

Jan Södersten Profitability of Swedish industry

The profitability trend is central for industrial capital accumulation. The downturn in the investment ratio between 1972-1975 and 1980-1983 is explained to slightly more than 60 per cent by the fact that the real return on material capital has decreased in relation to the real interest.

During the past decade the profitability of industry has varied in a way that lacks a parallel in postwar times. After the recession of 1971-1972 and the first oil crisis of 1973, profits increased dramatically, rising to a level in 1974 that had not been attained since the time of the Korean War in the early 1950s. The subsequent downturn was equally dramatic. As a result of the major crisis of 1977-1978, companies were afflicted with losses of a size and scope that had not been witnessed since the 1930s. The profit level improved somewhat during 1979-1980 but it was not until the devaluations of 1981 and 1982 that a more marked upturn occurred. As a result of the increase in profits in the past few years, we have once again, for 1984 and 1985, attained profit levels that correspond to the long-term average before the "turbulence" of the 1970s.

On the "real" side, the turbulent profit trend was matched by stagnating or falling industrial production during the 1970s, and by a dramatic downturn in companies' investments in plant in the years of crisis. It was not until 1984 and 1985, the years when industrial profits recovered, that a more marked expansion in industrial production and capital accumulation was noted.

For many reasons, the profitability trend is of central importance in an analysis of the changing conditions for industrial capital accumulation in Sweden during recent decades as an indication of profitability prospects in new investments and as a measure of the companies' access to internal financing. It is against that background that, in this article, I examine various aspects of the profit situation in industry since the mid-1960s. I chart the trends for gross profits and return on capital employed, the changed relation in respect of returns between real and financial investment alternatives, and elucidate the shift that has occurred during the past decade in the choice between real and financial investments.¹

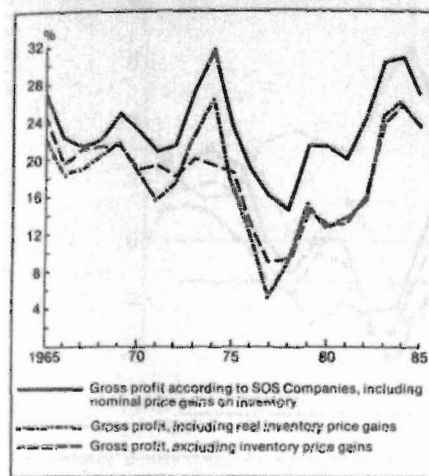
Special attention is given to problems of measurement. During the 1970s, inflation accelerated from a few per cent per year to double-digit figures, and the question of how this affected industry's profits and our picture of them is important. My view is that, in times of inflation, the fundamental difference between nominal and real concepts is all too often ignored, both in the official statistics and in various investigations.

Jan Södersten is an associate professor in Economics at the University of Uppsala and a researcher at the Industrial Institute for Economic and Social Research (IUI), Stockholm.

¹ The calculations are based throughout on Statistics Sweden's corporate statistics.

Figure 1. Gross profit share of added value 1965-1986

Alternative definitions (per cent)



Gross profits in industry

Figure 1 shows, with alternative definitions, the gross profit (operating surplus) share of the value added in industry during the years 1965-1985. The topmost, continuous curve is based directly on data from Statistics Sweden's company statistics, which means, among other things, that gross profits are calculated according to the FIFO (first in, first out) principle. Thus, the curve shows the profit trend inclusive of nominal inventory price gains. A rough estimation of the size of inventory profits may be obtained by multiplying the beginning inventory by the rate of growth of the producer price index. The broken line in figure 1 shows the gross profit margin after such an adjustment, that is, excluding nominal inventory price gains.

The difference between the two curves (the continuous and the broken) increases markedly as of 1973 and reflects the acceleration of the price increases from this point. During the remainder of the 1970s the inventory price gains account for as much as one-third of the uncorrected gross profits. An interesting result of the calculations concerns the appraisal of the profit trend in the mid-1970s. The dramatic upswing in corporate profits in 1973-1974 that was touched upon by way of introduction turns out to have been

caused entirely by the company's inventory price gains. If the sharp rise in the producer price index during these years (24.1 per cent just for 1974) is interpreted, in the way stated here, as a corresponding increase in the cost of replacements for inventories, 1974 does not appear to be a record year at all.

However, in a certain sense these calculations give a misleading picture of the companies' profit situation. A complete elimination of the inventory price gains means that the very real possibilities of profit that lie in making a successful adjustment of inventory policy to inflation are ignored. When the prices of replacements for goods consumed climb faster (more slowly) than the general rate of inflation, the companies make real inflation gains (losses) on their stock-keeping. The importance of including real inventory price gains in the calculation is shown by the dotted curve in figure 1, which thus shows industry's gross profit margin, including real inventory price gains.

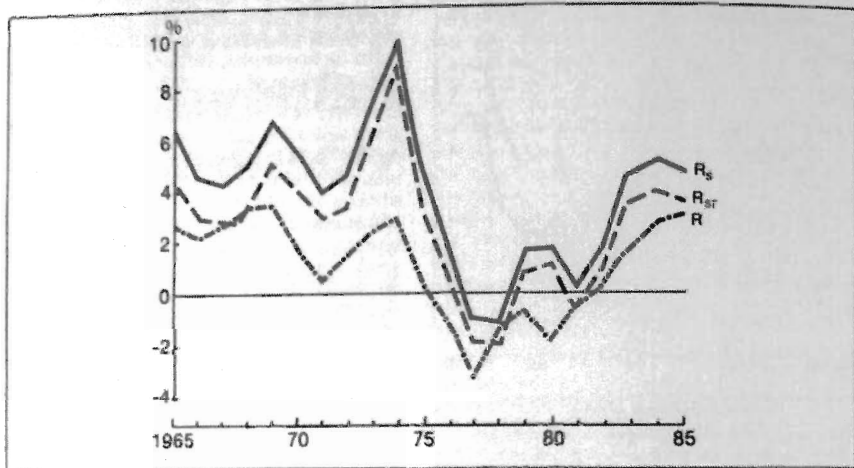
As can be seen, companies have experienced real gains and losses on their stock-keeping. The losses are concentrated in the periods of recession - 1967-1968, 1971-1972 and 1977-1978 - when replacement costs (here measured by the producer price index) increased more slowly than the general rate of inflation. The reverse was true in 1973-1974, when increasing real inventory price gains pushed up the profit margin to a record level. As an interesting comparison, we may also note that real inventory price gains did not play any part in the sharp upturn in profit that started in 1983.

Real return on capital employed

The fact that the gross profit margin has been used so frequently as a measure of the profitability trend is naturally linked to the simplicity of design of the measure. For example, no data on real capital or economic depreciation is required. This very fact can, at the same time, pose a risk in comparisons over time and, in particular, in comparisons between industries and companies. This subsection deals, instead, with the return on capital employed in industry, a measure that allows comparisons over time, even if the capital requirement per kröna of value added changes.

The continuous and broken curves in figure 2 show the real return on shareholders' equity before and after tax, respectively. Generally, in

Figure 2. Real return on total capital (R) and on shareholders' equity before tax (R_s) and after tax (R_{ST}), per cent



calculating the return on shareholders' equity, gross profits are reduced by economic depreciation and by the net of the companies' financial expenses and income, the remainder then being divided by shareholders' equity. Economic depreciation is calculated on the replacement value of the written-down real capital.² But in the same way as inflation affects a company's financial situation through revaluation of the real capital, it results in undermining financial assets and liabilities that are expressed in nominal amounts. In an economy where expectations are adjusted to inflation, such undermining by inflation has its counterpart in higher market interest rates, which push up both financial income and expenses for companies. A correct measurement of the real return on capital employed must incorporate both these effects of inflation. In the calculations shown in figure 2, this has been done by reducing the reported financial net (interest expense less financial income) by an amount corresponding to the rate of inflation multiplied by (beginning) net financial liability (liabilities less

financial assets).³ Figure 2 also shows (dotted curve) the real return on total capital (where, as earlier, the real capital is valued at replacement prices), which also includes the real return on companies' financial assets.

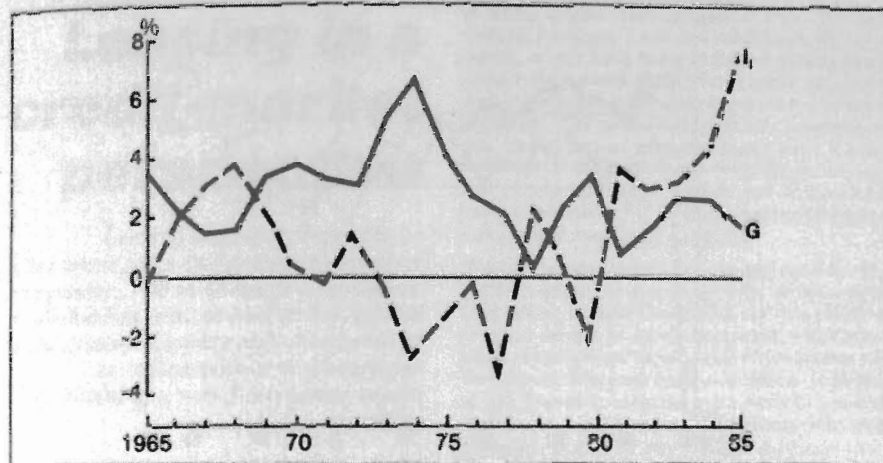
The various rates of return in figure 2 provide the same picture of the long-term trend as figure 1. It may be noted, for example, that the upturn in profits following the 1981 and 1982 devaluations raised the total return to a level comparable with that in 1974, while the return on shareholders' equity did not substantially exceed that in the years of recession 1966-1967 and 1971-1972.

Return on total capital is of special interest in this connection since it enables the so-called gearing effect to be calculated. The gearing effect shows the extent by which the return on

² Return on shareholders' equity after tax has been calculated after deduction of actual tax payments. By subtracting actual tax payments, the deferred corporate taxes (through the companies' "accelerated depreciation" (including allocation to inventory reserves and investment reserves)) are placed on a level with shareholders' equity. Accordingly, the deferred taxes are also included in the denominator in the measure of return on capital. The deferred taxes may alternatively be regarded as interest-free loans, which reduce the companies' average interest on loans. With this interpretation, the denominator in the measure of return on capital is reduced, since shareholders' equity is defined exclusive of deferred taxes. At the same time, the numerator decreases since the profit is stated after deduction for actual tax payments and the year's increase in deferred tax. In practice, these alternative methods of calculation yield virtually identical results for return on capital after tax.

³ I have here utilized my own calculations of industry's real capital according to the perpetual inventory method. The calculations presuppose that economic depreciation follows a geometric progression. The rate of depreciation has been set at 7.7 per cent per year for machinery and 2.6 per cent for buildings, which corresponds to an average economic life of about 13 and 38 years, respectively. In practice, Statistics Sweden's calculations of economic depreciation and real capital (which are not published) are based on the same depreciation rates.

Figure 3. Gearing effect (G) and real interest on industrial bonds (i_t)



shareholders' equity (before tax) exceeds the return on total capital. The size of the gearing factor depends on the difference between the return on total capital and the company's average interest payable and on the size of the debts in relation to shareholders' equity.⁴ Thus, the gearing factor is of interest as a measure of the effect of the company's financing on the return on shareholders' equity. As shown in figure 3, the gearing effect was positive throughout the observation period, amounting on average during 1965-1983 to 3.0 per cent. The return on shareholders' equity averaged 3.9 per cent during the same period, and the return on total capital only 0.9 per cent. Thus, the level of the return on shareholders' equity was determined for the most part by the gearing effect.

The average interest payable by companies, as reported in Statistics Sweden's company statistics, deviates for several reasons from prevailing market rates of interest. It is clear, however, that the situation in the capital market has had a direct and obvious impact on the gearing effect. As shown in figure 3, the variations in size of the gearing factor are, on the whole, a reflection of changes in the real interest - represented in the figure by the real interest on long-term industrial

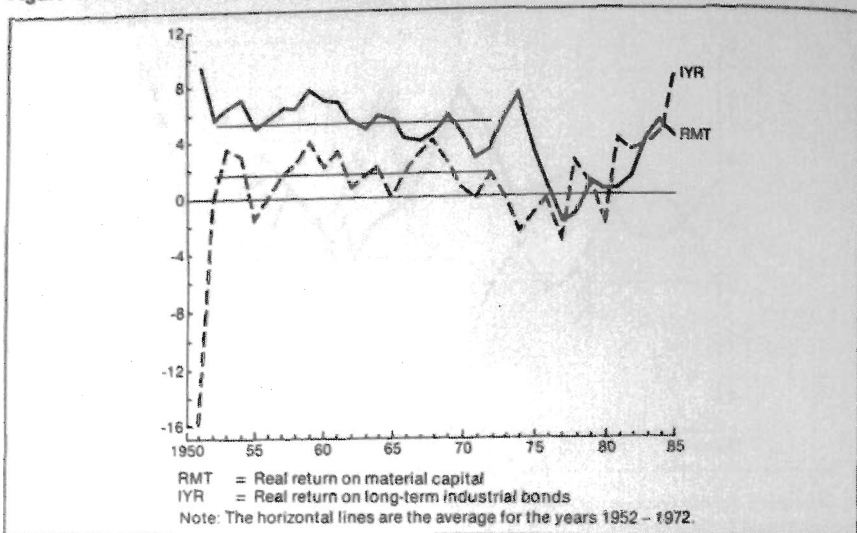
bonds. Thus, the growing gearing profits during the 1970s were caused to a large extent by falling - negative for several years - real rates of interest. The sluggish and incomplete adjustment of the market interest to the accelerating inflation during the 1970s was manifested in this way in a higher return on shareholders' equity. The fact that the return on shareholders' equity following the profit increases of the 1980s did not at all approach the 1974 level is correspondingly linked with the interest trend. As a result of the high real rates of interest, the gearing profits were very limited, compared with those in the record years of the 1970s.

Return on capital and the asset structure in industry

In the foregoing sections an account has been given of the trend of profits in industry during the years of crisis in the 1970s, among others. Parallel with the crisis in profits, an important change in the capital markets, in the form of better adjustment of market interest rates to inflation, may be noted from the end of the 1970s. The rising real rates of interest also influenced the conditions for industrial capital accumulation since, other things being equal, the costs of financing real investments were pushed up. In other words, there was a greater incentive to invest in various financial objects than in uncertain and binding real investments. This is clearly illustrated in figure 4, which shows the real return

⁴ The relationship is clear from the well-known expression $R_s = R_t + L/E(R_t - i_t)$ where R_s and R_t are the return on shareholders' equity and total capital, respectively, i_t is the average interest payable and L/E is the ratio between total liabilities and shareholders' equity. The second term on the right-hand side is the gearing effect.

Figure 4. Real return and real market interest 1951 - 1985



on material capital (machinery, buildings and inventories) and the real rates of interest in the market since the beginning of the 1950s.

The changes in the return on capital during the second half of the 1970s were matched on the real side by stagnating or falling industrial production and a drastic reduction in corporate investments in machinery and fixed capital. For example, the 1982 production level, following the years of crisis, was not much higher than 10 years previously, and throughout the period 1976 - 1982 investments in machinery decreased by an average of 5 per cent each year, and investments in buildings by 12 per cent. We can also note a very marked shift in the corporate asset structure towards a growing share of financial assets. Thus, financial capital, excluding cash and trade credits, rose from about 15 per cent of total capital during the second half of the 1960s to about 25 per cent in the early 1980s.

In an econometric analysis of industry's asset structure, which formed part of the long-term appraisal made in 1985 by the Industrial Institute for Economic and Social Research, a clear relationship was shown between the changed relation in returns between companies' financial and real investments, on the one hand, and the increased holding of financial assets, on the other. The decidedly most important factor in the increase in the share of financial capital was,

however, the changed market valuation of the net worth of companies ("Tobin's q ").

Similarly, an analysis of real investments by industry during the period 1966 - 1986 shows the strong effect of the return variable: an upturn in the real return on material capital by one percentage point in relation to the real rate of interest on bonds raised the investment ratio (measured as the net investment share of value added) by 0.5 percentage point. Since the investment ratio during the analysed period amounted on the average to 5.6 per cent, this result indicates the strong impact of changes in profitability on capital accumulation by industry. According to this analysis, the downturn in the investment ratio between 1972 - 1975 and 1980 - 1983 may be explained, to slightly more than 60 per cent, by the fact that the real return on material capital decreased in relation to the real interest.³

³ The following equation has been estimated for the years 1966 - 1986:

$$I^* = 0.52 - 0.50 R_{-1} + 0.07 \text{CLUT}_{-1} \\ \bar{Q} \quad (-3.57) \quad (3.00)$$

$$R^2 = 0.83 \quad \text{DW} = 1.96$$

t-Values are stated within parentheses.

I^* is industry's net investment ratio. R is the ratio

between (one plus) the bond interest and (one plus) the return on material capital. CLUT is capacity utilization. The explanatory variables have been "lagged" one year in order to incorporate, in the simplest possible way, the time-lag in the companies' adjustment.