it considerable coordination gains from higher production volume for a given volume of real capital. Whether these prerequisites can be assumed to hold for "expansion mergers" is difficult to know a priori.

The hypothesis that *appraisal gaps*, i.e. value gaps which do not depend on coordination gains, can be an *independent and sufficient cause of mergers* could be formally tested by a cross-section analysis of sectorial data, where the *technological change, market change and degree of concentration* are *explanatory variables*. On the other hand, the growth of output appears to be less interesting as an independent explanatory variable. This appraisal-gap theory will be tested in the next chapter.

MERGER BEHAVIOR UNDER DEVIATIONS FROM THE PROFIT-MAXIMIZATION ASSUMPTION

Up to now it has been assumed that the merger behavior of firms is determined by profit considerations. If this assumption is dropped it will of course have consequences for the theory herein presented.

The inference to be drawn from almost all mergers is for the acquiring firm to increase its market share.¹ As will be discussed in Chapter 7, corporate acquisitions are presumably also a means of avoiding different internal or external constraints on growth. In other words, a firm that

¹ The most important exception pertains to vertical integration.

acquires another firm can increase its rate of growth compared with the alternative of expanding internally. If rapid growth or corporate size is given high priority by management, then the merger alternative ought to lie ready to hand - even if it should turn out to be a poorer action alternative by the profitability criterion.

These and similar notions have been discussed by several writers. Thus mergers are described in terms of "empire building", where the owners/managers are motivated by a desire to gain more power and prestige through an enlargement of the firm regardless of whether that maximizes profits or not. It has been contended that empire building was and still is an important ingredient in the group of merger motives, but it has also been said that this motive can be justified by arguments that appear economically rational to the owners (Penrose [1959], p. 185).¹ Several attempts have been made in recent years to interpret the greatly intensified merger activity in the United States, in the form of diversifications across industries ("conglomerates"), as evidence of empire building or turnover maximization on the part of the managements of large firms with dispersed ownership.² This very ownership structure would enable management to deviate somewhat in its behavior from that which leads to maximizing the owners' profits and to concentrate more on satisfying their own goals (of which the turnover increase is assumed to be a composite measure).³ A statistical test of the connection between profit per-

¹ "... much merger activity can only be understood in the light of an entrepreneurial drive spurred by the vision of organizing and controlling the use of economic resources on a grand scale" (Penrose [1959], p. 183). "Although it is difficult to assess the extent, it seems clear that some take-over bids are inspired not by the prospective economic advantage to the bidder but by the desire of one or more of the directors of the bidder to build up a financial empire ... as a boost to the feeling of achievement, status and prestige that controlling of large enterprise and its employees may bring" (Weinberg [1967], p. 32).

² See e.g. Reid [1968], and Mueller [1969]. Scherer ([1970], pp. 121-122) too, it seems, shares this view.

³ Among the exponents of this general theory are Baumol [1959]; Carlson [1969]; Cyert & March [1963]; Galbraith [1967]; Marris [1967] and Williamson [1966].

formance and ownership structure has also shown that owner-controlled firms in the U.S., other things being equal, have earned significantly higher profits than firms that are not thus controlled (Monsen & Chin & Cooley [1968]).

Reid [1968] has investigated the connection between the merger activity of large American firms on the one hand, and their growth rate and profits on the other. He found a positive correlation with rate of growth and a negative correlation with profits, which was interpreted to support the view that merger-prone firms seek to maximize size rather than profits and that mergers take place against the owners' interests. But this interpretation is questionable since it ignores the relevant basis for comparison, which is what would have happened if the merger-active firms had been passive and vice versa. An inquiry into similar correlations in Sweden and a discussion of related problems will be undertaken in Chapter 7.

According to Mueller [1969], much of the U.S. merger wave in recent years - especially as represented by the conglomerates with their many acquisitions - can only be explained by the efforts of these firms to maximize their turnover. His arguments are based on two assumptions: no value gaps exist, and coordination gains ("synergistic effects") from conglomerate acquisitions can only be represented by superior management talent in the buying firm.¹ Although both these assumptions - and especially the first one - are questionable, that does not debar the relevance of Mueller's theory as a partial explanation of the American merger trend; if turnover maximization is a firm's principal goal, it undoubtedly adds greatly to that firm's potential merger alternatives.

Even if Mueller's postulates and behavioral assumptions were to constitute realistic descriptions of the American scene, they scarcely seem to be valid for Sweden. This country has no direct counterparts to distinctly conglomerate types such as Litton, LTV and Gulf & Western, though the most recently arrived Swedish investment companies (Incentive, Promotion, etc.) admittedly bear certain similarities. Besides, the market for shares is much smaller in

¹ The value gaps are assumed to even out on a perfectly functioning stock market.

Sweden than in the United States - one year's volume of trading on the Stockholm Stock Exchange is roughly equivalent to the transactions handled by New York's "Big Board" on a single day. In the third place, Swedish firms appear to be relatively more owner-controlled, and that also applies to quite a few listed companies. Lastly, the Swedish firms are exposed to much keener foreign competition than the American and their profits have held at a much lower level, at least during the 1960's. This narrows their scope for undertaking major, longer-ranging departures from the profit quest as the main goal of their operations - or at least imposes a powerful constraint on their actions

Even if occasional cases of deviations could probably be detected, it therefore seems reasonable to figure that the merger behavior of Swedish firms is and has been mainly guided by profit considerations. But as was discussed earlier, the firms may not only have motives but also possibilities to deviate temporarily from profit-maximization behavior. However, this need not imply an increased probability of mergers. The effect may just as well be the contrary, having regard to the negative impact of some mergers on members of management, other personnel, etc.

OBSTACLES TO MERGERS

The discussion pursued in this and in the previous chapter can be made to support the following thesis: In an economy of the Swedish type and size, there ought to be a very large number of value gaps - both "pure" (appraisal gaps) and coordination-motivated - between potential buyers and actual owners of firms. There are about 15,000 decision-making units (firms employing at least five persons in Swedish industry). Outside industry and abroad, there are a great many more such economic entities that can be potential merger partners of Swedish industrial firms. Pervasive and rapid changes in factors which are essential in producing value-gaps ("disturbances") can be assumed to change the appraisals made by the different investors as well, for which reason a complete adjustment to equilibrium, i.e. an evening-out of the resultant value gaps, never is reached. If this

assertion is correct, the potential for corporate transactions in the form of mergers ought to be very great.¹ This mechanism is further reinforced by the possibilities of carrying out transactions with segments of firms ("partial mergers") - and if our merger data is any guide, these possibilities have been increasingly exploited in recent years.

In Chapter 2 it was shown that, according to the data collected here, Swedish industrial firms participated in about 2,900 total and partial mergers during the postwar period up to 1970. The economic decision-making entities (firms employing at least five persons) that were the object of these transactions comprise around ten percent of the total number of decision-making entities during the period. That proportion does not look particularly big considering the number of value gaps that can be assumed to have existed or arisen in the same period. This points to the presence of various obstacles that keep the value gaps which arise from culminating in merger. One such "obstacle", namely the deviation from the goal of profit maximization, was discussed in the previous section. This section will consider some more obstacles to merger

L a c k o f i n f o r m a t i o n

It was shown earlier that inadequate access to information can produce value gaps and therefore lead to mergers. However, lack of information can also prevent mergers from taking place. The more poorly the information process functions in the "market for firms", the greater is the probability that existing value gaps will never be discovered and never lead to merger. In Sweden the only organized market for corporate ownership is the Stockholm Stock Exchange, on which the shares of about 100 firms are listed. Compared with conditions in countries like the United States and Great Britain, this imposes a great restraint on the flow of information that is essential to the discovery of value gaps.

¹ "...the industrial community is literally a sea of synergistic opportunities ..." (Gort [1969], p. 644).

But there are also limited markets for firms. Examples of such markets are the classified ad columns in certain newspapers, banks, consulting firms and other intermediaries that have specialized in merging firms ("corporate brokers"). This type of partial markets naturally makes it more probable that potential buyers and actual owners of firms will be brought together, begin to negotiate and arrive at a merger settlement. It seems as though such "market improvements" have come about to some extent in Sweden during the past few years in response to the generally increased interest in mergers. However, it is doubtful whether any decisive improvements is involved. Perhaps the Swedish market is not attractive enough to pursue this kind of activity on a bigger scale compared to the large industrial countries. These countries have large companies that specialize in searching out merger-interested firms and bringing them together. They set up files on potential buyers and sellers, which increases the probability that existing value gaps will be discovered and mergers will materialize. This brokerage service finds clear expression in the advertisements of American and British financial journals. It presumably performs an important function in disarming the diffidence and prestige that are often regarded as putting obstacles in the way of mergers.

Accordingly it may be assumed that the merger frequency in a country depends on how well the market for firms functions. The number of mergers in Sweden would probably have been greater if there had existed a developed advertising market for such transactions or a sizeable force of specialized "corporate brokers".¹

F i n a n c i n g f o r m s

Since a merger is a business transaction the parties must be agreed not only on the price but also on the financing form. An array of different forms may be envisioned, of which the most common would appear to be payment in cash, payment against a promissory note, and payment against a new issue of shares in the acquiring firm. Naturally, these

¹ Cf. the housing market.

forms of payment may also be combined.¹ The form of payment can be assumed to be strongly dependent on the seller's motive for executing the transaction. If, say, the seller wants to transfer or consume savings plowed back into the firm or if the sale is caused by the distribution of an estate that makes it necessary to have liquid funds to pay inheritance tax, the situation will of course call for payment in cash or other liquid assets. If on the other hand the seller wants to stay in business but still benefit from potential coordination gains of some kind, or if he wants to retire and still share in future coordination gains that are hard to calculate, other forms of payment may be considered, e.g. an issue of new shares in the acquiring firm.

If the buyer is a listed firm the financing form will presumably be less of a problem, provided that the acquired firm is not very large. In the normal case the listed firm can pay in cash or with newly issued shares, which are relatively convertible property inasmuch as they can be sold on the stock exchange.² If the potential buyer does not have this financing capability and besides has limited possibilities of borrowing capital equivalent to the consideration, that may prevent mergers made possible by value gaps. The buyer cannot provide the consideration in the form desired by the seller. This will of course limit the number of potential buyers of family-owned firms for whom the selling motive can often be supposed to exert direct influence over the form of payment.³ Hence for this reason, too, the small size of the Swedish Stock Exchange can pose an obstacle to merger.

¹ For a further discussion of these matters, see Höglund & Rydén et al [1964], pp. 66-70, and Hellström & Hermanson [1968].

² If the new issue represents a large part of the buyer's capital stock, that will curtail the possibilities for prompt disposal of the newly issued shares without precipitating a sharp drop in the market price.

³ Another conclusion which may be drawn from this discussion is that a listed firm which finds it hard to finance its growth investments in cash may systematically tend to expand through merger instead of "internally", since acquisitions of firms need not require capital contributions but "merely" an exchange of shares.

Legal and other institutional obstacles to merger

If certain types of mergers are prohibited by legislation or otherwise legally impeded, this can naturally prevent mergers motivated by value gaps. Examples of such legislation are to be found in several countries, especially the United States, whose antitrust laws confer vast powers for the prevention primarily of horizontal mergers. However, this type of obstacle does not exist in Sweden. If anything, the registration of cartel agreements between independent firms in the official Cartel Register would be more likely to make firms opt for mergers in preference to pools, unless other reasons should militate against such a choice.

The propensity of firms to choose between different alternatives is probably also influenced by political or public attitudes to these alternatives. In some countries the very word, "merger", is said to have invidious connotations. Nothing suggests that this is the case in Sweden; on the contrary, numerous positive statements could be cited from politicians, government officials, union leaders, etc. Most people in Sweden seem to regard mergers as being mostly constructive or indispensable. In that respect, no doubt, Sweden differs a great deal from a country like Great Britain.

If legislation and public attitudes have affected the Swedish merger frequency, there will even be reasons to assume that this influence has served to raise the number of consummated mergers. There are several examples of mergers that seem to have been initiated and rendered possible, either in whole or in part, by government, administrative agencies, organizations, etc.

SUMMARY

One prerequisite for a merger to be carried out is for buyer and seller to put different appraisals on the merger object. This valuation gap or as we have more briefly called it, "value gap", may arise because the merger creates a surplus value attributable to coordination gains or because the

parties differ in their access to information, opportunity costs, risk assessment, liquidity preference, etc. Coordination gains can arise in many different ways. Their causes can be assigned to two main categories: a) *efficiency improvements* and b) *market advantages* through restraint of trade.

Efficiency improvements can be attained along many different routes. One way is to replace a bad management with a good one. Another is to take advantage of or create different types of economies of scale. These may be static or dynamic, i.e. provide for adjustments to existing technology or the possibility of generating or adapting to technological and other changes. Using a somewhat different terminology, the economies of scale could also be called "technical" (resource-saving) or "strategic" (increased security, risk-spreading, etc.). The incidence of technical economies of scale in an industry is not easy to measure, one reason being that they may occur in so many different functions. A composite measure of adjustment could be read into the industry's movement towards increased corporate size, but such a measure would be problematical since it may at the same time also be a direct measure of the industry's expansion. A more restricted approach, viewed from the aspect of production technique, would be to measure changes in the proportion of small plants.

In fast-growing industries it should be easier for firms to adapt to changes in technological scale economies by expanding internally than by merging. The need to improve efficiency, for instance by taking advantage of scale economies that save resources, ought to be greatest in industries which are characterized by keen competition. One measure of competition may be the industry's dependence on foreign trade, specifically the share of imports in its input and, where applicable, the share of exports in its output. As for the dynamic economies of scale, these can be assumed to be especially large in industries that are characterized by rapid technological advance and oligopolistic competition.

It may be assumed that restraint of trade will yield relatively larger advantages in industries marked by high

barriers to entry, a high degree of concentration, low import share and slow expansion than in industries with opposite characteristics.

Value gaps without coordination gains (appraisal gaps) may be induced by certain powerful economic and other "disturbances" in the environment of firms that do not systematically influence all investors in the same direction. Examples of such disturbances are rapid changes of technology and markets. The probability that value gaps will occur in a specific industry should also correlate positively with the industry's degree of concentration. That is because the higher the barriers to entry in an industry, the greater will be the difference between the value of a given firm and the cost of reproducing its physical assets.

A statistical test of the connection between the here-mentioned explanatory variables and the merger frequency in different industries will be undertaken in the next chapter. At best such a test can give evidence on behalf of one of the three main theories we have advanced to explain the causes of mergers. None of them, however, is likely to tell the whole truth. On the contrary, it is probable that they often enforce one another. Another problem with a cross-section analysis of industry data is that the averages employed in the analysis may conceal information of considerable explanatory value. Hence a firm-by-firm analysis may also be justified. In the next chapter we shall inquire into certain characteristics of a sample of industrial firms acquired in connection with mergers. The merger behavior of large acquiring firms will then be discussed in Chapter 7.

INTRODUCTION

In this chapter we shall test the hypotheses on merger causes that were developed in the previous chapter. The present chapter consists of two main sections: the first sets out the results of a cross-section analysis of the merger data on the industry level; the second presents the findings of an investigation concerned with certain merger-relevant characteristics of acquired firms.

The industry analysis primarily seeks to explain why mergers are consummated. What is the cardinal motive underlying the mergers in Sweden? Have firms aspired to improve their *efficiency* or have they anticipated market gains through measures to *restrain trade*? Or could it be that the majority of mergers have been consummated on no more than the same grounds which govern other business transactions, in other words can a value gap uninfluenced by coordination gains - an *appraisal gap* - explain a large part of the mergers all by itself? It seems very likely that none of these causes alone can explain mergers in the large, but that they are all represented in the overall picture and perhaps also in one and the same merger. The main object of the industry analysis, therefore, will be to find out whether any of the three hypotheses receives strong enough support from the empirical data to warrant our saying that it has been quantitatively the most important merger cause in Sweden. Another object will be to ascertain whether three main causes *together* can explain the consummated mergers.

A cross-section analysis suffers from certain limitations. One of them, which has particularly great bearing upon this study, is that the values used for the explanatory variables represent industry averages which can conceal essential information. Moreover, relevant measures are in

very short supply for some explanatory variables and for others nonexistent. Third, it seems that certain types of merger motives are simply not amenable to analysis at the industry level. This is especially true of such explanatory variables which are common to all industries and apply to them equally. For these reasons it would be justified to make a time-series analysis or to analyze individual firms which have been involved in mergers - and preferably, of course, also those which have not been involved. However, it has not been feasible to undertake detailed case studies aimed at mapping out and, if possible, quantifying different merger motives and obstacles to mergers. Case studies would also be demanding of time and labor. Besides, they would pose considerable methodological problems with reference to such things as the possibility of describing a merger process after the event and to the reliability and completeness of submitted information. Hence what we have done instead is to collect and analyze various company data available from external sources.

This company analysis has been done as an adjunct to the industry analysis. Its chief purpose is to test hypotheses which account for the supply of firms on the merger market, with primary attention being devoted to those explanatory variables which have eluded or been inappropriate to analysis at the industry level. Thus the firm analysis in this chapter will be exclusively devoted to the seller's motives. Even so, this may yield worthwhile information for an assessment of different buying motives. The next chapter will discuss mergers more explicitly from the buyer's point of view.

HYPOTHESIS-TESTING AT THE INDUSTRY LEVEL

All things considered, a cross section analysis was deemed to be better capable of testing the formulated hypotheses than time series data. As we had occasion to observe earlier, a time series analysis would entail difficult problems of lags. While a time-series analysis would undoubtedly have to allow for such lags, the present corpus of knowledge is such that it could not possibly be specified with-

out exercising a good deal of arbitrary judgment. This problem diminishes in a cross-section analysis, especially when it covers a period longer than one year. In addition, time-series data are unavailable for many explanatory variables and some of them simply do not lend themselves to testing by this method.

These strictures on the usefulness of time-series analysis reflect our own skepticism towards some of the results and conclusions that have emerged from earlier research on the basis of analyses of the temporal connections between short-term changes in the volume of mergers and in different cyclical indicators.¹ Consequently, the time-series analysis would appear to be more useful when longer periods, say five or ten years, are compared with respect to the volume of mergers and differences in various merger determinants. But with the data that are available, such an analysis would be very hard to carry out in the same formalized manner as a cross-section analysis. The explanatory variables would not be as well defined and the number of observations on the industry level would be smaller in a time-series analysis compared to a cross-section analysis. The cross-section analysis should therefore be most appropriate here. One compelling reason for our choice is that cross-section data have been used by Gort [1969] with some success to analyze merger data at the industry level.

Naturally, this is not to suggest that a cross-section analysis is free of objections. Several difficulties have already been mentioned. To them can be added the risk that different types of causality in different industries can have a neutralizing effect on correlations in the total sample. Another problem may be the presence of "stratifications" in the sample, in the sense that all correlations are not identical in all industries.

The limited supply of measurable explanatory variables has made it necessary to confine the analysis to the second half of the investigated period, i.e. 1958-69. As was noted in Chapter 2, however, by far the greater proportion of post-

¹ The chief reference here is to Weston [1953] and Nelson [1959], whose methods have been criticized at length most notably by Maule [1968].

war mergers took place during these years. Besides, a twelve-year period ought to be long enough to eliminate any lags in the individual merger processes.

F o r m u l a t i o n o f t h e h y p o t h e s e s

Three distinct merger theories will be tested: the efficiency motive, the restraint-of-trade motive and the appraisal-gap motive.¹ More or less plausible arguments for all three theories were presented in Chapter 5 and, as has been noted several times, it can be assumed that all of them are represented in our merger data. It is therefore difficult to rank-order them in advance according to their supposed explanatory value. None the less, the discussion in the previous chapters might suggest at least a tentative rank order. During the 1960's it can be assumed that many business owners were very much swayed in their appraisals by "external disturbances" in the business environment, which in turn induced a great many value gaps between potential buyers and sellers of firms or widened already existing gaps. In his analysis of U.S. mergers during the 1950's, moreover, Gort [1969] found good support for the value-gap hypothesis even though he formulated it in somewhat different terms. Accordingly, the appraisal-gap theory may be assumed to have no little merit in explaining Swedish mergers during the 1960's.

The discussion in the previous chapters showed the potentials that mergers have for restricting competition and, consequently, the restraint-of-trade motive cannot be rejected either on a priori grounds or on the basis of empirical observations. The many horizontal mergers, the absence of legal and other barriers to trade-restraining mergers, the probable desire to be more competitive abroad by achieving greater unity at home (read "reduced competition") and the assumption of risk-spreading and security as vital goals: these are some of the most important arguments in support of this motive.

¹ It should be evident by now that this approach has been greatly inspired by Gort. However, it diverges considerably in choice of variables and their definitions.

The significance of the efficiency motive seems to be hardest to evaluate. There is not the slightest doubt that efficiency improvements of different kinds can result from mergers. For instance, such improvements can be achieved when a skillfully managed firm takes over a firm that is less skillfully managed, or when spare capacity in the form of technical and commercial know-how is put to better use. But given the data available, it is impossible to measure this type of efficiency improvements at the industry level.

Efficiency improvements are often justified by static economies of scale, i.e. a cost-minimizing adjustment to a given technology. Similar economies can be attained in many functions inside a firm. The only type of static scale economies capable of measurement at the industry level with available data relates to production. It was contended in the previous chapter that economies of scale in production are best realized in many cases through internal expansion, i.e. by enlarging existing plants. The economies-of-scale motive in a static, production technology sense may therefore be assumed to have a relatively low explanatory value as a merger motive.

Economies of scale can also be of "dynamic" and "strategic" nature. Such economies pertain to research and development programs, the ability to behave aggressively on oligopolistic markets as needed, to deter competitors from taking measures to destabilize markets, etc. Relatively good explanatory value may be imputed to this type of motive. However, one problem in testing this motive is that the conceivable and available explanatory variables coincide with those of the two other principal motives. The "dynamic" economies-of-scale motive cannot be tested other than indirectly through the other two. Unfortunately, this will of course add difficulties to the interpretation of the results of the industry analysis.

The explanatory variables chosen to test the hypotheses were discussed in the previous chapter. In the present context, therefore, we confine ourselves to repeating those correlations which the different hypotheses give cause to expect.

(1) *Motive: technical economies of scale in production*

Negative correlation between merger frequency on the one hand and change in the proportion of small establishments and in growth of output on the other. Positive correlation between merger frequency and degree of foreign competition. It should be emphasized that this hypothesis formulation does not permit testing the whole spectrum of the efficiency motive nor, for that matter, the scale motive. The hypothesis is solely concerned with the existence of technical economies of scale in production.

(2) *Motive: restraint of trade*

Positive correlation between merger frequency and barriers to entry/degree of concentration. Negative correlation between merger frequency and import share/growth of output.

(3) *Motive: appraisal gap*

Positive correlation between merger frequency and technological change, market change and degree of concentration.

The hypotheses can be formulated in three functions as follows:

$$M = f_1(E, G, FC) \quad (1)$$

$$\frac{\partial M}{\partial E} < 0, \frac{\partial M}{\partial G} < 0, \frac{\partial M}{\partial FC} > 0$$

$$M = f_2(C, I, G) \quad (2)$$

$$\frac{\partial M}{\partial C} > 0, \frac{\partial M}{\partial I} < 0, \frac{\partial M}{\partial G} < 0$$

$$M = f_3(T, MA, C) \quad (3)$$

$$\frac{\partial M}{\partial T} > 0, \frac{\partial M}{\partial MA} > 0, \frac{\partial M}{\partial C} > 0$$

where

| | |
|---------------------------------------------|-----------------------------|
| M = merger frequency | C = degree of concentration |
| E = change in share of small establishments | I = import share |
| G = growth of production volume | T = technological change |
| FC = foreign competition | MA = market change |

A linear functional form is employed in the calculations. This is obviously open to objections: for instance, given the functional form used the degree of concentration or the import share up to a certain level may very well explain the merger frequency in one industry, but after that the correlation stops or inverts. The linear functional form therefore entails certain risks that poor adjustment will be obtained for this very reason.

D e f i n i t i o n o f t h e v a r i a b l e s

If satisfactory precision is to be obtained from the calculations, a cross-section analysis should preferably be based on more observations than the 17 industries according to which the sample was grouped in the survey presentation in Chapter 2. It was therefore deemed necessary to disaggregate the merger data even further. The disaggregation was determined by the availability of data for the explanatory variables and by the number of firms (see below) in different industries. Another criterion was industry homogeneity, which decisively affects the possibility of making an adequate classification of acquired firms by industry.¹

Disaggregation doubled the number of industries to 34. The additional industries are: glass; cement and cement products; brick; stone (separated from the clay and stone industry); sawmills and planing mills; furniture (formerly included with lumber and wood products); paper products; printing and publishing (formerly classified as paper products and printing and publishing); grain mill products; bakery products; manufacture of chocolate, candy and ice cream; dairying; meat packing and prepared meat products; canning; manufacture of malt liquors, soft drinks and carbonated waters (all split off from food processing); paint; detergents, perfumes and candles; and manufacture of plastic materials (formerly included with chemicals and chemical products). A complete list of industries is set out in Table 13.

All dependent and independent variables could be measured in the 34 industries, which means that the number

¹ Concerning this problem, see Chapter 2, p. 62.

Table 13. *Values of variables for 34 industries entering into the regression calculations*

| Industry | M | G | C | I | FC | E | T | MA |
|-----------------------------------------------|--------|-----|------|----|----|--------|------|-----|
| Mining | 14.29 | 177 | 98.3 | 13 | 23 | 1.58 | 6.6 | .0 |
| Primary metals | 4.25 | 205 | 79.1 | 16 | 36 | -19.82 | 7.1 | .5 |
| Fabricated metal products | 7.35 | 203 | 37.2 | 15 | 38 | -1.08 | 3.7 | .7 |
| Machinery | 12.05 | 199 | 36.4 | 28 | 62 | .19 | 10.1 | 1.0 |
| Electrical machinery | 12.38 | 197 | 80.0 | 19 | 36 | 4.62 | 14.8 | 1.1 |
| Transportation equipment | 13.33 | 181 | 63.0 | 27 | 47 | -.40 | 12.6 | .4 |
| Shipbuilding | 7.81 | 137 | 88.0 | 30 | 95 | 5.68 | 10.5 | .0 |
| Stone | 5.86 | 137 | 30.0 | 1 | 2 | .15 | 1.0 | .9 |
| Cement and cement products | 5.21 | 227 | 62.9 | 2 | 4 | -2.86 | 4.5 | .6 |
| Brick | 7.34 | 85 | 46.0 | 10 | 10 | -2.23 | 3.0 | 2.0 |
| Glass | 22.54 | 234 | 61.0 | 20 | 39 | -7.78 | 1.5 | 1.0 |
| Other clay and stone | 7.88 | 177 | 83.2 | 8 | 19 | -3.23 | 4.0 | 1.3 |
| Sawmills and planing mills | 2.93 | 166 | 25.0 | 5 | 52 | -1.74 | .5 | .2 |
| Furniture | .96 | 183 | 17.0 | 8 | 17 | -2.78 | 1.0 | 1.2 |
| Other wood products | 3.44 | 198 | 33.9 | 8 | 24 | -1.56 | 2.5 | 1.0 |
| Pulp and paper | 59.49 | 166 | 60.6 | 1 | 48 | -2.89 | 3.8 | .2 |
| Paper products | 13.40 | 224 | 51.0 | 2 | 10 | -33.91 | 3.1 | 3.1 |
| Printing and publishing | 3.14 | 142 | 47.4 | 6 | 12 | 1.84 | 1.6 | 2.2 |
| Grain mill products | 23.08 | 89 | 93.0 | 0 | 0 | 1.54 | 5.6 | 2.1 |
| Bakery products | 2.02 | 117 | 41.0 | 6 | 10 | -2.62 | .6 | 2.4 |
| Dairying | 113.69 | 116 | 62.0 | 2 | 10 | -.29 | 1.5 | .4 |
| Meat packing, prepared meat products | 11.48 | 192 | 45.0 | 7 | 21 | -8.39 | .6 | 2.5 |
| Manufacture of chocolate, candy and ice cream | 26.92 | 172 | 75.0 | 7 | 14 | .13 | 2.7 | 6.6 |
| Canning | 11.82 | 231 | 85.6 | 23 | 29 | -1.99 | 3.2 | 3.6 |
| Brewing, soft drinks and carbonated water | 36.23 | 155 | 76.8 | 5 | 7 | -2.46 | 2.7 | 3.7 |
| Other food processing | 34.33 | 167 | 80.8 | 10 | 17 | -6.26 | 4.7 | 3.6 |
| Textiles | 7.03 | 121 | 67.0 | 31 | 46 | 4.50 | 2.4 | 1.5 |
| Wearing apparel | 3.21 | 121 | 21.4 | 17 | 24 | 5.97 | 1.1 | 2.2 |
| Footwear and leather | 6.23 | 112 | 50.4 | 25 | 34 | .52 | 1.0 | 1.9 |
| Rubber products | 17.07 | 194 | 89.0 | 31 | 65 | 4.72 | 4.9 | 1.3 |
| Paint | 37.84 | 196 | 61.0 | 9 | 16 | .87 | 13.3 | 9.6 |
| Detergents, perfumes, candles | 72.73 | 157 | 78.0 | 16 | 25 | 2.72 | 5.6 | 1.6 |
| Manufacture of plastic materials | 12.83 | 546 | 49.0 | 31 | 47 | -12.00 | 7.0 | 8.5 |
| Other chemicals and chemical products | 37.82 | 256 | 78.7 | 19 | 33 | -3.69 | 11.7 | 2.1 |

Legend: M = relative merger frequency 1958-69 (%)
G = change in prod.volume 1959-68 (index)
C = degree of concentration 1963 (%)
I = import share 1963 (%)
FC= foreign trade share 1963 (%)
E = change in proportion of establishments employing less than 50 workers in 1958-67 (percentage points)
T = proportion of technical personnel to all employees in 1963 (%)
MA= proportion of selling personnel to all employees in 1963 (%)

of observations is 34 except when otherwise stated.¹ However, the industry breakdown would have had to be carried much further in order for each industry to be reasonably homogeneous in terms of production technique, degree of concentration, expansion rate, import competition, etc, but the data did not permit further disaggregation. There is a risk that the level of aggregation means the loss of so much information that it may be difficult, for this reason alone, to find support in the empirical data for the formulated hypotheses.

Merger frequency (M) can be defined in various ways. Since the analysis seeks to explain the causes of mergers and not their effects, an unweighted merger measure was thought most appropriate. The next question is whether the merger measure ought to be absolute or relative (see Chapter 2). Arguments can be cited for either one. Choosing between them is chiefly determined by the correlation between number of mergers and number of firms in a given industry. An analysis of the correlation between the number of firms acquired during the period 1958-69 and the number of firms in 1964 gave a correlation coefficient of .497.² This association is strong enough to enable us to assume that the number of firms in an industry can be an important determinant of how many mergers occur in that industry. When the dairying industry is excluded (see below), the correlation becomes much stronger ($r = .702$). This suggests that a relative merger measure ought to be acceptable by itself. Merger frequency (M) is accordingly defined as the number of firms acquired from 1958 to 1969 in relation to the population of firms in 1964.³ For a more detailed description of sources and calculation bases, reference is made to

¹ As will be seen later on one industry, dairying, has been excluded from certain calculations.

² 1964 was chosen as an approximation to the average number of firms during the period. A lower size limit was set at five employees. See also Chapter 2.

³ For control purposes regression analyses were also performed using the absolute number of mergers as a dependent variable and with the number of firms held constant. However, the fit turned out so poor that the result has not been considered worth reporting.

Chapter 2.¹

To measure the incidence of *technical economies of scale in production*, we have chosen the *percentage-point change in the proportion of establishments employing less than 50 workers of an establishment* between 1958 and 1967 (E).² It cannot be taken for granted that this variable is wholly exogenous, i.e. the merger frequency can affect the change in the proportion of small plants. If anything, however, this possible effect should make the measure even more credible, since it is tantamount to saying that mergers have not only aimed at but also led to a concentration of production facilities.

The measure chosen is far from unobjectionable. In the first place, it does not allow for the possibility that differences in average plant size in different industries may affect the proportion of plants employing less than 50 workers; establishments that small may not exist at all in industries characterized by very large plants. Second, it is a very limited measure of economies of scale - even of technological economies of scale. Yet, it has been deemed the best measure of the few to be had. A more general measure of the existence of scale economies that comes to mind would have been the change in average *size of firm* or in the proportion of small firms. However, annual data on the number of firms in different size groups were not recorded until 1963 (the Central Business Register) and the short-time series which does exist (1963-68) is believed to be marred by big margins of error. Thus, the use of this measure was ruled out.

¹ Since the data on number of firms (source: the Central Business Register) pertain in principle to legal entities, the number of acquired firms, measured as decision-making units was enlarged as far as practicable to the number of acquired firms measured as legal entities. Corrections were primarily made for large acquired groups of affiliated companies having several subsidiaries. The total number of acquired firms measured as legal entities included in the study comes to 1,239 (see Table 6). However, owing to possible incompleteness in the corrections the number of acquired firms may be somewhat underestimated. If such an underestimate exists, it is impossible to tell whether it is evenly distributed across industries.

² Source: annuals of "SOS, Industri", the Official Statistics of Swedish Industry, Table 11. The change is computed in percentage points.

The *growth of production volume* (G) covers the period 1959-68 and the measure is an index for 1968 (1959=100). The data were taken directly from the Official Statistics of Swedish Industry (SOS, Industri 1968). Certain industries were aggregated using the value added by manufacture as weights.

The *import share* (I) was taken from the classification of commodities made by the Committee on Economic Concentration (*Industrins struktur och konkurrensförhållanden*, 1968, pp. 95-110). Our figures represent unweighted averages of the import share in 1963 ($\frac{\text{imports}}{\text{prod.}+\text{imp.}-\text{exp.}}$) for the commodities assigned to each of the industries. This measure forms one part of the variable, *foreign competition* (FC). FC is the total obtained by adding I to the industry's export share (exports/output). The export share was calculated in the same way as I and was obtained from the same source. FC is envisioned as a (very rough) measure of industry dependence on foreign competition and was included bearing in mind such industries as may be exposed to keen competition from abroad even though the import share is low, as in mining and the manufacture of pulp and paper. The measure's very construction implies a strong correlation between FC and I.

Another measure taken from the Committee on Economic Concentration is the *degree of concentration* (C) and as such pertains to 1963. No other concentration measures are available for Swedish industry. We had a choice between two types of measures: the respective shares of output accounted for by the four largest firms or the eight largest. Since the variable is intended to measure the degree of oligopolistic competition and the height of barriers to entry, the share attributable to the eight largest firms was deemed to be most appropriate. But since both measures are highly correlated, the choice does not have much practical importance.

Of the 34 industry groups used in this study 16 represent aggregates of the industry groups used by the Committee on Economic Concentration. This has made it necessary to calculate appropriate aggregate concentration ratios for these industries, which was done by weighting the average concentration ratios of each industry in a group with value

added in the industry. The resulting ratios do not, of course, correspond to the definition of "the share of output accounted for by the eight largest firms".

Technological change (T) has been measured as the proportion of technical personnel to all employees (wage-earners + salary-earners) in 1963.¹ The period's mid-year was chosen because the proportion of technicians may be assumed to bear a relationship to both past and future technological change in an industry.

Market change (MA) has been measured as the proportion of selling personnel to all employees in 1963.¹ This year was chosen for the same reason as for T. MA suffers from the weakness that selling personnel are not the only ones engaged in marketing; in some cases "market personnel" work for a firm without being on its employment payroll. Still, the measure is the only one we have and it must be used for lack of alternatives.

Table 13 sets out the values of all these variables for each of the 34 industries.

As mentioned above the 34 industry groups used here are aggregates. All variables except the concentration measure C are such that their value on this level of aggregation should be defined as a weighted average of the component industries in each group. Different weights should be attached to the different variables, such as the number of firms in the case of M, volume of output in the case of G, and total employment in the case of T. The concentration ratio C cannot be aggregated by using weights by definition. As a result, data for the 16 industries for which a weighted average of C had to be used should not be regarded primarily as data for these 16 industries as such but rather as data for the component industries in these groups. This should not affect the validity of the analysis, however.

¹ Source: *SOS Industri* 1963, Tables 1 and 8.

The regression calculations

The assumed correlations between the dependent and the independent variables were formulated in three linear equations, i.e. one equation for each of the three hypotheses. So as to facilitate a comparison of the explanatory value of the three hypotheses, we first fitted an equation which contained all explanatory variables. Next we excluded, one by one, the explanatory variables which were unique for a particular hypothesis. According to this method the hypothesis with the highest explanatory value is that whose unique variables contribute most to reducing the multiple correlation coefficient for all explanatory variables.

These regression runs afforded a very poor fit and the correlations obtained were not significant. However, examination of the residuals showed that a few industries consistently had high residual values and as such may have exerted a strong influence over the coefficients obtained. That such an effect was probable was suggested by the fact that the values for these industries deviated sharply from the observation means. This was particularly true of the dairying industry.

Considered from the merger aspect, dairying presents a very special case. Its operations are concentrated in the Swedish Dairies' Association (SMR) and virtually all firms are run as "economic associations" (cooperatives) owned by their milk suppliers. The trend towards concentration among member firms has long been actively promoted by SMR, in response to such causal factors as the slow increase in milk consumption, the economies of scale permitted by improved techniques of production and transportation and, not least important, the closure of a great many farms during the postwar period.¹ Consequently a large number of dairies have gone out of business. But since the discontinued firms have still had members/milk suppliers, these have been transferred to some other, geographically adjacent cooperative. In that way *every closure of a firm within the dairying industry has automatically involved a merger*. This is a unique, industry-related circumstance

¹ The number of milk suppliers went down by more than half during the 1960's.

that naturally tends to substantially raise the merger frequency.¹

The relative merger rate for the dairies is also considerably higher than for any other industry - 114 percent as against a mean of 19 percent for all industries from 1958 to 1969. That the dairying figure should exceed 100 percent reflects the fact that there were more mergers than dairies at the period's mid-year, 1964. The reason, of course, is that every dairy merger automatically reduces the number of firms (legal entities) in this industry in a way that does not happen in any other industry. Since no new *firms* entered the dairying industry during the investigated period, the denominator in the relative merger measure for dairying ought preferably to have been the number of firms in 1958. That number, representing the population of dairies, has been estimated at 279 (as against 168 in 1964), so the relative merger rate should have been 68.5 percent instead of 113.7 percent. However, it has not been thought proper to change the definition of merger measure merely in order to accommodate a particular industry.

Moreover, the dairying merger rate can be assumed to work out somewhat higher than for other industries owing to the 100-percent coverage in our sample, which was made possible by organizational pattern in this industry and SMR's ready willingness to supply information.

Again where the dairying industry is concerned, misleading values can be imputed to some of the explanatory variables. A particular reservation should be made for the 62 percent shown for the degree of concentration. Actually, this value should read 100 since the organizational structure embodies a segmentation of the market such that no dairies compete with one another.

Nor can appraisal gaps be regarded as a driving force behind dairy mergers. Normally, the industry does not contain any privately owned firms. The owners enjoy no opportunities to sell their shares at a "market price", and a

¹ The comparison is solely directed towards those industries which enter into the study. Similar observations could be made for omitted industry such as the starch industry and the cooperative retail trade.

market for such shares does not exist. For any one member of a dairying cooperative, probably the "only" significance of a merger is for his membership to pass over to the absorbing cooperative which will be the recipient of future milk deliveries.

Since all these arguments suggest that the dairies not only can but also should be excluded from the regression estimates, these have been consistently performed for all industries except dairying, i.e. a total of 33 observations for each variable. Only the results of these calculations will be reported in the following.

Table 14 sets out in matrix form the coefficients of correlation between all eight variables which enter into the regression equations. Included therein are the means and standard deviations of the variables. The table gives two types of essential information. First of all it shows the correlation between the different explanatory variables, which has relevance for interpreting the result of the re-

Table 14. *Correlation matrix for all eight variables in the regression calculations*

| Variable | M | G | C | I | FC | E | T | MA |
|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| M | 1.000 | .027 | .407 | -.108 | -.028 | .051 | .252 | .229 |
| G | | 1.000 | -.007 | .313 | .205 | -.401 | .247 | .444 |
| C | | | 1.000 | .203 | .117 | .085 | .445 | .031 |
| I | | | | 1.000 | .748 | .240 | .396 | -.005 |
| FC | | | | | 1.000 | .206 | .367 | -.260 |
| E | | | | | | 1.000 | .126 | -.156 |
| T | | | | | | | 1.000 | .130 |
| MA | | | | | | | | 1.000 |
| Mean value | 16.5 | 183.8 | 60.4 | 13.8 | 29.2 | -2.5 | 4.8 | 2.1 |
| Standard deviation error | 16.8 | 77.4 | 22.6 | 10.0 | 20.8 | 7.7 | 4.0 | 2.2 |

Legend: M = merger frequency 1958-69 (%)
 G = change in production volume 1959-68 (index)
 C = degree of concentration 1963 (%)
 I = import share 1963 (%)
 FC = foreign trade share 1963 (%)
 E = change in proportion of establishments employing less than 50 workers in 1958-67 (percentage points)
 T = proportion of technical personnel to all employees in 1963 (%)
 MA = proportion of selling personnel to all employees in 1963 (%)

gression estimates. As will be seen from the table, the correlation is not especially strong between any of the explanatory variables which enter into the same hypothesis. The highest coefficient between two such variables relates to C and T ($r=.445$). Second, the simple correlation coefficients between the dependent M variable and the independent variables can be seen as the first step in the run of the three equations representing each of the three hypotheses. The best correlation by far is obtained using the degree of concentration as explanatory variable ($r=.407$). For all the other explanatory variables the coefficients are remarkably low.¹

The multiple correlation coefficient for all seven explanatory variables is $R=.554$. From this it may be concluded that the three hypotheses together have a rather low explanatory value as they have been formulated here and considering the variable-values that were available. Both these addenda are essential: in other words, the relatively low multiple correlation coefficient need not mean that the mergers are explained by causes that the hypotheses formulations have not captured.

Comparing the three hypotheses resulted in according the highest explanatory value to the restraint-of-trade motive and the lowest to the technical-economies-of-scale-in-production motive. The important variable, which is unique to the restraint-of-trade hypothesis, contributes .081 points to the multiple correlation coefficient of .554. The variables T and MA, both unique to the theory of the appraisal gap, contribute .062 points, while E and FC, both unique to the theory of technical economies of scale in production, contribute .038 points. It is especially interesting that the highest explanatory value should go to the restraint-of-trade hypothesis, considering that its equation contains only one unique variable compared with two each for both the other hypotheses.

¹ Gort [1969] consistently obtained much higher correlation coefficients, e.g. $r_{M,G} = .572$; $r_{M,C} = .589$; $r_{M,T} = .737$. The variables were measured in the same way except for C, which stands for the share of output accounted for by the four largest firms.

Table 15. Regression coefficients for merger frequencies and seven explanatory variables

| Equation No. | Constant | Explanatory variables | | | | | | |
|--------------|----------|-----------------------|----------------|-----------------|-----------------|----------------|------------------|----|
| | | G | C | I | FC | E | T | MA |
| (1) | 15.404 | .017 (.046) | | | -.052 (.161) | .209 (.467) | | |
| (2) | -4.048 | .024 (.038) | .343 (.127) | -.603 (.444) | | | | |
| (3) | -3.164 | | .275 (.142) | | | .317 (.874) | 1.502 (1.376) | |

Legend: G = change in production volume 1959-68 (index)
 C = degree of concentration 1963 (%)
 I = import share 1963 (%)
 FC = foreign trade share 1963 (%)
 E = change in proportion of establishments employing less than 50 workers in 1958-67 (percentage points)
 T = proportion of technical personnel to all employees in 1963 (%)
 MA = proportion of selling personnel to all employees in 1963 (%)

Note: Standard deviation errors within parentheses.

Table 15 sets out the values resulting from our regression estimates. The equations are numbered in the order that the three hypotheses were treated earlier, i.e. the hypothesis on technical economies of scale in production comes first and the hypothesis on the appraisal gap comes last. Two controls can be performed by means of the table: first, whether the regression coefficients have the signs predicted by the hypotheses; and second, whether the results are significant.¹

According to the hypothesis on technical economies of scale in production, the G and E variables are supposed to have negative signs and the FC variable a positive sign. As the table shows, the signs are reversed for all three variables. However, the standard errors are so large that no coefficients are significant. This result agrees with our earlier remarks concerning the probable insignificance of economies of scale in production as a merger cause.

According to the restraint-of-trade hypothesis, the G and I variables are supposed to have negative signs while

¹ If the value of a regression coefficient is at least twice that of its standard deviation, the result is significant at the five percent level.

the C variable is positive. The signs are "correct" for the C and I variables but not for G. Only the coefficient for C is significant, however. Lastly equation (3) (the appraisal-gap theory) has the "correct" signs for all three variables. Here, too, only the concentration variable is significant.

The statistical significance of individual variables is thus nearly always low. In none of the three equations are all variables significant at the five percent level; in two equations only one variable is significant and in the third equation no variable is. The reported results therefore make it difficult to draw any definite conclusions as to the relative importance of the different merger causes. None the less, it appears as though the quest for economies of scale in production has played a very unimportant role among the merger motives. On the other hand, of course, other types of scale economies may have acted as major incentives to merge, especially those of the kind referred to earlier as "dynamic" and "strategic". However, it has not been possible to measure their incidence with variables that are specific to this variant of the scale hypothesis. On the contrary, all the variables that in Chapter 5 were deemed capable of measuring dynamic and strategic economies of scale are identical with the variables for the hypothesis on the appraisal gap. For this reason the results - regardless of their significance levels - can naturally not be taken to lend conclusive support to this particular hypothesis.

In light of what we have said so far, it seems that the restraint-of-trade hypothesis receives the best support and the hypothesis on technical economies of scale in production the worst. On the basis of our estimates the appraisal-gap hypothesis cannot be rejected, but that applies at the same time to the hypothesis on dynamic and strategic economies of scale. The one explanatory variable that correlates most strongly and unequivocally with the dependent merger variable is the degree of concentration ($r=.41$) while with seven explanatory variables in the equation $R=.55$. The high coefficient obtained for the C variable could of course be due to a certain bias, the reason being that this variable is not wholly exogenous since the number of mergers in an

industry can indeed affect its degree of concentration. That will have special relevance when a great many of the mergers are horizontal, as has been the case in Sweden. Yet this influence cannot be particularly great considering that less than 20 percent of the mergers in the M variable occurred before 1963, the year to which the concentration measure refers. It should also be noted that the C variable cannot be affected by mergers which involve acquisitions outside the industry.

The relatively strong correlation between merger frequency and degree of concentration is therefore scarcely attributable to bias. This is by way of saying that a certain degree of concentration seems to be necessary for a merger process to get under way in an industry. In other words, extensive merging often seems to require that the industry contains at least one or two big firms with financial strength, long-term planning, good overview, access to specialized personnel, etc. In industries dominated by such firms the acquisition of smaller firms in the same industry can become an important competitive weapon.

Attention should also be called to the association between production growth and merger frequency, which is as good as nonexistent. It is sometime said that potential acquirers are especially interested in "growth industries", and it used to be said that acquisitions of small expansive firms can take place owing to financing restrictions on growth. Our regression estimates do not support these hypotheses. However, the coefficients may be low because the correlation is nonlinear, e.g. it is negative up to a certain "normal" rate of growth, after which it turns positive (the regression line is shaped like a U or V). Plotting the observations on a diagram lends some support to this view. But the overall picture is greatly spoiled by a few exceptional industries. None the less, what this more penetrating analysis does show is that the negative signs of the coefficients are not due to chance.

The results of the regression calculations can hardly be called encouraging, the more so when they are compared with the findings of Gort [1969]. He has admittedly used a somewhat different analytical technique by comparing the

absolute levels of the multiple correlation coefficients for each of the three equations. With this method Gort finds consistent support for the disturbance (i.e. the appraisal-gap) hypothesis, while he rejects those on monopoly and economies of scale. The signs of his regression coefficients also lead to these conclusions. Another major difference is that Gort's results are much more significant, often even at the one percent level.

Because Gort's study differs from our own in methods, in definitions of variables and in number of observations, it is scarcely feasible to compare the two sets of results at greater length. Be that as it may, these differences alone probably do not explain the disparities. Instead, these could reflect the U.S. merger pattern that was portrayed in Chapter 3, namely that a sizable portion - about half - of the American mergers have been of the conglomerate type as against only an insignificant portion of the Swedish mergers. Another big difference is that the U.S. antitrust laws pose a formidable obstacle to mergers in restraint of trade. As we mentioned earlier, a similar obstacle does not exist in Sweden, which makes it natural to expect that the monopoly motive has less importance in the United States than in Sweden. A third and possibly important difference is that we have set a lower size limit than Gort to the merged firms. All things considered, the proportion of small and family-owned firms to all merged firms would appear to be lower in American merger data than in this study.

S i m p l i f i e d c o r r e l a t i o n e s t i m a t i o n s

The relatively poor fit obtained from the regression estimates is not very surprising of itself, considering such things as the risks (mentioned at the outset of this chapter) of errors in the sample and inadequate realism in the assumptions, especially as to linearity in the correlations. Besides, as was found when comparing the results of data runs with the dairying industry included and omitted, respectively, extreme values for individual variables can powerfully affect the total results.

It was for these reasons that we undertook to simplify the correlation estimates. In so doing we divided the observations for each of the eight variables into four groups of equal size (quartiles). Next, the dependent M variable was set off against each of the explanatory variables, i.e. seven 16-field tables have been laid out. Grouping the 34 observations (i.e. including the dairies) in the table's 16 squares makes it possible to assess the strength and type of correlations. These seven 16 squares tables are set out in Table 16.

The table shows that the relationship between the dependent and the different independent variables is rather complicated, i.e., the previous assumption of a linear relationship is not wholly realistic. The correlation between merger frequency (M) and foreign trade share (FC) appears practically random, which is consistent with the very low correlation coefficient between these two variables. The same applies to the growth of output variable (G) although this picture is disturbed by a strong asymmetry in both upper quartiles of M. It also seems hard to detect any stable correlation between import shares (I) and the dependent variable. There is some suggestion in the extreme quartiles that such a correlation might exist with E, but the observations are irregularly distributed between the extreme quartiles.

The picture is somewhat less obscure in the case of the three remaining variables. The variable T exhibits a stronger relationship with M than the correlation coefficient would lead one to expect. Table 16 shows that this is due to the relationship being non-linear. This applies even more to the variable MA which is strongly correlated to M in both extreme quartiles but shows a weak correlation between these. Finally, the table also shows considerable irregularity in the relationship between C and M despite the high correlation coefficient between them. In the lowest quartile the relationship is strong, i.e., industries with low concentration ratios have had few mergers. But the relationship is reversed in the top quartile, i.e., even highly concentrated industries have had few mergers. It appears as if the degree of concentration might have good explanatory value as a

Table 16. *Correlations between merger frequencies and seven explanatory variables*
 Number of observations divided into quartiles

| M | G | | | | C | | | | I | | | | FC | | | |
|------------|--------------|---|---|---|--------------|---|---|---|--------------|---|---|---|--------------|---|---|---|
| | Quartile no. | | | | Quartile no. | | | | Quartile no. | | | | Quartile no. | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| 1 quartile | 2 | 2 | 2 | 2 | 5 | 1 | 2 | 0 | 2 | 4 | 2 | 0 | 2 | 3 | 2 | 1 |
| 2 " | 4 | 2 | 2 | 1 | 2 | 3 | 1 | 3 | 1 | 2 | 2 | 4 | 2 | 2 | 3 | 2 |
| 3 " | 1 | 0 | 5 | 3 | 1 | 3 | 1 | 4 | 2 | 0 | 3 | 4 | 2 | 1 | 2 | 4 |
| 4 " | 1 | 5 | 1 | 1 | 0 | 2 | 5 | 1 | 3 | 3 | 2 | 0 | 2 | 3 | 2 | 1 |
| | E | | | | T | | | | MA | | | | | | | |
| | Quartile no. | | | | Quartile no. | | | | Quartile no. | | | | | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | | | | |
| 1 quartile | 1 | 5 | 0 | 3 | 4 | 2 | 1 | 2 | 4 | 2 | 3 | 0 | | | | |
| 2 " | 2 | 2 | 3 | 1 | 3 | 3 | 2 | 0 | 1 | 2 | 3 | 2 | | | | |
| 3 " | 3 | 0 | 4 | 2 | 0 | 2 | 3 | 4 | 2 | 4 | 1 | 2 | | | | |
| 4 " | 2 | 2 | 3 | 1 | 1 | 2 | 3 | 2 | 2 | 0 | 2 | 4 | | | | |

Legend:

M = Merger frequency 1958-69 (%)

G = Change in production volume 1959-68 (index)

C = Degree of concentration 1963 (%)

I = Import share 1963 (%)

FC = Foreign trade share 1963 (%)

E = Change in proportion of establishments employing less than 50 workers in 1958-67 (percentage points)

T = Proportion of technical personnel to all employees in 1963 (%)

MA = Proportion of selling personnel to all employees in 1963 (%)

merger motive up to a concentration level of about 80 percent. This could be due, among other things, to the fact that there are relatively few potential merger objects above that concentration level.

The impression left by the simplified correlation estimates is that the weak correlations resulting from the regression estimates will scarcely be improved when extreme-value effects are eliminated and the assumption of complete linearity in the correlations is not retained. One conclusion from this is that the poor results may be due to other causes such as inadequate variable measures, an overly rough industrial classification, not enough observations and strong asymmetrical connections. Another conclusion, of course, could be that the assumed correlations actually do not exist in pure form.

S u m m a r y a n d a m p l i f i c a t i o n o f t h e i n d u s t r y a n a l y s i s

One conclusion to be drawn from the calculations reported so far in this chapter is that none of the hypotheses satisfactorily explains the variations in merger frequency between different industries. Efforts to achieve technical economies of scale in production appear to have been a very weak merger motive for firms. Somewhat better support has been obtained for the hypotheses on restraint of trade and the appraisal gap. But as noted earlier, the latter coincides with the hypothesis on dynamic and strategic economies of scale, since the incidence of these can be measured with the same variables as appraisal gaps. The estimates therefore seem to have given the monopoly hypothesis the best - or least poor - support.

In light of the results obtained it is reasonable to believe that the causal connections which trigger off mergers are so complicated and heterogeneous that they are hard to capture in the type of functions used here. For one thing, the correlations often seem to be nonlinear. Furthermore, our industrial classification is probably too crude. The ideal breakdown would be one that is consistently adapted to commodities, since many of the 34 industries subsume prod-

ucts with greatly varying values for the explanatory variables. However, an industrial classification along these lines would result in very low values for the dependent merger variable, with attendant risks that this could randomly assume extreme values in certain cases. Moreover, the extent of corporate diversification poses a major constraint when it comes to making a commodity-related classification.

The result of the industry analysis could be interpreted to mean that the quest for efficiency improvements has been a weak merger motive. Such an interpretation would be mistaken, however. The relatively poor fit may be due instead to the impossibility of capturing, with available data, the whole breadth of the efficiency motive in a testable hypothesis. That such an interpretation is not unreasonable is indicated by the results of calculations that we made as to the effects of mergers on productivity in manufacturing. If mergers turn out to have productivity-raising effects, it is also reasonable to assume that these effects were envisaged and may therefore have been instrumental in promoting mergers.

The starting point for these estimates is an aggregated production function of the Cobb-Douglas type. As explanatory variables in the function we have selected capital stock, employment and merger intensity. The latter is represented by the proportion of persons employed in acquired firms to the total number of manufacturing employees (see Table 2). The effects of mergers on productivity have been assumed to make themselves felt after a certain time lag, so that the productivity change in a given year is explained by the average merger intensity during the three years immediately preceding. Attached to the function is a trend factor containing the effect of all production-influencing factors alongside the three which enter into the function.¹

The result of these estimates was to impute to the mergers a considerable portion of the total productivity

¹ The method was developed in collaboration with Doctor Yngve Åberg, the Industrial Institute for Economic and Social Research (IUI). For a more detailed account of methods, definitions of variables, etc., see Åberg [1969].

growth that has occurred in recent years. For the period 1951-69 the mergers explain 15 percent of the increased output and for the period 1966-69 all of 25 percent. It should be reasonable to interpret this to mean that mergers have not only aspired to productivity improvements but also realized them to a respectable degree.

HYPOTHESIS-TESTING AT THE FIRM LEVEL

I n t r o d u c t i o n

It was already pointed out in Chapter 5 that certain hypotheses on merger causes can be tested only by investigating those firms that have participated in mergers. This is true of such causes which have to do with problems of succession and the like in family businesses, financing difficulties in connection with rapid expansion and sales of firms occasioned by a critical course of events in profitability, liquidity, etc. Industry data which shed light on such conditions are either unsuitable or unavailable.

S a m p l e o f f i r m s i n v e s t i g a t e d

This section will present an analysis of a sample of acquired firms. In principle, the sample consists of all manufacturing firms which according to the collected data were acquired during 1969 and 1965. The only exception is the merged dairies, all of which have been excluded. Certain variables of the acquired firms were compared with the corresponding variables of a control group that were taken from the "Profit Statistics" maintained by the Central Bureau of Statistics (SCB). The choice of year was completely determined by the availability of comparable data for the control group. These data are based on the profit and loss accounts and balance sheets put out by manufacturing firms.¹ Thus the control group consists of all firms included in the Profit Statistics, i.e. all manufacturing firms with at least 50 employees plus a sampling of firms with 5-49 employees. The fact that the investigated firms enter into the control

¹ Balance sheet data were first published as from 1966. In 1962-64 SCB made pilot surveys from which balance sheet data were put at our disposal. Owing to certain incompleteness these data have been partially estimated and adjusted, and as such may have rather wide margins of error.

group has not been deemed to influence the results appreciably, since these firms comprise a very small part of the control-group firms and besides are much smaller in average size than the latter.

According to the collected data the number of acquired manufacturing firms located in Sweden amounted to 129 in 1969, excluding dairies, electric utilities and construction firms. Of these 106 could be investigated for the majority of the selected variables. The smallest number of observations for any of the examined financial variables is 99. The gross figure for 1965 is 130 firms of which between 94 and 106 were investigated in detail. Observations vary somewhat in number between the different variables because certain particulars were not consistently available for a single firm or for any one year. Losses of coverage involving whole firms are attributable to the following causes: As of 1969 and 1965 respectively, 3 and 6 firms were not corporations and as such not required to file financial statements with the National Patent and Registration Office (PRV); 2 and 2 firms could not be found in PRV's index of corporations; 1 and 3 firms were newly started; 4 and 3 firms had gone bankrupt; 4 and 3 firms did not, for various other causes, conduct any business in the year or years preceding sale; 2 and 0 firms were run on a commission basis for other firms and therefore did not disclose the desired particulars; 4 and 0 firms had no statements on file with PRV for the year preceding the merger year; 3 and 7 firms had no statements at all on file with PRV.¹

Most of the investigated firms are small. As of 1969 and 1965 respectively, 37 and 39 percent had less than 50 employees, 20 and 25 percent had 51-100 employees, 14 and

¹ In spite of repeated inquiries made from June 15 to July 15, 1970, we could not get hold of financial statements for these ten firms. The statements were said to be "out on loan" but nobody knew to whom and how long. It also happened that statements for specific years were missing from accessible company files for no stated reason or without information as to where they were to be found. These circumstances are remarkable considering that corporations are required by law to file financial statements for public inspection at the National Patent and Registration Office.

17 percent employed 101-200, 18 and 15 percent employed 201-500 and 11 and 5 percent had more than 500 employees. This distribution materially deviates from that of the control group, a point that will be taken into account when the results are presented.

As for the industry-by-industry distribution, the investigated firms also differ from the control group. This industry difference will also be considered in the presentation of results.

F o r m u l a t i o n o f t h e h y p o t h e s e s

The main object of the firm analysis is to find out whether, and if so how, the acquired firms differ from other firms. That of itself will not enable us to test hypotheses as to causes of *mergers* but rather of the *supply of firms* on the merger market. Indirectly, too, causes of demand for firms can be explored by studying acquired firms.¹ Hence the reasons for selling firms constitute partial merger motives. The investigation under this head can therefore serve to check up on and amplify the industry analysis reported in the previous section.

If the *efficiency motive* is valid as a merger cause, acquired firms might be expected to be less profitable than other firms in the industry. To be sure, efficiency improvements through coordination gains can raise profitability for firms whose past earnings record is already above average. But the firm with low profitability is under greater pressure to exploit coordination gains than the firm with high profitability, which may be assumed to increase the probability of their merging. Efficiency improvements through merger can even transform an unprofitable firm into a profitable firm. Poor profit performance may be due to such things as inability of the sold firm to adapt to changes in the industry's technology and market conditions. The efficiency hypothesis should also denote that firms which have been acquired in horizontal mergers have earned lower profits than firms involved in other types of merger, above all diversifications.

¹ The demand side will be treated in the next chapter.

That is because the potential for efficiency improvements ought to increase with the number of interfaces between the merged firms; it may be assumed that these interfaces are particularly numerous and extensive in the case of horizontal mergers.

It has not been deemed feasible to test the *restraint-of-trade motive* with the type of firm analysis here performed.

The *appraisal-gap hypothesis* cannot be tested in the strict sense without access to detailed information about the appraisals that buyer and seller have put on the transferred firm, the price agreed upon, and the incidence of anticipated coordination gains. It has not been possible to perform such detailed analyses. Instead we have collected data on the ages of owners/managers at the time of transfer to use as a proxy variable; as was shown earlier, there is reason to expect that owners often put lower appraisals on their firms when they begin to reach retirement age and that the heirs to a deceased owner often attach a price to the firm that falls below the present value of its future earnings. We accordingly hypothesize that the owners of sold firms have a higher average age than the owners of unsold firms. This hypothesis may be alternatively formulated as follows: compared with the owners of other firms, a larger proportion of those who own sold firms are close to the age when problems of successions and the like come to the fore.

The advent of "development companies" (such as Incentive) in the 1960's has brought with it professionals who may be said to specialize in the discovery of value gaps caused by problems of succession and the like in family-owned firms. It may be assumed that the acquisitions made by these firms do not give rise to coordination gains to the same extent as those made by manufacturing firms. A further assumption is that these firms encounter a given supply of family businesses which often have no alternative to selling out but are caught in an all-or-nothing situation. If we then suppose that there is less competition among the buyers than among the sellers, it follows that the price of firms put up for sale ought to vary less than

the present value of their future earnings.¹ The development companies should therefore tend to concentrate on acquiring firms with high profitability. Thus according to the appraisal-gap hypothesis the average profit performance of firms acquired by the development companies has been superior to that of other acquired firms.

The formulations here imparted to the appraisal-gap hypothesis are also applicable to the "tax motive" for selling firms. As was demonstrated earlier, older owners of firms should have a greater incentive to sell out than younger owners because of the way in which capital gains tax on shares and inheritance tax are structured. The inheritance tax may compel a sale, while the comparatively lenient capital gains tax can make a sale economically attractive. Taxation can thus bear upon the seller's appraisal and, other things being equal, create an additional margin for striking a bargain.

Of the merger causes discussed in Chapter 5, it was not possible to test the *liquidity shortage motive* in the industry analysis. This motive - and for that matter the tax motive as well - naturally explains only the supply of firms and is therefore a partial merger motive. But it can have the effect of inducing value gaps and as such constitute a cause of mergers. Owners of fast-growing firms may regard financing as a constraint on continued rapid expansion and will therefore be compelled to attach a lower price than if this constraint were absent. Alternatively, expansion may well have been so rapid as to thrust the firm into a liquidity crisis, out of which a capital contribution from the proceeds of sale looks like the only rescue plank.

However, a liquidity crisis need not be due to "over-expansion". The trouble may originate in a contrary cause, i.e. overly weak growth in consequence of unsatisfactory competitive performance. In such cases the poor liquidity is attributable to poor profitability. A history of this

¹ This tendency may be reinforced in the appraisal process by owners of less profitable firms, who often apply a method based on the scrap value of plant and equipment, which normally results in a higher price than a calculation based on the value of the company as a going concern.

kind should also prevail on an owner to lower his appraisal and, provided a buyer exists, facilitate a merger. This type of merger was referred to in Chapter 5 as a "mismanagement merger". It means that the potential buyer thinks he can do a better job of running the seller's firm than the seller himself or the management he employs have done.¹ If such mergers have played a major quantitative role, bought-out firms should on the average have significantly lower profitability, liquidity and selling expansion than other comparable firms.² Perhaps some idea of the frequency of "mismanagement mergers" can be formed by finding out how big a proportion of all acquired firms have been running at a loss prior to merger.³

The hypotheses discussed in this section may be expressed in the following terms:

(1) *Efficiency hypothesis*

$$P_{M,j-1} < P_{T,j-1} \quad (4)$$

$$P_{MH,j-1} < P_{M\sim H,j-1} \quad (5)$$

$$\frac{P_{M,j-1}}{P_{M,j-2}} < \frac{P_{T,j-1}}{P_{T,j-2}} \quad (6)$$

¹ If the buyer is not convinced of this, the "mismanagement" will lead to closure instead of merger. In such cases one can speak of an unsatisfied supply of firms. In connection with settlement offers with the firm's creditors, suspension of payments and bankruptcies, announcements are often made to the effect that "attempts are being made to find a buyer for the firm" or that "negotiations are under way with a view to selling the firm".

² Since the merger frequency varies from one industry to another, this hypothesis builds upon an assumption of unequal distribution of management ability between industries. On an average this ability could be lower, say, in industries with low barriers to entry or defective competition.

³ The statements and press reports made during the summer of 1970 about the "apparel crisis" suggest that such mergers are consummated. This holds in particular for the sales of AB Junex and AB L. & P. Widengren, which were both widely publicized. The question to be asked is whether this type of merger constitutes an exception.

(2) *Mismanagement hypothesis*

$$P_{M,j-1} < P_{T,j-1}, L_{M,j-1} < L_{T,j-1}, \frac{S_{M,j-1}}{S_{M,j-2}} < \frac{S_{T,j-1}}{S_{T,j-2}} \quad (7)$$

$$\frac{P_{M,j-1}}{P_{M,j-2}} < \frac{P_{T,j-1}}{P_{T,j-2}} \quad (8)$$

$$\frac{L_{M,j-1}}{L_{M,j-2}} < \frac{L_{T,j-1}}{L_{T,j-2}} \quad (9)$$

(3) *Liquidity shortage hypothesis*

$$\frac{S_{M,j-1}}{S_{M,j-2}} > \frac{S_{T,j-1}}{S_{T,j-2}}, SO_{M,j-1} < SO_{T,j-1} \quad (10)$$

(4,5) *Appraisal-gap and tax hypotheses*

$$A_{M,j} > A_{T,j} \quad (11)$$

$$P_{MC,j-1} > P_{M\sim C,j-1} \quad (12)$$

where

P = profitability

S = sales

SO = solvency

L = liquidity

A = age of owner/manager

M = merged (acquired) firm

T = all firms (control group)

MH = firms acquired in horizontal mergers

M~H = firms acquired in non-horizontal mergers

MC = firms acquired by development companies

M~C = firms acquired by other than development companies

j = merger year

D e f i n i t i o n o f v a r i a b l e s

Profitability (P) is defined as the ability of a firm to earn, on the basis of its regular operations, a return on the capital employed in the firm in order to cover capital costs (interest and dividends), depreciation, profit and taxes. The measure is a ratio whose numerator consists of accounted gross surplus before depreciation charges, period-end appropriations and extraordinary items, while the denominator is the balance-sheet total on the liability side, i.e. equity plus debt. It has not been possible to allow for the effects of inventory reserves on entries in profit and loss accounts and balance sheets, nor for any dispositions of earnings due to variations in salary withdrawals from closely held companies.¹ However, spot checks have indicated that the latter type of dispositions have played a minor role overall in the investigated firms.

Sales (S) is represented by the figure which firms give in their annual reports, either in the letter to the stockholders or in the profit and loss statement. In Swedish accounting this term is also rendered by the equivalents of "operating revenue", "invoicing" and of course "sales". It has not been possible to control whether the applied definitions of the sales concept have been systematically consistent in the investigated group of firms. If disparities exist, they can be assumed to be so small as to leave the total result and conclusions unaffected.

Solvency (SO) has been defined in accordance with accepted commercial usage as the proportion of equity (capital stock + reserves + profit (loss) brought forward + profit (loss) for the year) to total capital (balance-sheet total). This measure is considered to express a firm's ability to finance a continuing expansion without contributions of capital. A rule of thumb says that this ratio should not fall below .5.

¹ It should be noted that changes in inventory reserves may push a firm's earnings and balance-sheet total either upwards or downwards. More likely than not, effected increases and liquidations of inventory reserves approximately cancel each other out in the investigated group of firms. In that case the changes in inventory reserves have no effect on the aggregate profitability ratio.

Liquidity (L) can be measured in various ways. The most commonly used measures are static in the sense that they express a firm's ability to honor some of its payment obligations at a given moment. A common measure relates current assets to current liabilities (the "acid test ratio"). One drawback of the static liquidity measures is the incomplete picture they give of the payment flows in different directions that a firm normally has. On the income side this mainly involves receipts from sales on current account and, on the outgo side, disbursements for wages and salaries, materials and interest charges. These payment flows are so vital to the assessment of a firm's real ability to meet its current payment commitments that we have ventured to construct a more dynamic liquidity measure. The main idea has been to capture the firm's payment flows over a three-month period (the duration of most current liabilities).

The measure's numerator includes:

- 1) 1/4 of accounted annual sales
- 2) cash on hand, in banks and postgiro account
- 3) marketable securities (listed stocks and bonds)

Its denominator includes:

- 4) 1/4 of the year's payroll
- 5) current liabilities¹
- 6) 1/40 of the long-term liabilities²
- 7) 1/4 of the year's interest payments

Loans from banks and insurance companies have been regarded as long-term liabilities. Our classification of liabilities for this purpose excludes advances from customers, since these are considered covered by products in inventory and work in process, and also amounts owing to private pension funds (PRI). Also left out are liabilities, receivables and interest payments pertaining to subsidiaries and affiliated companies, boards of directors and corporate managements.

Obviously, this liquidity measure ought to show a value greater than 1.0. If it does not, that is either because a payments crisis has occurred, as expressed by the

¹ These chiefly represent purchases of materials.

² The measure builds upon the assumption that the long-term liabilities run for an average ten years.

measure, or because the measure has failed to give a fair picture of the firm's financial position. The measure is certainly open to criticism on specific details and could probably be improved on.¹ But since the measure was identically applied to both the investigated firms and the control group, a comparison between these need not of itself be marred by imperfections in constructing the measure, provided the errors (if any) strike with equal impact on the two corporate groups.

Variables for the acquired firms have so far been discussed on the basis of their own published annual reports. For some of the larger corporations the information we sought was to be found in the Directory of Swedish Corporations ("Svenska Aktiebolag"). However, the vast majority of particulars were taken directly from the original copies of financial statements filed with the National Patent and Registration Office. As already mentioned, data on the control group were taken from SCB's Profit Statistics for the different years that were investigated.

In regard to *age of owner/manager (A)*, a problem was whether obtaining this information would be reasonably proportionate to the effort expended. First of all we resorted to available press clippings on the merger in question or consulted the Swedish Industrial Directory ("Svensk Industrikalender") to find out who could be regarded as the firm's principal owner. Unless the contrary was specified, this person was assumed to be the president or managing director. Where appropriate, we then tracked down his year of birth by looking up the name index in the Swedish Industrial Directory. The variable expresses the age attained by the owner during the merger year. All told, the ages of about 80 percent of the acquired firms' owners could be obtained in this way.

The loss of coverage is due to the partial absence of entries for small firms in the Swedish Industrial Directory.

¹ One of its shortcomings is the presumption that a firm, when caught in a crisis situation, cannot increase its revenues by selling certain fixed assets or increase its current assets by borrowing more from suppliers, customers, banks and other credit intermediaries. Although steps of this kind can of course sometimes cope with liquidity crises, it has not been possible to make allowance for them.

Since succession problems and circumstances of different kinds within the owning family may be assumed to hold to a greater extent for small than large firms, this loss tends to diminish the probability of finding support for the age hypothesis in the sample.

The age variable has been distributed between two corporate types: close companies (family-owned firms) and non-close companies (firms with widely dispersed ownership and subsidiaries). This was done because the hypothesis to be tested with the age variable pertains exclusively to family firms. Besides, the other group can serve as a control, it being assumed that chief executives of the sold firms with dispersed ownership have a lower average age.

H y p o t h e s i s - t e s t i n g

The hypotheses on causes of mergers and/or sales of firms that were formulated on pp.201-205. will be tested in this section. Testing will be performed on the firms that were transferred in 1969 and 1965. However, the control group for 1969 is of a higher quality than for 1965. Balance-sheet data for the latter group were obtained from an unpublished pilot survey made by the Central Bureau of Statistics. Estimates have been applied to these data to adjust them up to a total level, which makes the information uncertain. In addition, the 1965 control group does not include firms employing less than 25 persons, and information about firms with 26-50 employees is also incomplete. In this respect, too, the 1969 control group is superior in quality to the 1965 group.

According to the *efficiency hypothesis*, the average profitability of transferred firms should be lower than that of the control group, especially in the case of firms that were sold in connection with horizontal mergers. The profit trend would also have moved less favorably by comparison with the control group.

Naturally, a test of this hypothesis makes it necessary to hold important profitability-influencing factors as constant as possible. We therefore standardized the merged firms with reference to distributions in the control

group by industry and size. These two variables have thus been considered simultaneously. Number of employees was used as the weight measure.¹ The control group includes only those combinations of industry and size that are represented in the investigated corporate group.²

The calculations lend fairly clear-cut support to the efficiency hypothesis. The group of acquired firms standardized with reference to the control group exhibits strikingly lower profitability than the control group. During 1968 the firms that were acquired in 1969 had a standardized profitability of 7.4 percent as against 10.7 percent for the control group. For the firms bought out in 1965 the corresponding profitability rate comes to 6.4 compared with 11.4 for the control group.

These profitability rates are accordingly hypothetical, since the only reason for estimating them was to permit the fairest possible comparison between both groups of firms. In reality, however, the acquired firms break down quite differently by industries and sizes than the control-group firms. Hence the actual profitability picture for the acquired firms also diverges somewhat from the standardized picture.

The weighted average profitability for all 1969 acquisitions, i.e. including firms with less than 50 employees, was 7.8 percent and the unweighted rate 10.4 percent. For firms bought out in 1965 the corresponding rates were 8.0 and 7.6 percent, respectively. The differences for 1969 acquisitions are of course attributable to higher profitability among the very smallest than among the very

¹ The control group is divided into nine industries and four size groups. Firms employing less than 50 persons are not simultaneously tabulated by industry and size in the Profit Statistics and have therefore been excluded in standardizing the investigated group of firms. The same weight matrix was used for both investigated years since the distribution by industry and size shows considerable stability over time, at least in the short run. The weight matrix relates to 1968.

² These combinations comprise 80-90 percent of the number of employees in the control group. The profitability rates have been written up to 100 percent for both the control group and the acquired firms in order to render meaningful the absolute levels of these rates.

Table 17. *Profitability of acquired firms*

Proportion of gross surplus to balance-sheet total in the year preceding merger year.

| | Number of employees | | | | | Totals |
|--------------------------------|---------------------|-------|---------|---------|------|--------|
| | 5-49 | 50-99 | 100-199 | 200-499 | 500- | |
| <i>Acquired firms 1969</i> | | | | | | |
| Weighted firm average (%) | 10.0 | 11.2 | 8.4 | 10.0 | 7.1 | 7.8 |
| Unweighted firm average (%) | 9.5 | 13.6 | 9.6 | 10.2 | 8.8 | 10.4 |
| Number of observations | 39 | 21 | 15 | 19 | 12 | 106 |
| <i>Acquired firms 1965</i> | | | | | | |
| Weighted firm average (%) | 5.0 | 11.5 | 5.3 | 7.4 | 8.7 | 8.0 |
| Unweighted firm average (%) | 6.1 | 10.6 | 5.7 | 7.9 | 9.9 | 7.6 |
| Number of observations | 41 | 26 | 18 | 16 | 5 | 106 |
| <i>All firms 1968</i> | | | | | | |
| Weighted average (%) | 12.3 | 10.4 | 9.6 | 9.7 | 9.5 | 10.0 |
| Proportion of observations (%) | 78 | 8 | 7 | 4 | 3 | 100 |

Source: See pp. 199-201.

largest firms, whereas the contrary must have been true for the 1965 acquisitions. This picture is confirmed by Table 17.

So far the efficiency hypothesis has been discussed in terms of average profitability. However, the profitability spread can provide essential supplementary information, making it possible, for instance, to assess the relative significance of the efficiency motive. As will be seen from Table 18 the merged firms differed considerably in profitability.

About ten percent of the acquired firms had negative profitability in the year preceding transfer, and for about half of them the gross surplus scarcely sufficed to cover depreciation charges and interest payments, let alone earn a normal return on equity capital. On the other hand, several acquired firms had very good profitability. As far as both the lower quartiles are concerned, the efficiency motive may very well have inspired the transfer, whereas this is less

Table 18. *Profitability distribution for acquired firms.*
 Proportion of gross surplus to balance-sheet
 total in the year preceding merger year.

| | 1969 acquisitions | 1965 acquisitions |
|------------------------------|----------------------|----------------------|
| Lower quartile (%) | 3.6 | 3.0 |
| Median (%) | 7.7 | 6.6 |
| Upper quartile (%) | 15.7 | 12.7 |
| Number of unprofitable firms | 9 | 13 |
| Number of observations | 106 | 106 |

Source: See pp. 199-201.

probable for at least the topmost quartile. Inspection of the profitability distribution has thus disclosed information that was hidden in the previously presented averages - namely that one and the same variable can express different merger motives and that the causal relationships can then go in different directions.

For a single year, 1967, the Profit Statistics have tabulated the profitability distribution for all manufacturing firms with at least 50 employees.¹ According to these data the profitability distribution is about equally wide for all manufacturing firms as for the acquired firms.

Since the Profit Statistics' profitability rates in this instance relate to the surplus after depreciation charges, the levels are not directly comparable. However, the difference between the quartile values of the two groups works out about the same - at 5 to 6 percentage points, which by and large ought to represent the proportion of depreciation charges to the total capital in the course of one year. We conclude from this comparison that the acquired firms, considered from the profitability aspect, represent an approximate cross section of Swedish manufacturing firms. However, this does not contradict the hypothesis that the quest for efficiency improvements may have been an essential merger motive.

¹ *Source:* SOS, Företagen 1967, Tables G and H.

As was shown earlier, the acquired firms have scored higher on profitability as per the actual rates compared with the hypothetical rates, i.e. the ones which were standardized. This indicates that the acquired firms are "over-represented" in the most profitable industries and size groups. A possible interpretation here is that efficiency gains through mergers often cannot be exploited because it is difficult for low-earning firms to find merger partners. In other words, there would be an unsatisfied supply of firms with weak profitability.

Since the potential for efficiency improvements ought to increase with the number of activities the merged firms have in common, the profitability of firms acquired by buyers in the same industry should also be lower than of firms which have had other buyers. This formulation of the efficiency hypothesis receives some support by our analysis. The profitability for the "horizontally" bought-out firms was lower in both years than for nearly all other merger types and lower than the profitability for all bought-out firms. Table 19 compares the different merger types for profitability.

Table 19. *Profitability of acquired firms in the year preceding merger year*

Different merger types

| Merger type | Proportion of gross surplus to total capital (%) | | | | Number of firms | |
|------------------------------------------|--------------------------------------------------|--------|-------------------|--------|-----------------|------|
| | 1969 acquisitions | | 1965 acquisitions | | 1969 | 1965 |
| | Arithmetic mean | Median | Arithmetic mean | Median | | |
| Horizontal | 9.6 | 7.0 | 6.2 | 5.3 | 63 | 58 |
| Other merger types | 11.5 | 11.4 | 9.3 | 7.4 | 43 | 48 |
| Of which: | | | | | | |
| vertical backward | 12.2 | 14.1 | 6.8 | 7.7 | 7 | 8 |
| vertical forward | 11.9 | 11.8 | - | - | 3 | 0 |
| diversification internal to the industry | 10.6 | 7.9 | 7.7 | 10.4 | 20 | 13 |
| diversification external to the industry | 9.5 | - | 9.1 | 18.0 | 2 | 3 |
| holding co. acquis. | 10.4 | 11.9 | 10.2 | 7.0 | 11 | 24 |
| All types | 11.9 | 7.7 | 7.6 | 6.6 | 106 | 106 |

Source and definitions: see Chapter 2 and pp. 199-201.

The horizontally acquired firms have significantly lower profitability than other merger types. Even when separate comparison is made with each of the other merger types, horizontal mergers score lower on profitability, especially when the medians are compared. Seven of the nine unprofitable firms in 1969 had been acquired in horizontal mergers and nine of the 13 unprofitable firms that were acquired in 1965. The highest profitability has been recorded by those firms which the holding companies acquired. there will be reason to bring this matter up again later on.

Naturally, the efficiency motive is closely allied with the "*mismanagement*" or "*failure*" motive for selling firms. According to the mismanagement hypothesis the acquired firms would have performed more poorly than the control group on profitability and liquidity and their sales would have grown more slowly. Considering liquidity first, it can be established that the acquired firms had a clearly inferior financial position in the year preceding merger than the control-group firms. The liquidity rates have been standardized in the same way as the profitability rates so that the acquired firms are comparable with the control group. In 1968 the standardized, weighted average liquidity for the firms purchased during 1969 was 1.04 as against 1.24 for the control group. Corresponding rates for the 1965 acquisitions are 1.06 and 1.28, respectively. In light of the profitability differentials observed earlier, these differences are natural since profitability and liquidity often correlate positively.

The liquidity values referred to above were of course hypothetical. Table 20 sets out the actual liquidity ratios for all firms and the distribution of the observations.

The weighted average liquidity shown in the table is lower than the standardized ratios presented earlier. For 1969 acquisitions the difference is negligible, but it becomes very noticeable for those in 1965. In regard to profitability the difference went in the opposite direction. Hence the acquired firms are somewhat overrepresented in industries and size groups with lower liquidity than the average for all industries. This can be interpreted to mean that poor liquidity poses a smaller obstacle than poor profitability to the sale of a firm.

Table 20. *Liquidity of acquired and all firms in the year preceding merger year*

| | 1969 acquisitions | 1965 acquisitions |
|------------------------------|----------------------|----------------------|
| <i>All firms</i> | | |
| Arithmetic mean (weighted) | 1.19 | 1.35 |
| <i>Acquired firms</i> | | |
| Arithmetic mean (weighted) | 1.03 | .88 |
| Arithmetic mean (unweighted) | 1.22 | 1.15 |
| Lower quartile | .74 | .63 |
| Median | 1.00 | .87 |
| Upper quartile | 1.46 | 1.35 |

Note: For a definition of the liquidity measure, see pp. 207-208.

Source: Profit Statistics, annuals for 1969 and 1965; for acquired firms, see pp. 199-201.

The liquidity measure is constructed so that the ratio ought to exceed 1.0. If not, there are good reasons to assume that a payment crisis has occurred, from which the firm may have to extricate itself by selling out as the only alternative to bankruptcy. Table 20 shows that a sizable portion of the acquired firms were either in or on the verge of such a crisis prior to sale. Half the 1969 acquisitions had a liquidity ratio in 1968 which fell below 1.0, i.e. liquid assets and current revenues did not suffice to meet the short-term payment commitments. The corresponding proportion for 1965 acquisitions was 60 percent. That the unweighted arithmetic means should nevertheless be so high is of course attributable to the very good liquidity that some of the bought-out firms have enjoyed. This is also apparent from the values shown by the upper quartiles in the table. Not only that, but more than ten percent of the acquired firms have a liquidity ratio of at least 2.0.

Liquidity bears a remarkable relationship to firm size. As it turns out, the smallest acquired firms have significantly higher liquidity than all other size groups, while the very biggest acquired firms show remarkably low liquidity. This agrees fairly well with the relationship between profitability and size in regard to the 1969 acquisitions but not in regard to those in 1965. Nor does it agree with this relationship for the control group, which is the opposite.

(Table 21)

Table 21. *Liquidity of acquired and all firms in the year preceding merger year, size groups*

| | Size groups, number of employees | | | | | Totals |
|--------------------------------|----------------------------------|-------|---------|---------|------|--------|
| | 5-49 | 50-99 | 100-199 | 200-499 | 500- | |
| <i>Acquired firms 1969</i> | | | | | | |
| Weighted corporate average | 1.30 | .85 | .99 | 1.22 | .97 | 1.03 |
| Unweighted corporate average | 1.41 | 1.02 | 1.02 | 1.19 | 1.20 | 1.22 |
| Number of observations | 40 | 20 | 15 | 17 | 12 | 104 |
| <i>Acquired firms 1965</i> | | | | | | |
| Weighted corporate average | 1.17 | .97 | .80 | .90 | .78 | 0.87 |
| Unweighted corporate average | 1.31 | 1.01 | 1.00 | 1.14 | 1.18 | 1.15 |
| Number of observations | 41 | 26 | 17 | 16 | 5 | 105 |
| <i>All firms 1968</i> | | | | | | |
| Weighted corporate average | 1.00 | 1.10 | 1.06 | 1.21 | 1.24 | 1.19 |
| Proportion of observations (%) | 78 | 8 | 7 | 4 | 3 | 100 |

Source: See pp. 199-201.

According to the efficiency and mismanagement hypotheses, profitability and liquidity should have turned for the worse in the acquired firms compared with the control-group firms. By and large, our sample gives no cause for rejecting these hypotheses. Profitability dropped sharply from 1966 to 1967 for the firms acquired in 1969, whereas it rose for the control group. In the following year, however, both groups performed better on this score, especially the acquired firms. For the period 1962-64 the support is more conclusive; in each of these years the bought-out firms showed much lower profitability than the control group and their profitability decreased with every passing year, while the control group improved during 1964.

The change of liquidity also clearly supports the hypothesis that mismanagement or failure is a cause of selling firms involved in mergers. With the exception of 1968 the

liquidity of these firms fell by an average ten percent per annum, whereas liquidity for all firms rose in every year except one (1964, when the downturn was negligible). However, the tendency was not consistent in all industries. In 1968 and 1967 the acquired firms showed reduced liquidity in only four of twelve industries; in 1964 this was true of seven and in 1963 of six of eleven industries. In other words, the average ratios are pulled down by a limited number of industries - a fact that is not of itself surprising, inasmuch as the fragmented business-cycle and demand patterns in manufacturing industry need not uniformly affect the liquidity of firms.

The fact that the change in profitability and liquidity of merged firms has been more unfavorable than that of other firms is not of itself surprising, either, considering the low levels of these variables attained by these firms which was discussed earlier. These results could be interpreted to mean that firms are often sold in consequence of management's inability or unwillingness to adapt the firm to changes in technology, markets, etc. When seen from this angle, mergers may be regarded as links in a continuous chain of adjustment on the part of manufacturing industry.

An important question is whether it is the same firms that have poor profitability and liquidity. Table 22 sets out certain data which shed light on this and related matters. The table shows how many of the acquired firms have had lower variable values than comparable firms in the same industry and size group.¹

To begin with, the table provides certain information which supplements previously reported data. It shows that about two-thirds of the firms acquired in 1969 had a profitability in the preceding year that was lower than the average for comparable firms. As to liquidity the corresponding proportion exceeds half. About 40 percent of the firms had values that were poorer in both these respects. More or less

¹ The compared firms were divided into nine industries and four size groups, with the lower limit set at 50 employees. Where firms employ less than 50, the comparison pertains to averages of the variables for the whole industry.

Table 22. *Number of firms acquired during 1969 with lower variable values than comparable firms*

| Employment | P_{j-1} | L_{j-1} | $\frac{P_{j-1}}{L_{j-1}}$ | $\frac{S_{j-1}}{S_{j-2}}$ | $\frac{P_{j-1}}{L_{j-1}}$ $\frac{S_{j-1}}{S_{j-2}}$ | SO_{j-1} | $\frac{SO_{j-1}}{S_{j-1}}$ $\frac{S_{j-1}}{S_{j-2}}$ | Total firms |
|-----------------------|-----------|-----------|---------------------------|---------------------------|--------------------------------------------------------|------------|---------------------------------------------------------|-------------|
| | | | | | | | | |
| 49 or fewer employees | 25 | 21 | 17 | 15 | 8 | 27 | 18 | 35 |
| 50 or more employees | 37 | 30 | 21 | 27 | 11 | 38 | 23 | 63 |
| Total | 62 | 51 | 38 | 42 | 19 | 65 | 41 | 98 |

Note: For names of variables, see pp. 199-201 and 205.

an equal proportion recorded a lower increase in sales during 1968 than the average for the industry and size group, and for 20 percent of the acquisitions all the values were lower for profitability, liquidity and growth of sales. Consequently, it might be contended that at least one-fifth and at most two-thirds of the mergers stemmed from inferior competitive performance and management skills in the selling firm. This suggests that rather many mergers can be regarded as close substitutes for bankruptcies/closures and that they probably lead to better utilization of limited management capacity.

The testing of hypotheses at the firm level in this section seems to have produced much more compelling evidence for the efficiency motive for mergers than the earlier analysis on the industry level.¹ It also appears from the firm analysis that poor adaptability on the part of a firm's managers ("mismanagement") is a not uncommon motive for selling out. The efficiency motive can be rated an essential, perhaps decisive, merger motive in nearly half the mergers that were consummated during 1965 and 1969. In the year preceding merger at least one-fifth of the sold firms were in such a

¹ The efficiency motive could be tested no more than partially in the industry analysis, with efficiency being measured as the existence of technical economies of scale in production.

weak position that the motive for sale can be classified as "mismanagement". If the buying firm's management is normally more capable than that of the selling firm and if potential coordination gains are also exploited, these efficiency mergers should have decisively contributed to a better utilization of resources in manufacturing industry.

Liquidity shortage as a cause of mergers is partly related to the mismanagement motive discussed above. However, these two causes are considered as being of different character. "Mismanagement" can via weak expansion and profitability lead to payments difficulties and in that way compel a sale. But liquidity shortage can also arise from expanding too fast and thereby pose an obstacle to continued rapid growth. This type of liquidity shortage is often cited as a reason why small, expansive firms are forced to sell out. Since liquidity shortage is a phenomenon that is more firm-related than industry-related, an analysis of firms is the only way to test this hypothesis.

The liquidity shortage hypothesis was formulated earlier to read that the sold firms would have had a faster increase of sales and a poorer solvency than other firms. Expansion rates are set out in Table 23.

Table 23. *Expansion rates of acquired firms and all firms*
Increase in sales over preceding year, in percent

| | 1963 | 1964 | 1967 | 1968 |
|----------------------------|------|------|------|------|
| <i>All firms</i> | | | | |
| Weighted arithmetic mean | 7.9 | 10.1 | 8.4 | 5.8 |
| <i>Acquired firms</i> | | | | |
| Weighted arithmetic mean | 15.7 | 19.4 | 2.3 | 4.5 |
| Unweighted arithmetic mean | 20.2 | 18.6 | 23.8 | 7.5 |
| Lower quartile | -1.1 | -2.3 | -3.9 | -5.3 |
| Median | 11.0 | 12.3 | 9.2 | 4.6 |
| Upper quartile | 27.0 | 23.3 | 19.9 | 20.1 |

Source: Profit Statistics, annuals for years shown; for acquired firms, see pp.199-201.

The increases in sales were not standardized for the acquired firms. With the proviso that these are not fully comparable with the control group, it can be established that the aggregate sales increase for the firms acquired in 1969 was distinctly lower than the rate for all firms. However, the observations are widely scattered. As will be seen from the table, the most expansive one-fourth grew by 20 percent or more over the previous year. Ten percent of the acquired firms even expanded by more than 50 percent. But at the same time more than one-fourth of the acquired firms decreased their sales. This suggests that both types of liquidity shortage - "mismanagement" and overexpansion - may be represented among the selling motives in our sample.

If liquidity shortage has been a common selling motive, this ought to be reflected in low solvency for the sold firms. In order to admit of a fair comparison between sold firms and the control group, we have calculated a weighted, standardized solvency ratio for the sold firms by the same method as for profitability and liquidity. The calculation shows that the solvency of these firms was decidedly poorer by comparison with the control-group firms. As of 1968 the firms that were sold in 1969 had an average weighted standardized solvency of 30.6 as against the control group's 39.5 percent. The corresponding rates for 1965 were 23.8 and 41.4 percent, respectively. Actual solvency deviates only slightly from the standardized value for the acquired firms. The actual weighted solvency rates, which accordingly include the smallest firms as well, amount to 31.5 percent for the 1969 acquisitions and 24.2 percent for those in 1965. The actual unweighted rates work out somewhat lower. Table 24 sets out the actual solvency rates.

The table shows that the solvency of acquired firms are widely dispersed. However, not even the upper quartile of these firms comes up to the average for all firms. Hence the solvency of the acquired firms can be characterized as highly unsatisfactory if the previously mentioned 50-percent rule of thumb is taken as the standard of comparison. But that limit does not come up to the average for all firms, either.

Table 24. *Solvency of acquired and all firms in the year preceding merger year*

Equity capital/balance-sheet total (%)

| | 1969 acquisitions | 1965 acquisitions |
|------------------------------|----------------------|----------------------|
| <i>All firms</i> | | |
| Arithmetic mean (weighted) | 35.6 | 37.8 |
| <i>Acquired firms</i> | | |
| Arithmetic mean (weighted) | 31.5 | 24.2 |
| Arithmetic mean (unweighted) | 20.6 | 23.7 |
| Lower quartile | 7.9 | 7.9 |
| Median | 15.9 | 19.2 |
| Upper quartile | 23.0 | 33.4 |

Source: Profit Statistics, annuals for years shown; for acquired firms, see pp. 199-201.

The picture of Table 24 applies to all industries and for nearly all size groups. The difference in solvency between acquired large and small firms is not so great as might be supposed in view of the oft-made assertion that weak solvency is peculiar to small firms. This becomes evident from Table 25, which breaks down the solvency of acquired firms by different size groups.

Table 25. *Solvency of acquired and all firms in the year preceding merger year*

Equity capital/quick assets.

| | Size groups, number of employees | | | | | Totals |
|--------------------------------|----------------------------------|-------|---------|---------|------|--------|
| | 5-49 | 50-99 | 100-199 | 200-499 | 500- | |
| <i>Acquired firms 1969</i> | | | | | | |
| Weighted firm average (%) | 17.7 | 24.9 | 17.9 | 23.8 | 34.8 | 31.5 |
| Unweighted firm average (%) | 15.6 | 28.8 | 15.5 | 24.0 | 24.4 | 20.6 |
| Number of observations | 39 | 21 | 15 | 19 | 12 | 106 |
| <i>Acquired firms 1965</i> | | | | | | |
| Weighted firm average (%) | 30.9 | 23.5 | 21.9 | 17.3 | 27.2 | 24.2 |
| Unweighted firm average (%) | 27.8 | 25.2 | 21.0 | 15.0 | 19.2 | 23.7 |
| Number of observations | 41 | 27 | 17 | 16 | 5 | 106 |
| <i>All firms 1968</i> | | | | | | |
| Weighted average (%) | 20.3 | 24.2 | 21.6 | 27.2 | 36.7 | 35.6 |
| Proportion of observations (%) | 78 | 8 | 7 | 4 | 3 | 100 |

Source: See pp. 199-201.

Information about sales increase and solvency, variables that are both relevant to the liquidity shortage motive, was also given in Table 22, where it was shown that nearly 60 percent of the firms acquired in 1969 expanded more rapidly than comparable firms during 1968. In regard to solvency the corresponding proportion is two-thirds. 40 percent of the acquired firms simultaneously featured faster increase in sales and poorer solvency than comparable firms. These figures can be interpreted to mean that liquidity shortage has played a significant role as selling motive in connection with mergers. It seems to have been at least a contributing cause behind more than one-third of all the mergers consummated during 1969. But if we impose the additional requirement that these firms ought to have shown higher profitability the proportion falls to ten percent. This may accordingly be set as a lower limit of significance for the liquidity shortage motive.

The hypothesis on the *appraisal gap* as an independent merger motive was formulated earlier in terms which imply that it would include the *tax motive* for selling firms. Since the holding companies, which can be assumed to aspire less than other firms to exploiting coordination gains, have specialized in seeking out or attracting firms that are put on the market for these very reasons, it was asserted (partly on account of imperfections in the market for firms) that the profitability of firms acquired by holding companies ought to be higher than that of firms acquired by others. Table 19 furnishes clear proof that this has indeed been the case. In 1969 the acquisitions made by companies had a profitability of 12.8 percent as against an average 10.1 percent for all other acquisitions. Corresponding rates for the 1965 acquisitions were 10.2 and 6.7 percent (unweighted corporate average), respectively. Hence there are grounds for accepting both these hypotheses on selling motives for the time being.

The appraisal-gap and tax motives uninfluenced by coordination gains ought to be especially important for owners or firms who are approaching or already at the age when serious thought must be given to problems of succession and inheritance. An inquiry into the age structure of such

owners should therefore give some idea as to the frequency of these selling motives. If the owners of the sold firms have been older on the average than the owners of other firms, that could be interpreted as supporting the appraisal-gap and tax hypotheses.

The age analysis of the firms merged during 1969 and 1965 turned up such contradictory results that the analysis of the role of this particular variable was extended to embrace additional years, namely 1961, 1963, 1966 and 1967. The result was as follows in Table 26.

It will be seen from the table that between one-third and one-fourth of the sellers had reached an age of 60 years or more during the merger year, i.e., an age when matters of succession and inheritance tax should normally come up for consideration.¹ In similar cases, therefore, this limited segment of the appraisal-gap motive as well as the tax motive may have borne crucially upon the transaction.

According to the formulated hypothesis the sellers should be older than owners of other firms. While it has not been possible to get hold of a fully comparable control group, certain age data do permit a comparison. An investi-

Table 26. *Age distribution for principal owners of sold firms, 1961-69*
Percent

| Age | Merger year | | | | | | All years |
|----------------------|-------------|-------|-------|-------|-------|-------|-----------|
| | 1961 | 1963 | 1965 | 1966 | 1967 | 1969 | |
| -50 | 34.5 | 35.5 | 43.9 | 36.2 | 31.4 | 44.0 | 38.4 |
| 51-60 | 31.0 | 35.5 | 25.6 | 28.7 | 39.2 | 45.5 | 33.1 |
| 61- | 34.5 | 29.0 | 30.5 | 35.1 | 29.4 | 10.5 | 28.5 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Lower quartile, year | 49 | 47 | 46 | 49 | 47 | 48 | 48 |
| Median, year | 58 | 56 | 53 | 54 | 56 | 51 | 54 |
| Upper quartile, year | 65 | 61 | 62 | 63 | 63 | 58 | 62 |
| Average age, year | 56.5 | 55.9 | 54.4 | 56.4 | 55.7 | 51.7 | 55.0 |
| Number of owners | 29 | 31 | 82 | 94 | 51 | 57 | 344 |

Source: Swedish Industrial Directory, annuals for years shown; for sold firms, see pp.199-201.

¹ The 60-year limit could of course be criticized for being arbitrarily chosen, but no other limit looks more plausible. These problems crop up early for some owners and later for others.

gation of several hundred randomly selected family-owned firms showed that 21 percent of their owner-managers were older than 60, 35 percent were between 51 and 60 years of age, and 44 percent were under 50 (Johansson & Sillén [1968], p. 22). The average age was 53, i.e. a couple of years younger than the sellers' average. These two samples of firms ought to be relatively comparable. The difference of age structure is not conspicuously great, but it moves in the direction predicted by the hypothesis.

Similar findings come from an investigation of age among the owners of "one-man firms", i.e. sole proprietorships. About 15 percent of these persons were 60 years old or older. The average age was 49 (Sundin [1971], p. 29). Although the difference between this group and the sellers is considerable, it is likely that the groups are not fully comparable. A third investigation of some 700 family-owned firms disclosed ages that were only insignificantly higher for the sellers than for family entrepreneurs in general. 14 percent of all family entrepreneurs were older than 64. The corresponding proportion for the owners of sold firms was 16 percent. In both instances the proportion of entrepreneurs younger than 50 was 38 percent (*Veckans Affärer* 1970:15).

Some 60 of the investigated firms can be characterized as "executive-controlled", i.e. the managing director was employed, ownership was dispersed and the firm could be regarded as a "going concern". According to the age hypothesis the chief executives of these sold firms ought to be younger than the owner group. This hypothesis receives support from our study sample. The average age was 51.5 (compared with 55) and only 11 percent of the managing directors were older than 60 compared with 29 percent of the owners.

The number of transfers attributable at least in part to value gaps arising from disturbances which were "internal" to the firm or of a "personal" nature, or from tax considerations in family-owned firms, would appear to lend themselves to quantitative specification for about one-fourth of all transfers of firms.

Supplementary data from the firm analysis

The analysis of individual firm data has resulted in information that could not be used to test the hypotheses. Some of this information will be presented below. It is mainly concerned with the values of variables for different merger types.

In Table 19 the profitability of acquired firms was broken down by different types of merger with reference to the operations of firms. Table 27 sets out the values for all the investigated variables according to merger type.

Table 27. Profitability, liquidity, solvency and expansion rate of the acquired firms, by types of merger
Unweighted corporate averages for the year preceding merger year

| Merger type | Profit-ability, % | | Liquidity ratio | | Solvency, % | | Increase in turnover over previous year, % | |
|------------------------------------------------|-------------------|------|-----------------|------|-------------|------|--------------------------------------------|---------------------|
| | 1969 | 1965 | 1969 | 1965 | 1969 | 1965 | 1969 | 1965 |
| Horizontal | 9.6 | 6.2 | 1.25 | 1.15 | 22.8 | 26.0 | 6.6 | 9.4 |
| Vertical, backward | 12.2 | 6.8 | 1.01 | 1.38 | 26.3 | 26.4 | -5.3 | 9.3 |
| Vertical, forward ¹ | 11.9 | - | 1.08 | - | 14.9 | - | 14.5 | - |
| Diversification, internal | 10.6 | 7.7 | 1.45 | 1.40 | 20.6 | 23.0 | 9.8 | 41.2 |
| Diversification, external ³ | 9.5 | 15.3 | .76 | .64 | 2.8 | 5.6 | 36.6 | 34.8 |
| | | | | | | | (10.2) ² | (26.7) ² |
| Purchases by holding companies | 12.8 | 10.2 | .75 | 1.00 | 9.7 | 20.1 | 9.2 | 28.5 |
| | | | | | | | (21.5) ² | |
| Acquired independent firms (1a) | 11.6 | 7.9 | 1.26 | 1.08 | 21.5 | 21.2 | 7.2 | 21.5 |
| Acquired subsidiaries (2b) | 6.7 | 3.7 | 1.14 | 1.27 | 18.9 | 43.3 | 3.8 | 3.7 |
| Acquired foreign-owned firms (4b) ⁴ | 6.5 | -9.6 | .94 | .38 | 2.6 | 15.4 | 13.9 | 36.5 |
| Firms purchased by foreign-owned firms (5a-b) | 10.6 | 8.8 | 1.09 | 1.72 | 19.3 | 34.3 | 14.6 | 5.3 |
| All merger types | 10.4 | 7.6 | 1.22 | 1.15 | 20.6 | 23.7 | 7.5 | 18.6 |

¹ The number of observations is only 2 for 1969

² Excluding one extreme value

³ The number of observations is only 2 or 3 for both years

⁴ The numbers of observations is only 1 for both years

Source: See Chapter 2; annual company reports.

The table permits a number of observations. For one thing, the holding companies have consistently acquired firms with high profitability but low liquidity and solvency. This result conforms to what we noted earlier for such acquisitions (in Chapter 5) as well as with the avowed policies of these firms. It can also be observed that the branching-out diversifications have a similar pattern. But it is also true of these transactions that the volume of business or sales has increased with exceptional speed, which suggests that buying firms are primarily attracted by "growth industries" when they venture outside their own domain. However, the number of observations in this category is much too limited to admit of statistically significant conclusions.

The independents (read "family firms") bought out by Swedish firms almost always show better variable values than other seller categories. Concerning partial mergers in the form of subsidiary sales, the point to be made is that the sold firms have been conspicuously weak on expansion rates and profitability. This suggests that partially different motives have governed these mergers compared with the sales of family-owned firms. One explanation for the difference may be that subsidiaries, by virtue of their ties to an often large parent company, often have more action alternatives than family firms when caught in a predicament and can therefore afford to postpone a merger decision.

The variable values for Swedish firms acquired by foreign firms do not appreciably deviate from the averages for all mergers. This might be taken to mean that Swedish buyers are just as discriminating as foreign buyers in their choice of targets for acquisition. On the other hand, the few foreign-owned firms in Sweden which were acquired have had very poor profitability, liquidity and solvency.

Several different motives for vertical mergers were described in Chapter 5. The variable values for these mergers indicate that acquisitions of suppliers or customers threatened by closure or bankruptcy are not a common motive for vertical integration. Here again, however, the number of observations is too small to permit any definite conclusions.

S u m m a r y o f t h e f i r m a n a l y s i s

The analysis of more than 200 manufacturing firms that were acquired in 1965 and 1969 has made it possible to supplement the results obtained from the earlier industry analysis. The following conclusions appear justified:

There is not a single merger motive that can explain the majority of consummated mergers all by itself. The acquired firms contain firms with very low profitability, liquidity and solvency. But their ranks also include those with extremely high values of these variables. Some acquired firms have been owned by very old persons, while others have had very young owners, etc. This suggests that mergers and sales of firms stem from various causes.

It is for this reason that the tabulated spreads of the analyzed variables stand out as especially interesting and important. They give information of the kind which averages readily conceal. If some firms are sold because they have extremely poor profitability while others are bought because their profitability is extremely good, the natural result will be to produce average rates of profitability for the acquired firms that are fairly normal.

The firm analysis shows that the quest for efficiency improvements seems to be a common merger motive. About two-thirds of the merged firms have had lower profitability than comparable firms in their industry and size group, and about 40 percent had both lower profitability and liquidity. About half the merged firms, moreover, have failed to keep pace with their competitors in growth of sales. For 20 percent of the sold firms, mismanagement or failure might be identified as a decisive selling motive.

A shortage of liquidity in otherwise profitable and well-managed firms is sometimes cited as an imperative reason for selling out. More than one-third of the sold firms have had a faster increase in sales and a lower solvency than comparable firms. But at least half of these, aggregating ten percent of the total number, have also had a higher profitability. Major importance can therefore be imputed to the liquidity shortage motive in at least ten and at most 30 percent of the consummated mergers.

The significance of the appraisal-gap motive and the tax motive is harder to specify in the same way. Even so, our analysis seems to indicate that these motives do occur in the sample. The acquisitions made by holding companies have been much more profitable than the other acquisitions. About 30 percent of the principal owners of the sold firms were more than 60 years old at the time of sale. Only a few of the firms that were sold during 1969 by an owner 60 years old or older meet the criteria of mismanagement or liquidity shortage.

CHAPTER 7

THE ROLE OF MERGERS IN THE GROWTH AND PROFITABILITY OF LISTED SWEDISH MANUFACTURING FIRMS

INTRODUCTION

Mergers by acquisition may be regarded as part of the firm's growth process. When viewed in this light, mergers may be said to represent "external expansion" for the acquiring firms, whereas growth in other forms, especially through the addition of new productive capacity, could be defined as "internal expansion".

These two routes of growth differ considerably in several respects and choosing between them may have considerable macro-economic consequences, at least in the long run. Internal expansion leads to an increase in real resources, whereas mergers, at least in the short run, "merely" signify a redistribution of the title and control over existing resources.¹ Thus internal expansion results in increased investment activity, i.e. it generates a rising capital stock in the economy. By contrast, the individual firm's external expansion is constrained by a given capital stock, which means that expansion in the short run is offset by an equally large contraction. If the financial capital released by a merger (the price paid) is used for consumption or transferred abroad, this amounts to abating the overall investment level compared with the alternative of internal expansion.² As a matter of course this redistribution of the

¹ For the sake of simplicity we here ignore the kind of internal expansion that follows from better utilization of resources, as well as external expansion that may ultimately give rise to internal expansion.

² As was shown earlier (Chapter 2) most mergers have involved sales of family-owned firms. There is cause to assume that the consideration paid in these cases has occasionally been collected or remitted abroad, either the whole sum or part of it. "A Malmö executive is building a villa, soon to be completed, for ... more than 500,000 Swedish kronor. (...) He said he had recently sold his firm to the U.S. and obtained the money in Switzerland." (Dagens Nyheter, June 2, 1970, p. 3)

stock of capital - and of labor, too - can bear upon efficiency in the national economy in so far as it permits a better allocation of resources. But given the strategic role of the capital stock for economic growth, it is obvious that the choice between internal and external expansion is a matter that does not concern the firms alone.¹

Another reason why this question can be important on macro-economic grounds involves potential coordination gains from mergers. External expansion may involve cutbacks or transfers of manpower, which in turn may conflict with the aims of employment and regional policy in a partly different manner than internal expansion from investments in new capacity.

A third reason concerns the question of what significance the type of expansion has for the state of competition within the economy. External expansion may be induced by the aim to restrain trade within a given sector - or it may have that consequence even if this is not the aim. But it may also seek to strengthen the competitiveness of the merging firms vis-à-vis other firms in the same industry and in doing so intensify competition in the industry as a whole. Insofar as the choice between external and internal expansion has such competitive effects, the question will also be of interest outside the circle of those firms directly concerned.

Attention was called in earlier chapters to the disagreement, especially in the U.S., as to whether large firms are impelled by a quest for high profits or for rapid growth in their merger activity. It has also been asked whether mergers are advantageous or disadvantageous for the stockholders of acquiring firms. A discussion of these problems motivates using the acquiring firm as the specific reference point in an analysis of mergers. This approach also makes it possible to extend the analysis in previous chapters of different merger motives.

¹ The argument could of course be elaborated to include this question: What is the optimal distribution, from the viewpoint of the economy as a whole, of total growth between an internal and external component for certain groups of firms?

In view of what has been said thus far, it may be of interest to determine empirically the extent to which Sweden's large industrial firms have expanded internally or externally. That will be the major purpose of the present chapter. Should external expansion then emerge as a quantitatively important phenomenon, the next question to deal with is: To what extent and in what way should it be influenced? To answer that question it will be necessary to discuss and analyze plausible motives for and effects of external expansion. At best such an analysis can suggest external expansion can be expected in the future and which policy parameters can influence this type of growth. Our ambition here is not to give answers to these complicated issues but rather to suggest a basis for evaluating them.

NOTES ON THE GROWTH OF THE FIRM

Of particular interest for this study are the viewpoints on the growth of the firm presented by Penrose [1959], and Marris [1967]. According to these authors the growth of the firm is primarily determined by the possibilities that are offered by "markets" for selling its output. Every marketing possibility contains a growth potential for each firm. If management finds that exploitation of this possibility is compatible with the firm's goals (e.g. good profitability) and adjusts its operations accordingly, the firm will grow. Growth potentials consist of all possible markets relative to the firm's earlier activity, i.e. not only markets which the firm already covers. Normally, however, the individual firm probably elects to grow in pace with demand on a market (for a product) that it already knows (manufactures). Given heavy initial outlays, risks, etc., the firm often prefers to defer its entry into "new" markets until profitability or demand develops unfavorably on the original market.^{1 2}

¹ The Marris model defines the (big) business goal as maximizing the growth of its total assets, whereas e.g. Baumol [1959] specifies sales maximization as the main goal. To all intents and purposes Penrose seems to regard profit and expansion goals as compatible.

² For a discussion of the direction and determinants of expansion, see e.g. Gort [1962], and Marris [1967].

The firm's expansion is governed not only by external factors such as markets but also by internal factors, i.e. the tangible and intangible resources within the firm. If these are incompletely utilized, or could be utilized more efficiently by altering the combination of factor inputs the firm harbors an internal growth potential. This may consist of idle productive or distributive capacity, different kinds of goowill, more or less unique experiences and know-how about methods of production and selling, particular markets, etc.

This kind of unused capacity is a recurrent phenomenon in a firm. Productive resources are often indivisible and cannot be tailored with exact precision to the conditions of supply and demand that the firm faces on any one investment occasion. Hence as productive resources are acquired the firm keeps incurring a certain amount of idle capacity, even though as a matter of course the total utilization of resources should be improved by expansion, at least temporarily.

As noted above, the know-how and experience that accumulate in a firm must also be counted with its resources. In the course of working for the firm employees on all levels may be assumed to undergo a learning process that raises their productivity, i.e. creates a basis for increased output at unchanged quantitative inputs of labor. This applies not least to the firm's management. If no provision were made for enlarged or new activities in the firm's business, the management would soon be reduced to mainly administrative functions (coordination, control, etc.). This would amount to inefficient use of the firm's resources in view of the modern administrative aids available. For this reason, too, expansion will be a natural and self-generating process for a profit-seeking firm that wants to use its resources as efficiently as possible.

Both inside and outside the firms, therefore, various incentives are present for continuing expansion on old and new markets. But at the same time there are other circumstances that act to retard expansion. The limited ability to comprehend a very large number of concurrent activities

sets an upper limit to expansion.¹ Just when that limit is reached is of course impossible to establish in general terms; it presumably differs from case to case.

Other obstacles to expansion lie outside the firm. The limited size of markets is often perceived as a formidable barrier to the individual firm's growth potentials. In special cases the monopoly of essential factors of production wielded by other firms can impede expansion, above all if this monopoly is encountered on new markets. Monopolies of this kind can relate to different categories of patented know-how, raw materials, labor, etc. Even insufficiency of capital may be perceived as a major obstacle to expansion.

Expansion by merger can be one way to circumvent internal and external barriers to growth. Thus, the growth rate for a given firm can become greater if it elects to grow externally rather than internally.² It follows that external expansion ought to be an especially attractive action alternative for firms that experience feebly growing, stagnating or declining demand or other barriers to internal growth such as lack of patents or resources.

INTERNAL AND EXTERNAL EXPANSION - DEFINITIONS AND PROBLEMS OF MEASUREMENT AND METHOD

D e f i n i t i o n s a n d s e l e c t i o n o f v a r i a b l e s

External expansion is understood in this study to refer to the change in size of a given firm that takes place during a given time period on account of merger, i.e. acquisition or sale. Such expansion will be negative for a firm that sells part of its business. Internal expansion refers to all changes other than external, i.e. it is obtained as a residual after the external growth has been deducted from total growth in a given time period.

¹ "If an organization is to remain efficient, it cannot possibly expand at an indefinite rate merely by infinitely rapid recruitment", (Marris [1967], p. 123).

² "It follows from the comparison of internal and external growth that except under special circumstances a greater rate of expansion is made possible by merger", (Penrose [1959], p. 195).

As already indicated, the reasons for analyzing the internal and external components of the total growth of firms involves such factors as the level of investment, employment, competition, and the state of demand on product markets. Consideration of these factors would argue for the use of several different size measures in the empirical analysis in this chapter. The significance of mergers for capital formation and the like suggests that capital be used as a size measure. That has not been possible, however. Owing to the lack of data on considerations paid, together with the broad range of depreciation options permitted by Swedish tax law¹ - making it also very difficult to draw comparisons both between firms and over time - the selection of a capital size measure would have entailed great risks of incomplete or misleading results. Several arguments may be adduced in favor of a sales measure, e.g. the earlier-presented viewpoints on acquisitions as instruments to compensate for contracting demand, to penetrate new markets, to raise the rate of potential market growth, etc. In Sweden, moreover, the concepts of growth and expansion are usually associated, both by firms and among the general public, with sales measures or markets. Since it has been relatively easy to obtain the value of sales reported by the large listed firms, this figure (or "turnover" as it is often called in the annual reports) is consistently used as a size measure in our study. The impact of mergers on changes in the labor force suggests an employment measure, and that is also relatively easy to come by. For this reason, and also for control purposes, the number of employees is also made to serve as a size measure; these data, however, have not been tabulated as extensively as those using the sales measure.

The growth of firms due to external and internal components, respectively, can be calculated in different ways and with presumably varying results. Two aspects are made to decide the choice of method: first, whether the aim is to analyze the significance of external growth over a longer

¹ Incidentally, the official depreciation rules were amended during the period studied.

period or only from year to year; and second, the assumption imputed to growth of the acquired or disposed entities after each merger is consummated.

M e t h o d s o f e s t i m a t i o n

The analysis in this chapter has a threefold purpose. It purports to show (1) the year-by-year role of external expansion throughout the period investigated and for all of the approximately 60 firms under study; (2) the size of the acquired entities relative to the size of all firms at the end of this period; (3) the share of the total growth of firms attributable to the acquired firms during the same period. Accordingly, three different calculations have been performed.

Method 1. For each investigated firm annual total growth has been determined at the level of the affiliated group of companies (ΔS_T) with the aid of the annual reports of the companies for the longest possible segment of the period 1946-68.¹ For each year growth has then been allocated to an external (ΔS_E) and an internal (i.e. "other") component, which is primarily expressed as the change during the given year in relation to the level in the previous year. The next step was to calculate the share of total growth attributable to external growth [$(\Delta S_{E,j})/(\Delta S_{T,j})$], after which the external shares were added up and divided by the number of observations. To measure the size of the external component, data were taken from the annual report of the acquiring or acquired firm, from available reference books or - as a last resort - from the Industrial Statistics put out by SCB, the Swedish Central Bureau of Statistics.²

Whenever an acquisition or a sale took place in the course of a financial year, the internal sales growth or concentration respectively were apportioned to two years

¹ Some firms did not report sales data for the whole period. 1952 is the first year for which consolidated data are available for all firms.

² SCB and the Swedish Industrial Directory do not report "turnover" but "value of shipments", which normally works out at a lower figure.

wherever possible.¹ The vertical acquisitions occasionally posed a special problem: How much of the acquired firm's sales had already been included in the acquiring firm's sales value?² Difficulties were also caused by changes in the lengths and opening-closing dates of financial years, as well as by the scope of the data base - especially the changeover from parent-company to consolidated accounting. These and similar problems were resolved from case to case in the manner that was deemed most appropriate according to criteria on completeness and comparability between firms and over time. When, say, exact size data were lacking for the merged entities, estimates were nevertheless made if the data provided other hooks on which to hold.³ All this is by way of saying that we have sought to make the coverage of acquired firms as complete as possible.

The average annual contribution of external expansion to every single firm, as measured by method 1, may be described in the following formula:⁴

$$\delta_1 = \sum_{j=t+1}^{t+n} \frac{\Delta S_{E,j}}{\Delta S_{T,j}} \left(\frac{1}{n-1} \right). \quad (13)$$

¹ It was sometimes possible to determine apportionments on the basis of information given by the firms in their annual reports.

² See Chapter 2, pp. 74-75 for a definition of vertical mergers. These mergers account for less than ten percent of the total number.

³ An example of such a hook is the rated productive capacity of an acquired or sold-off plant. In cases of this kind external price data have been drawn up to estimate an approximate value of output.

⁴ *Symbols used in Chapter 7*

t = initial year (varying)
t+n = terminal year (1968)
S_T = total size
ΔS_E = external size change (size of merged entity at time of merger)
ΔS_{T,j} = total size change during year of merger
g_I = internal percentage growth
 \bar{S} = adjusted size
S_{T,t} = adjusted initial-year size

In years without mergers $\Delta S_{E,j}$ assumes the value of zero, which means that the share of internal expansion works out at 100 percent. $\Delta S_{E,j}$ assumes a negative value during years when only disposal(s) take place or when these exceed the acquisitions in size. The external-share values resulting from method 1 for a given merger will obviously depend on the movement of prices during the merger year. The inflation effect becomes clear from the following example. A firm with annual sales of SKr 100 million acquires a firm that grosses SKr 10 million. If the acquiring firm grows internally that same year by ten percent without inflation, the share attributable to external expansion works out at 50 percent ($\frac{10}{10+10}$). For an inflation at five percent the external share falls to 40 percent ($\frac{10}{15+10}$) and for ten-percent inflation to 33.3 percent ($\frac{10}{20+10}$). Hence in cases of inflation method 1 tends to understate the role of mergers in the sales growth of firms. It would therefore have been desirable to deflate the expansion of every investigated firm with an inflation coefficient. However, that was not deemed feasible in view of the practical and methodological difficulties involved.

Method 2 seeks to show the significance of postwar merger activity for the total size of affected firms in the terminal year (1968), i.e. for growth during the whole of their existence. If growth up to the initial year was internally generated alone, method 2 will produce a pure measure of the impact that mergers have had on the total growth of the investigated firms ever since they came into being. The extent to which this holds true of the investigated firms naturally varies from case to case; some firms (e.g. Swedish Match) represent massive consolidations that were consummated many decades prior to the period studied, while others (e.g. SAAB) started out relatively late and relied almost completely on internal expansion up to the beginning of this period.¹

¹ In his estimates of the role played by mergers in the growth of large American firms, Weston [1953] proceeds from two alternative calculations, one assuming that size at the initial year was due to internal expansion alone, the other that this was due to external expansion alone.

Normally, of course, acquired entities do not stop growing after a merger. However, data on the actually realized post-merger growth are not obtainable in many cases because the absorbed entities are often integrated with the acquiring firm in fairly short order, after which sales and employment data are no longer reported separately. Hypothetical data must therefore be calculated for the post-merger growth of the absorbed entities. Several alternatives suggest themselves: (a) no more growth; (b) continued growth at the same rate as during a given period before the merger; (c) same growth rate as the industry after the merger; or (d) same growth rate as the acquiring firm after the merger. Alternative (a) was deemed the least realistic and excluded even though it would undoubtedly have been the easiest to handle numerically. Alternative (b) not only has the drawback of demanding a great deal of extra data but also conflicts with the idea that the acquiring firm is in a position to affect the growth of a bought-up company in various ways. Alternative (c) is relatively attractive because it implies that growth of the industry can be *one* major determinant of expansion for the individual firms. But owing to the difficulty of making adequate industrial classifications, allowing for reclassifications and the like, plus the fact that experience has shown growth to vary between firms in the same industry, sometimes very much so, alternative (c) was ruled out as well. That left alternative (d), i.e. that the absorbed entities have grown after the merger at the same rate as the acquiring firm (with subtractions made for further acquisitions or disposals). The main reason for adopting this assumption ties in with an earlier argument, namely that internal conditions of various kinds in a firm have the greatest bearing upon its growth in the long run. Moreover, the calculations implied by this assumption are facilitated by the fact that internal annual growth data for each investigated firm have emerged as a by-product of the calculations worked out in accordance with method 1.¹

¹ Weston [1953] has not made any terminal-year estimates of the acquired firms by size, i.e. he assumed these stopped growing after merger. Since his period of investigation runs up to about 50 years for some firms, his method seems highly debatable, especially when account is taken of changes in the value of money during the 20th century. For a more detailed criticism of Weston's estimates, see Stigler [1956].

Method 2 entails the following procedure. For each investigated firm the size value of every absorbed entity ($\Delta S_{E,j}$) was written up for each post-merger year to the terminal-year value in 1968 by a cumulative growth factor, consisting of a geometric series of annual internal growth

factors in accordance with the formula $\left[\prod_{i=j+1}^{t+n} (1+g_{I,i}) \right]$.

In this way a number of terminal-year values were obtained for every firm in the study on all acquired and sold entities for which size data were available. These were added up and related to the consolidated size reported by the investigated firm as of 1968 ($S_{T,t+n}$). The result is a measure of the "net" significance (i.e. with allowance also made for sales) that the aggregate merger activity has had during the postwar period for the size of each investigated firm at the end of the period under review. The method may be summarized in the following formula:¹

$$\delta_2 = \frac{\sum_{j=t+1}^{t+n} \left[\Delta S_{E,j} \prod_{i=j+1}^{t+n} (1+g_{I,i}) \right]}{S_{T,t+n}} \quad (14)$$

Method 3 is an elaboration of method 2 and accordingly does not differ very much from it in the calculation procedure used. The terminal-year value of each of the merged entities was similarly estimated for every firm, and the sum total of these values was then related to the difference between the firm's terminal-year and initial-year sizes, representing the total corporate growth during the period. However, the calculation of this type of growth was complicated by the broadened data base that several firms had adopted for their accounting systems during the period studied; in some cases, this had even been done in several stages.² Obviously, changes of this kind can distort the

¹ The symbol explanations are summarized in note 4, p. 235.

² Cases in point are firms whose published accounts up to the mid-1950's pertained solely to the parent company (perhaps including some major subsidiaries), for several years thereafter to "the group in Sweden" and not until 1960 or so to "the group in Sweden and abroad").

picture of a firm's growth when the reported initial-year value is subtracted from the terminal-year value; indeed the result could greatly exaggerate the growth of firms which already operated subsidiaries on a big scale at the beginning of the period without accounting for this in consolidated form. A contrary effect arises, for instance, when an accounting system is revised to show sales or turnover less excise taxes, which has happened in some cases.

This problem has been solved by estimating an "adjusted initial-year size" ($\bar{S}_{T,t}$), which by definition becomes identical with the firm's reported initial-year value ($S_{R,t}$) when consolidated statements have been published throughout the period and the accounting system has not been revised. The first step here was to deduct for each firm the net total of the terminal-year value of the acquired and disposed-of entities ($\delta_2 S_{T,t+n}$, which is identical with the numerator in equation (14)) from the terminal-year size ($S_{T,t+n}$). The remaining "internal" portion of the group's terminal-year size was then deflated to an adjusted initial-year size by a coefficient based on the annual internal percentage growth rates for the whole period under review. If a changeover from parent-company to consolidated accounting has occurred, the adjusted initial-year size is bound to be higher than the reported figure (negative initial-year difference). By contrast, changing over from reported gross to net turnover produces a positive difference.¹

¹ Note that the adjusted initial-year value is not affected in any direction by inadequate or erroneous information about the size of the merged entities. That is because such errors affect, *concurrently and equally*, the terminal-year value after inflated acquisitions and disposals are deducted and the coefficient with which this value is deflated, with the result that both these effects cancel out one another. If the size of recorded accounting revisions is deflated to initial-year value, this should accordingly agree with the initial-year differences as estimated above. In other words, this procedure can serve as a double-check to ensure that the calculations have been correctly performed at all stages. Similar checks were performed for all the investigated firms. Accounting revisions were deflated to initial-year values by means of the following formula:

$$\bar{S}_{T,t} = \frac{\sum_{j=t+1}^{t+n} \Delta S_{R,j}}{\prod_{i=j+1}^{t+n} (1+g_{I,i})}$$

(Explanation of symbols in note 4, p. 236.)

$$\delta_3 = \frac{\sum_{j=t+1}^{t+n} \left[\Delta S_{E,j} \prod_{i=j+1}^{t+n} (1+g_{I,i}) \right]}{S_{T,t+n} - \bar{S}_{T,t}}, \quad (15)$$

where

$$\bar{S}_{T,t} = \frac{S_{T,t+n} - \delta_2 S_{T,t+n}}{\prod_{j=t+1}^{t+n} (1+g_{I,j})}$$

I l l u s t r a t i o n o f t h e m e t h o d s
o f c a l c u l a t i o n s

Figure 15 illustrates the application of the different calculation methods. AB Bahco was selected as an example because this firm's growth pattern illustrates most of the elements and complications that arose in making the estimates: during the period 1952-68 AB Bahco made eight acquisitions, three sales, and one accounting revision.¹ Although its activities were varied, they are neither so many nor so complicated as to confuse a diagrammatic illustration.

The continuous line starting at B and ending at I traces the course of Bahco's reported sales from year to year. Acquisitions and sales are represented by disjointed leaps in the expansion curve, i.e. the vertical segments of the sales curve. The sloping segment of the curve during the merger years also shows the internal growth.² The broken line ending at H shows the growth of sales that would have taken if Bahco had not carried out any mergers, on the assumption that the bought and sold entities did not grow at all after each merger. The line ending at G shows the same trend on the assumption that the merged entities grew at the same rate as the rest of the enterprise. IH is the net total of the merged entities, measured by the value of each entity at the time of merger, while HG shows how much these are

¹ Data were used for only six of the acquisitions since two pertained to foreign firms for which size data were not available.

² The curve has been segmented during the merger years so as to show the mergers and their relative size more distinctly.

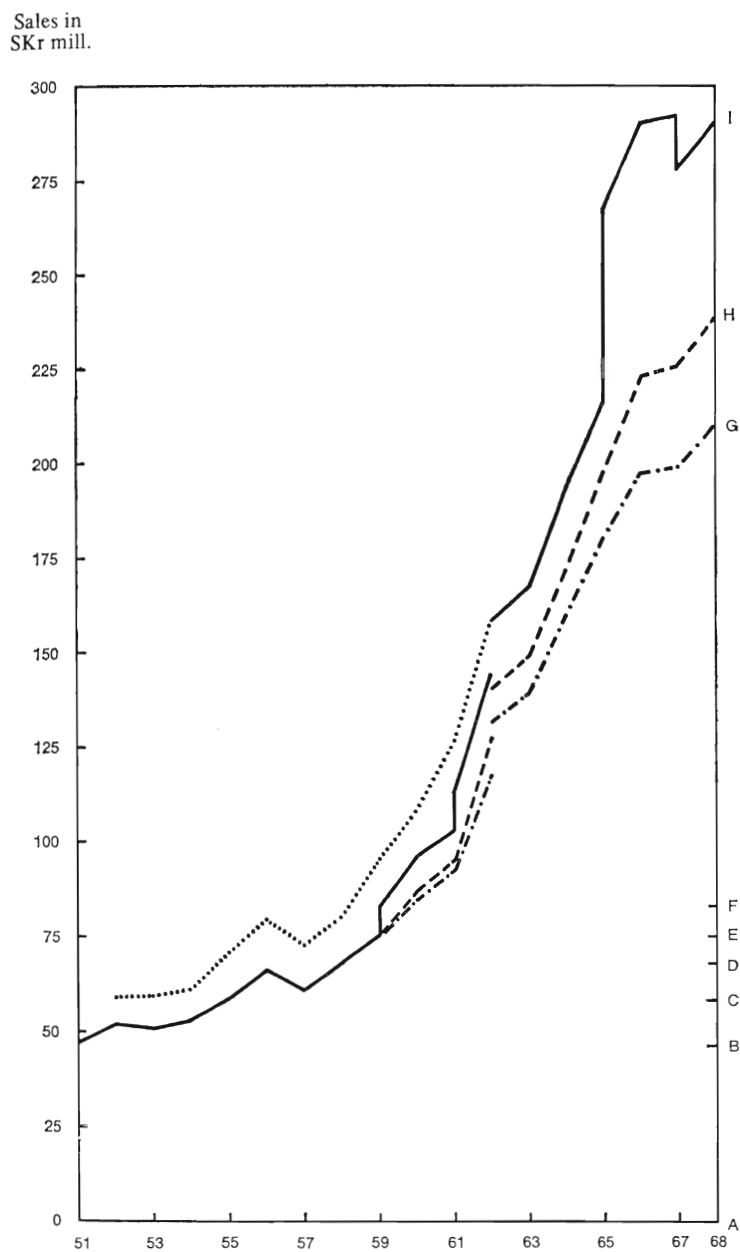
assumed to have grown after the merger according to the method used. GI thus represents the aggregate size of the firms that Bahco bought or sold during the period, written up to 1968 value by the firm's internal growth for each merger and year. C, lastly, represents the adjusted initial-year size and the dotted line beginning at C represents the upward adjustment to consolidated level of the sales reported during the years from 1951 to 1961.

As will be seen from Figure 15, Bahco grew rather slowly on a 100-percent internal basis up to 1959, when it acquired a firm grossing annual sales of SKr 8.8 million. This is marked by the vertical EF segment on the illustrated sales curve. DE represents Bahco's internal expansion during the same year (SKr 7.2 million) and DF the total expansion (SKr 16.0 million). Bahco's external expansion share in 1959 was 55 percent ($\frac{EF}{DF} \cdot 100$). The next acquisition took place in 1961, and in 1962 Bahco went over to reporting sales for the group as a whole. Growth increased rapidly thereafter, and the acquisition of SKr .5 million that was made in 1964 accounted for a very small part of the year's total expansion of SKr 26 million (about 2 percent). But in 1965 the external-expansion share became considerable by virtue of three acquisitions which - after deducting for a sale made during the year - added a sales value of SKr 48.8 million to the internal expansion of SKr 23.2 million. In that year Bahco's total expansion came to 37.3 percent. A relatively steep rate of internal growth reported for 1966 turned into a very modest rate in 1967. In that year, however, one subsidiary and one operating division with combined sales of SKr 18 million were disposed of, resulting in negative overall expansion. In 1968, finally, growth was confined to an internal increase of a few percentage points.

The average (arithmetic mean) annual rate of increase in Bahco sales during the period 1951-68 amounted to 11.2 percent (at current prices). External expansion as estimated with method 1 averaged 2.5 percent per annum and internal expansion 8.7 percent per annum. This means that, according to method 1, Bahco's acquisitions and disposals contributed on an average to 22.3 percent of its *annual* growth throughout the period.¹

¹ The external-expansion share came to 20.3 percent for 1951-59 and 23.4 percent for 1960-68.

Figure 15. *Illustration of methods used to calculate the role of mergers in the growth of a firm (AB Bahco), 1951-68.*



The firm's reported terminal-year value (I) is SKr 288.3 million. The terminal-year value of merger activity (GI) comes to SKr 80.2 million, i.e. the sum total of acquisitions and sales, written up to 1968 prices by the internal percentage growth after each merger year by year.¹ Hence the share of Bahco's size in 1968 attributable to mergers works out at $\frac{80.2}{288.3} \cdot 100$, i.e. 27.8 percent (method 2). Their share of the firm's growth from 1952 to 1968 (method 3) amounts to 35.0 percent ($\frac{80.2}{288.3-58.3}$) $\cdot 100$, i.e. higher than the value given by method 1.² The adjusted initial-year size (C) for 1952 is SKr 58.3 million, which gives a negative initial-year difference of SKr 6.1 million (-11.7 percent). This is equivalent to the firm's accounting revision in 1962, which had a magnitude of SKr 14.2 million in current prices. If the 1962 value is deflated to the 1952 level by the annual rates of internal growth between these two years, the resulting value comes to SKr 6.3 million.³

THE ROLE OF EXTERNAL EXPANSION FOR THE POSTWAR SIZE AND GROWTH OF LISTED FIRMS

S a m p l e o f f i r m s i n v e s t i g a t e d

As of January 1, 1969, a total of 67 manufacturing and construction firms had their shares quoted on the Stockholm Stock Exchange. Seven of the firms are excluded from the analysis in this chapter for various reasons, some because they were subsidiaries of other firms either during the whole period of analysis or a large part thereof, others because of inadequate information or because they were established during the period. Two firms were added which though formally constituted as holding companies could be

¹ For example, the terminal-year value is SKr 21.7 million for acquisitions worth SKr 8.8 million made in 1959 and SKr 20.1 million for those worth SKr 10 million made in 1961.

² If no post-merger growth at all is assumed for the merged entities, the external share falls just short of 22 percent, or approximately the same as with method 1.

³ The difference of SKr .2 million is due to rounding.

regarded in practice as manufacturing enterprises.¹ That left a sample of 62 firms for study. A list of these firms together with selected merger data is given in Table 28. The merger activity of all these 62 firms from 1946 to 1968 was investigated in detail and their expansion in terms of sales and employment mapped out for as much of this period as the reported data permitted.² Sales and/or number of employees were reported by 59 firms on a consolidated basis long enough to qualify for inclusion in the aggregated analyses pertaining to the period 1952-68.^{3 4}

The analyzed firms cannot be said to represent any group other than listed Swedish industrial companies. Many large firms are left out altogether (e.g. government-owned, cooperatives, family-owned). Our selection was primarily determined by the availability of data, and considering the relatively great willingness of listed firms to provide information and (at least during the 1960's) disclose particulars on mergers it was only natural to subject them to detailed analysis already at the time when we began collecting our primary data. However, they cover different industries rather well, and the group also represents a broad size interval - the range in terms of 1968 sales, for instance, runs from SKr 60 million up to nearly SKr 4 billion.

Together, the 62 investigated firms acquired 579 firms and operating divisions throughout the period 1946-68. Of these acquisitions 16 took place during years for which the acquiring firm did not report sales data, and 62 were completed by firms whose expansion could not be analyzed for the whole period. Of the remaining 501 acquisitions, 53 were excluded from the analyses of sales expansion, in most

¹ The seven excluded firms are AB Algot Johansson, Corona-verken, Dagens Nyheter, Förenade Superfosfatfabriker, AB Nitro-Nobel, Skandinaviska Elverk and Svenska Fläktfabriken. The added firms are AB Cardo (Sockerbolaget) and Kilsunds AB, both recently reorganized into holding companies.

² For methods of investigation and sources, see Chapter 2.

³ The firms excluded owing to lack of data are AB Ahlsell & Ågren and SAAB (sales data), Atlas Copco and Cementsa (employment data) and Swedish Match (both sales and employment data).

⁴ When two listed firms merge the larger one is considered the buyer (e.g. acquisition of Stockholms Bryggerier by Pripp & Lyckholm).

Table 28. Merger data for 62 listed manufacturing and construction firms

| | Num- ber of acqui- sitions 1946- 68 | Num- ber of dis- posals 1946- 68 | Turn- over value (Skr mn) of Σ ac- quisi- tions - sell-offs | Number of em- ployees in Σ ac- quisi- tions - sell-offs | External exp. share (%) method 1 | | External exp. share (%) method 3 | | External e- share (%) method 2 | |
|------------------------------------------------|----------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------|-------|----------------------------------------|--------|--------------------------------------|------|
| | (1) | (2) | (3) | (4) | sales | empl. | sales | empl. | sales | em |
| <i>Engineering</i> | | | | | | | | | | |
| Aga | 27 | 5 | -117.1 | 237 | neg. | 6.9 | -20.7 | 5.0 | -13.4 | |
| Alfa-Laval | 11 | 1 | -30.7 | -77 | 1.1 | 4.8 | -3.5 | -0.6 | 2.2 | -1 |
| Atlas Copco | 6 | 1 | 78.2 | — | 3.8 | — | 8.3 | — | 6.9 | — |
| Billman | 4 | 2 | 14.0 | 258 | 5.8 | 17.6 | 18.2 | 24.2 | 16.5 | 21 |
| Bofors | 4 | 0 | 19.4 | 567 | 3.3 | 20.0 | 3.3 | 29.0 | 2.2 | . |
| Esab | 5 | 1 | 56.0 | 647 | 9.1 | 30.0 | 23.2 | 21.6 | 16.8 | 11 |
| Facit | 8 | 1 | 177.7 | 2 970 | 11.2 | 33.3 | 26.3 | 35.0 | 22.1 | 21 |
| Jungner | 2 | 3 | -94.4 | -1 638 | neg. | neg. | -2 697.1 | 84.9a) | -101.1 | -231 |
| ASJ | 3 | 2 | -29.8 | -263 | 3.3 | neg. | -36.6 | -155.6 | -21.1 | -11 |
| Kullager | 12 | 0 | 571.3 | 18 434 | 10.6 | 42.2 | 20.9 | 35.5 | 15.1 | 21 |
| Monark-Crescent | 10 | 0 | 116.4 | 1 428 | 79.8 | 136.9 | 101.8 | 213.8 | 67.8 | 71 |
| Nordarmatur | 3 | 1 | 32.6 | 566 | 27.1 | 180.0 | 51.3 | 204.3 | 31.0 | 31 |
| PLM | 12 | 0 | 162.5 | 2 167 | 27.4 | 85,3 | 52.1 | 92.5 | 45.5 | 61 |
| <i>Primary metals</i> | | | | | | | | | | |
| Boliden | 6 | 1 | 382.7 | 2 984 | 21.9 | 88.6 | 45.6 | 107.6 | 38.6 | 41 |
| Fagersta | 7 | 0 | 36.5 | 790 | 3.2 | 36.4 | 10.9 | 27.8 | 6.1 | 11 |
| Garphyttan | 0 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |
| Gränges (exkl. LKAB) | 10 | 0 | 711.1 | 6 486 | 24.9 | 33.0 | 56.8 | 50.5 | 49.0 | 31 |
| Gunnebo | 5 | 1 | 43.1 | 517 | 22.5 | 86.8 | 52.1 | 83.5 | 37.6 | 41 |
| Metallverken | 17 | 0 | 230.6 | 1 985 | 8.9 | 77.8 | 27.3 | 77.5 | 19.2 | 21 |
| Sandviken | 3 | 0 | 72.8 | 1 162 | 5.0 | 18.9 | 8.7 | 13.9 | 6.8 | 11 |
| Uddeholm | 7 | 3 | 137.7 | 2 443 | 8.5 | 0.9 | 25.0 | 202.9 | 14.0 | 11 |
| Wirsbo | 1 | 0 | 0.0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0 |
| <i>Domestic appliances</i> | | | | | | | | | | |
| Bahco | 8 | 3 | 80.2 | 1 736 | 22.3 | 81.6 | 34.9 | 89.9 | 27.8 | 41 |
| Electrolux | 10 | 0 | 328.4 | 4 531 | 18.1 | 38.2 | 34.8 | 49.1 | 24.7 | 21 |
| Husqvarna | 9 | 2 | 9.5 | 558 | 2.7 | >100 | 3.7 | >100 | 2.3 | 11 |
| <i>Electrical equipment</i> | | | | | | | | | | |
| ASEA | 27 | 19 | -444.8 | -56 | 0.0 | 10.0 | -26.1 | -0.6 | -16.3 | -0 |
| LM Ericsson | 21 | 2 | 402.2 | 3 703 | 10.4 | 3.3 | 19.8 | 12.3 | 16.0 | 11 |
| <i>Transport equipment</i> | | | | | | | | | | |
| Götaverken | 2 | 0 | 4.2 | 78 | 0.0 | 0.0 | 0.8 | 4.7 | 0.6 | 0 |
| SAAB | 12 | 0 | — | 2 037 | — | 12.7 | — | 20.0 | — | 14 |
| Scania-Vabis | 13 | 0 | 45.0 | 2 939 | 2.5 | 43.8 | 4.5 | 45.5 | 3.7 | 31 |
| Volvo | 15 | 2 | 171.8 | 8 082 | 8.0 | 30.2 | 5.1 | 39.9 | 4.4 | 31 |
| <i>Lumber & wood, pulp & paper</i> | | | | | | | | | | |
| Bergvik och Ala | 5 | 0 | 88.2 | 96 | 30.2 | >100 | 67.9 | >100 | 42.4 | 11 |
| Billerud | 13 | 0 | 154.4 | 2 183 | 26.1 | 106.6 | 52.6 | 125.2 | 33.8 | 31 |
| Holmens Bruk | 5 | 1 | -13.5 | -115 | 1.1 | 0.0 | -5.0 | -19.0 | -2.8 | -21 |
| Iggesund | 4 | 0 | 157.3 | 2 352 | 40.7 | 176.2 | 53.1 | 173.2 | 38.2 | 41 |
| Klippan | 11 | 3 | 138.1 | 1 670 | 38.0 | 87.0 | 67.6 | 91.9 | 54.3 | 41 |
| Kopparfors | 3 | 1 | -10.7 | 60 | 1.4 | >100 | -14.3 | >100 | -5.6 | 11 |
| Korsnäs | 4 | 1 | 121.4 | 2 004 | 21.6 | 3.3 | 52.6 | 215.9 | 31.0 | 41 |
| Mo och Domsjö | 15 | 1 | 107.0 | 1 933 | 8.6 | 92.3 | 20.5 | 56.3 | 14.6 | 21 |
| Munksjö | 2 | 0 | 0.0 | 137 | 4.1 | 16.0 | 0.0 | 15.0 | 0.0 | 11 |
| Stora Kopparberg | 7 | 3 | -154.7 | 2 079 | neg. | 60.0 | -21.4 | 59.7 | -11.9 | 11 |
| SCA | 17 | 2 | 313.9 | 3 483 | 53.4 | >100 | 48.7 | >100 | 28.3 | 21 |
| SLT | 18 | 3 | 54.3 | 892 | 5.0 | 45.5 | 10.4 | >100 | 7.1 | 11 |

| | Number of acquisitions 1946-68 | Number of disposals 1946-68 | Turn-over value (Skr mn) of Σ acquisitions — sell-offs | Number of employees in Σ acquisitions — sell-offs | External exp. share (%) method 1 | | External exp. share (%) method 3 | | Extern share (metho |
|-----------------------------------------|--------------------------------|-----------------------------|---------------------------------------------------------------|----------------------------------------------------------|----------------------------------|-------|----------------------------------|---------|---------------------|
| | (1) | (2) | (3) | (4) | sales | empl. | sales | empl. | sales |
| <i>Food and beverages</i> | | | | | | | | | |
| Marabou | 4 | 1 | -170.4 | -831 | neg. | neg. | -164.5 | -442.2 | -76.4 |
| Pripp-Bryggerierna | 21 | 4 | 364.9 | 2 955 | 47.6 | 100.0 | 63.8 | 107.8 | 53.9 |
| Socketbolaget (AB Cardo) | 3 | 0 | 142.0 | 1 403 | 26.0 | >100 | 38.0 | 1 150.0 | 19.5 |
| <i>Textile and apparel</i> | | | | | | | | | |
| Borås Wäfverier | 3 | 0 | 45.6 | 405 | 41.8 | >100 | 54.1 | 61.1 | 30.8 |
| Kilsund | 3 | 0 | 54.2 | 990 | 75.9 | 292.9 | 105.7 | 368.0 | 71.6 |
| Mölnlycke | 5 | 1 | 12.3 | -52 | 2.9 | 0.0 | 6.6 | -4.6 | 4.4 |
| Förenade Trikä | 6 | 0 | 47.0 | 532 | 27.0 | 1.2 | 47.6 | >100 | 32.6 |
| <i>Chemical and chemical products</i> | | | | | | | | | |
| Astra | 14 | 1 | 100.5 | 1 189 | 9.6 | 27.4 | 21.3 | 29.8 | 19.1 |
| Becker | 17 | 6 | 35.6 | 488 | 50.6 | 124.2 | 41.4 | 114.0 | 25.0 |
| Fosfatbolaget (KemaNord) | 7 | 1 | 124.9 | 1 203 | 22.3 | 65.5 | 35.1 | 55.8 | 27.0 |
| Tändsticksbolaget | 34 | 1 | — | 5 191 | — | — | — | — | — |
| Trelleborg-Tretorn | 10 | 2 | 207.5 | 4 458 | 29.2 | 60.8 | 44.8 | 63.5 | 40.0 |
| <i>Concrtuction, building materials</i> | | | | | | | | | |
| Ahlsell & Ågren | 15 | 0 | — | 1 293 | — | 95.5 | — | 99.3 | — |
| Armerad Betong | 2 | 0 | 20.8 | 179 | 1.7 | 7.7 | 5.7 | 11.0 | 4.7 |
| Cementa | 12 | 2 | 481.7 | — | 48.1 | — | 75.9 | — | 61.9 |
| Skånska Cementgjuteriet | 14 | 0 | 221.0 | 1 648 | 3.2 | 8.3 | 10.2 | 13.5 | 9.2 |
| Höganäs | 3 | 2 | 5.9 | 266 | 6.8 | >100 | 3.5 | >100 | 2.3 |
| Tarkett | 3 | 1 | -4.1 | 13 | neg. | 0.0 | -3.2 | 1.2 | -2.9 |
| Vägförbättringar | 4 | 0 | 40.7 | 706 | 3.3 | 13.3 | 11.5 | 22.7 | 10.5 |

a) The value is positive because both numerator and denominator are negative.

Note: Columns 1 and 2 pertain to the period 1946-68, columns 3, 7 and 9 to 1953-68. Columns 8 and 10 have initial years varying between 1946 and 1952. »>100» signifies that total expansion negative even though acquisitions were consummated. »neg.» means that the disposals were on a larger scale than the acquisitions when total expansion was positive.

cases because their sales values were deemed to have entered wholly or preponderantly into the acquiring firm's turnover prior to merger,¹ ² and in a few cases where the acquired entities were not immediately integrated with the consolidated accounts of the acquiring firm.³ An additional 63 acquisitions could not be included in the analysis of external-expansion shares because turnover data were missing, nor could they be estimated with any reasonable claim to accuracy. The vast majority of these transactions pertain to firms located abroad. However, there are compelling reasons to believe that small entities were almost entirely involved in the excluded acquisitions. Any tendency these may have to understate the shares attributable to external expansion should therefore be relatively small.

The number of sales during the period amount to 86. Five of them were left out for reasons similar to those mentioned above. Data on size were missing in twelve cases. Quite a few of the sales took place in the form of transactions between listed firms, i.e. within the investigated aggregate, which means that their effect on the expansion-share estimates for the group as a whole have been neutralized. Some sales were made to individuals (local managers and the like), and a couple of more cases involved offerings of large blocks of shares to the public.⁴ Such sales fall outside the definition of merger as used in this study, but since both cases of the latter type had a big and immediate effect on the selling groups reported sales and employment they have been included in the analysis.

For the period as a whole acquisitions and sales were frequent among the investigated firms. At the same time, however, there are considerable variations between them. In the course of the 23 years under review the most "merger-active" firm (ASEA) completed 27 acquisitions and 19 sales

¹ A large number of these cases pertain to acquisitions of automobile dealers by manufacturers of motor vehicles.

² The number of such cases turned out to be considerably lower when the employment measure was used.

³ Chiefly pertains to 50-percent acquisitions of shares. According to the accounting practices of some firms, ownership interests of this kind should not be shown on a consolidated basis.

⁴ The reference here is to the stock-market introductions of Svenska Fläktfabriken (1959) and Skandinaviska Elverk (1965), both former subsidiaries of ASEA.

in Sweden and abroad, whereas Garphyttan was the only firm having no merger activity at all throughout this period.

Combined sales of SKr 5,985.9 million were recorded for the entities merged from 1953 to 1968, this figure expressed in 1968 values written up in accordance with the method described earlier. The total is a result of acquisitions less sales and pertains to 59 of the 62 firms. Their combined turnover in 1968 was SKr 44,627.1 million and the increase in total sales since 1952 was SKr 32,936.8 million (adjusted initial-year values), i.e. an increase of 282 percent in 16 years. The merged entities employed 98,890 persons in 1968. Total employment in the 59 firms that same year was 512,441 and the increase during the period came to 248,466 persons. The investigated firms account for about half the total industrial turnover and employment and about one-fourth of all the mergers during the period.

The external-expansion shares accounted for in the following sections are set forth in detail for each of the investigated firms in Table 28 together with certain absolute values concerning their merger activity.

Year - by - year significance of the mergers (method 1)

The external share of annual sales expansion for the 59 firms amounts to 15.8 percent for the period 1946-68,¹ figured as an unweighted annual average of each firm's share of external growth.² The contribution of external expansion to sales growth has increased during the period; the share for 1960-68 comes to 23.3 percent.

To the extent that the increase in sales reflects higher prices, the *share* attributable to external expansion will tend, as already mentioned, to be understated and hence the internal portion will be correspondingly overstated. However, this bias does not seem to be large for the popu-

¹ The initial year varies between 1946 and 1952.

² In the estimates a value of zero was assigned to firms with a negative external share and of 100 to firms with shares over 100.

lation as a whole (though possibly for a few firms and years) since the wholesale price index for manufactured goods rose by only 22 percent during the period 1952-68 compared with the aforementioned sales increase of 282 percent.

Analogous calculations were made using number of employees as the size measure. As expected, higher proportions were found for the external share: 54.1 percent for the whole period and 62.4 percent for 1960-68. The fact that far fewer acquisitions had to be excluded owing to the absence of size data, and also because vertical acquisitions increased the number of employees but often not sales, may account for part of this big difference.¹ Above all, however, the difference is due to employment having expanded much more slowly than sales volume for the investigated firms; some of them actually cut back their employment levels during the period. For these firms a single acquisition, be it ever so insignificant, will push the external expansion share beyond 100 percent when number of employees is used as the size measure. Just as the sales measure tends to understate the shares attributable to external expansion, so does the employment measure tend to overstate them - and probably to an even higher degree.

The estimates of external-expansion shares using the two different size measures are set out in Tables 29-32. Tables 29 and 30 give frequency distributions on shares of total corporate growth attributable to external expansion for the whole period from 1946 to 1968 as well as for the period from 1960 to 1968. Taking in the whole period it will be seen that average annual expansion accounted for less than 10 percent of the sales growth for more than half the firms. For nearly 90 percent of the firms the sales increase attributable to mergers accounted for less than 40 percent of the total growth and in only four cases for more than 50 percent. Two firms had external expansion shares exceeding 70 percent, while for nine firms (15 percent) the external share was zero or even negative.

¹ By contrast to sales, corporations are required to disclose number of employees in their annual reports.

Table 29. *Role of external expansion in the annual growth of listed industrial firms, 1946-68 (method 1)*

| Average annual share (%) external expansion | Sales | | | Number of employees | | |
|---------------------------------------------|--------------|-------------------------|----------------------|---------------------|-------------------------|----------------------|
| | No. of firms | Cumulative no. of firms | Share (%) cumulative | No. of firms | Cumulative no. of firms | Share (%) cumulative |
| - 0 | 9 | 9 | 15.3 | 8 | 8 | 13.6 |
| 1- 9.9 | 24 | 33 | 55.9 | 6 | 14 | 23.7 |
| 10-19.9 | 4 | 37 | 62.7 | 5 | 19 | 32.2 |
| 20-29.9 | 12 | 49 | 83.0 | 2 | 21 | 35.6 |
| 30-39.9 | 2 | 51 | 86.4 | 5 | 26 | 44.1 |
| 40-49.9 | 4 | 55 | 93.2 | 4 | 30 | 50.9 |
| 50-59.9 | 2 | 57 | 96.7 | 0 | 30 | 50.9 |
| 60-69.9 | 0 | 57 | 96.7 | 3 | 33 | 55.9 |
| 70-79.9 | 2 | 59 | 100.0 | 1 | 34 | 57.6 |
| 80-89.9 | 0 | | | 5 | 39 | 66.1 |
| 90-99.9 | 0 | | | 2 | 41 | 69.4 |
| 100- | 0 | | | 18 | 59 | 100.0 |
| Total | 59 | | | 59 | | |

Note: The initial year varies between 1946 and 1952.

Table 30. *Role of external expansion in the annual growth of listed industrial firms, 1960-68 (method 2)*

| Average annual share (%) external expansion | Sales | | | Number of employees | | |
|---------------------------------------------|--------------|-------------------------|----------------------|---------------------|-------------------------|----------------------|
| | No. of firms | Cumulative no. of firms | Share (%) cumulative | No. of firms | Cumulative no. of firms | Share (%) cumulative |
| - 0 | 10 | 10 | 16.7 | 12 | 12 | 20.0 |
| 1- 9.9 | 16 | 26 | 43.3 | 1 | 13 | 21.7 |
| 10-19.9 | 5 | 31 | 51.7 | 2 | 15 | 25.0 |
| 20-29.9 | 11 | 42 | 70.0 | 3 | 18 | 30.0 |
| 30-39.9 | 3 | 45 | 75.0 | 4 | 22 | 36.7 |
| 40-49.9 | 4 | 49 | 81.7 | 1 | 23 | 38.3 |
| 50-59.9 | 6 | 55 | 91.7 | 2 | 25 | 41.7 |
| 60-69.9 | 3 | 58 | 96.7 | 2 | 27 | 45.0 |
| 70-79.9 | 0 | 58 | 96.7 | 1 | 28 | 46.7 |
| 80-89.9 | 0 | 58 | 96.7 | 1 | 29 | 48.3 |
| 90-99.9 | 0 | 58 | 96.7 | 3 | 32 | 53.3 |
| 100- | 2 | 60 | 100.0 | 28 | 60 | 100.0 |
| Total | 60 | | | 60 | | |

As for the shorter period from 1960 to 1968, the picture does not change so much as might be supposed in view of the much livelier merger activity than compared with the 1950's and late 1940's. The external-expansion share during the 1960's came to less than 20 percent for half the firms and less than 50 percent for nine-tenths of the firms. Merger activity contributed to the entire sales increase for two firms, while it made no contribution at all or even had negative effects for ten firms.¹

If analogous calculations are made for the increase in employment, external expansion will take on greater significance for the reasons just described. Figured for the period as a whole, external expansion has accounted for half the total employment increase of every other firm and for 100 percent or more in 30 percent of the cases. This tendency was accentuated during the period 1960-68, when nearly half the firms had an external share of 100 percent or more.

As was noted above, the external-expansion shares presented so far represent unweighted company averages. If similar estimates are performed for the whole aggregate, i.e. if the firms are treated as a single group, weighted expansion data are obtained. Such data are presented in Tables 31 and 32. They show that the weighted external-expansion shares fall slightly below the unweighted. These estimates were worked out with the same initial year for the firms. The smaller group of barely half the firms, for which consolidated data were in hand for the years up to 1952, had an external share of sales expansion amounting to only 1.4 percent for the period 1948-52. For the period 1953-68 the corresponding share for the whole aggregate comes to 13.8 percent.² These figures should be compared with the previously quoted unweighted external share of 15.8 percent. The weighted external employment share from 1948 to 1952 is 11.5 percent and for 1953-68 40.7 percent, which compares with unweighted share of 54.1 percent for the whole period. These differences indicate that the smaller firms in our population have had a higher external-expansion share than the larger firms.

¹ Which is by way of saying that the sales were more extensive.

² For method of estimation see p. 235 f.

Table 31. *Total, external and internal annual sales growth of listed industrial firms, 1948-68 (method 1)*

| Year | Sales | | | | | | |
|---------|----------------------------------------|---------|-------------------|---------|-------------------|---------|------|
| | Total increase | | External increase | | Internal increase | | |
| | SKr mn | % | SKr mn | % | SKr mn | % | |
| 1948 | (24 firms) | 351.5 | 14.9 | 0 | .0 | 351.5 | 14.9 |
| 1949 | " | 31.5 | 1.2 | 7.1 | .3 | 24.4 | .9 |
| 1950 | " | 442.7 | 16.0 | 5.0 | .2 | 437.7 | 15.8 |
| 1951 | " | 1,470.0 | 45.8 | 23.2 | .7 | 1,446.8 | 45.1 |
| 1952 | " | 166.5 | 3.6 | -.4 | .0 | 166.9 | 4.0 |
| 1948-52 | Arithmetic mean p.a. | | 16.3 | | .2 | | 16.1 |
| | Average weighted share p.a. (58 firms) | | | | 1.4 | | 98.6 |
| 1953 | " | -4.2 | .0 | 10.9 | .1 | -15.1 | -.1 |
| 1954 | " | 1,095.8 | 9.6 | 41.9 | .4 | 1,053.9 | 9.2 |
| 1955 | " | 1,515.7 | 12.4 | 71.9 | .6 | 1,443.8 | 11.8 |
| 1956 | " | 1,726.8 | 12.5 | 73.0 | .5 | 1,653.8 | 12.0 |
| 1957 | " | 823.9 | 5.3 | 100.8 | .6 | 723.1 | 4.7 |
| 1958 | " | 295.3 | 1.8 | -68.6 | -.4 | 363.9 | 2.2 |
| 1959 | " | 1,250.9 | 7.5 | -335.0 | -2.0 | 1,585.9 | 9.5 |
| 1960 | " | 2,394.1 | 13.4 | 278.1 | 1.6 | 2,116.0 | 11.8 |
| 1961 | " | 1,983.9 | 9.8 | 374.7 | 1.8 | 1,609.2 | 8.0 |
| 1962 | " | 1,403.6 | 6.3 | 84.4 | .4 | 1,318.4 | 5.9 |
| 1963 | " | 2,226.5 | 9.4 | 324.2 | 1.4 | 1,902.3 | 8.0 |
| 1964 | " | 3,976.7 | 15.3 | 566.5 | 2.2 | 3,410.2 | 13.1 |
| 1965 | " | 4,637.1 | 15.5 | 1,024.4 | 3.4 | 3,612.7 | 12.1 |
| 1966 | " | 2,636.4 | 7.6 | 805.9 | 2.3 | 1,830.5 | 5.3 |
| 1967 | " | 3,223.4 | 8.7 | 856.7 | 2.3 | 2,367.0 | 6.4 |
| 1968 | " | 3,248.7 | 8.0 | 263.9 | .7 | 2,984.8 | 7.3 |
| 1953-68 | Arithmetic mean p.a. | | 8.9 | | 1.0 | | 7.9 |
| | Average weighted share p.a. | | | | 13.8 | | 86.2 |

Tables 31 and 32 show the total external and internal growth for each single year of the period. From 1953 to 1968 the external sales expansion averaged (arithmetic mean) 1.0 percentage point per annum out of a total expansion of 8.9 percent. The external sales expansion varied during the period between a negative external growth rate of 2.0 percent in 1959 and a positive rate of 3.4 percent in 1965. Very large annual variations can be observed for the external shares of the sales increase. They were negative in 1952, 1958 and 1959, negligible in 1948 and 1950-51 and insignificant (at most 5 percent) in 1954-57. The big external-

expansion shares during the pre-1960 period occurred in 1953 (more than 100 percent) and 1949 (25 percent).¹ It will be seen from Table 31 that 1949 and 1953 were the two years of this earlier period when business activity was at its lowest levels, with insignificant total sales expansion for the whole group of firms. This could be interpreted to mean that the firms then sought to compensate for contracting demand by "buying markets". However, it may be doubted

Table 32. *Total, external and internal annual employment growth of listed industrial firms, 1948-68 (method 1)*

| Year | Number of employees | | | | | | |
|---------|-----------------------------|--------|-------------------|--------|-------------------|---------|------|
| | Total increase | | External increase | | Internal increase | | |
| | number | % | number | % | number | % | |
| 1948 | (26 firms) | 1,926 | 1.6 | 10 | .0 | 1,916 | 1.6 |
| 1949 | " | - 798 | -.6 | 23 | .0 | - 775 | -.6 |
| 1950 | " | 1,899 | 1.5 | 392 | .3 | 1,507 | 1.2 |
| 1951 | " | 8,010 | 6.3 | 1,230 | 1.0 | 6,780 | 5.3 |
| 1952 | " | 3,530 | 2.6 | 140 | .1 | 3,390 | 2.5 |
| 1948-52 | Arithmetic mean p.a. | | 2.3 | | .3 | | 2.0 |
| | Average weighted share p.a. | | | | 11.5 | | 88.5 |
| 1953 | (60 firms) | -4,202 | -1.4 | 514 | .2 | -4,716 | -1.6 |
| 1954 | " | 33,518 | 11.6 | 2,110 | .7 | 31,408 | 10.9 |
| 1955 | " | 24,302 | 7.5 | 2,386 | .7 | 21,916 | 6.8 |
| 1956 | " | 12,621 | 3.6 | 1,560 | .4 | 11,061 | 3.2 |
| 1957 | " | 6,834 | 1.9 | 2,795 | .8 | 4,039 | 1.1 |
| 1958 | " | 6,924 | 1.9 | 609 | .2 | 6,315 | 1.7 |
| 1959 | " | 1,017 | 2.7 | 3,226 | .9 | 6,791 | 1.8 |
| 1960 | " | 33,315 | 8.7 | 7,159 | 1.9 | 26,156 | 6.8 |
| 1961 | " | 26,539 | 6.4 | 6,197 | 1.5 | 20,342 | 4.9 |
| 1962 | " | 7,746 | 1.7 | 2,724 | .6 | 5,022 | 1.1 |
| 1963 | " | -1,875 | -.4 | 4,409 | 1.0 | -6,284 | -1.4 |
| 1964 | " | 24,802 | 5.5 | 9,006 | 2.0 | 15,796 | 3.5 |
| 1965 | " | 38,709 | 8.2 | 22,309 | 4.7 | 16,400 | 3.5 |
| 1966 | " | 10,220 | 2.0 | 13,225 | 2.6 | -3,005 | -.6 |
| 1967 | " | -6,074 | -1.2 | 8,452 | 1.6 | -14,526 | -2.8 |
| 1968 | " | -2,253 | -.4 | 3,301 | .7 | -5,554 | -1.1 |
| 1953-68 | Arithmetic mean p.a. | | 3.6 | | 1.3 | | 2.3 |
| | Average weighted share p.a. | | | | 40.7 | | 59.3 |

¹ The percentage shares for specific years can be read off only indirectly from the tables.

whether the merger behavior of acquiring firms is swayed by such short-range considerations. An equally plausible interpretation could be that some merger activity is almost always going on and that this will have much greater impact on the estimates performed here whenever the total expansion is weak.¹ During the 1960's, however, the relationship was the other way around. The two years with a markedly low external-expansion share - 1962 and 1968 - also belonged to the period's weakest expansion years. Even so the picture is not altogether conclusive, since the most pronounced expansion years, 1960 and 1964-65, did not have the highest external-expansion shares. These occurred instead during the relatively "poor" years, 1966-67.² Thus, it would appear more plausible to test the idea of "buying markets" as a merger motive for individual firms and over a longer time period. Such a test will be undertaken later on in this chapter.

The contribution of mergers to the size of listed firms (method 2)

The method of estimating the significance of acquisitions and sell-offs for the size of the investigated firms was described and illustrated in detail earlier in the chapter. All that will be repeated here is that the sales of bought and sold entities have been calculated in 1968 prices by means of the internal growth rates resulting from the calculations made in accordance with method 1.

¹ This interpretation is supported by the fact that merger activity during the two years before 1960 with extremely high external shares (1949 and 1953) in absolute values was relatively low compared with the other years.

² Our regression estimates suggest a nonexistent correlation between internal and external expansion. The equation $y = a + bx$, where y is the external and x the internal annual sales increase in percent, produced the following values: $y = .7 + .01x$. The correlation coefficient was .07. But as was noted in Chapter 5, a "lag" of at least one year should be built into the equation. Since this was not done, the estimates should be interpreted with great caution.

From 1953 to 1968 acquisitions and sell-offs contributed 13.9 percent to the turnover of the roughly 60 investigated manufacturing and construction firms in 1968. This share is an unweighted corporate average that also includes firms with negative merger effects on size, i.e. where sell-offs weighed heavier than acquisitions.¹ Correspondingly, external contribution to employment in 1968 comes to 17.6 percent.² The two methods thus yield results that do not especially diverge.³

If weighted firm average is calculated instead, i.e. the investigated firms are regarded as an aggregate and their combined merger activity is related to their combined terminal-year value, the picture does not change appreciably. These weighted merger shares amount to 13.4 percent for the sales measure and 19.3 percent for the employment measure. The variances from the unweighted external average shares thus go in different directions, but they are so small that they can hardly admit of any interesting conclusions.⁴

As was done for the external annual expansion shares (method 1), a frequency distribution was made of the investigated firms with reference to the share of mergers in their size in 1968. The result is presented in Table 33.

¹ If the ten firms whose sales contracted because of mergers are subtracted, the average for the remaining 49 rises to 22.5 percent.

² If the five firms for whom employment levels fell off because of sales are subtracted, the average for the remaining 54 rises to 25.3 percent.

³ The results come remarkably close to the external-share rate of 18.6 percent that Weston ([1953], p. 14) obtained from his analysis of merger activity for some 70 U.S. corporations. His study, however, covers a much longer period (c. 1900-48). Nor are the mergers inflated to terminal-year values. Weston used capital as the size measure. This suggests that the similarity is purely fortuitous.

⁴ Weston [1953] obtained a weighted merger share measure of 19.2 percent, but here again the resemblance to the Swedish result must be due to chance. A more accurate comparison would be with an American study of merger activity by the 200 largest firms during the period 1949-68. The firms and operating divisions acquired during this period accounted for 16.9 percent of the 200 acquiring firms' combined capital in 1968, the terminal year (*Economic Report on Corporate Mergers* [1969], p. 186). That figure also comes very close to the one in our study even though the acquired entities have not been written up to terminal-year values.

Table 33. *Share of mergers in the size of listed industrial firms in 1968 (method 2)*

| Merger share of size (%) | Sales | | | Number of employees | | |
|--------------------------|--------------|-------------------------|----------------------|---------------------|-------------------------|----------------------|
| | No. of firms | Cumulative no. of firms | Share (%) cumulative | No. of firms | Cumulative no. of firms | Share (%) cumulative |
| < 0 | 10 | 10 | 16.9 | 5 | 5 | 8.5 |
| 0 | 3 | 13 | 22.0 | 4 | 9 | 15.3 |
| 1- 9.9 | 13 | 26 | 44.1 | 13 | 22 | 37.3 |
| 10-19.9 | 10 | 36 | 61.0 | 7 | 29 | 49.2 |
| 20-29.9 | 6 | 42 | 71.2 | 11 | 40 | 67.8 |
| 30-39.9 | 8 | 50 | 84.7 | 6 | 46 | 78.0 |
| 40-49.9 | 4 | 54 | 91.5 | 8 | 54 | 91.5 |
| 50-59.9 | 2 | 56 | 94.9 | 1 | 55 | 93.2 |
| 60-69.9 | 2 | 58 | 98.3 | 1 | 56 | 94.9 |
| 70-79.9 | 1 | 59 | 100.0 | 2 | 58 | 98.3 |
| 80-89.9 | 0 | | | 1 | 59 | 100.0 |
| 90-99.9 | 0 | | | 0 | | |
| 100- | 0 | | | 0 | | |
| Total | 59 | | | 59 | | |

For 15 to 20 percent of the firms, according to our estimates, size either declined or was completely unaffected by merger activity. For 50 to 60 percent of them, postwar acquisitions and sales contributed no less than 20 percent to their size in 1968. For less than 10 percent of the firms, at least half their 1968 size can be attributed to mergers that were consummated since 1953. Although the external-size shares generally work out slightly higher for employment than for sales, the two measures nevertheless produce strikingly similar results.

As noted earlier, complete merger and growth data are available for 24 of the 59 firms for a somewhat longer period, namely 1948-68. The external share of sales for these firms then works out at 15.8 percent compared with 15.1 percent for the same firms during the shorter period from 1953 to 1968.¹ This insignificant difference is of course due to the much lower level of merger activity in 1948-52 than in the subsequent period.

¹ The percentages are unweighted firm averages.

The results presented in this section point up the significance that merger activity (under certain specified assumptions) of the past few decades has had for the size of listed industrial firms in 1968. By making a few additional assumptions we shall be in a position to assess what merger activity has meant for these firms from their very beginnings, i.e. for their entire growth. At the beginning of the period under review (1952) the 59 firms had combined sales or turnover of SKr 11,150 million. Assuming that this size can be explained by mergers to the same extent as the growth between 1952 and 1968 (about 20 percent, see next section), and further assuming that this merger share of the 1952 turnover ($\frac{20 \cdot 11,150}{100} = \text{SKr } 2,230$ million) has expanded since then at the same rate as internal corporate growth, we obtain an estimated value for 1968 of SKr 13,700 million $[5,986 + 3.47(2,230)]^1$ for the total merger activity of these firms throughout their life-span. The share of their *total* growth thus attributed to mergers works out at more than 30 percent from the time these firms first went into business. If we assume instead that only ten percent of the 1952 size was achieved by mergers, this proportion falls to 22 percent.

The contribution of mergers to the long-run growth of listed firms (method 3)

For those firms which experienced the greater part of their expansion during the postwar period, that part of their size attributable to mergers is bound to coincide closely with corresponding shares of their growth. Since this was the case for many of the investigated firms the merger share of sales and employment growth for the period 1952-68 is admittedly larger than the corresponding share of size in 1968 (i.e. the total growth) - but not considerably larger.

¹ 3.47 is the internal growth factor for all 59 firms for the period 1952-68.

The share of mergers in the sales expansion of the investigated firms during the period 1952-68 amounts to 23.2 percent, figured as an unweighted average (arithmetic mean) that also takes in the ten firms with negative external expansion. If these firms are excluded the average merger share for the remaining 49 comes to 31.3 percent. The merger share of the firms' combined increase in sales, i.e. a weighted share, is somewhat lower, namely 18.3 percent, which indicates that the larger firms have had a somewhat lower merger share than the smaller ones. A similar variance was obtained from method 1.

As expected, the contribution of mergers to the increase in employment is higher. The share for the group of firms as a whole comes to 39.8 percent. The merger share measured as average varies sharply according to how it is calculated. If the six firms that had negative external employment expansion and the eleven whose expansion shares exceeded 100 percent are counted in, the merger share average becomes 61.6 percent. If instead all negative expansion shares are counted as zero and all shares above 100 as 100, the average falls to 40.3 percent.

The reported figures can be compared with the results from some investigations in other countries. According to an American study concerned with the acquisitions of firms and operating divisions, both inside and outside the manufacturing sector, made by the 200 largest industrial firms in the period 1949-68, mergers accounted for 20.6 percent (weighted average) of the growth of assets during the period. This share came to 24.3 percent for the 50 largest firms (*Economic Report on Corporate Mergers* [1969], p. 186). Although the acquired assets were not written up to terminal-year values, this study otherwise appears to be relatively comparable with the present one.

The cited American study looked into the 25 most active acquiring firms in the U.S. during the period 1961-68. Up to 54 percent of the growth in assets held by these 25 firms is explained by acquisitions inside the U.S. during the eight years (*Economic Report on Corporate Mergers* [1969], pp. 258-262). That figure is of course not fully comparable with the Swedish one since its focus is restricted to the

most merger-intensive period as well as to the most active buyers (among them the large conglomerates). Using the same period and the same type of corporate sample the merger activity of Swedish firms would presumably have come fairly close to the 50-percent mark. Indeed, that is suggested by Table 35 below. The results of the American investigation are presented in Table 34.¹

A couple of British studies point to a substantially more modest role for acquisitions in the growth of British firms. From 1951 to 1960 a bit more than 15 percent of the growth experienced by the 100 largest firms resulted from mergers.² Roughly the same proportion was found for 150 medium-sized firms but less (10 percent) for small firms (Samuels [1965]). In another British study, covering the period 1957-62, the external growth share was found to be even lower: 7-8 percent for large and medium-sized firms and 4 percent for small firms (Mennel [1962]).³

Table 35 sets forth a frequency distribution of the 59 investigated Swedish firms with reference to the merger share of their expansion in sales and employment during the period 1950-68. The result here lends further support to the hypothesis that was advanced at the beginning of this section. The external share of sales growth exceeded 20 percent for more than 60 percent of the firms and was larger than 50 percent for one-fourth of them. Two firms grew during 1952-68 by more than 100 percent on account of mergers. When the expansion is measured in number of employees this tendency becomes decidedly more accentuated. Half the firms received at least half their manpower increments during the period through acquisitions (excluding sales), and for nearly one third of them mergers accounted

¹ Here again Weston's estimates of external expansion shares in American industry produce results that closely approximate those for the Swedish firms as far as the sales measure is concerned. The merger share for the American corporate group was estimated at 22.3 percent and the unweighted average at 22.6 percent. But this resemblance, too, may be no more than a coincidence (see footnote 3, p. 256).

² The total capital assets owned by the firms was used as the size measure.

³ The difference can be explained in part by different methods of valuing the assets of acquired firms.

Table 34. *Significance of mergers for the 25 most active acquiring firms in the U.S., 1961-68.*

| Company | Acquisitions 1961-68 | | Change in assets of company | | | Acquired assets as % of change in assets | Rank among largest industrial companies | |
|-------------------------------------------|----------------------|------------------------------------|-----------------------------|--------|--------|------------------------------------------|-----------------------------------------|------|
| | Number | Total assets of acquired companies | 1960 | 1968 | Change | | 1960 | 1968 |
| | | | -----Millions----- | | | | | |
| Gulf & Western Industries, Inc. | 67 | 2,882 | 12 | 3,455 | 3,443 | 84 | — | 34 |
| Ling-Temco-Vought, Inc. | 23 | 1,901 | 94 | 2,648 | 2,554 | 74 | 335 | 22 |
| International Telephone & Telegraph Corp. | 47 | 1,487 | 924 | 4,022 | 3,098 | 48 | 35 | 15 |
| Tenneco, Inc. | 31 | 1,196 | 1,734 | 3,888 | 2,154 | 56 | — | 16 |
| Teledyne, Inc. | 125 | 1,026 | 0 | 1,146 | 1,146 | 90 | — | 136 |
| McDonnell Douglas Corp. | 8 | 864 | 141 | 1,237 | 1,096 | 79 | 242 | 62 |
| Union Oil Company of Cal. | 11 | 825 | 734 | 2,298 | 1,564 | 53 | 56 | 30 |
| Sun Oil Company | 3 | 808 | 760 | 2,363 | 1,603 | 50 | 54 | 28 |
| Signal Companies, Inc. | 10 | 770 | 306 | 1,228 | 922 | 84 | 126 | 66 |
| Occidental Petroleum Corp. | 15 | 767 | 7 | 1,788 | 1,781 | 43 | — | 41 |
| Continental Oil Co. | 19 | 686 | 832 | 2,537 | 1,705 | 40 | 45 | 24 |
| General Telephone & Electronics Corp. | 40 | 679 | 2,205 | 6,157 | 3,952 | 17 | 13 | 9 |
| J. S. Plywood-Champion Papers, Inc. | 27 | 649 | 210 | 1,123 | 913 | 71 | 176 | 74 |
| Littton Industries, Inc. | 79 | 609 | 119 | 1,421 | 1,302 | 47 | 275 | 67 |
| Atlantic Richfield Co. | 9 | 543 | 820 | 2,451 | 1,631 | 33 | 46 | 25 |
| North American Rockwell Corp. | 6 | 534 | 386 | 1,362 | 976 | 55 | 103 | 58 |
| RMC Corp. | 13 | 497 | 313 | 974 | 661 | 75 | 121 | 89 |
| Studebaker-Worthington, Inc. | 13 | 480 | 164 | 602 | 438 | 100+ | 222 | 138 |
| General American Transportation Corp. | 4 | 453 | 414 | 1,204 | 790 | 57 | 94 | 123 |
| Textron, Inc. | 50 | 453 | 272 | 892 | 620 | 73 | 132 | 98 |
| White Consolidated Industries, Inc. | 28 | 443 | 19 | 620 | 601 | 74 | — | 133 |
| Phillips Petroleum Co. | 11 | 440 | 1,647 | 2,889 | 1,242 | 35 | 17 | 20 |
| Colt Industries, Inc. | 9 | 437 | 143 | 588 | 445 | 98 | 238 | 140 |
| Radio Corporation of America | 2 | 402 | 816 | 2,366 | 1,550 | 26 | 47 | 27 |
| Georgia-Pacific Corp. | 45 | 396 | 295 | 1,269 | 974 | 41 | 128 | 64 |
| Total | 695 | 20,227 | 13,367 | 50,528 | 37,161 | 54 | | |

Source: Economic Report on Corporate Mergers [1969], pp. 260—261.

for 100 percent or even more of their employment growth.¹

Table 35. *Shares of mergers in the growth of listed industrial firms, 1950 (approx.) - 1968 (method 3)*

| Merger share of growth (%) | Sales | | | Employment | | |
|----------------------------|--------------|-------------------------|----------------------|--------------|-------------------------|----------------------|
| | No. of firms | Cumulative no. of firms | Share (%) cumulative | No. of firms | Cumulative no. of firms | Share (%) cumulative |
| < 0 | 10 | 10 | 16.9 | 6 | 6 | 10.2 |
| 0 | 3 | 13 | 22.0 | 3 | 9 | 15.3 |
| 1- 9.9 | 9 | 22 | 37.3 | 3 | 12 | 20.3 |
| 10-19.9 | 6 | 28 | 47.5 | 5 | 17 | 28.8 |
| 20-29.9 | 7 | 35 | 59.3 | 7 | 24 | 40.7 |
| 30-39.9 | 5 | 40 | 67.8 | 3 | 27 | 45.8 |
| 40-49.9 | 5 | 45 | 76.3 | 2 | 29 | 49.2 |
| 50-59.9 | 8 | 53 | 89.8 | 4 | 33 | 55.9 |
| 60-69.9 | 3 | 56 | 94.9 | 1 | 34 | 57.6 |
| 70-79.9 | 1 | 57 | 96.6 | 1 | 35 | 59.3 |
| 80-89.9 | 0 | 57 | 96.6 | 2 | 37 | 62.7 |
| 90-99.9 | 0 | 57 | 96.6 | 3 | 40 | 67.8 |
| 100- | 2 | 59 | 100.0 | 19 | 59 | 100.0 |
| Total | 59 | | | 59 | | |

Note: The initial year in the sales estimates is 1952. It varies in the employment estimates between 1946 and 1952. The initial-year values have been adjusted in the sales calculations.

MERGER PROPENSITY AND GROWTH RATE

In pp. 232-233 it was contended that acquisitions can be one way for a firm to increase its rate of growth. Of two otherwise equal firms the one that grows both internally and externally will expand more rapidly than the one that only grows internally. One may therefore expect a positive correlation between merger propensity, measured as the share of external expansion, and total growth. Such an association was also found in an American study of merger activity by large American firms during the 1950's (Reid [1968], Chap.8).

¹ It should again be pointed out that employment levels declined in eight firms and that many of the others with a merger share of 100 percent or more had growth rates so low that even a very few or small mergers will yield the result obtained.

It was suggested earlier (p. 254) that one motivation for merger may be to "buy markets" to compensate for weak internal growth potential. In Chapter 6 it was also shown that firms which made acquisitions outside their own industry ("external diversification") have very much been attracted by fast-growing firms. The growth of firms acquired in connection with horizontal and vertical mergers has been much less. This does not contradict the notion of a negative correlation between internal growth and merger propensity.

Taking these arguments as a starting point it seems reasonable to formulate the following hypotheses. Firms with low *internal* growth probably have a higher merger propensity than firms with high internal growth, whereas firms with high merger propensity have greater *total* growth than firms with low merger propensity. These hypotheses will now be tested in more detail with the aid of available expansion and merger data for the 59 investigated firms. Owing to the limited size of our sample, however, certain qualifications must be attached to the observations made and the conclusions drawn.

In table 36 the 59 firms have been divided into four groups by scope of merger activity. To permit a comparison

Table 36. *Expansion rates of firms with varying merger activity (number of mergers), 1946-68*

| | Firms with | | | | All firms |
|------------------------------------|------------------|-------------|--------------|-------------|-----------|
| | 0 mergers | 1-5 mergers | 6-10 mergers | 11- mergers | |
| Total annual sales increase (%) | 7.2 | 10.4 | 11.1 | 11.4 | 10.7 |
| Internal annual sales increase (%) | 8.9 ¹ | 9.2 | 7.6 | 8.2 | 9.0 |
| Number of firms | 2 | 29 | 13 | 15 | 59 |
| <i>U.S. study</i> ² | | | | | |
| Total annual sales increase (%) | 16.0 | 12.1 | 20.1 | 34.1 | 18.2 |
| Number of firms | 48 | 214 | 142 | 74 | 478 |

¹ Internal expansion exceeds the total because sell-offs in the group as a whole weighed heavier than the acquisitions.

² Reid [1968], p. 159, Table 8:2. Pertains to the period 1951-61.

with the above-mentioned American study, merger activity has been defined with reference to the number of acquisitions (minus the number of sales) for each firm.

The table suggests that there is a positive correlation between merger intensity and total expansion rate. Total annual growth in sales rises for each intensity group, but this is not the case with the American firms. Among them firms with 1-5 mergers scored significantly lower on rising growth compared not only with firms having no merger activity at all but also with the average for all firms. Another difference is that the most merger-intensive group had a much higher rate of growth in the U.S. than in Sweden.

A much less distinct pattern emerges when internal growth is related to merger intensity. In order to support the formulated hypothesis the growth rate in the table ought to fall for each intensity group, but instead it fluctuates. However, the firms in both groups with the lowest merger activity (0-5 mergers net) show a definitely higher internal growth than firms in the two other intensity groups (6 or more mergers). To that extent the data do not contradict the hypothesis, either.¹

The measure of merger intensity used up to this point was selected solely because it permitted comparing the Swedish and American results. It suffers from certain weaknesses, however; other measures of intensity have of course also suggested themselves from the studies referred to earlier in this chapter. An alternative to Table 36 was therefore estimated with reference to the share of mergers in growth (method 3), with the result shown in Table 37.

It will be seen from the table that the above hypotheses receive less support from this method than from the earlier one (Table 36); all the same, the results are not contradictory. Firms with the largest external merger share of sales growth (>50 %) have also clearly grown less internally than other firms: 7.0 percent per annum as against an average of 9.0 percent for all firms. The same group of firms (>50 %) has also had higher total growth (11.7 %) than the average for all firms (10.7 %). What is surprising, how-

¹ The American study does not report any internal growth data.

Table 37. *Expansion rates of firms with varying merger activity (share of external expansion)*

| | External expansion share (%) | | | | All firms |
|------------------------------------|------------------------------|--------|---------|------|-----------|
| | -4.9 | 5-19.9 | 20-49.9 | 50- | |
| Total annual sales increase (%) | 9.0 | 13.0 | 10.2 | 11.7 | 10.7 |
| Internal annual sales increase (%) | 9.2 ¹ | 12.3 | 8.3 | 7.0 | 9.0 |
| Number of firms | 18 | 11 | 16 | 14 | 59 |

¹ Internal expansion exceeds the total because sales in the group as a whole weighed heavier than the acquisitions.

ever, is that the eleven firms with an external expansion share of 5-19.9 percent (intensity group no. 2) show higher growth rates than firms in any of the other groups, both totally and internally. The main reason for this is that growth for the group as a whole is strongly influenced by a number of construction and engineering firms who have expanded very rapidly and shown a relatively low merger activity.

The averages in the calculations presented up to this point contain a very wide dispersion, which may explain in part their inability to produce conclusive evidence for the two hypotheses. Ordering the firms by their rates of growth can serve to check this to some extent and in addition give more detailed information about how the external share correlates with the total and internal sales growth. The 59 firms have therefore been divided into two groups of about the same size with reference to the annual total and internal sales growth, respectively. These groups have been set off against two merger intensity groups. The result is shown in Table 38.

In that half of the firms which have had the largest total growth (exceeding that of the median firm), the firms with "high" merger activity (external expansion share of at least 20 %) outnumber by more than 50 percent the firms with "low" merger activity (less than 20 % external expansion share). Firms with low expansion rates and low merger activity greatly outnumber those with low expansion rates and high merger activity. As to the correlations between internal

Table 38. *Correlation between expansion rate and merger activity*

| | Number of firms, external expansion share (%) | | Total |
|------------------------------------|-----------------------------------------------------|-----|-------|
| | -19.9 | 20- | |
| Total annual sales increase (%) | | | |
| 0-9.9 | 17 | 11 | 28 |
| 10- | 12 | 19 | 31 |
| Internal annual sales increase (%) | | | |
| 0-8.9 | 12 | 19 | 21 |
| 9- | 17 | 11 | 28 |
| Number of firms | 29 | 30 | 59 |

growth and merger activity, the picture becomes more or less the opposite: firms with low internal growth rates and high merger activity outnumber those with low internal growth rates and low merger activity by 50 percent. The same relation holds for firms with high internal growth and low external expansion shares when set off against firms with high internal growth and low external expansion shares.

Summing up, while it can be said that the calculations in this section have not produced any conclusive evidence in favor of the formulated hypotheses, they have given any cause for rejecting them either. Accordingly, we retain the proposition that intense merger activity generates rapid total growth, or, alternatively, that acquisitions of firms are one way to eliminate obstacles to internal growth and thus increase the potential total expansion. The same applies to the hypothesis that a low internal growth rate can be regarded as a major explanation for high merger propensity - and vice versa.

Obviously, merger activity could be "explained" by variables other than the growth rate, especially in terms of the industries to which the firms belong; in other words, industry affiliation could determine both the growth and propensity to merge of any one firm. And as was shown in Chapter 2, merger intensity has in fact fluctuated widely

from one industry to another. While the regression estimates in Chapter 6 admittedly did not support the proposition that merger frequency in an industry is determined by its growth, there is nevertheless reason to find out whether the conclusion about the relationship between growth rate and merger activity will stand up when the industry variable is held constant.

The limited size of our sample of firms makes such an analysis very difficult to manage. There hardly seems to be much point in carrying out a similar analysis as in Table 37 for industries that are so poorly represented in the population as sometimes to preclude even a single observation. This holds for the chemical industry (4 firms), textiles and apparel (4 firms), food and beverages (3 firms) and construction and building materials (6 firms). The industry analysis is therefore confined to two groups: metalworking-engineering (30 firms) and the forest industry (12 firms in a classification that includes lumber, wood products, pulp and paper). For both these sectors the average growth of firms with varying merger activity is presented in Table 39 in an analysis comparable with Table 37.

Table 39. *Expansion rates of firms with varying merger activity in metalworking-engineering and the forest industry*

| | External expansion share (%) | | | | All firms |
|------------------------------------|------------------------------|--------|---------|------|-----------|
| | -4.9 | 5-19.9 | 20-49.9 | 50- | |
| <i>Metalworking-engineering</i> | | | | | |
| Number of firms | 11 | 6 | 8 | 5 | 30 |
| Total annual sales increase (%) | 8.7 | 13.6 | 11.0 | 12.9 | 11.0 |
| Internal annual sales increase (%) | 9.0 | 12.6 | 9.5 | 8.5 | 9.7 |
| <i>Forest industry</i> | | | | | |
| Number of firms | 4 | 1 | 2 | 5 | 12 |
| Total annual sales increase (%) | 8.9 | 8.5 | 7.8 | 11.6 | 9.8 |
| Internal annual sales increase (%) | 8.8 | 8.1 | 6.2 | 8.0 | 7.9 |

When the industry variable is held constant the association between expansion rate and merger activity becomes more tenuous than was found for the whole group of firms (Table 37), but it is still detectable. Forest-based firms with the greatest merger activity have grown fastest overall, but the fastest-growing metalworking and engineering firms have had relatively low merger activity (5-19.9 %). Metalworking and engineering firms with the lowest internal growth have been the most active in mergers, but the same does not hold true of the forest-based firms.

As was done in Table 38 the firms in these two industry divisions have been broken down into two growth groups of approximately equal size. The result is set out in Table 40.

As to the 30 engineering firms the correlation between high total growth and merger activity is clear-cut, but the correlation between internal growth and merger activity is contrary to what the hypothesis predicts and to the results of the tests accounted for earlier. Both hypotheses receive somewhat better support from the analysis of the forest-based firms. The expected correlation between internal expansion

Table 40. *Correlation between expansion rates and merger activity in metalworking-engineering and the forest industry*

| | Number of firms, external expansion share (%) | | Total |
|-----------------------------------|-----------------------------------------------------|-----|-------|
| | -19.9 | 20- | |
| <i>Metalworking-engineering</i> | | | |
| Number of firms | 17 | 13 | 30 |
| Total annual sales increase (%) | | | |
| -10.9 | 12 | 4 | 16 |
| 11.0- | 5 | 9 | 14 |
| Internal annual sales increase(%) | 11 | 6 | 17 |
| - 9.9 | 11 | 6 | 17 |
| 10.0- | 6 | 7 | 13 |
| <i>Forest industry</i> | | | |
| Number of firms | 5 | 7 | 12 |
| Total annual sales increase (%) | | | |
| - 8.9 | 3 | 2 | 5 |
| 9.0- | 2 | 5 | 7 |
| Internal annual sales increase(%) | | | |
| - 7.9 | 1 | 4 | 5 |
| 8.0- | 4 | 3 | 7 |

and merger propensity comes out distinctly, whereas the correlation between merger activity and the total expansion is more ambiguous. None the less, it appears as though the fastest-growing firms have also been the most merger-active.

MERGER PROPENSITY AND PROFITABILITY

A study of the association between merger propensity and profitability is interesting for several reasons. First, it can answer the question as to whether merger-active firms are more successful on the average and more profitable than merger-passive firms. Second, it can suggest motives for acquisitions. For instance, is merger propensity likelier to appear among firms where profitability is weak rather than strong? Or are merger-active firms of the kind that maximize their sales growth at the expense of profitability?

As will have emerged from earlier chapters, it is possible to adduce several plausible merger motives that tie in with the profitability of those firms under study.¹ A good profit base generates financial and material resources for the acquisition of firms. A firm with good earning power may also be assumed, *ceteris paribus*, to be better able to earn a good return from a prospective merger than a firm with poor earning power, and will therefore be more inclined to pay a higher price - which in its turn permits the good earning power.² By the same token it is possible to imagine that the "excess liquidity" which good profitability can generate encourages investments in other firms in preference to internal branching-out into "new" industries, etc. A case in point is where high profitability is accompanied by scarce managerial resources and internal expansion is deemed to demand more of management capabilities than expansion through acquisitions.

¹ See Chapters 5 and 6.

² American acquisitions of European firms are sometimes explained by saying that American firms can afford to pay higher prices than European buyers because of greater (confidence in their) ability to make the investments pay off.

On the other hand, it may be supposed that firms with weak past or expected future profitability may be compelled or prefer to seek cooperation by merger with one or more competitors in the industry. By integrating and coordinating their activities, the resulting cost and/or income benefits may be such as to improve profitability (according to the 2+2=5 theory). This assumption derives some support from the negative correlation, noted in the previous section, between merger propensity and internal growth, since it may be surmised that weak internal expansion is often accompanied by weak profitability.

Several studies of merger profitability have been made in the United States. According to the most comprehensive of these, firms with high merger activity exhibit a lower profit performance than firms with low merger activity (Reid [1968], Chap. 8). This investigation embraces 478 of the 500 largest American firms and studies their development and activity during the period 1951-61. However, it compares non-equivalent enterprises. Profitability could of course have turned even worse for the merger-active firms had they not undertaken any mergers. The Reid study must therefore be interpreted with caution.

However, there are some other studies that have attempted to avoid this problem. In one of them, covering 21 merger-active firms, their profitability as measured by movement of stock prices and earnings per share was found to be generally in line with that of merger-passive firms of the same size and with similar production patterns (Kelly [1967]). In another study the movement of stock prices - regarded as a yardstick of a firm's success - was compared for 43 merger-active firms in different industries with a market price index for the industry as a whole. About half the 43 firms fared decidedly less well than the industry average, while only three firms performed better. But with earnings per share taken as a measure of success, the difference between merger-active firms and their respective industry proved to be insignificant (Hogarty [1970], pp. 317-326). In a third investigation, covering about 100 large American firms, earnings per share between 1946 and 1965 were found to have moved almost identically for merger-active

and merger-passive firms. Among the fast-growing firms, however, earnings per share had increased much more for the merger-active than for the merger-passive (Ansoff et al). Another U.S. study found that profitability in 75 manufacturing companies during the period 1952-62 rose with the share of acquired assets during the same period, while industry growth, company size and degree of concentration were held constant (Heiden [1968], quoted in Scherer [1970], p. 121).

Accordingly, the basis for our hypothesis in this section is that a causal relationship exists between profitability and merger propensity. But in the light of our foregoing arguments and the findings of American research, it scarcely seems reasonable to entertain any a priori notion as to the direction that this causality takes. The diversity of merger motives and the effects of mergers may very well render it impossible to establish any clear-cut connections at all. Be that as it may, it should be possible to single out certain typical causes of mergers on the strength of partial analyses, e.g. of specific industries. Similar analyses are feasible for industries which exhibit different merger-relevant characteristics. Thus, in respect of the forest industry it would seem reasonable to assume that the persistent profit squeeze has been an impelling force towards horizontal combination ("defensive mergers") and thus been related to the high merger intensity that was observed for this industry in Chapter 2.¹ At the same time good profitability in segments of the engineering industry may have set the stage for high merger activity among component firms whose shares are publicly quoted. It may be assumed that the principal motives for mergers in this category have been to diversify output or to enlarge markets ("offensive mergers").

¹ Other specific explanations for mergers in the forest industry may be sought in factors affecting the supply of its raw material (the need to secure supplies of wood at reasonable costs within reasonable transport distances; the periodically experienced shortage of raw materials; the need to make logging operations more efficient) and in the overcapacity that becomes pronounced from time to time.

Earlier in this chapter the merger activity of firms was measured, first, by the number of consummated acquisitions (less sales) and, second, by the share of growth attributable to mergers. Several reasons suggest that the latter method is more appropriate for present purposes. For one, it allows for the size of mergers in relation to total size and internal expansion of the acquiring firm, a factor that carries weight when - as in this section - the question to be answered is not only the causes of mergers but also their effects. However, some tabulations have been made using both measures, one reason being to permit comparisons with Reid's study.

Profitability can be measured in various ways. As used here it refers to the firm's ability to earn a return on the capital employed.¹ A fundamental problem is posed here by published financial statements, since the information they provide often do not give an accurate picture of the actual profitability of different firms at the same date, nor of the same firm at different dates, owing to variations in depreciation charges over time and between different firms and industries. One measure that circumvents these difficulties is the movement of stock prices. This measure should also be the best composite indicator of the valuation that the market puts on the achievements of listed firms and their ability to fulfill the expectations of their owners, provided the stock market functions anywhere near satisfactorily. As a measure of profitability for the approximately 60 listed industrial firms in this study, we have therefore selected the change in the stock price after adjustment for bonus issues, new issues and stock splits.² The price for each year is represented by the official security price (but after the aforementioned adjustments). The period under review extends from 1955 to 1968. Since some of the firms made their stock market debuts during this period, the number of firms selected for investigation here is reduced to 52.^{3 4}

¹ See e.g. Lundberg [1961].

² In case of new issues it is assumed that every stockholder has fully availed himself of his right to subscribe to new shares.

³ Using the number of mergers as a measure permitted the inclusion of two more firms (SAAB and Swedish Match).

⁴ Data on the movement of stock prices were taken from the periodical, *Affärsvärlden/Finanstidningen*, issues 4-6, 1970.

As was done in the section on expansion rates and merger propensity, the investigated firms were first divided into four groups on the basis of the extent of their merger activity. This was first measured by number of consummated acquisitions less sales from 1955 to 1968.

Table 41 shows that the association between merger propensity and movement of stock prices works out quite differently for the Swedish than for the U.S. firms. In Sweden stock prices have risen much more slowly for listed industrial firms that have consummated a very small number of mergers than for firms that have consummated many mergers. This gives cause for feeling skeptical about the proposition that poor profitability engenders (or results in) high merger propensity and vice versa. It may also be asked whether Swedish and American firms differ completely in their merger behavior.

Unfortunately, the available evidence offers no basis for answering that question. On the other hand, it is possible to ascertain whether the association between movement of stock prices and merger activity works out the same when this activity is measured by the external expansion share.¹ The result is set out in Table 42.

Table 41. *Movement of stock prices for firms with varying merger activity (number of mergers), 1955-68*

| | Firms with | | | | All firms |
|--------------------------|------------|-------------|--------------|-------------|-----------|
| | 0 mergers | 1-5 mergers | 6-10 mergers | 11- mergers | |
| Stock price increase (%) | 38.2 | 66.9 | 285.7 | 217.9 | 142.5 |
| Number of firms | 4 | 26 | 9 | 15 | 54 |
| <i>U.S. study*</i> | | | | | |
| Stock price increase (%) | 680.4 | 230.4 | 244.7 | 306.6 | 291.6 |
| Number of firms | 48 | 214 | 142 | 74 | 478 |

* Reid [1968], p. 159. Table 8:2.

¹ This measure is identical with that used earlier in the present chapter (method 3) and thus pertains to a somewhat longer period (1952-68).

Table 42. *Movement of share prices for firms with varying merger activity (share of external expansion), 1955-68*

| | External expansion share (%) | | | | All firms |
|--------------------------|------------------------------|--------|---------|------|-----------|
| | -4.9 | 5-19.9 | 20-49.9 | 50- | |
| Stock price increase (%) | 109.7 | 445.8 | 89.0 | 46.6 | 138.4 |
| Number of firms | 16 | 8 | 15 | 13 | 52 |

A comparison of Tables 41 and 42 reveals that the conclusions as to the association between merger propensity and profitability greatly depend on what merger measure is being used. The weighted measure (Table 42), which ought to be more accurate for purposes of assessing the effect of mergers on profitability, produces a correlation that is almost entirely the reverse of that obtained with the unweighted measure (Table 41). Those firms who owe relatively little of their expansion to mergers have seen their stock prices go up much more than firms for whom mergers have contributed a large or very large part of their expansion. Firms that have grown externally by more than half have experienced the weakest rise in stock prices by far (<50 %). The sharpest rise (nearly 500 percent) is by firms with "moderate" merger activity (5-20 % external expansion share). The inverse correlations presumably signify that large and fast-growing firms have been involved in a relatively large number of mergers but that these have pertained to acquisitions of comparatively small firms and as such are insignificant contributors to total growth of the acquiring firms. This also agrees with the previously observed (in Chapter 2) size relation between acquiring and acquired firms.

As already noted, there is reason to expect that the association between profitability and merger intensity may take different directions from one industry to another. To determine whether such a difference exists the movement of stock prices was calculated for the four different merger activity groups within the forest industry and the metal-working-engineering industry, in accordance with the same procedure used in earlier sections. A calculation comparable with Table 41 is presented in Table 43.

Table 43. *Movement of stock prices for firms with varying merger activity (number of mergers) in metalworking-engineering and the forest industry, 1955-68*

| | Firms with | | | | All firms |
|---------------------------------|------------|-------------|--------------|-------------|-----------|
| | 0 mergers | 1-5 mergers | 6-10 mergers | 11- mergers | |
| <i>Metalworking-engineering</i> | | | | | |
| Stock price increase (%) | 42.8 | 90.5 | 225.9 | 411.3 | 186.2 |
| Number of firms | 2 | 14 | 7 | 6 | 29 |
| <i>Forest industry</i> | | | | | |
| Stock price increase (%) | 38.7 | 4.4 | -25.8 | 2.5 | 6.1 |
| Number of firms | 2 | 5 | 1 | 4 | 12 |

It will be seen from the table that the metalworking and engineering firms, who comprise more than half the number of investigated firms, have exerted a considerable influence on the result obtained for all firms. The more mergers consummated by a given engineering firm from 1956 to 1968, the more its stock has risen. Indeed, the evidence is unusually clear-cut for this particular group of firms. As for the forest-based firms, the correlations appear to be of an inverse order. Those firms that have completely abstained from mergers have experienced by far the fastest rise in stock prices within the forest industry during the period. However, the number of observations is too small to admit of any definite conclusions.

Table 44 sets out the correlations that turn up at industry level if the weighted merger measure is used instead. Here again it is clear that the metalworking-engineering sector has greatly influenced the correlations in Table 42. For instance, engineering firms with "moderate" merger activity have seen their stock prices rise so high as to make comparison difficult. For the forest-based firms the conclusions are the same as for Table 43, i.e. they are not affected by the choice of merger measure.

Summing up, it can be established that some support has been lent to the hypothesis formulated by way of introduction, namely that the association between merger propensity and profitability takes different directions from one

Table 44. *Movement of stock prices for firms with varying merger activity (share of external expansion) in metalworking-engineering and the forest industry, 1955-68*

| | External expansion share (%) | | | | All firms |
|---------------------------------|------------------------------|--------|---------|-------|-----------|
| | -4.9 | 5-19.9 | 20-49.9 | 50- | |
| <i>Metalworking-engineering</i> | | | | | |
| Stock price increase (%) | 159.8 | 509.0 | 85.7 | 119.2 | 192.1 |
| Number of firms | 10 | 5 | 8 | 4 | 27 |
| <i>Forest industry</i> | | | | | |
| Stock price increase (%) | 7.1 | 5.3 | 1.9 | 4.6 | 4.8 |
| Number of firms | 4 | 1 | 2 | 5 | 12 |

industry to another. This further confirms a point made several times in earlier chapters: motives for merging are heterogeneous and may, among other things, differ from industry to industry. Thus, mergers in the forest industry seem to have been undertaken mainly for defensive reasons, while offensive considerations seem to have prevailed in the engineering industry.¹

The movement of stock prices for the investigated firms features a very broad spread, ranging from a decrease of fully 30 percent to an increase of fully 1,000 percent. For this reason the 52 firms here studied have been divided into two equally large groups on the basis of the movement of stock prices and compared with two merger activity groups.

Table 45 shows a virtually nonexistent association between change in stock prices and external expansion share. To be sure, firms with a high external expansion share (>20%)

Table 45. *Association between increase in stock prices and merger activity (external expansion share), 1955-68*

| Stock price increase | Number of firms, external expansion share (%) | | Total |
|----------------------|--------------------------------------------------|-----|-------|
| | -19.9 | 20- | |
| <40 % | 11 | 15 | 26 |
| >40 % | 12 | 14 | 26 |
| Total | 23 | 29 | 52 |

¹ The terms "defensive" and "offensive" are here used with reference to the acquirer, since his behavior is subjected to special study in this chapter.

slightly dominate among that half of the population with a rise in stock prices slightly less than that of the median firm. However, this does not amount to much, and above all the relation is roughly the same for the other half of the firms.

It was shown earlier that sales growth bears some relationship to the industry affiliation of firms; this may accordingly explain differences in merger propensity which in the total sample tend to obscure the associations that may exist at industry level. Table 46 shows that this is also the case where the movement of stock prices is concerned.

In the case of the metalworking and engineering firms, i.e. half the total number of firms, the distribution is as good as random. But for the forest-based firms the negative correlation noted earlier is again observable. Firms in this industry with a weak movement of stock prices (<0 %) have engaged much more vigorously in merger activity than those firms whose stocks went up during the period.

Hence it has not been possible to establish any clear-cut general connections between the change in profitability, as measured by the movement of stock prices, and merger propensity for the investigated firms. This agrees with what was assumed by way of introduction and is very much due to the diametrically opposed correlations shown by different industries, which for the sample as a whole tend to cancel out one another. To illustrate, engineering firms

Table 46. *Association between increase in stock prices and merger activity (external expansion share) in metalworking-engineering and the forest industry, 1955-68*

| Stock price increase | Number of firms, external expansion share (%) | | Total |
|---------------------------------|-----------------------------------------------|-------|-------|
| | -19.9 | 20.0- | |
| <i>Metalworking-engineering</i> | | | |
| <80 % | 7 | 8 | 15 |
| >80 % | 8 | 5 | 13 |
| Total | 15 | 13 | 28 |
| <i>Forest industry</i> | | | |
| <0 % | 1 | 4 | 5 |
| >0 % | 4 | 3 | 7 |
| Total | 5 | 7 | 12 |

with soaring stock prices appear to have consummated a relatively large number of mergers, but these have played a subordinate role for total expansion of the acquiring firms.¹

By contrast, forest-based firms with the poorest profit performance have been most involved in merger activity, measured both by number of mergers and their relative size. Obviously, this fact must not be interpreted to mean that mergers have been "unprofitable", "unsuccessful" or "against the interests of stockholders". It is impossible to know what might have happened if these mergers had never come off - perhaps stock prices would have taken an even more unfavorable turn. By the same token it cannot be firmly asserted that the many mergers in the engineering industry have furthered the interests of the stockholders concerned. Perhaps the engineering firms might have deployed their resources to uses (internal expansion, for instance) that would have been even more favorable to the stockholders. However, the differences between the two industries could very well be interpreted to mean that the firms have been impelled to commit themselves to mergers for quite dissimilar reasons, possibly related to the particular industry. These could be characterized in simplified terms as defensive and offensive, respectively.

SUMMARY

A number of factors in the internal and external environment of firms induces them to aspire to continuous expansion, especially when this manifests itself in rising sales. "Expansion" has come to be a concept with intrinsically positive denotations in our society; indeed, it is often equated with success. For all firms, however, there is an upper limit for the rate of growth that is practically possible. It seems likely that obstacles of this kind can sometimes be eliminated by acquiring other firms or operating divisions, representing resources, markets and the like that are other-

¹ Another interpretation may be that the correlation between movement of share prices and merger activity is nonlinear. Tables 42 and 44 seem to indicate as much, at least for the engineering firms. However, it is difficult to find any reasonable explanation for such an asymmetry.

wise difficult to get at, thereby opening up potentials for a firm to increase its growth rate. Such behavior need not conflict with the firm's quest for profits.

The investigations described in this chapter indicate that the listed industrial firms owe a considerable part of their postwar growth to acquisitions of existing firms and operating divisions both at home and abroad. For the 60 or so firms that were investigated, mergers have accounted on an average for 10 to 15 percent of the *annual* total sales increase and 40 to 50 percent of the increase in employment; the proportions differ according to whether the averages are weighted or unweighted. However, the averages contain a wide dispersion: Half the firms owe less than ten percent of their total annual sales increase to growth by merger, whereas for five firms the share attributable to external expansion exceeds 50 percent. However, this measure (method 1) contains certain distortive effects biased towards underestimation.

A more accurate measure is the relation for each firm between the net total of acquisitions and sales during the period and the firm's total growth during the same period. Assuming that the merged entities have grown after each merger at the same rate as the "internal" segment of the acquiring firm, the mergers accounted for nearly one-fourth of the firms' total sales growth and about half the employment increase during the period 1952-68. The weighted average shares generally lie somewhat lower. These figures agree rather well with the findings of similar American studies but are slightly higher than the corresponding rates for British industrial firms.

The discussions in earlier chapters have shown that mergers may take place for various reasons. If maximum expansion of sales is the aim whether for profitability reasons or as a goal in its own right, this ought to mean that the most merger-active firms have also grown most rapidly. The research data largely confirm this hypothesis. It also seems likely that mergers constitute an action alternative which looks more attractive to firms with weak rather than strong internal expansion. Here again the data give no cause for rejecting the hypothesis. The conclusions also

appear to hold up when the analysis is made at industry level, even though less industry-related impact on the averages can be detected for the whole corporate sample investigated.

No monotonically rising or falling correlations between movement of stock prices and merger intensity could be observed for the investigated firms generally. On the other hand a positive correlation between these variables could be detected for firms in the metalworking-engineering industry and a negative correlation in the forest industry. However, it is scarcely possible to say anything with certainty about these correlations in terms of cause and effect. Above all, the results must not be taken to mean that the merger activity of a firm has direct bearing on its success or failure. It is simply not possible to know what might have happened if other action alternatives had been selected.

CHAPTER 8

SUMMARY, CONCLUSIONS, PROSPECTS

SUMMARY

B a c k g r o u n d a n d a i m s o f t h e s t u d y

The aim of this study has been (1) to explore, describe and analyze mergers in Swedish industry after World War II and (2) to explain why mergers occur and why they vary over time, between industries, etc. In recent years the interest in different aspects of the merger problem complex has waxed so great among Swedish politicians, authorities, organizations, social scientists and not least among the firms themselves that a synoptic portrayal of the merger trend has been deemed relevant from more general points of reference than those taken in this study. For this reason the presentation of data has been made relatively extensive and detailed.

As to the question of *why* mergers occur, our interest is obviously related to the importance that should be attached to the *effects* of mergers in different respects. Hence it would have been fitting and proper to undertake an analysis of the effects of mergers as well. But in view of the necessary limitations that had to be put on this project, no such analysis could be made. Besides, the fact that mergers are generally *considered* to have different kinds of major effects can be verified without further investigations - effects on the level and distribution of employment, on the distribution of incomes and wealth, on power relations in the business community and the larger society, on the movement of prices and costs, on the rate of economic growth, etc.; after all, it is against the background of these very types of (assumed) effects that the government authorities and the trade unions have shown such keen interest in mergers. An analysis of mergers by causes makes a natural point of departure for a more detailed anal-

ysis of them by effects. It also gives evidence to assess the question of *how* mergers can be influenced and of how mergers may develop in the future.

M e r g e r s i n S w e d e n a n d a b r o a d

A feature common to all countries for which merger data could be found is the trendwise increase in merger activity during the postwar period. As far as Sweden is concerned, perusals of newspapers, business journals, annual reports, industrial directories and similar sources have permitted us to pinpoint more than 3,900 combinations, i.e. acquisitions or mergers and pools, in which manufacturing firms were directly involved during the period 1946-70. Slightly more than one-fifth of the approximately 3,100 mergers were partial, i.e. related to subsidiaries or separate operating divisions, and in 13 percent one party was a foreign firm. Swedish firms bought out nearly 300 foreign entities, while foreign acquisitions of Swedish firms were about half as many. The number of manufacturing firms located in Sweden that were acquired or merged during the 25-year period comes to about 2,000, or about six percent of the average population of firms in that period. If firms employing less than five persons are excluded, the proportion rises to 12 percent, which on the basis of our collected data indicates that a much greater proportion of large than of small firms have been merged. Actually the positive correlation between reported merger frequency and firm size is very strong; in the smallest size group, the proportion of merged firms to the total ranges from 1 to 2 percent, as against 40 to 50 percent for firms having more than 200 employees.

Nearly 300,000 persons were employed by the firms and operating divisions that were acquired in the manufacturing sector from 1946 to 1969. This number represents more than one-third of the total industrial employment at mid-period or computed as an average for the period.

In spite of the common features the development over time is not quite uniform in all countries for which merger data are available. In some countries the upswing in merger activity already began in the late 1940's, while in Sweden it did not set in until the second half of the 1950's,

The upswing was especially steep during the latter part of the 1960's: nearly half the mergers recorded in this study occurred during the period 1965-69. Prior to 1960 the proportion of employees per year in acquired firms to all industrial employees exceeded one percent in one year only. Since 1965 that rate has normally exceeded two percent, and in 1969 it came to 4.4 percent or nearly 38,000 employees.

Owing to a great many mergers of dairies, which in their turn have a rather specific background, most of the mergers recorded from 1946 to 1969 relate to food manufacturing (851 mergers). A great many mergers of breweries are also subsumed under this industry group. According to the rough classification by 19 industries that has been applied, the next highest figures are recorded for fabricated metal products (339), machinery (315) and chemicals and allied products (229). Very few mergers were found in rubber products (16), mining (22) and shipbuilding (31). But since the number of mergers in an industry tends to correlate rather strongly with its population of firms, a fairer indicator of merger activity is a relative merger measure, which we have called "merger frequencies". When mergers are calculated on this basis, the industries also assume a different rank-order. The most pervasive relative merger activity within the 19 industries has taken place in pulp and paper, where 63 percent of the number of firms in 1958 were acquired from 1946 to 1969. Next come mining (29 %), chemicals and allied products (27 %) and transportation equipment (18 %). The lowest merger frequencies are shown by lumber and wood products (3 %), wearing apparel (4 %) and footwear-leather (5 %). If the size of merged firms (by number of employees) is also taken into account, the picture changes even more. Pulp and paper still come out highest at 54 percent, but then comes food manufacturing (46 %). The lowest weighted frequency rates are accounted for by mining (12 %) and printing and publishing (14 %). All of these rates, it should be noted, are exclusively confined to total mergers and to acquisitions of subsidiaries.

The merger rates shown do not lay claim to covering all mergers which *occurred* in the period. Because of the method of collecting data we used, merger activity among the

very smallest firms is surely underestimated, and the same probably applies as well to the partial mergers and the pools. On the other hand the degree of coverage as regards the number of *reported* combinations can be considered very good. The mergers recorded are believed to cover about 80 percent of all mergers which occurred and more than 90 percent of the weighted merger activity.

Merger frequencies for countries other than Sweden were found to only a limited extent. But as for the United States, which has highly detailed merger statistics, it can be observed that nearly half the number of firms with assets of over ten million dollars in 1948 were acquired during the period 1948-68. This corresponds very well to the frequency rate for those Swedish firms employing more than 200 persons. Even the weighted U.S. rates exhibit great similarities with the Swedish frequencies.

In Sweden the typical merger transaction has involved the purchase of a small or medium-sized firm, usually family-owned, by a large firm whose shares were usually listed on the Stockholm Stock Exchange, the mode of payment being cash, a promissory note, the issuance of new shares or a combination of these. Of the 2,000 or so acquired Swedish manufacturing firms, an estimated 1,200 were family-owned, close-held enterprises, while about 600 were producer co-operatives and 200 were listed firms or - in most cases - subsidiaries of such firms. 80 percent of the mergers may be called "horizontal" in the sense that the merged firms were previously engaged in the same or closely related lines of business. Eight percent of the mergers were vertical, while the remaining 12 percent may be characterized as conglomerate ("diversifications"). Of the latter figure, four percentage points are attributable to acquisitions of manufacturing firms by a holding company. It is evident, however, that a breakdown of mergers by horizontal and other types will very much depend on how far the industry-by-industry classification is carried. A more ramified industry classification than the one used here will of course increase the share of diversifying and vertical mergers at the expense of the horizontal share. But a greater ramification would probably not alter the impression of a major difference between Sweden and the

United States as far as the character of merger activity is concerned. In the U.S. the distribution between horizontal and diversifying or conglomerate mergers has largely been the reverse of that in Sweden (much due to differences in antitrust legislation), while the proportion of vertical mergers has held about the same in both countries. By contrast, most other countries exhibit a pattern that coincides fairly well with the Swedish one.

In addition to investments in new production capacity and the like, acquisitions and sales of entities can be regarded as links in the individual firm's growth process. An investigation of expansion patterns among some 60 listed Swedish manufacturing firms during the postwar period (1946-68) shows that mergers have contributed significantly to the growth of sales and employment in these large companies. The mergers can be credited with having contributed to the *annual* sales growth by an average 10 to 15 percent and to the annual employment growth by 40 to 50 percent (the difference is partially due to the calculation methods used). For four of the 59 investigated firms more than half the annual sales increase came from acquisitions of other firms and operating divisions. However, these calculations are marred by certain underestimates, one reason being that they have been unable to allow for the effects of inflation. If we assume instead that every merged entity *after* merger has grown at the same rate as the investigated acquiring firm has done *internally*, i.e. after additional mergers are deducted, it turns out that the mergers have accounted for as much as one-fourth of the increased sales of the large firms and for half their increased employment.

Mergers are not a phenomenon peculiar to the postwar period. On the contrary, they date back to the very beginning of economic activity, albeit in somewhat different forms than today. In ages past not a few marriages were contracted to amalgamate landed estates and farms for the purpose of creating more economic or politically influential holdings.

Sweden does not have any regular statistical records on mergers in industry prior to the period here under review. However, certain scattered data as well as company histories

about a number of manufacturing firms and banks now grown large indicate that mergers have, at least on occasion, played a major role in the transformation of industry ever since the closing years of the 19th century. Many of today's big firms owe their origin in whole or in part to mergers that occurred long before World War II, e.g. Höganäs, Sockerbolaget, Esselte, Swedish Match and Cellulosa-bolaget. What appears to be less likely, however, is that the merger trend was ever as pervasive and rapid in any earlier period of Swedish industrial history as it was during the second half of the 1960's - with the possible exception of the period 1900-15, when quite a few huge mergers of industry-wide scope were consummated.

Detailed studies of trends in the United States and Great Britain show that the latter-day "merger wave" in these countries has earlier counterparts. Around the turn of the century and during the later 1920's merger activity greatly intensified. It is against this background that the activity of recent years has been called "the third merger wave".

C a u s e s o f m e r g e r s

Mergers may be discussed in terms of business transactions since virtually all mergers consummated in Sweden during the last decades have been carried through by acquisitions. A prerequisite for every business transaction is for the buyer to put a higher value than the seller on the object involved. This rule also holds for mergers. In other words, there must be a gap between the parties in their appraisal of the firm or operating division that changes hands - a *value gap*. This value gap is a necessary merger condition. One indication of the incidence and size of value gaps is given by the average premiums of 20-25 percent above the market price that the buyer has paid to acquire listed firms both in Sweden and abroad. That has accordingly been the minimum size of the average value gap in these mergers. If buyer and seller are assumed to have met midway in the value gap, that works out twice as large as the premium, i.e. about 50 percent of the prevailing market price.

Investors normally do not have access to the same information nor do they attach equal value to given information. Their risk appraisal and liquidity preference may diverge. For this reason they may also aim at different target rates of return (opportunity costs), which sets the stage for value gaps and hence for mergers even if these would not affect the business of the firms concerned in the slightest. A gap of this kind may be called a "pure" value gap or an *appraisal gap* to distinguish it from the value gap which arises from coordinating the merged firms. If the value of a merged firm exceeds the combined values of both firms in the absence of merger, this creates a surplus value (the " $2+2=5$ " or "synergistic" effect). This too can be a sufficient merger condition even if both parties have exactly the same target rate of return and the same access to information. A gap of this kind can be called *value gap through coordination gains*.

A coordination gain emerges as a net of coordination revenues and coordination costs. The coordination revenues may arise from *efficiency improvements*, financial and other *stability advantages*, and *price advantages* on the goods or factor markets. Over and above the foregoing, mergers may permit certain tax advantages.

The coordination costs may come from loss of markets, a higher rate of labor turnover, disrupted operations, early retirement pensions, etc., as well as increased inputs of scarce management time. If these costs are deemed to exceed estimated revenues (" $2+2=3$ "), the contemplated merger should of course not be consummated, but since inadequate or wrong information can readily tend to underestimate the costs the merger may go through anyway. Evidence that such mergers do in fact occur, and considerably so, comes not only from foreign research but also from our own study.

The value gap is a necessary but not sufficient merger condition. Owing to inadequate information, preoccupation with prestige, lack of negotiating skills and other necessary resources (e.g. financial), misjudgments as to the most appropriate date for striking a bargain and so on, existing value gaps may never be discovered or otherwise not lead to merger. Not least important is the negotiating process it-

self, which must deal with various intricate matters besides price (which of course is never given), such as the installation of new executives, changing the names of firms and/or products, and corporate policy in general.

To test and, if possible, establish the explanatory value of a number of plausible merger motives, we have performed analyses on the industry level and on the firm level. The industry analysis has naturally had to be adapted to the possibilities offered by the supply of statistical data on suitable explanatory variables. This has primarily imposed a major constraint on our ability to test the value of the efficiency motive. Improved efficiency through merger is attainable in several ways. With a change of owner and management a badly managed, i.e. inefficiently operating firm can be made more efficient. But the efficiency of well-managed firms can also be improved, e.g. if they are underdimensioned in one or more functions (production, selling, research, etc.). In such cases the merger may permit economies of scale to be exploited. The only suitable efficiency variable available for the industry analysis that was reasonably proportionate to the research effort involved has to do with economies of scale in production, i.e. at plant level. But since such advantages should often be more readily obtainable from internal expansion rather than merger, there is scarcely reason to expect a positive correlation between merger frequency and the incidence of economies of scale in production. Unfortunately, therefore, the industry analysis has only limited value when it comes to testing the efficiency motive underlying mergers.

The motive of gaining *price advantages* through merger ("monopoly profits") is somewhat easier to test. For this purpose the ratios of concentration and the import shares in specific industries were selected as explanatory variables. The possibility of exploiting price advantages ought to correlate positively with degree of concentration and negatively with the extent of competition from imports.

The incidence of *appraisal gaps* between buyers and owners of firms in an industry may be assumed to depend on the industry's stability in terms of such things as technology and market conditions. Rapid and pervasive changes in

these respects influence potential buyers and sellers of firms so as to increase the number of value gaps between them. This influence need only operate randomly for value gaps to arise. The theory of appraisal gaps motivating mergers is tested by variables which measure technological and market changes. Further, it may be expected that the margin for appraisal gaps is narrow in low-concentrated industries, since the value of firms in industries with low barriers to entry tends to come close to the cost of reproducing their assets.

Some additional explanatory variables were used in the industry analysis. Positive correlations between merger frequency and degree of foreign competition may be expected if the efficiency motive is valid, since keen competition should compel the firms to realize potential efficiency improvements. Negative correlations between merger frequency and growth of output may be expected considering that it is easier to adjust to new cost-minimizing technology through internal expansion when demand and production grow rapidly. However, the same correlations can also be seen as support for the restraint-of-trade motive on the grounds that internal expansion tends to be avoided when demand grows slowly, since that would otherwise intensify competition by creating overcapacity in the industry.

The stability motive could not be tested in the industry analysis, partly because the relevant financial variables are not available at industry level, and partly because the suitable explanatory variables for this motive coincide with the variables that we selected to test the appraisal-gap motive.

The industry analysis accordingly tests three hypotheses: (1) the efficiency motive, (2) the restraint-of-trade motive and (3) the appraisal-gap motive. Our dependent variable is the merger frequencies for the period 1958-69, while the independent variables are the changes in production from 1959 to 1968 (hypotheses 1 and 2), the concentration ratios in 1963 (numbers 2 and 3), the import shares in 1963 (2), the foreign trade shares in 1963 (1), the changes in the proportion of small establishments from 1958 to 1967 (1), and the changes in the respective proportions of technical and selling personnel to all employees in 1963 (3).

Each variable embraces 33 observations. The correlations have been assumed to be linear.

According to the calculations, the correlation between merger frequency and the different explanatory variables turns out to be very weak with the exception of the concentration variable. The fit of a regression equation containing all seven explanatory variables also yields a relatively low multiple correlation coefficient ($R = .55$), which means that the variations in the seven explanatory variables account for only about 30 percent of the variations in merger frequency industry by industry.

A discrimination between the three aforementioned hypotheses gave the highest explanatory value to the restraint-of-trade motive and, as expected, the lowest value to the motive of technical economies of scale in production. However, the results of these estimates are uncertain since none of them is significant at the 95-percent level. Yet an assessment of the hypotheses' explanatory values which considers only whether the correlations go in the expected directions, i.e. if the regression coefficients have the "right" signs, gives cause for the same conclusion as above.

It is surprising for several reasons that so relatively few of the merger variations by industry lend themselves to explanation in terms of technological and marketing changes. Similar estimates for the United States (Gort [1969]) have demonstrated a good correlation between merger frequencies and technological change. There seems to be no obvious reason why this type of association should not hold for other countries with similar economic systems and industrial structure, at about the same level of development, etc. Moreover, the degree of change in an industry can also be seen to reflect the need of having mergers create resources for research and development programs, greater marketing efforts, etc., as well as stability and risk-spreading in that industry. For these reasons it would be justified to expect a relatively good positive correlation between merger frequency and technological and other change.

Thus the industry analysis could not verify this hypothesis. However, the trendwise increase in mergers since the mid-1950's could be seen as lending support to the

"disturbance hypothesis". Since then a series of technological, economic and social changes have unfolded at an accelerated pace both in Sweden and abroad, which can also explain the rather uniform merger patterns from one country to another. It seems likely that developments such as the greatly increased volume of world trade, the advent of EEC and EFTA, the rapid diffusion of new production techniques, new products and new buying habits, advances in mass communications, the higher proportion of disposable incomes spent on non-essential consumption, the greater demands imposed on private enterprise by the community at large, and mounting social unrest: all these things have made it harder for businessmen to evaluate the future - which in turn has increased the number of merger-inducing value gaps and thereby resulted in more mergers. This turn of events has probably also intensified the needs of firms for stability, risk-spreading, sufficient volume for research, etc.: goals that can all be attained by mergers.

The relatively strong correlation between merger frequency and degree of concentration is perhaps the most interesting result of the industry analysis. To be sure, it could be explained by saying that the degree of concentration in an industry inevitably follows from that industry's merger frequency. But this effect is presumably insignificant. The concentration ratios pertain to 1963, and before then only 20 percent of the mergers that enter into dependent variable had occurred. Besides, the ratios are not affected by vertical and conglomerate mergers. The correlation could be interpreted to mean that the quest for price advantages, stability, etc. through restraint of trade has been the most common merger motive, the more so since a relatively strong negative correlation between merger frequency and import share is obtained when the concentration variable is held constant. But another interpretation, and one that looks at least equally plausible, suggests that a merger process is hard to get under way in industries with fragmented structures. This is to say that extensive merging in an industry may require one or more of its firms to have enough overview, financial strength and initiative to serve as "merger catalysts". For industries which need efficiency improvements of the kind that can come from

mergers, this means that the catalysts must be generated externally: from banks, investment companies, business organizations, government, etc.

As mentioned earlier, no association could be found between merger frequency and the incidence of technical economies of scale in production. In the normal case, viewed from the vantage point of the individual firm, it is certainly more economical to try minimizing production costs by extensions to existing plants or investment in a brand new plant instead of acquiring production capacity of older vintage. But for firms which make competing products, a merger could pay off if the manufacture of all these products were relocated at one plant in place of the previous two or more plants. The result would be to lengthen production runs and, probably, reduce average costs. Our empirical data contains many examples of such mergers. More often than not they take place in the form of product switches, i.e. partial mergers. The fact that these do not enter into the merger measure of the industry analysis may explain the poor fit. Another explanation may be that the measure used for technical economies of scale in production does not give a correct picture.

More surprising and hard to explain is the lack of association between merger frequency and degree of foreign competition. After all, we are often told that firms must merge willy-nilly in order to cope with keen competition from imports or on export markets. These assertions, plausible enough in themselves, receive no support from the analysis. Here again the explanation may be "technical", i.e. the variables may have inadequate values, the industry classification may be too coarse, etc. Such an interpretation is reinforced by the results of the firm analysis presented below.

The efficiency motive might also be tested by means of time series analysis. If firms merge so as to improve their efficiency, then merger activity ought to covary negatively with the business cycle since contracting demand and falling profits will compel firms to "rationalize", i.e. cut costs. Actually, the correlation has been the other way around: merger have increased when industrial output has in-

creased and vice versa. A similar connection has been observed in the United States. This would suggest that merger activity in the large cannot be explained with reference to corporate cost-cutting aspirations. However, a conclusion to this effect is far from given. Bearing in mind the inordinate amounts of time that are often consumed in arriving at a merger decision, in finding a suitable partner, in bringing off the negotiations, etc., it is hard to believe that a merger undertaken in response to a recession will normally have time to register as a merger during the same phase of the business cycle. Naturally, if a lag of 1-2 years is introduced in the time series analysis the correlation - and therefore the conclusions - will turn out quite differently. For this reason every interpretation of the connection between mergers and the business cycle is bound to be fraught with imponderables.

According to both the efficiency and restraint-of-trade hypotheses, production growth should correlate negatively with merger frequency. No such connection between these variables is detectable in our analysis. However, that does not give cause for rejecting either hypothesis. That is because a positive correlation between the two variables could also be expected, since would-be acquirers are often said to be particularly interested in so-called growth industries. If that is true the absence of correlation may simply be due to the fact that all three hypotheses are valid and therefore cancel out one another.

This problem is avoided when individual firms are analyzed instead of industries. Our analysis of the supply of firms for sale is based on an investigation of all manufacturing firms (excluding dairies) that were acquired during 1965 and 1969. These years were selected because comparable data were available for a control group. This consists of firms that enter into the "Profit Statistics" maintained by the Central Swedish Bureau of Statistics, i.e. in principle all manufacturing firms employing at least 50 persons. More than 100 acquired firms were investigated for both years. The merger motives we tested are those concerned with efficiency, liquidity shortage and the appraisal gap. Testing the efficiency motive sub-

sumed a "mismanagement" or "failure" motive, while the tax motive was tested as part of the appraisal-gap motive. On the other hand, the restraint-of-trade motive could not be tested.

The firm analysis is of special interest because it permits the identification of spread or distribution of the investigated explanatory variables, thus providing information that readily tends to get concealed in industry averages. Our scatter diagrams make it clear that the acquired firms are greatly heterogeneous in terms of the studied variables. Some have had very good profitability, others have been mediocre, and still others have performed very poorly. The same holds true of their liquidity, solvency and expansion. This suggests that firms are sold for any of a number of contrary reasons, such as extremely good or extremely poor profitability, expansion, etc.

To judge from the firm analysis, the quest for efficiency improvements has been a common merger motive. Prior to merger about two-thirds of the acquired firms displayed lower profitability than comparable firms in their industry and size group. The resort to mergers as a device to solve profitability problems ought to be more common for less profitable than more profitable firms. About 40 percent of the acquired firms displayed both poor profitability and liquidity. Profitability, measured as the proportion of gross surplus to balance-sheet total (total capital) worked out at 10.7 percent for all manufacturing firms in 1968. The comparable figure, weighted and standardized with reference to the control group, is 7.4 percent for those firms which were acquired in 1969. For the 1965 acquisitions profitability was 6.4 percent as against 11.4 percent for the control group. Nearly half the 1969 acquisitions showed a profitability less than the highest rate of interest paid on a bank deposit account; that return would also cover depreciation and interest payments.

The acquired firms also had lower liquidity than the control group. As of 1968 the firms acquired in 1969 had a liquidity ratio ($\frac{\text{liquid funds} + \text{current receipts}}{\text{debt servicing} + \text{current expenditures}}$) of 1.04 as against 1.24 for other, comparable firms. For the 1965 acquisitions the figures relating to 1964 were 1.06

and 1.28, respectively. Half the firms acquired both in 1969 and 1965 had a liquidity ratio below unity, i.e. their liquid funds and current receipts during the year did not suffice to meet the short-term commitments in the form of principal and interest payments, wages and salaries.

Poorer profitability and liquidity than comparable firms indicate difficulties in keeping up with competition. If these problems are compounded by weak sales growth, one could speak of "failure" or "mismanagement" as a cause of transferred ownership. 20 percent of the acquired firms meet that threefold criterion. This is one of the most important results of our study, since it makes it reasonable to believe that rather many mergers result in a better utilization of scarce resources. Put more succinctly, these mergers probably serve to replace bad managements with perhaps low target rates of return with better managements who demand a good deal more in this respect.

Naturally, the "mismanagement" label may be pinned on firms that are short of funds. But when "liquidity shortage" is mentioned as a reason for relinquishing ownership of a firm, the usual reference is to profitable, "expansive" and otherwise well-managed firms. Hence a test of the liquidity shortage motive makes it necessary to analyze the financing ability of firms with good profitability and a favorable sales trend. Such an analysis shows that about ten percent of the acquired firms have had higher profitability and a faster sales growth but poorer solvency than comparable firms. The liquidity shortage motive could therefore be said to have relevance for about ten percent of the consummated mergers, provided that the investigated firms are also representative over time.

If liquidity shortage was a major motive for selling firms, then mergers ought to increase during periods of severe credit restraint and decrease when credit is in good supply. A formal analysis of this association has not been performed, one reason being that it would run up against the same type of time-lag problems discussed earlier. Even so, it can be observed that the number of mergers soared during 1969 under a very severe credit squeeze. A similar association holds for 1965, which was another boom year

accompanied by mandatory credit restraint. However, the correlations assume a reverse order in other years; and for 1970, a year when credit was extremely tight, the number of mergers even appears to have dropped. In other words, no one-to-one correspondence can be read off between the change in merger activity and the availability of credit.

The holding companies (such as Incentive and Promotion), which have specialized in acquiring and developing "expansive" family-owned firms, have encountered a considerable supply of such firms ever since they first appeared on the Swedish business scene in the early 1960's. A great many family firms can be assumed to have been caught in a financial predicament or been beset by problems of succession that could be solved by a change of ownership without necessarily achieving any coordination gains. Besides, it is likely that holding companies have had to reckon with competition from one another or with other potential buyers only in exceptional cases. Under these assumptions this segment of the firm market would accordingly be a buyer's market, which ought to have affected price determination for sold firms. It may therefore be assumed that the holding companies have enjoyed greater scope than the sold firms to fix - within reasonable limits - the price regardless of the profitability of these firms. The holding companies should therefore have acquired firms with a better record of profit performance than other acquired firms. And this is what they have actually done. Since these purchases are based less than others on the potential for realizing coordination gains, that can be seen as contributing support to the appraisal-gap hypothesis, as well as to the belief that an important determinant of this gap is the seller's desire to reap tax benefits.

The age distribution among the owners of sold firms argues for the same conclusion. On an average, these persons have been somewhat older than comparable family-firm owners; about 30 percent of them were over 60 at the time of sale. Only a few of these firms suffered from "liquidity shortage" or "mismanagement" as these terms have been defined here. An appraisal gap, induced for instance by the

heightened liquidity preference of an aging owner, may very well alone explain a great many of these mergers.

Among the objects of the previously mentioned analysis of the growth and merger activity of some 60 listed manufacturing firms was to test certain hypotheses on buying motives. These motives are: faster growth from external than internal expansion; compensating for weak internal growth; and improving poor profitability by exploiting coordination gains.

By and large, the assumed correlations between merger activity and growth rate have received support from the analysis. The most merger-active firms have expanded their sales more rapidly than the less merger-active. This can be interpreted to mean that rapid growth is a not uncommon buying motive, and considered as a goal it need not conflict with the goal of profit maximization.

Acquisitions ought to be an attractive alternative for firms with weak internal growth. The analysis bears out this hypothesis. Firms with a record of weak internal growth have been more merger-active than firms with strong internal growth.

The correlation between merger activity and profitability (measured by the movement of stock prices) is more complicated. No such association could be detected for any of the investigated firms. On the other hand, an analysis of firms in the forest-industry in the sample discloses that the most merger-active firms have been the least profitable and vice versa. But in the metalworking industry (which includes steel, fabricated metal products, machinery, electrical equipment and shipbuilding) the most profitable firms have shown the greatest merger activity in proportion to their total growth. Hence weak and strong profitability may both be conducive to acquisitions. The former instance may be taken to confirm the belief that certain mergers are consummated in order to improve poor profitability by cutting down costs, while the second instance may be interpreted to mean that good profitability creates resources for growth through acquisitions. However, it is equally plausible to argue that rapid growth, brought about by many acquisitions, has gone hand in hand with good profitability.

SOME ANSWERED AND UNANSWERED QUESTIONS

This study has clearly shown that mergers can, indeed must, be explained by an array of different motives and causes. The task of discriminating between these is a hard one, for it appears that different motives explain not only different mergers but may also interact in one and the same merger. Actually, it is reasonable to assume that the combined effect of several merger motives - entertained by either the buyer or seller - has swayed the decision to merge in many cases. Moreover, buyer and seller may of course have quite different motives in one and the same transaction.

The industry analysis has shown that the quest for economies of scale in production does not seem to be a common merger motive. But the general conclusion we can draw from the firm analyses is that the quest for economies of scale and other efficiency improvements seems in fact to have been very common. An analysis that we made of the effects of mergers on the growth of productivity in Swedish industry during the postwar period also suggests that these have been considerable. This must be interpreted to mean that mergers often lead to efficiency improvements which are not directly attributable to the size of plants (as measured in production runs and capacity of output), but rather to the organization and management of firms in the large, to their activities in research, purchasing and selling, etc. Unfortunately, it was not possible in this study to identify the bench-marks for these efficiency improvements, their location, size, etc. Such an analysis which would be highly worthwhile in its own right, will presumably have to be based on studies of the decision-making process in connection with individual mergers and of their effects on different functions in terms of organizational form, productivity and related parameters.

Of the motives that were tested in the industry analysis, the one on restraint of trade came up with the most convincing evidence by far. However, no conclusive interpretation is possible. Mergers have definitely occurred which have not only aimed at but also led to price increases and/or production cutbacks. Just how often this has occurred

did not come within the terms of reference for our study, but it should be possible to form an idea by studying the movement of prices and output for a sample of merged firms in the years preceding and following the mergers. One problem posed by such a study, as well as by measurements of efficiency changes in consequence of mergers, is to ascertain what would have happened in the absence of these mergers.

It should be observed, however, that restraint of trade has been and still is achievable in Sweden without merging. This suggests that many mergers which aim to restrict competition have also been impelled by other motives - otherwise the price advantages and the like could normally have been gained by means of often rather uncomplicated cartel arrangements. The "Cartel Register" kept by the National Price and Cartel Office abounds in evidence that many competitors in Swedish industry have reached agreements during the postwar period to rise or maintain prices and limit output.

However, the restraint-of-trade concept can be made to denote more than efforts by firms to employ the weapons of price and production towards exploiting a favorable market position. In an economy where competition is oligopolistic, stability, security and risk-minimization become major goals of firms, which in turn tend to favor cooperation and mergers. In industries marked by such competition the struggle for market shares often also becomes a gamble with very high stakes and with constant risks of retaliation and quick losses of invested capital. This, too, makes mergers likely in industries with relatively high concentration. As the saying goes, "If you cannot beat them, join them".

Yet another admissible interpretation of the relatively good correlation between merger frequency and degree of concentration is one that was alluded to earlier, namely that a fragmented industry structure can pose an obstacle to mergers that might be sought by individual firms in the industry for other reasons than restricting competition. However, it has not been possible to test this hypothesis. That would again require individual analyses of firms - and also, of course, of firms that have not merged.

A salient conclusion to draw from this study is that mergers can be regarded as "normal" transactions, motivated by divergent appraisals of the value that different parties put on the firms involved. It has not been possible to identify the exact proportion of total merger activity that can be explained by such appraisal gaps. Normally, however, a merger ought to embrace not only disparities of appraisal but also a surplus value attributable to coordination gains.

Quite a few questions of relevance to mergers have not been answered in this study, or indeed never been formulated in the first place. Among the questions put but left unanswered - or with unsatisfactory answers - mention can be made of the significance that a change of generations and the tax laws has for the supply of firms on the market. These problems should presumably be studied by investigating individual firms. One question that was touched upon when the empirical data were first presented concerns the choice of combination form: total merger, partial merger or pool. This question is directly related to an analysis of the causes of mergers, since it may be assumed that the choice of combination form is highly dictated by the motives which impel the parties. All things considered, partial mergers in the form of pools and transfers of separate operating divisions have been treated rather negligently. They ought to constitute interesting areas for further research.

The presentation of data accorded fairly broad scope to mergers between Swedish and foreign firms because of the mounting interest in the internationalization of business enterprise. In the causal analysis these mergers were passed over in silence. Certain reasons suggest that this is not entirely unjustified - mergers across national frontiers need not necessarily have other causes than domestic mergers. However, that remains to be proven and as such ought to make another inviting research project, one moreover that could well be linked to the much bigger question of the factors that determine the choice of merger partner. How does the market for firms function? What roles are played by business "pipelines", banking ties, geographic proximity,

nationality, earlier situations of conflict and competition, etc.? What do price and form of payment mean? A more penetrating discussion of these matters might also provide a better foundation for a causal analysis of overall merger activity by size.

THE FUTURE OF MERGERS

The principal aim of this study has been to describe and explain Swedish mergers in the past few decades. As a by-product of our investigations we have acquired some evidence that permits a general assessment of the future development of merger. While this assessment is primarily based on our empirical data and on the analyses reported in previous chapters of this book, it also springs from the impressions given by our day-to-day work with the empirical data and by conversations with various persons having experience of merger matters.

Since virtually every merger involves the acquisition by one firm of another firm, or of a part of it, mergers can be regarded as ordinary investment. The total merger volume will accordingly depend on, among other things, the assessment that investors (=buyers of firms) make of future rates of return from their investment (=bought-out firms) and of the movement of relative prices for firms, i.e. how the prices of firms are deemed to develop in relation to the prices of comparable real capital. Considering first the future profitability of mergers, the assessment of this will naturally depend on the profitability of already consummated mergers. If these have turned out to be, or are reputed to be, highly profitable investments, that will most likely also affect the assessment of profitability from future mergers. So in order to forecast future merger activity we must have some idea of the profitability that has accrued from already consummated mergers. Unfortunately, we do not have a thoroughly prepared body of evidence on which to base an assessment of this matter. No investigation of profitability from consummated mergers has been carried out in Sweden.

However, foreign investigations together with observations of individual mergers in Sweden indicate that acquisitions of firms are a relatively risky form of investment, with

highly varying payoffs from the executed projects. Examples are to be found, both in Sweden and other countries, of mergers that have inflicted heavy losses on buyers over many years; but there are also examples of projects that have yielded extremely high returns. An American investigation of the value (movement of stock prices plus dividends) of a sample of merged firms before and after merger date (Gort & Hogarty [1970]) found that, on the average, the investigated mergers had neither a positive nor negative effect on the value of the merged firms, but that the observations were scattered across a relatively broad range.¹

Now what bearing does this have on assessing the future merger activity in Sweden? Although no definite answer can be given, some imaginable lines of development can be suggested. If the average profitability of mergers has so far been lower than that of "internal" investments, then the merger activity must be explained by saying that some firms have been more stimulated by the opportunity of earning extremely large profits than they have been deterred by the risk of incurring losses. According to this argument buyers of firms could generally be characterized as "gamblers"; whereas internal investors would be marked by aversion to risks. Under these assumptions future merger activity may very well continue at a high level even if it were to yield a lower average return than from internal investments.

It follows from the foregoing that raising the average relative profitability of consummated mergers should tend to increase merger activity. Events may actually take this turn if the prices of firms tend to fall in relation to the prices of comparable real capital. This is a likely development that will be further motivated below. However,

¹ The results are to some extent open to criticism for bias, since they are based on the assumption that the stock prices of the investigated firms would have moved in tandem with the index for the whole industry if the mergers had not been consummated. It is probable, however, that a great many mergers are consummated precisely because such a development would not have been possible otherwise. In other words, merging firms would not be representative of whole industries.

this merger-enhancing effect may be offset by another factor, namely that the profitability of firms put up for sale ought to decline over time since the buyers can be assumed to give first preference to the most profitable acquisitions at given prices. It is impossible to judge which of these two tendencies is likely to prevail.

An important conclusion to draw from the foregoing is that merger activity may occur on a large scale even if the profitability of consummated mergers turns out to be lower than that of corresponding investments in internal expansion. That is to say, even if it were true that many of the mergers consummated in Sweden in recent years have been "unprofitable" or "unsuccessful" in some sense, this need not make the incentives to merge in the future any less forceful than in the past. If the prices of firms were to fall more than the profitability of these same firms, one might even expect an increased merger activity.

As we have already had occasion to note several times, the past merger trend must be explained by an array of different causes. It is hard to find arguments to suggest that the motives and causes which have underlain the lively merger activity of the 1960's should diminish in strength or decline in number - rather the contrary. For reasons which need not be elaborated here, the pressure on firms to operate as efficiently as possible may be expected to continue to intensify pari passu with growing demands by employees and the "community at large", toughening international competition, accelerated technological advance, etc. This speaks for continued merger activity at a high rate, partly because mergers no doubt lead to efficiency improvements in many cases, and partly because the supply of small and medium-sized family-owned firms is influenced by the conditions mentioned. Besides, there is reason to suppose that this supply will still be very much determined in coming years by problems of succession and by tax considerations.

The restraint-of-trade motive likewise argues for continued high merger activity. If firms are still of the opinion that competition on the commodity markets is getting more intense and troublesome, there is every reason to ex-

pect mergers that aim at increasing corporate control over these markets during the 1970's as well. The much publicized crisis in the textile and apparel industries is likely to have its counterparts in other industries owing to keen competition from imports and other adverse developments. In some industries the mergers undertaken to restrain trade will presumably be of the "vertical" kind. Many internationally operating firms certainly impute to complete vertical integration a substantial guarantee of stability in sales volume, in prices of inputs and outputs, and hence in profits. Employment considerations may also enter into this equation.

If the "disturbance theory" that has been developed in this study is valid, the future merger volume will also depend on the extent and force of the technological, economic and social disturbances. There is no evidence to suggest that the 1970's will be any less a "decade of change" than were the 1960's. Technological advance is expected to keep moving at a headlong pace, with all the difficulties this imply for forecasting the movement of prices, the economic lives of products, etc. The market changes will be partially subject to political decisions, but unless protectionism suddenly turns rampant in the Western world they are expected to be rapid and pervasive. As regards the social disturbances that have bearing upon the propensity to merge, it is likely that tendencies from the 1960's will persist for some years to come. Hence the disturbance theory also speaks for continued high merger activity among the Western industrial countries. The disturbances will ensure the constant presence of merger-inducing appraisal gaps in manufacturing industry.

Several of the factors outlined above may be assumed to bring particularly strong influence to bear on the propensity of family owners to sell their firms, which would have the effect of pushing down prices of firms. It is therefore very likely that, during the decade which lies ahead, these tendencies will generate a movement of relative prices for firms which, other things being equal, will favor mergers in preference to internal expansion. This also speaks for at least unchanged merger volume during the 1970's.

The merger volume realized to date has probably fallen far short of the potential figure. A number of mergers, desired by businessmen, bankers, employees, administrative agencies or government officials, never come off owing to inadequate information, prestige and fear of taking the initiative, financing difficulties, lack of negotiating skill, etc. The extensive merger activity of recent years, taken together with the increased activity of government and certain business organizations in the merger field, points to a gradual removal of these obstacles. The availability of merger expertise seems to have increased in response to a growing demand for different services in this field. More "catalysts" have appeared on the scene, not least in the government sector as represented by the Investment Bank and SVETAB (The Swedish Industrial Establishing Corporation), which ought to increase the number of mergers if one assumes that the lack of initiative, resources and the like pose major impediments. In addition, a considerable body of experiences has been developed to deal with the many intricate technical, legal, financial, manpower and other problems that arise before, during and after merger negotiations. These experiences are disseminated in various ways and should thus help to eliminate some serious obstacles to mergers. Considered in the aggregate, certain imperfections in the market for firms are slowly being whittled away, which is likely to increase merger activity.

It is much harder to find arguments which militate against a continued merger volume of at least the same extent as during the past few years. Obviously, unless the entry of new firms keeps pace with the attrition of firms caused by closures and mergers in the manufacturing sector, the foundation for continued merging in existing forms will dwindle in the long run. However, more and more mergers are transacted partially in the sense that firms transfer subsidiaries, plants or product lines to one another. Nowadays, moreover, the search for merger partners is often not confined to Sweden. Swedish acquisitions of foreign firms greatly increased in number during the 1960's, and this trend may be expected to gain momentum, especially

if suitable merger partners at home should be in short supply. In the long run it is likely that international transactions will account for a growing proportion of the total merger activity.

An attrition of the number of firms tends to reduce the potential for continued merging within a given industry. Since mergers often need not involve firms in the same industry in order to achieve the purposes intended, a particularly great increase can be foreseen for the conglomerate mergers - the "diversifications" - at the expense of the horizontal type. This tendency has long asserted itself in the United States but in part is also due to the barriers that antitrust laws there put in the way of horizontal mergers. But in Great Britain, which does not have similar legislative barriers, diversifications have also grown in importance.

AN ATTEMPT AT EVALUATION

Alongside of all other changes in the industrial structure, mergers and other combinations are normally no more than marginal events within the framework of the whole process of structural change in industry. Internal rationalization and expansion, the advent of new products, techniques, plants and firms, as well as the weeding-out of the old, are events which, viewed from different economic and social aspects, presumably have greater importance than mergers in the long run. To say the least, precious little is known about these different elements of the transformation process. Nevertheless, it appears as though the relative weight of mergers has increased in recent years in Sweden and that this tendency will persist for some time to come. In consequence it should be more imperative to specify and evaluate the effects and relative importance of mergers. This will have to be a cardinal task for future research.

But on the basis of certain results and ideas that have emerged from this study, it should be possible even now to formulate some viewpoints that may have relevance to an attempt to evaluate mergers with reference to certain types of effects. We set them forth below by way of conclusion, in the form of briefly worded hypotheses.

- Mergers permit a more efficient utilization of scarce resources. They offer opportunities for correcting certain market defects and inertias in the economy. They constitute an economical alternative to closures without entailing "unnecessary" destruction of capital.
- Mergers promote a favorable development of the balance of trade and foreign exchange reserve in that they enhance the competitiveness of Swedish firms vis-à-vis the rest of the world and thereby increase exports and/or reduce imports compared with a situation without mergers.
- For various reasons about one-fifth of the personnel are normally not restored to the labor market after a closure. This personnel can often be afforded continued employment because of a merger. Mergers, therefore, stabilize and can raise the employment level in that they often permit the continued operation of firms and plants that would otherwise be forced to close down.
- Mergers offer owners of closely-held firms an opportunity to "disinvest" or reinvest their capital. In that way they make the capital market more viable and can stimulate the entry of new firms since they represent a way for the entrant to "jump off" if he so wishes or if he wants to sell his firm so as to reap a capital gain.
- Mergers may on the other hand reduce the level of capital formation since for the buyer they often constitute alternatives to internal expansion and since the seller does not always reinvest the consideration paid, whether directly or indirectly.
- Mergers may inflict losses of welfare on certain employees who lose their jobs or who are forced to make a quicker or farther-reaching readjustment than would have been necessary otherwise. However, these welfare losses are probably offset by welfare gains for other employees.
- Mergers may lead to restraints of trade that lessen the welfare of consumers. In the long run, however, reduced competition between two merged firms may intensify competition within the industry as a whole, especially if the

affected industry is highly concentrated and the merger does not involve the largest firms; a declining number of firms in an industry need not signify reduced competition.

Mergers increase the "concentration of power" in private enterprise in that a given number of persons (managers or owners of firms) will take decisions affecting a larger number of firms. In that way mergers can also add to the influence that these persons wield in other sections of the community and in society at large.

Mergers, in sum, have various effects that are both positive and negative. The latter-year merger trend in Sweden has undoubtedly brought both types in its train. Hence an important policy conclusion is that every attempt to minimize the negative effects in various ways - by legislation, for example - must allow for the risk of minimizing the positive effects at the same time. From the overall welfare aspect the latter presumably have weighed heaviest, at least up to the present time.¹

All the above statements, of course, are of a "ceteris paribus" nature. They are not conclusions but hypotheses. As such they can perhaps serve as points of departure for an in-depth analysis of mergers for their effects.

¹ For a formalised discussion of the tradeoff between the effects of mergers, see Williamson [1968] with comments and replies in later issues of the same source.

APPENDIX A

Number of employees in bought-out firms according to different types of mergers in 17 industries, 1946-69

- Column 1. Year
 Columns 2-6. Different types of mergers
 Column 2. Total mergers
 Column 3. Purchase by Swedish firms of subsidiaries of other Swedish firms
 Column 4. Purchase by Swedish-owned firms located in Sweden of foreign-owned firms located in Sweden
 Column 5. Purchase by foreign-owned firms located abroad of Swedish-owned firms, subsidiaries or operating divisions located in Sweden
 Column 6. Purchase by foreign-owned firms located in Sweden of Swedish-owned and firms in Sweden
 Column 7. Sum of columns 2-6
 Column 8. Employees in bought-out firms in relation to the total number of employees in the industry

Mining

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-----|-----|-----|-----|-----|-----|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | — | — | — | — | — | — | — |
| 1948 | — | — | — | — | — | — | — |
| 1949 | 80 | — | — | — | — | 80 | 0,62 |
| 1950 | 478 | — | — | — | — | 478 | 3,61 |
| 1951 | 15 | — | — | — | — | 15 | 0,11 |
| 1952 | — | — | — | — | — | — | — |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | 555 | — | — | — | — | 555 | 3,50 |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | — | — | — | — | — | — | — |
| 1959 | — | — | — | — | — | — | — |
| 1960 | — | — | — | — | — | — | — |
| 1961 | — | — | — | — | — | — | — |
| 1962 | — | 479 | — | — | — | 479 | 3,10 |
| 1963 | — | — | — | — | — | — | — |
| 1964 | — | — | — | — | — | — | — |
| 1965 | — | — | — | — | — | — | — |
| 1966 | — | — | — | — | — | — | — |
| 1967 | — | 107 | — | — | — | 107 | 0,89 |
| 1968 | — | — | — | — | — | — | — |
| 1969 | — | — | — | — | — | — | — |
| 1946—69 | | | | | | | 11,83 |

Primary metals

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-----|-----|-----|-------|-------|
| 1946 | 885 | — | — | — | — | 885 | 2,21 |
| 1947 | — | — | — | — | — | — | — |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | — | — | — | — | — | — |
| 1951 | — | — | — | — | — | — | — |
| 1952 | — | — | — | — | — | — | — |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | 725 | 661 | — | — | — | 1 386 | 2,99 |
| 1956 | — | — | — | — | — | — | — |
| 1957 | 500 | 1 200 | — | — | — | 1 700 | 3,51 |
| 1958 | — | — | — | — | — | — | — |
| 1959 | — | — | — | — | — | — | — |
| 1960 | — | 551 | — | — | — | 551 | 1,05 |
| 1961 | — | — | — | — | — | — | — |
| 1962 | — | 1 528 | — | — | — | 1 528 | 2,69 |
| 1963 | 203 | — | — | — | — | 203 | 0,37 |
| 1964 | — | — | — | — | — | — | — |
| 1965 | 1 309 | — | — | — | — | 1 309 | 2,28 |
| 1966 | 986 | 732 | — | — | — | 1 718 | 2,93 |
| 1967 | — | — | — | — | — | — | — |
| 1968 | 750 | — | — | — | — | 750 | 1,16 |
| 1969 | — | 50 | — | — | — | 50 | — |
| 1946—69 | | | | | | | 19,19 |

Fabricated metal products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-----|-----|-----|--------|-------|
| 1946 | 40 | — | — | — | — | 40 | 0,06 |
| 1947 | 272 | — | 125 | — | — | 397 | 0,52 |
| 1948 | 155 | — | — | — | — | 155 | 0,20 |
| 1949 | — | — | — | — | — | — | — |
| 1950 | 625 | — | — | — | — | 625 | 0,80 |
| 1951 | 516 | — | — | — | — | 516 | 0,67 |
| 1952 | 91 | — | — | — | — | 91 | 0,12 |
| 1953 | — | — | — | — | — | — | — |
| 1954 | 104 | — | — | — | — | 104 | 0,12 |
| 1955 | 582 | — | — | — | — | 582 | 0,71 |
| 1956 | 186 | — | — | — | — | 186 | 0,23 |
| 1957 | 150 | — | — | — | — | 150 | 0,19 |
| 1958 | 458 | — | — | — | — | 458 | 0,57 |
| 1959 | 1 483 | 600 | — | 380 | — | 2 463 | 2,99 |
| 1960 | 929 | 300 | 100 | — | — | 1 329 | 1,49 |
| 1961 | 855 | — | — | — | — | 855 | 0,91 |
| 1962 | 735 | — | — | 53 | — | 788 | 0,84 |
| 1963 | 908 | 392 | — | — | — | 1 300 | 1,41 |
| 1964 | 953 | — | — | — | — | 953 | 0,96 |
| 1965 | 2 181 | 163 | — | 13 | — | 2 357 | 2,35 |
| 1966 | 2 498 | 228 | — | 100 | — | 2 826 | 2,81 |
| 1967 | 1 481 | — | 10 | — | — | 1 491 | 1,54 |
| 1968 | 3 389 | 468 | — | 185 | 15 | 4 057 | 4,37 |
| 1969 | 7 972 | 2 383 | — | 100 | — | 10 455 | 10,77 |
| 1946—69 | | | | | | | 34,63 |

Machinery

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-----|-----|-------|-----|-------|-------|
| 1946 | 627 | — | — | — | — | 627 | 0,58 |
| 1947 | 30 | — | — | — | — | 30 | 0,02 |
| 1948 | 143 | — | — | — | — | 143 | 0,13 |
| 1949 | — | — | — | — | — | — | — |
| 1950 | 367 | 242 | — | 132 | — | 741 | 0,63 |
| 1951 | 400 | — | — | — | — | 400 | 0,32 |
| 1952 | 360 | — | — | 150 | — | 510 | 0,43 |
| 1953 | 35 | — | — | — | — | 35 | 0,03 |
| 1954 | 40 | — | — | — | — | 40 | 0,03 |
| 1955 | — | — | — | — | — | — | — |
| 1956 | 1 044 | — | — | — | — | 1 044 | 0,83 |
| 1957 | 130 | — | — | — | — | 130 | 0,10 |
| 1958 | 722 | — | — | — | — | 722 | 0,56 |
| 1959 | 1 562 | — | — | — | — | 1 562 | 1,29 |
| 1960 | 589 | — | — | — | — | 589 | 0,45 |
| 1961 | 105 | — | — | 90 | — | 195 | 0,14 |
| 1962 | 876 | 224 | — | 30 | — | 1 130 | 0,76 |
| 1963 | 2 403 | 250 | — | — | — | 2 653 | 1,79 |
| 1964 | 1 485 | 379 | — | — | — | 1 864 | 1,21 |
| 1965 | 1 839 | 600 | — | 360 | 70 | 2 869 | 1,82 |
| 1966 | 1 026 | 549 | — | 30 | — | 1 605 | 1,01 |
| 1967 | 1 510 | 335 | — | 105 | — | 1 950 | 1,27 |
| 1968 | 848 | 844 | — | 1 265 | — | 2 957 | 2,15 |
| 1969 | 1 163 | 800 | — | 110 | — | 2 073 | 1,41 |
| 1946—69 | | | | | | | 16,96 |

Electrical machinery

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-------|-------|-----|-------|-------|
| 1946 | 1 061 | 2 035 | — | — | — | 3 096 | 9,00 |
| 1947 | 160 | — | — | — | 220 | 380 | 0,94 |
| 1948 | — | — | 1 700 | — | — | 1 700 | 3,84 |
| 1949 | 12 | — | — | — | — | 12 | 0,03 |
| 1950 | 235 | — | — | — | — | 235 | 0,51 |
| 1951 | — | — | 600 | — | — | 600 | 1,24 |
| 1952 | — | — | — | — | — | — | — |
| 1953 | 124 | — | — | — | — | 124 | 0,28 |
| 1954 | 37 | — | — | — | — | 37 | 0,08 |
| 1955 | 85 | — | — | — | — | 85 | 0,17 |
| 1956 | — | — | — | — | — | — | — |
| 1957 | 482 | — | — | — | — | 482 | 0,91 |
| 1958 | 91 | — | — | — | — | 91 | 0,17 |
| 1959 | — | — | — | — | — | — | — |
| 1960 | 82 | — | — | — | — | 82 | 0,14 |
| 1961 | — | 548 | — | — | — | 548 | 0,87 |
| 1962 | 329 | 2 261 | — | — | 125 | 2 715 | 4,15 |
| 1963 | 138 | 20 | — | — | 50 | 208 | 0,31 |
| 1964 | 264 | 1 484 | — | — | — | 1 748 | 2,61 |
| 1965 | 273 | — | — | — | — | 273 | 0,40 |
| 1966 | 3 054 | — | — | — | — | 3 054 | 4,42 |
| 1967 | 50 | 35 | — | — | — | 85 | 0,13 |
| 1968 | 1 245 | 1 108 | — | — | — | 2 353 | 3,61 |
| 1969 | 789 | 260 | — | 1 140 | 515 | 2 704 | 3,95 |
| 1946—69 | | | | | | | 37,76 |

Transportation equipment

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|--------|-------|-----|-----|-----|--------|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | 150 | — | — | — | — | 150 | 0,59 |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | 1 900 | — | — | — | 1 900 | 6,98 |
| 1951 | — | — | — | — | — | — | — |
| 1952 | — | — | — | — | — | — | — |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | — | — | — | — | — | — | — |
| 1956 | 235 | — | — | — | — | 235 | 0,49 |
| 1957 | 84 | — | — | — | — | 84 | 0,18 |
| 1958 | 104 | — | — | — | — | 104 | 0,22 |
| 1959 | 501 | — | — | — | — | 501 | 0,83 |
| 1960 | 1 924 | 1 468 | — | 15 | — | 3 407 | 5,27 |
| 1961 | 139 | — | — | 40 | — | 179 | 0,27 |
| 1962 | — | 59 | — | 100 | — | 159 | 0,23 |
| 1963 | — | — | — | — | — | — | — |
| 1964 | 701 | 12 | — | — | — | 713 | 0,94 |
| 1965 | 294 | — | — | — | — | 294 | 0,36 |
| 1966 | 1 174 | 400 | — | — | — | 1 574 | 1,87 |
| 1967 | 209 | — | — | — | — | 209 | 0,26 |
| 1968 | 10 331 | 395 | — | — | — | 10 726 | 15,00 |
| 1969 | — | 4 600 | — | — | — | 4 600 | 6,13 |
| 1946—69 | | | | | | | 39,62 |

Shipbuilding

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-----|-----|-----|-------|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | 164 | — | — | — | — | 164 | 0,60 |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | — | — | — | — | — | — |
| 1951 | 302 | — | — | — | — | 302 | 1,11 |
| 1952 | — | — | — | — | — | — | — |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | — | — | — | — | — | — | — |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | — | — | — | — | — | — | — |
| 1959 | — | — | — | — | — | — | — |
| 1960 | 40 | — | — | — | — | 40 | 0,12 |
| 1961 | 45 | — | — | — | — | 45 | 0,13 |
| 1962 | 327 | — | — | — | — | 327 | 0,98 |
| 1963 | 4 042 | — | — | — | — | 4 042 | 12,42 |
| 1964 | 548 | — | — | — | — | 548 | 1,70 |
| 1965 | 653 | — | — | — | — | 653 | 2,10 |
| 1966 | 40 | — | — | — | — | 40 | 0,13 |
| 1967 | 90 | — | — | — | — | 90 | 0,31 |
| 1968 | — | — | — | — | — | — | — |
| 1969 | — | 1 800 | — | — | — | 1 800 | 6,10 |
| 1946—69 | | | | | | | 25,70 |

Stone, clay and glass

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-----|-----|-----|-----|-------|-------|
| 1946 | 442 | — | — | — | — | 442 | 0,83 |
| 1947 | 201 | — | — | — | — | 201 | 0,41 |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | 50 | — | — | — | 50 | 0,12 |
| 1951 | 99 | — | — | — | — | 99 | 0,24 |
| 1952 | — | — | — | — | — | — | — |
| 1953 | 115 | 472 | — | — | — | 587 | 1,49 |
| 1954 | — | — | — | — | — | — | — |
| 1955 | 189 | — | — | — | — | 189 | 0,46 |
| 1956 | 8 | — | — | — | — | 8 | 0,02 |
| 1957 | 5 | — | — | — | — | 5 | 0,01 |
| 1958 | 60 | — | — | — | — | 60 | 0,16 |
| 1959 | 490 | — | — | — | — | 490 | 1,27 |
| 1960 | 851 | 169 | — | — | — | 1 020 | 2,55 |
| 1961 | 265 | — | — | — | — | 265 | 0,65 |
| 1962 | 416 | — | — | — | — | 416 | 0,98 |
| 1963 | 850 | — | — | — | — | 850 | 1,96 |
| 1964 | 383 | 937 | — | 110 | — | 1 430 | 3,10 |
| 1965 | 1 012 | 15 | — | — | — | 1 027 | 2,17 |
| 1966 | 4 127 | 61 | — | — | — | 4 188 | 8,88 |
| 1967 | 168 | — | — | — | — | 168 | 0,36 |
| 1968 | 2 522 | 105 | — | 100 | — | 2 727 | 6,47 |
| 1969 | 1 348 | 96 | — | — | — | 1 444 | 3,36 |
| 1946—69 | | | | | | | 35,49 |

Lumber and wood products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-----|-----|-----|-------|-------|
| 1946 | 12 | — | — | — | — | 12 | 0,02 |
| 1947 | 35 | — | — | — | — | 35 | 0,05 |
| 1948 | 76 | — | — | 20 | — | 96 | 0,10 |
| 1949 | 16 | — | — | — | — | 16 | 0,02 |
| 1950 | 308 | 633 | — | — | — | 941 | 1,31 |
| 1951 | 729 | — | — | — | — | 729 | 1,01 |
| 1952 | — | — | — | — | — | — | — |
| 1953 | 483 | 171 | — | — | — | 654 | 1,01 |
| 1954 | 465 | — | — | — | — | 465 | 0,65 |
| 1955 | 88 | 1 600 | — | — | — | 1 688 | 2,32 |
| 1956 | 90 | 97 | — | — | — | 187 | 0,27 |
| 1957 | 129 | 395 | — | — | — | 524 | 0,78 |
| 1958 | 34 | — | — | — | — | 34 | 0,05 |
| 1959 | 69 | 95 | — | — | — | 164 | 0,25 |
| 1960 | — | 240 | — | — | — | 240 | 0,35 |
| 1961 | 837 | — | — | — | — | 837 | 1,21 |
| 1962 | 86 | — | — | — | — | 86 | 0,13 |
| 1963 | — | — | — | — | — | — | — |
| 1964 | 1 138 | — | — | — | — | 1 138 | 1,50 |
| 1965 | 1 099 | 40 | — | — | — | 1 139 | 1,46 |
| 1966 | 1 617 | 81 | — | — | — | 1 698 | 2,20 |
| 1967 | 334 | — | — | — | — | 334 | 0,44 |
| 1968 | 966 | 25 | — | — | — | 991 | 1,27 |
| 1969 | 1 098 | 478 | — | — | — | 1 476 | 1,86 |
| 1946—69 | | | | | | | 18,26 |

Pulp, paper and board

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-------|-------|-----|-------|-------|
| 1946 | 366 | — | — | — | — | 366 | 0,90 |
| 1947 | 98 | — | — | — | — | 98 | 0,24 |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | 895 | — | — | — | 895 | 2,16 |
| 1950 | 576 | — | — | — | — | 576 | 1,36 |
| 1951 | 40 | — | — | — | — | 40 | 0,09 |
| 1952 | — | — | — | — | — | — | — |
| 1953 | 483 | — | — | — | — | 483 | 1,05 |
| 1954 | 784 | — | — | — | — | 784 | 1,64 |
| 1955 | 152 | 986 | — | — | — | 1 138 | 2,29 |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | — | 2 150 | — | — | — | 2 150 | 0,42 |
| 1959 | 400 | 102 | — | — | — | 502 | 0,95 |
| 1960 | 431 | 2 776 | — | — | — | 3 207 | 5,84 |
| 1961 | 970 | 1 006 | — | — | — | 1 976 | 3,47 |
| 1962 | — | — | — | — | — | — | — |
| 1963 | 1 106 | 241 | — | — | — | 1 347 | 2,43 |
| 1964 | 892 | — | — | — | — | 892 | 1,61 |
| 1965 | 3 916 | — | — | — | — | 3 916 | 7,23 |
| 1966 | 3 175 | 489 | — | — | — | 3 664 | 6,89 |
| 1967 | 2 995 | — | 2 500 | — | — | 5 495 | 10,92 |
| 1968 | — | 260 | — | — | — | 260 | 0,53 |
| 1969 | 370 | 350 | — | 1 200 | — | 1 920 | 3,91 |
| 1946—69 | | | | | | | 53,93 |

Paper products, printing and publishing

| (1) | (2) | (3) | (3) | (5) | (6) | (7) | (8) |
|---------|-------|-----|-----|-----|-----|-------|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | 114 | — | — | — | — | 114 | 0,28 |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | 75 | — | — | — | — | 75 | 0,18 |
| 1951 | — | — | — | — | — | — | — |
| 1952 | — | — | — | — | — | — | — |
| 1953 | 16 | — | — | — | — | 16 | 0,04 |
| 1954 | 140 | — | — | — | — | 140 | 0,33 |
| 1955 | — | — | — | — | — | — | — |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | — | — | — | — | — | — | — |
| 1959 | — | — | — | — | — | — | — |
| 1960 | 153 | — | — | — | — | 153 | 0,30 |
| 1961 | 65 | — | — | — | — | 65 | 0,13 |
| 1962 | 134 | — | — | 205 | — | 339 | 0,64 |
| 1963 | 167 | — | — | — | — | 167 | 0,31 |
| 1964 | 288 | — | — | — | — | 288 | 0,51 |
| 1965 | 2 694 | 123 | — | — | — | 2 817 | 4,88 |
| 1966 | 1 001 | 154 | — | — | — | 1 155 | 2,04 |
| 1967 | 277 | — | — | — | — | 277 | 0,50 |
| 1968 | 788 | 200 | — | — | — | 988 | 1,81 |
| 1969 | 480 | 52 | — | 400 | — | 932 | 1,70 |
| 1946—69 | | | | | | | 13,65 |

Food and kindred products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-----|-----|-------|-----|-------|-------|
| 1946 | 18 | — | — | — | — | 18 | 0,03 |
| 1947 | 72 | — | — | — | — | 72 | 0,11 |
| 1948 | 317 | — | — | — | — | 317 | 0,50 |
| 1949 | 340 | 39 | — | — | — | 379 | 0,59 |
| 1950 | 387 | — | — | — | — | 387 | 0,60 |
| 1951 | 411 | — | — | — | — | 411 | 0,65 |
| 1952 | 129 | — | — | — | — | 129 | 0,21 |
| 1953 | 26 | — | — | — | — | 26 | 0,04 |
| 1954 | 415 | 264 | — | — | — | 679 | 1,05 |
| 1955 | 586 | 45 | — | — | — | 631 | 0,96 |
| 1956 | 540 | — | — | — | — | 540 | 0,81 |
| 1957 | 167 | — | — | — | — | 167 | 0,26 |
| 1958 | 849 | 42 | — | — | — | 891 | 1,37 |
| 1959 | 442 | 188 | — | — | — | 630 | 0,95 |
| 1960 | 1 401 | 582 | — | 76 | — | 2 059 | 3,05 |
| 1961 | 2 108 | 718 | — | — | — | 2 826 | 4,11 |
| 1962 | 2 762 | 253 | — | 1 644 | — | 4 659 | 6,63 |
| 1963 | 1 113 | 382 | — | — | — | 1 495 | 2,13 |
| 1964 | 3 351 | 289 | — | 12 | — | 3 652 | 5,03 |
| 1965 | 1 526 | 91 | — | — | — | 1 617 | 2,21 |
| 1966 | 1 503 | 111 | — | — | 90 | 1 704 | 2,37 |
| 1967 | 1 000 | 264 | — | 115 | — | 1 379 | 1,94 |
| 1968 | 1 807 | 50 | — | 386 | — | 2 243 | 3,14 |
| 1969 | 4 580 | — | — | — | 494 | 5 074 | 7,36 |
| 1946—69 | | | | | | | 46,10 |

Textile mill products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-----|-----|-----|-----|-------|-------|
| 1946 | 2 210 | — | — | — | — | 2 210 | 3,51 |
| 1947 | 30 | — | — | — | — | 30 | 0,05 |
| 1948 | 390 | — | — | — | — | 390 | 0,60 |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | — | — | — | — | — | — |
| 1951 | — | — | — | — | — | — | — |
| 1952 | 220 | — | — | — | — | 220 | 0,35 |
| 1953 | 328 | 170 | — | — | — | 498 | 0,80 |
| 1954 | 584 | — | — | — | — | 584 | 0,97 |
| 1955 | 79 | — | — | — | — | 79 | 0,14 |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | 88 | — | — | — | — | 88 | 0,18 |
| 1959 | 266 | — | — | — | — | 266 | 0,53 |
| 1960 | 351 | — | — | — | — | 351 | 0,69 |
| 1961 | 1 254 | — | — | — | — | 1 254 | 2,52 |
| 1962 | 100 | — | — | 35 | — | 135 | 0,27 |
| 1963 | 361 | — | — | — | — | 361 | 0,76 |
| 1964 | 245 | — | — | — | — | 245 | 0,50 |
| 1965 | 17 | — | — | — | — | 17 | 0,04 |
| 1966 | 1 460 | — | — | 487 | — | 1 947 | 4,70 |
| 1967 | 190 | 440 | — | — | — | 630 | 1,61 |
| 1968 | 596 | 45 | 50 | 23 | — | 714 | 1,95 |
| 1969 | 20 | — | — | — | — | 20 | 0,56 |
| 1946—69 | | | | | | | 20,73 |

Apparel and related products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-----|-----|-----|-----|-----|-------|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | — | — | — | — | — | — | — |
| 1948 | 200 | — | — | — | — | 200 | 0,43 |
| 1949 | — | — | — | — | — | — | — |
| 1950 | 100 | — | — | — | — | 100 | 0,21 |
| 1951 | — | — | — | — | — | — | — |
| 1952 | — | — | — | — | — | — | — |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | — | — | — | — | — | — | — |
| 1956 | 55 | — | — | — | — | 55 | 0,12 |
| 1957 | 140 | — | — | — | — | 140 | 0,31 |
| 1958 | — | — | — | — | — | — | — |
| 1959 | 264 | — | — | — | — | 264 | 0,62 |
| 1960 | 196 | — | — | — | — | 196 | 0,45 |
| 1961 | 14 | — | 291 | 850 | — | 1 155 | 2,62 |
| 1962 | 430 | — | — | 29 | — | 459 | 1,09 |
| 1963 | 150 | — | — | — | — | 150 | 0,36 |
| 1964 | 567 | — | — | 375 | — | 942 | 2,21 |
| 1965 | 231 | — | — | — | — | 231 | 0,57 |
| 1966 | 817 | — | — | 70 | — | 887 | 2,35 |
| 1967 | 794 | — | — | — | — | 794 | 2,20 |
| 1968 | 595 | — | — | — | — | 595 | 1,76 |
| 1969 | 671 | — | — | 222 | — | 893 | 2,70 |
| 1946—69 | | | | | | | 18,00 |

Footwear and leather

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-----|-----|-----|-------|-----|-------|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | — | — | — | — | — | — | — |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | — | — | — | — | — | — |
| 1951 | — | — | — | — | — | — | — |
| 1952 | 247 | — | — | — | — | 247 | 1,12 |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | — | — | — | — | — | — | — |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | 127 | — | — | — | — | 127 | 0,62 |
| 1959 | 473 | — | — | — | — | 473 | 2,32 |
| 1960 | — | — | — | — | — | — | — |
| 1961 | 57 | — | — | — | — | 57 | 0,29 |
| 1962 | 70 | — | — | — | — | 70 | 0,36 |
| 1963 | 136 | — | — | — | — | 136 | 0,65 |
| 1964 | 22 | — | — | — | — | 22 | 0,11 |
| 1965 | — | — | — | — | — | — | — |
| 1966 | 244 | — | 111 | — | — | 355 | 1,42 |
| 1967 | 964 | — | — | — | — | 964 | 6,03 |
| 1968 | 330 | 76 | — | 1 880 | — | 2 286 | 14,70 |
| 1969 | — | 110 | — | — | — | 110 | 0,69 |
| 1946—69 | | | | | | | 28,31 |

Rubber products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-----|-----|-------|-----|-------|-------|
| 1946 | — | — | — | — | — | — | — |
| 1947 | — | — | — | — | — | — | — |
| 1948 | — | — | — | — | — | — | — |
| 1949 | — | — | — | — | — | — | — |
| 1950 | — | — | — | — | — | — | — |
| 1951 | — | — | — | — | — | — | — |
| 1952 | — | — | — | — | — | — | — |
| 1953 | — | — | — | — | — | — | — |
| 1954 | — | — | — | — | — | — | — |
| 1955 | — | — | — | — | — | — | — |
| 1956 | — | — | — | — | — | — | — |
| 1957 | — | — | — | — | — | — | — |
| 1958 | — | — | 34 | — | — | 34 | 0,31 |
| 1959 | — | — | — | — | — | — | — |
| 1960 | — | — | — | — | — | — | — |
| 1961 | — | — | — | — | — | — | — |
| 1962 | — | — | — | — | — | — | — |
| 1963 | — | — | — | — | — | — | — |
| 1964 | — | — | — | — | — | — | — |
| 1965 | 2 700 | — | — | — | — | 2 700 | 19,35 |
| 1966 | 3 | — | — | — | — | 3 | 0,02 |
| 1967 | — | — | — | 1 000 | — | 1 000 | 7,43 |
| 1968 | — | — | — | — | — | — | — |
| 1969 | 560 | — | — | — | — | 560 | 3,85 |
| 1946—69 | | | | | | | 30,96 |

Chemicals and allied products

| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---------|-------|-------|-----|-----|-----|-------|-------|
| 1946 | 13 | — | — | — | — | 13 | 0,05 |
| 1947 | 215 | — | — | — | — | 215 | 0,75 |
| 1948 | — | — | 125 | — | — | 125 | 0,43 |
| 1949 | — | — | — | — | — | — | — |
| 1950 | 65 | — | — | — | — | 65 | 0,21 |
| 1951 | 684 | — | — | — | — | 684 | 2,15 |
| 1952 | 102 | — | — | — | — | 102 | 0,32 |
| 1953 | 110 | — | — | — | — | 110 | 0,35 |
| 1954 | 148 | — | — | — | — | 148 | 0,45 |
| 1955 | 21 | — | — | — | — | 21 | 0,06 |
| 1956 | 517 | — | — | — | — | 517 | 1,46 |
| 1957 | 22 | — | — | — | — | 22 | 0,06 |
| 1958 | — | — | — | — | — | — | — |
| 1959 | 93 | — | — | — | — | 93 | 0,25 |
| 1960 | 521 | — | — | 30 | 90 | 641 | 1,64 |
| 1961 | 165 | 97 | — | — | — | 262 | 0,65 |
| 1962 | 1 145 | — | — | — | 335 | 1 480 | 3,56 |
| 1963 | 291 | 1 616 | — | 121 | — | 2 028 | 4,78 |
| 1964 | 1 893 | 728 | 90 | — | — | 2 711 | 6,08 |
| 1965 | 928 | 604 | 70 | 321 | 42 | 1 965 | 4,24 |
| 1966 | 822 | 973 | — | 50 | 181 | 2 026 | 4,26 |
| 1967 | 382 | — | — | 3 | — | 385 | 0,81 |
| 1968 | 470 | 10 | — | — | — | 480 | 1,01 |
| 1969 | 852 | 1 920 | — | 850 | — | 3 622 | 7,55 |
| 1946—69 | | | | | | | 41,12 |

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The rapidly increasing merger activity in Swedish industry has been one of the most noticeable external signs of the structural change of the 1960's. The present investigation provides the first complete account of the merger activity in Sweden in the postwar period. The material is discussed and analyzed with respect to the extent of mergers in different industries and among large and small firms. In addition, the profitability, solvency, and growth of purchased firms are studied.

A separate chapter is devoted to studying the importance of mergers for the growth of Swedish firms whose stocks are traded on the stock exchange. For each of these firms, the growth rate is divided into the part accounted for by mergers and that due to internal growth. The motives and considerations behind the firms' choice between growing through purchasing other firms or through internal growth via new investments are also discussed thoroughly.