

Industrial Profits—Their Importance and Evaluation

by *Thomas Lindberg*

Profitability - a Difficult Concept

The Medium-Term Survey (LB 79)¹ recently published by the Institute concluded that the Swedish economy is suffering from a serious structural adjustment problem. The rate of expansion, for instance, of industrial investment and growth during the 1970's has been far below the levels of the 50's and 60's and biased towards low growth, low profit industries.

The study points at several deficiencies in the way the "profits system" functions. It deals partly with the extremely depressed profits situation during the crisis years of the 70's and partly with the allocation of total investment in the Swedish economy. This article will attempt to shed some light on the difficulties involved in using the traditional concept of profits as an indicator of industrial performance. The effects of corporate taxation will be emphasized in particular.² In addition, some of the material used as a basis for the financial analysis carried out in LB 79 will be presented.

In a market economy information on ex-post profitability and its components is interpreted by economic agents and used inter alia for projecting expected profitability on investment. These rate of return criteria, as perceived by the firms before tax and by the shareholders after tax, will ideally guide resources to those investments that yield the highest returns and the highest total growth. For this to happen, a number of requirements on the performance of markets themselves have to be satisfied. Some of these, especially those related to taxes, will be dealt with here. Some have been discussed elsewhere in this volume.³

Important questions are whether, in fact, decentralized investors interpret the rate of return criteria in roughly the same way. For instance, what conflicts exist between the objectives of individual firms and those of society at large?

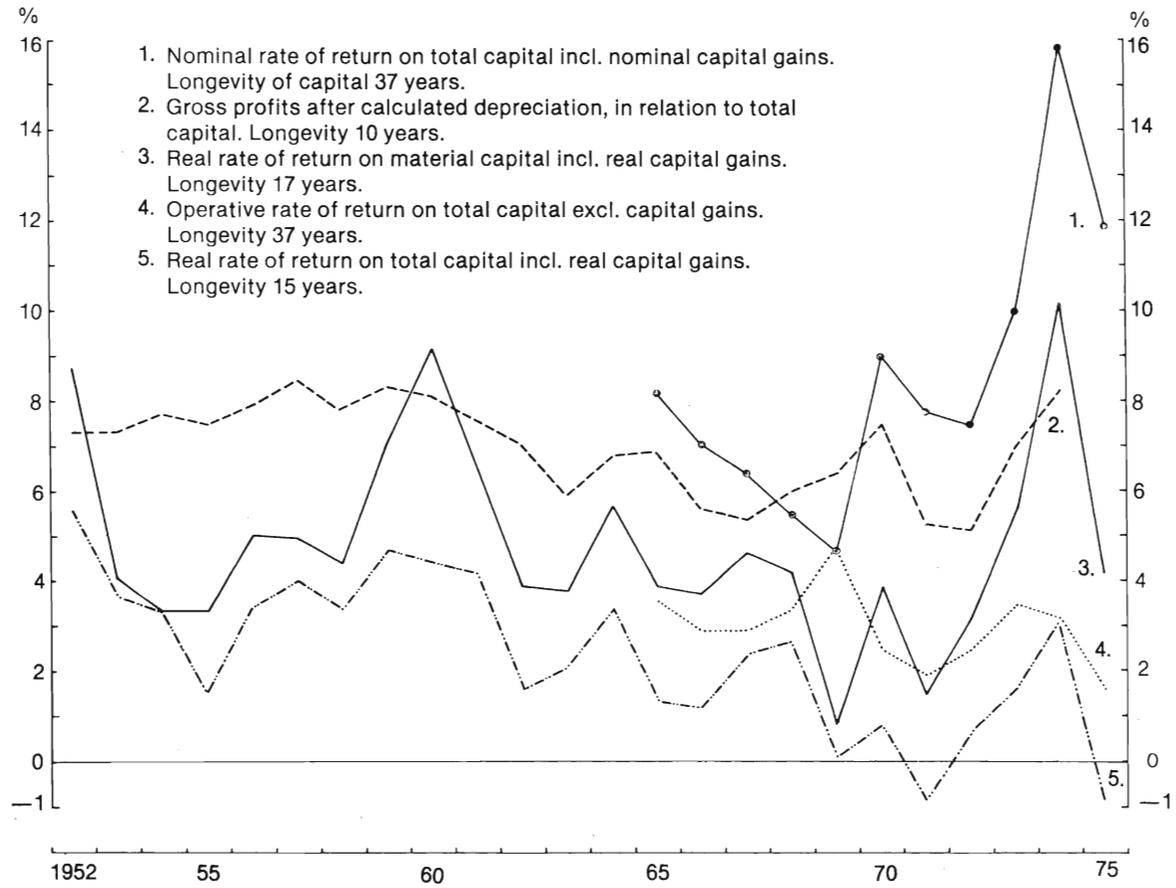
In Sweden and in other countries there has been a lively debate as to whether industrial profitability of real capital investments has really fallen in the long-run. As shown in Figure 15 profitability can be measured in a number of different ways. Different purposes and problems normally require different definitions. An "objective" approach, trying them all also fails to give any clear picture of the development. The chart shows both a measure of real returns for intertemporal comparisons and a measure of

¹See p. 83.

²These issues are dealt with in the project "Corporate Taxation, Profitability and Growth" (p. 99).

³See for instance articles by G. Eliasson, and D. Bradford & J. Södersten in this volume.

Figure 15. *Profitability in Swedish Manufacturing industry, 1952—1975*



nominal returns to facilitate an evaluation of alternative financial placements at any given point in time.

The considerable statistical (and theoretical) difficulties involved in achieving a good measure of any one of these variables explain why the result is often a compromise (as in Fig. 15, curve 2) or a hybrid. How, for example, should price variations in inventories be correctly captured when converting from a nominal to a real rate of return? And how does one choose the correct instrument for measuring the capital invested that corresponds to a particular income stream?

The problem of evaluating capital is as topical today as ever before. A common assumption is that the value of installed capacity reflects the cost of replacing it with new equivalent capital goods—the replacement value. This is often misleading, particularly if applied to individual firms in an aggregate. Take the Swedish shipyards as an example that barely succeeded in obtaining a value added exceeding the wage bill in 1978. What does it mean to calculate a rate of return for them with accumulated price-corrected net investments according to a fixed depreciation scheme? However, for an (external) observer with imperfect information, it seems to be one of the better approximations available for *sufficiently large aggregates*. The crucial problem is to calculate the *economic* life span of capital, i.e., how large should the depreciation allowances be? Can one reasonably assume that the depreciation factor does not change over time? One can reject almost any hypothesis about profit performance depending upon the assumptions one makes regarding depreciation allowances.

The Micro Perspective

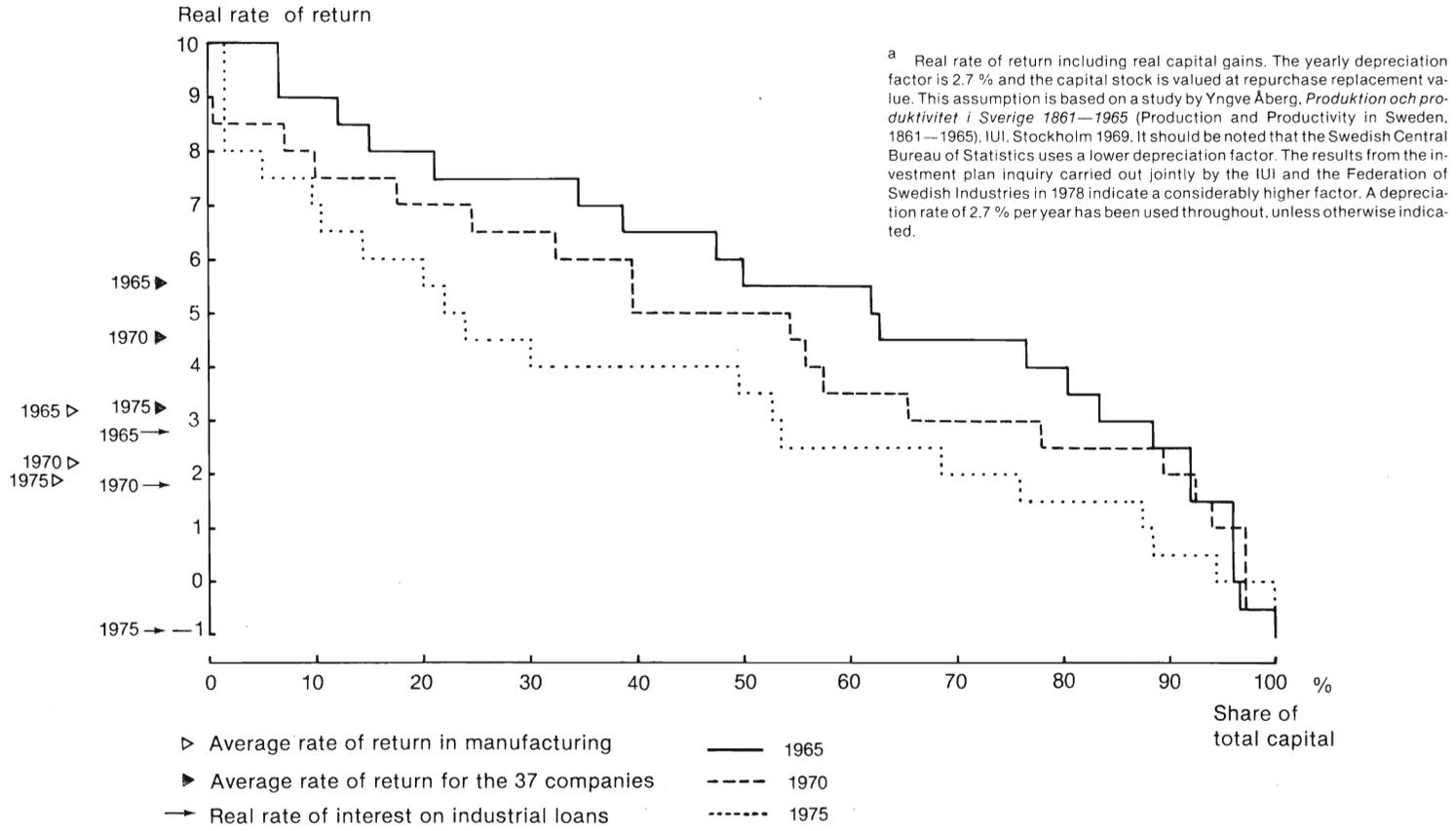
Economic activity is often studied at the macro-level using aggregate data relating, for instance, to the whole industry or one of its sectors.

However, working with averages for an entire sector or industry means that one misses the influence of the structural change that occurs continuously. The indices studied will then present a misleading picture of the dynamics of development if there are considerable variations among individual companies.

A study at the individual company level allowing a closer examination of the dispersal pattern is, therefore, an important complement for explaining the development of aggregates.

In order to achieve this a data base built on generally available statistics for the largest Swedish industrial corporations has been created at the Institute, to be used together with other individual firm information in the micro-to-macro model (see p.104). In some instances these statistics have been complemented by information gathered directly from the companies involved. Results will be presented here for 37 corporations (or groups of companies) selected from the data base. During the period 1971-75 these com-

Figure 16. Total capital employed at various rates of real return ^a. 37 large industrial companies



panies accounted for, on average, 50 and 54 percent respectively, of the manufacturing industry's total sales and balance sheet totals. Keeping the reservations regarding the conceptual difficulties associated with profitability measures in mind, we shall take a closer look at one of these measures at the company level.

Figure 16 indicates the distribution of the rate of return with respect to total assets employed for the group of large corporations in 1965, 1970 and 1975. The decline in profitability that can be observed is partly due, however, to 1975 not being a peak year in the business cycle as were 1965 and 1970. In addition, the distribution tends to concentrate around the average in 1975. (The slope of the curve has decreased somewhat). The latter tendency illustrates a dampening which occurred in most companies simultaneously. Data have not yet been analyzed for the years after 1975 witnessing an extremely low economic activity, but we expect a further lowering of the average and a decreased dispersion around the same average (i.e. a flatter curve or an extended inflexion point).

The real rate of return experienced by the larger corporations has been higher than the average in manufacturing industry during all three years. In 1975, all 37 corporations showed an internal rate of return exceeding the "real" interest rate on loans to industry (calculated as effective rate of interest deflated by the Consumer price index) while 13 percent of the capital in 1965 and 5 percent in 1970 yielded an internal rate of return below this interest rate.

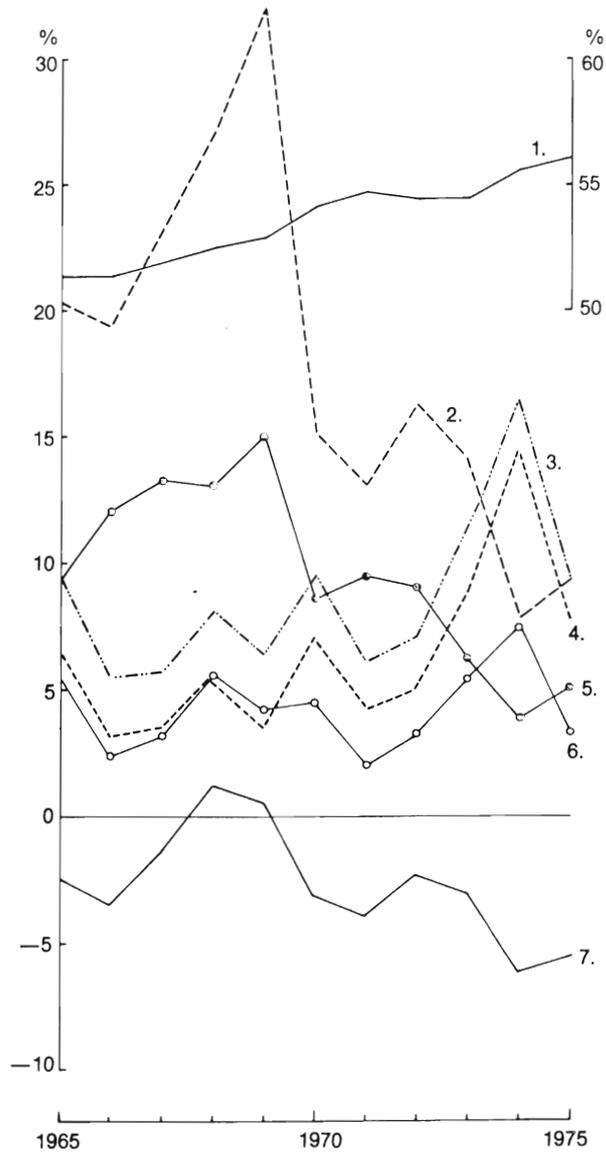
This gives some indication of the dispersion in profitability of this group of companies. It would be interesting to follow individual corporations over time (including some small and medium size firms) and particularly to trace their development during 1976-79. Such a study is currently in progress (p. 00).

The Role of Corporate Taxation

The Swedish corporate income tax has gradually acquired a new function during the postwar period. In 1950 the tax revenue from corporations amounted to some 15 percent of total Central Government tax receipts. In 1975 this share had decreased to 4 percent. This reflects a shift of the adjustment burden of stabilization policy from corporate investment to private consumption.

During the 1950's, corporate investments were held back by direct taxes on investments at the same time as the availability of long-term credit was restricted through regulation to provide finance for a very expansive residential construction and public sector growth programme. The 1960's and 70's, however, witnessed a growing concern regarding the low level of investment in industry. Fiscal policy shifted towards greater investment incentives with a certain tilt towards regional economic policy. Through advantageous depreciation rules for fixed assets and inventories, the companies were partly

Figure 17. *Profitability, rate of interest, taxes and dividends*
37 large industrial companies



1. Nominal tax rate (right hand scale).
2. Effective tax rate (after calculated depreciation allowances and financial adjustments, including nominal capital gains.)
3. Real rate of return on equity capital before tax.
4. Real rate of return on equity capital after tax.
5. Dividend rate (on the same base as in the effective tax rate calculation).
6. Real rate of return on total capital before tax.
7. Real rate of interest on borrowed capital (financial costs in relation to total debts, minus the consumer price index).

given back the possibilities of averaging out the results of good to bad years through tax consolidation. Direct tax payments again became flexible even though still not to the extent possible before the suspension in the 1950's of the right for the firm to determine its own rate of fiscal write offs. Through investment funds and various investment deductions, etc., the government has also tried increasingly to use short-term stabilization measures in its growth policy. The same is true for subsidies in which inventory support programmes have come to play an important role during the last few years.

The system of corporate taxation with its extensive arsenal of rules and regulations constitutes an interesting field for analysis, indeed. However, only a few questions regarding its importance for the allocation of resources and economic growth will be dealt with here. Figure 17 shows the change, since the middle of the 1960's, in the nominal tax rate for incorporated entities (please note the scale). Given the existing possibilities for deductions, however, this does not give an accurate indication of the real tax burden on companies.

The *effective* tax rate measured for the 37 corporations in the data base as the tax actually paid in relation to the result (including nominal capital gains on real assets and stocks)—after calculated depreciation and net of financial costs—shows an entirely different development. Measured in this way, the average tax for the period 1970-75 was 12.4 percent as compared to 54.9 percent in nominal terms. The relatively small effect that the income tax has had on the real profitability on equity capital during the last few years is clearly seen when curves 3 and 4 are compared. Actual tax payments have been subtracted from the result in curve 4, while the tax credits obtained through excess depreciation allowances as well as the entire visible untaxed reserve and visible equity capital are included in the denominator. The difference between profitability on total and equity capital is composed of the so called "leverage effect". With a negative cost for borrowed capital (see the curve representing the real interest rate on loans—note the definition), it is remarkable that the difference in profitability is not greater. One explanation is to be found in the debt-equity ratio which is rather low (less than 1), given the fact that the capital stock has been valued at replacement cost and thus includes substantial "hidden reserves". As a result, the difference in interest rates between borrowed and total capital is reduced. In spite of this, interest rates on loans have continued to be a positive factor in the profitability of equity capital well into the 1970's.

Figure 17 indicates further that dividends paid to shareholders (curve 5) follow tax payments (curve 2) quite closely.

Dividend payments in relation to *visible* equity capital show a weak upward trend during the period studied. The proportion of tax payments in relation to visible equity capital shows a cyclical development and reaches its absolute peaks when nominal profits from price increases, resulting from the rising business cycle, are largest. Dividend payments reach their peaks at the

downturn of the business cycle.

It is reasonable to assume that the firm bases its tax planning on a certain minimum dividend requirement. This, together with the nominal tax rate and a correction for desired retained earnings, gives the net taxable profit. Consolidation is undertaken in various forms to the extent necessary. This reversed principle of consolidation—where the relationship between need and action is unclear—is a natural result of the existing taxation of the yield on risk capital. The strong merger tendency through the 1970's can probably also be explained partly by the nature of the Swedish corporate income tax. While the firm on the one hand—using advantageous rules of depreciation—has been able to exempt a considerable part of its profits from current taxation, it suffers on the other hand from the fact that its dividends are subject to extremely high taxation pressures through a combination of the corporate tax and the highly progressive personal income tax. It is extremely costly to reallocate internal corporate financial resources openly via the equity market. This may have led companies to attempt, through mergers, to find alternative uses for the non-taxed profits. Diversification through the spreading of risks, however, does not seem to have been the guiding principle. The companies have rather tried to achieve higher returns through concentrating on those sectors in which they are most competent. The combination of double taxation of profits and high marginal income tax rates counteracts the policy of strengthening firms financially through a generous tax treatment of retained earnings. Inflexibility in the allocation of resources, lower targets for internal rates of return, and inefficient capital allocation are likely consequences.

Financing Alternatives

For borrowed capital to be attractive relative to plow back of own profits, the rate of return on the firm's total capital must be sufficiently larger than interest on debts on the margin to cover the extra risks associated with external finance. In Sweden as well as many other industrialized countries, credit market interests are to some extent controlled by the policy authorities, mostly in the downward direction. Especially in inflationary times interest rates tend to be unduly low. Also here the risk for lowered internal profit requirements and misplaced investments can result from an "artificially" low cost of capital. This is illustrated to some extent by the very low real interest on debt shown in Figure 17.

External financing through new share capital, on the other hand, is considerably more costly for the firm. The returns demanded by shareholders are determined by the profitability of alternative investments seen through a complex network of taxes. Between 50 and 70 percent of the total stock of shares in Sweden is thought to be privately owned. Private investors have a broad spectrum of alternative investment possibilities—where after-tax

inflation-proof¹ non-productive investments in property, in particular, have become an increasingly important alternative to stock. Shareholders are, in addition, interested in the net payments after tax, as their tax burden varies with the source of income. Double taxation of dividends and capital gains raises the pre-tax profitability demanded to such an extent that investments financed by way of issuing new shares appears to be three times as expensive as those financed through internal plow-back of funds.

The third method of financing, retained earnings, is also directly related to the tax system. Profits are plowed back because interest free tax credits are created through accelerated depreciation allowances, the investment funds system and other tax schemes. To be able to take full advantage of these schemes in reducing current taxable income, however, firms have to achieve a high profitability.

The tax burden, therefore, differs between growing, highly profitable firms and those that stagnate and run at a loss. This naturally encourages structural change. The incentives to growth that are built into the corporate tax system assume that a relationship exists between ex ante and ex post profitability. Structural changes can be impeded because of the fact that the resources are tied up in existing (often out of date) unprofitable projects. This is compounded by the structure of investment funds that can imply long time lags between the allocation and the disposal of funds, and by the fact that newly established firms are not eligible.

Profit-Growth: What Lies in between?

At the macro level it is quite easy to demonstrate a correlation between profit flows and investment. This connection is illustrated in Figure 18 where the profit margin (operating profits in relation to value added) and the investment ratio (investments also related to value added) are shown for the whole manufacturing industry.

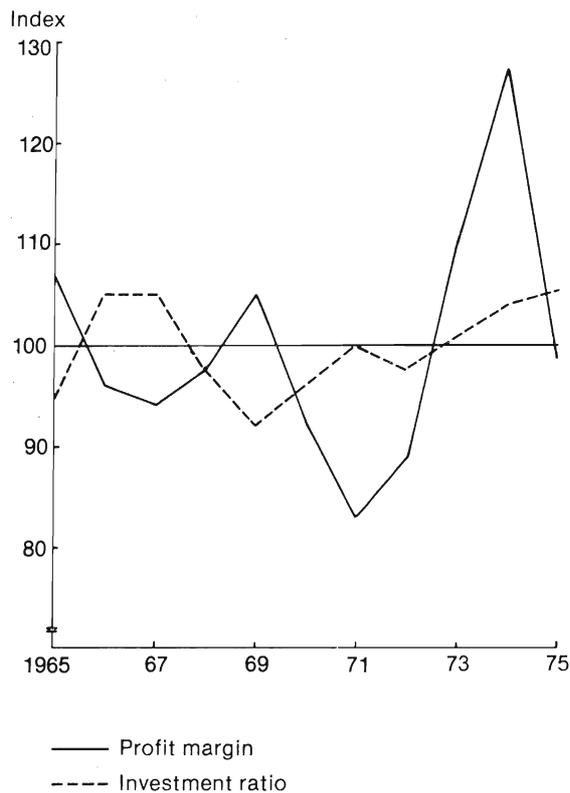
At the individual firm level this result seems to fade away. During the period 1968-75 only a few firms appear to have had the ability to combine vigorous growth in production with high profitability. Similar patterns have been observed previously in simulation experiments carried out on the Institute's micro-based macro model (MOSES).² In the very short run and the extremely long run (more than 10 years) the rapid growth and high profits pattern appear, however. In the medium term, individual firms often find themselves in different phases of the long process of profit increases—raised expectations—decision making—investment—capacity creation—production. A sophisticated dynamic model is needed to capture that process. The assumed connection appears most clearly for companies operating within the

See article by D. Bradford and J. Södersten in this volume.

¹ See p. 106.

Figure 18. *Investment ratio and profit margins in manufacturing industry, 1965—1975*

Index, 1965—75 = 100



two groups identified in the micro-to-macro model as “investment goods” and “consumption goods”. Firms producing raw materials and intermediate goods, in those exceptional instances where any trend is evident at all, seem to find themselves in the low profitability and low growth end.

It is important to make a distinction between expected and actual profitability. At the moment of investment it is of importance that the revenue surplus expected to be generated by the newly acquired resources is greater than the capital cost involved in using them. It is obviously difficult to calculate the ex ante profitability. Important factors that influence the forecast are the future development of product and factor prices and the market situation, etc. With the rates of price increase and relative price movement experienced in the 70’s, it is questionable whether investors dare to use market size signals to make judgements about their future profits. Use

of ex post profitability to approximate ex ante profitability can be defended in some situations. Investments often provide a complement to, or an extension of, already existing activity. It is, however, more difficult to assume past profitability to be a good prediction of the future when new investments involve diversification into a new product line, requiring a completely new technology. It is difficult to establish the relationship between expected and realized profitability, partly because expectations are not readily measured, partly because of the difficulty involved in isolating the actual contribution of the new resources to profitability.

Despite this fact, an attempt is made in Figure 19 to compare profitability during the two periods 1965-70 and 1970-75 for each of the firms. The deviation from the respective period's average is presented for the 37 companies. In addition to the fact that positive deviations dominate in the latter period, we see that the large majority of observations appears in the first and third quadrant. Thus, relatively high profitability in the first period is followed in general by relatively high profitability in the second period. Similarly, low profitability in the first period is followed by low profitability in the second. This finding provides at least some support for the use of historical profitability data in making judgements regarding the future. In simulations done on the micro-to-macro model, it is evident that it takes a long time, even in the face of large changes in the competitive position of the firm, for this pattern to break down.

Final Remarks

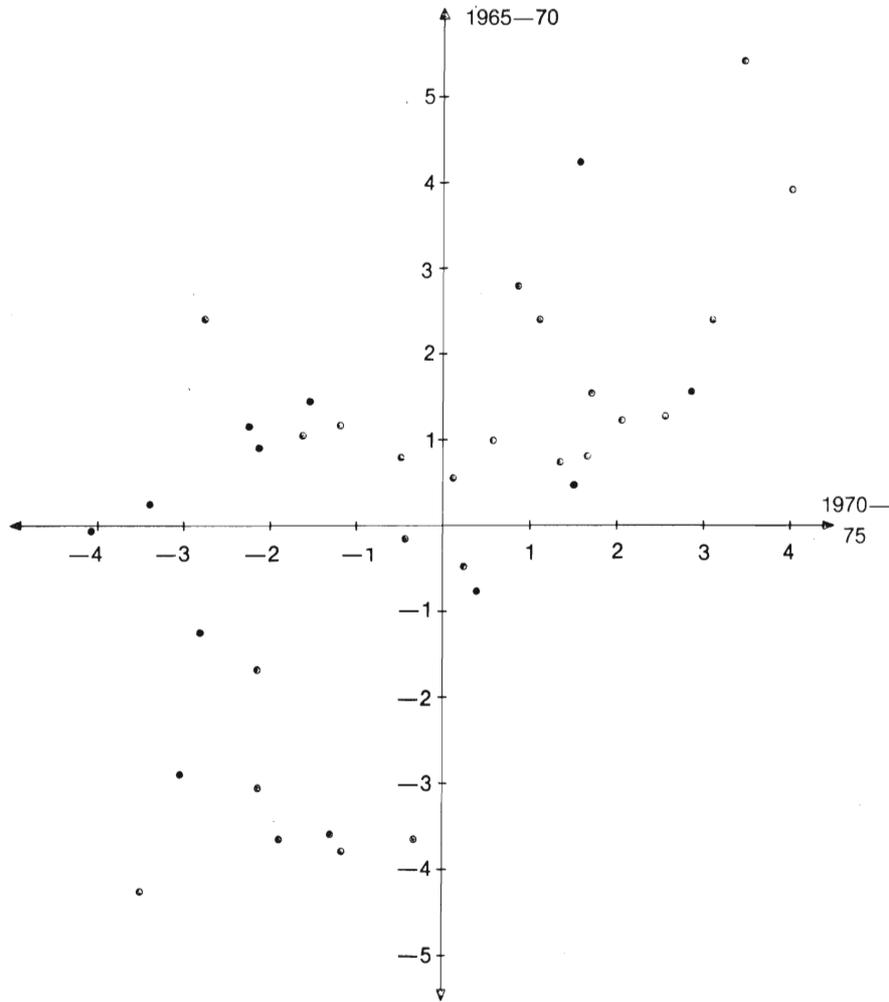
The picture of the development of profitability in industry during the last couple of decades is somewhat unclear. A number of recent studies show conflicting results; something that, in itself, is understandable with regard to the conceptual difficulties involved in measuring both the value and the profitability of capital. Since the mid-1970's, however, profitability in industry has drastically deteriorated while at the same time firms' average cost of capital appears to have decreased.

When one compares the cost of various forms of financing—which should be regarded as complements rather than as substitutes—one finds reason to believe that these costs vary to a greater extent than can be explained when taking into account the yield required by the creditors. One reason for this may be the locking-in effects that follow from the existing corporate tax system which rewards activities that are not necessarily the most viable and profitable in the long run.

We have been able to demonstrate a correlation between past and future relative profitability rankings. In contrast, it is more difficult to identify the significance of the actual yield for expectations and future growth. A long list of other factors interact and influence investment decisions: access to

Figure 19. *Real rate of return on total capital, 1965—1970 and 1970—1975*

Percentage points deviation from the average for 37 large industrial companies



and the cost of financing, the level of capacity utilization within the firm, its competitiveness in the market, etc.

It is essential for the formulation of rational expectations that existing market price information is not distorted by inflation and government or monopolistic interferences. Inflation has played a fundamental role disturbing the market price signaling function during the last few years and our simulation experiments suggest that this together with a spectrum of tax wedges, creates both instability and misallocation of investments hence retarding growth. As a consequence considerable attention to this problem is paid in several ongoing IUI projects.