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# Profitability in Austrian Industrial Corporations

(Methodology of Data Construction and Analysis of Past Performance)

Kurt Bayer

## 1. Introduction

This paper is concerned with a statistical analysis of the short- and long-term income performance of corporations in Austrian industry. For this purpose time series are constructed from aggregate balance sheet statistics which show the effects of valuation practices and accounting conventions and various tax rules on the calculation of various definitions of rates of return.

After a rather brief discussion of the concepts involved in "inflation accounting" to arrive at ex-post real rates of return for the corporate industrial sector and ten sub-sectors, which takes account of the historical emergence of the concepts and their applicability to the present Austrian situation, various definitions of "rates of return" are distinguished. The methodological part then traces the construction of the Austrian data, thereby attempting to keep the various relevant concepts apart.

The methodological section is followed by empirical analysis, describing the sectoral structure of profitability and the long and short-term behavior of these rates of return. Several hypotheses are tested as to their applicability to Austrian profitability data. Bye-results of these efforts are the description of capital structure (debt-equity ratios) and the effective tax burden borne by the corporations. Finally, some evidence is presented on the Austrian stock market in general and on divided payout ratios in particular. This latter section sheds some light on the peculiarities of the Austrian capital market and its inability to play an important role as a provider of risk capital. The section closes with a short comparison of costs and yields of capital in Austria.

The scope of the investigation is limited, insofar as it extends to industrial corporations (joint stock companies, "Aktiengesellschaften") only. These are the only enterprises required to publish balance sheets on an annual basis. These balance sheets are aggregated by sector and published by the Central Statistical Office with a time lag of approximately three years. Thus the present analysis covers the time span 1956-1978. The sector under investigation is composed of less than 200 firms and employs slightly more than 40% of Austrian industrial employees (see table 1). Since these corporations over-represent large firms (and especially the basic industries such as mining, petroleum and steel), an extension of the results to the total of Austrian industry is dangerous. Furthermore, there is some, if only sparse, evidence that different size classes of firms exhibit significantly different profitability rates1).

The data of the published balance sheet statistics form the core of the data base. From it various estimates are carried out. This data set is supplemented by published National Income Accounting (NIA) data, especially as concerns various price indices. Capital stock data are semi-official estimates of the Austrian Institute of Economic Research (Wifo), stock and capital market data are published by the Austrian National Bank. The rest of the data stems from the Wifo-Data-Bank.

Throughout this analysis the data presented are summations over firms, i.e. transactions among the firms concerned are not netted out. Thus, the sectoral or industry indebtedness ratios may be slightly over-stated, since it shows the weighted sum of the individual firms' indebtedness rather than that of the

## Number of Firms and Degree of Representation of Industrial Corporations (1976)

| Sector | No. of Firms | Representation[1)] |
|---|---|---|
| Stone-Clay, Glass | 18 | 26,14% |
| Electrical Engineering | 15 | 50,20% |
| Machinery, Vehicles | 29 | 35,88% |
| Chemicals | 23 | 46,67% |
| Food-Tobacco | 19 | 25,66% |
| Iron, Steel, Metal Products | 29 | 67,70% |
| Mining, Petroleum | 9 | 80,14% |
| Paper | 15 | 51,63% |
| Wood Products | 7 | 3,53% |
| Leather, Textiles, Clothing | 31 | 16,37% |
| Total Industry | 195 | 41,13% |

1) Number of employees of corporations within sector in relation to number of employees in sector of total industry.

consolitaded sector(s). On the other hand, in summing up losses of some firms are netted out against profits of other firms. In this respect, the individual sector, resp. total industry is treated like one single firm. The calculated rates of return then correspond not the mean rates of the individual firms, but rather to their weighted average.

## 2. Methodology of Inflation Accounting

### 2.1 Capital Maintenance and Income Concepts

It has been a recurring experience of the past sixty years that sustained periods of rising price levels led to discussions on how to measure business income "correctly". The hyper-inflation of the twenties led to an extensive debate in Germany (represented in the works of Schmalenbach and Schmidt) on capital maintenance and income concepts; this debate was revived during the inflation of the fifties, and the latest round of inflationary pressure since the early seventies has resulted in a vast international literature on how to change accounting rules in order to take account of changing price levels ("inflation accounting"). This paper does not intend to add to the host of proposals made in this direction, but intends to use an eclectic approach and adjust Austrian corporation accounts ex-post, in order to obtain results on "real" profitability of these corporations. As is common in the literature on inflation accounting, the term "real" in connection with a ratio refers to the fact that the distorting effects of historical cost accounting have been removed from the data, in the numerator as well as the denominator, but that each component is still calculated on a current price base. Thus, a "real rate of return" is the quotient of (inflation-adjusted) profits (at current prices) and (inflation-adjusted) capital stock (at current prices).

It should be recognized that all discussion on inflation accounting is (at least implicitly) tied in with the discussion on capital maintenance concepts. The main

problem in inflation accounting is how to adjust profit concepts in such a way that the "substance" of the firms (sectors) is not endangered by too high tax payments or dividend distribution which result from profit calculations based on the accepted historical cost accounting concepts.

Basically all tax accounting and national income accounting rules agree that profit should be defined as the surplus of revenue over cost after provision has been made for maintaining the company's capital intact, i.e. after deducting some definition of depreciation (SNA). It should be mentioned here that the issues of inflation accounting also touch upon the question of the equity of the tax burden. It has been argued that if business is allowed to substract from the tax base a provision for keeping its productive capacity intact, the same should apply to labor income (Welzmüller). Such a position would require two adjustments to personal income: One the one hand a "reproduction" deduction (to maintain the labor power and the wealth position of the individual), on the other hand an indexation of the relevant deduction, in order to account for inflation.

From the equity point-of-view the above position seems justified. Our present societies do not seem to share this view, however, since they allow depreciation deductions and, a fortiori, inflation accounting only for business income.

The literature on inflation accounting distinguishes between three major capital maintenance concepts (see e.g. Coenenberg-Macharzina, Schneider, Lawson, Rosenfield, etc.):

- Nominal capital maintenance: here the nominal (money) value of the invested capital has to be recouped before income (profit) arises. This definition lies at the basis of the present (historic cost) accounting rules in most countries.
- Real capital maintenance: the real (constant cost) value of the capital invested shall be maintained. Thus profit is the surplus after provision has been made for a) the loss in purchasing power of the money unit (current purchasing power accounting: CPP), or alternatively b) for the increase in the prices of the inputs into the production process (current cost accounting:CCA2). According to the method chosen assets are revalued either by a single price index (GNP-deflator or consumer price index - CPP method), or by asset-specific price indices (replacement costs of assets - CCA method).
- Economic capital maintenance: under this concept profit arises only after provision has been made for deducting all costs which secure the reproduction of the economic value of the firms, i.e. the present value of the future income streams. These is a long discussion in the literature3) on how to make this concept operational, which is orientated into the future. Most authors agree that this concept is the most desirable one theoretically, since economic theory defines economic profit not as the result of past activities, but rather as the income stream generated in the future by an investment undertaken now.

For the purpose of the present study it was decided to follow this latter concept and approach it by applying the proposals made by Kennedy and Godley-Cripps. They consider the productive potential of the firms maintained when provision has been made for the replacement of firstly machinery, equipment and plant, secondly of inventories, and thirdly of net liquid assets necessary to carry on the

business (going concern assumption). This method still implies a rather static income concept. Some authors (and business interests) would like to also include into capital maintenance provisions for necessary technological change.

Any consistent capital maintenance concept necessitates some inflation adjustments to historic cost accounts. Each capital maintenance concept will result in a different inflation accounting method and thus in a different definition and concept of profit. There is no generally "correct" way of calculating profit. Different purposes require different adjustment concepts. The objective of this paper leads the author to decide in favor of current cost accounting which "guarantees" the replacement of all those assets which the firms need to carry on their business. This method has the additional advantage that revenues and costs then are measured at the same (=current) prices, in contrast to present historic cost calculations where revenues are measured at current prices, but costs are measured at a conglomerate of past prices of varying periods. Thus current cost accounting yields a profit estimate which uses the same deflator for revenues and costs.

The objective of this study, to estimate the past economic income performance of the Austrian corporate industry sector, requires the calculation of current cost (="real") profit and real rates of return, net of depreciation. Other objectives, e.g. the analysis of the firms' income distribution, or a comparison with alternative money rates of interest may not require an inflation adjustment. For such purposes book profits based on historic cost accounting are appropriate4). A similar argument applies to the decision wether to measure profit on

total capital (entity view) or on equity only (proprietary view). Both are possible, but a decision between them is not a question of faith, but rather depends on the objective of the investigation. In this present study emphasis is on total profit (entity view), since we are interested in the performance of the corporate sector as a whole, no matter where the funds for investment come from. Equity rates of return are analyzed only as a subsidiary question (differences in these two concepts point to transfers between the two types of financiers; these transfers in general benefit equity owners at the expense of creditors when prices rise).

## 2.2 Cash Flow Method

In several articles the present author has presented a cash-flow concept for the estimation of industry profits5). In these previous studies no explicit attempt was made to take account of inflation problems. This extension is the topic of this present paper (Table 2). According to this cash flow approach gross book profit is calculated as the sum of accounting profit (minus losses) plus direct taxes on corporate income and property plus net change in reserves of all kinds (excluding "revaluation reserve") plus net interest payable plus book depreciation. Subtraction of "economic depreciation" calculated at historic cost yields net book profit (HC).

When "fictitious profits" which represent the adjustments required to maintain fixed assets and inventories and net monetary assets are subtracted, current cost net operating surplus (CC) results which corresponds to the above economic capital maintenance concept.

## Cash Flow Approach to Profits Calculation

| | |
|---|---|
| + | Net Accounting Profit (adjusted for carry-overs from previous year) |
| - | Accounting Losses |
| + | Direct Taxes on Corporate Income and Property |
| + | Change in Reserves of All Kinds (net of "revaluation reserve") |
| + | Net Interest Payments |
| + | Book Depreciation |
| | GROSS BOOK PROFIT (HC) |
| - | "Economic Depreciation" (calculated from book values) |
| | NET BOOK PROFIT (HC) |
| - | Fictitious Profits from Fixed Assets |
| - | Inventory Valuation Adjustment |
| - | Fictitious Profits (net of Losses) from Monetary Assets |
| | NET OPERATING SURPLUS (CC) |
| - | Net Additions to "Social Capital" |
| - | Interest Paid on Monetary Liabilities |
| + | "Geared" Proportion of Fictitious Profits |
| | EQUITY PROFIT (CC) |

HC: based on historic cost valuation (book valuation)
CC: based on current cost valuation

To arrive at current cost equity profit (proprietary profit), net additions to "social capital" and interest paid on monetary liabilities must be subtracted and the "geared" portion of fictitious profits must be added back in, since by definition fictitious profits can only be subtracted for that part of assets which is equity-financed. If the remaining fictitious profits are added in, total proprietary gain (HC) results which can be used for the calculation of earnings yields.

The method of calculation proposed here combines the advantages of adding in with accounting profit those elements which represent revenues without cash transactions and deducting an equivalent cost concept, plus being able to accomodate the necessary inflation adjustments in order to arrive at "real" operating surplus (CC). These estimates have been shown to be well suited to approximate economic profit (Bayer 1980b).

## 2.3 Inflation Adjustment to "Capital"

Each of the profit concepts in section 2.2 is related to a specific capital concept. In addition, the estimates of the inflationary elements of book profit ("fictitious profits") stem from a re-estimation of the asset values at current costs. Basically, three types of adjustments to the book figures are required.

According to Austrian accounting rules fixed assets are valued at historic costs. In order to arrive at a measure of fixed assets valued at replacement cost (current costs), a new capital stock for Austrian corporate industrial enterprises

was calculated on the basis of the "perpetual inventory" method (Goldsmith). The estimates and methodology are described elsewhere6). For the calculation of net capital stock in real terms a degressive method of calculating economic depreciation was applied, in which the rate of depreciation is approximately equal to twice the linear rate. There is a long discussion in the literature on what type of depreciation formula to use in such estimates7). Here a degressive formula is applied because there is evidence that it corresponds most closely to actual firm behavior in Austria. Several authors describe the differences in profit estimates resulting from various depreciation methods8). These differences have to be kept in mind when the results are interpreted. For lack of additional information the sectoral capital stocks were calculated by applying the industry depreciation rate to all sectors. Real net capital stock estimates then were inflated by means of price indices for fixed capital formation, i.e. the index for machinery and equipment and the index for plant, such that current cost estimates resulted. These estimates differ from the book values in two respects:

- they contain the "hidden reserves" which result from the quicker write-off through accelerated depreciation schemes permitted in Austria and the effects of the shorter service lives permitted in the calculation of "normal" depreciation for tax purposes (cumulative difference between book depreciation allowances and "economic" depreciation) and
- they contain the effect of valuation at replacement costs. The latter effect is smaller than the former, even though at times of high inflation (especially 1974) the latter reaches sizable proportions.

For the purpose of revaluing stocks of inventories very rough estimates had to be carried out. Basically, Austrian firms are required to value their stocks by the "identity pricing method". This, however, is only possible for such commodities which are distinguishable from each other and where the movement into and out of the stock can therefore be recorded. A vast number of commodities (fuel, raw materials, many semi-manufactured goods) are indistinguishable. These commodities may be valued at various methods of average pricing, which correspond closely to those suggested by the SNA procedures. There is no information in Austria on which procedures are applied to what extent in practice. Furthermore, according to Austrian rules synthetic methods like LIFO or FIFO, are not permitted. Thus it proved difficult to arrive at realistic estimates of "real" inventory changes. The decision was made to adjust the net input inventory changes by half the value of the increase in the price index for industry inputs, those of finished goods stocks by the industrial output price index. Among several variants tested this measure afforded the most plausible inventory changes when compared with sales, production and anticipation data. This adjustment yields "fictitious" profit elements (inventory valuation adjustment) which remain fairly stable throughout the first part of the period, but rise to sizable magnitudes during the early seventies. Nevertheless, in relation to the U.K. and the U.S. (where in 1974 this adjustment amounted to 48%, resp. 40% of gross operating surplus) the average-pricing procedures resp. the above assumptions keep this adjustment on a smaller level (in 1974: 20% of book profits). Basically, this concept implies that actual valuation procedures of Austrian firms eliminate about 1/2 of the price effect from inventory valuation, thus only the rest enters the arguments of inflation accounting.

The third "capital" item which requires adjustment is net monetary assets, defined as those liquid net assets which are part of the companies' working capital. They contain liquid assets and trade debtors minus debt creditors and are considered essential to the firms' ability of staying in business (Hill, p.122). At times they can assume negative values. If these net assets are considered necessary for carrying on the business, their real value must be maintained. Thus an adjustment is made to the effect that their net change between two years is split into a real component as an inflation-induced component which is part of "fictitious" profits and substracted from book profit. In general, this item is relatively small from the quantitative point of view, but takes on significance from the point of view of the logic of inflation accounting.

In principle there are two ways to take account of inflation adjustments in the assets estimates: either "fictitious profit" elements are calculated from book figures by means of the methods described, and these profit elements cumulated and transferred into a "revaluation reserve" or "capital maintenance" fund. Alternatively, each capital item is recalculated in terms of current costs. In this case no other adjustment to the capital figures, from which the profit figures are derived, is necessary.

The Austrian data situation calls for a mixture between these two methods: fixed assets are recalculated from outside sources, inventory and net monetary assets adjustments, on the other hand are approximated from book figures and transferred to a reserve fund. Thus new series for physical capital, total capital, and also equity capital (total capital minus book debts) at current costs are

developed and set in relation to the respective profit estimates, in order to arrive at real rates of return series.

Other capital items, e.g. financial assets and other parts of working capital, are not adjusted for inflationary bias, since they are assumed to represent non-essential (for the carrying-on of the business) investments which do not warrant capital maintenance provisions. They enter the capital estimates with their book values. Table 3 shows the three elements of "fictitious profits" as calculated for Austrian industrial corporations.

## 2.4 Physical Capital and Total Capital

The calculations and estimates in this paper refer primarily to "total capital", i.e. to all assets recorded in the balance sheets. Thus rates of return also include gains from extra-business activities, such as sale of equipment, interest on financial assets or from arbitrary valuation practices, etc. So-called extra-ordinary gains therefore are included in the profits estimates. As an alternative, one could imagine, as does Austrian National Income Accounting, that such activities and their proceeds should be excluded from these estimates, since they refer to non-industrial activities. To make these effects visible we also calculated rates of return o physical assets only. This implies excluding extra-ordinary gains from profits, excluding all financial interest-bearing assets from the capital figure and also excluding (for the same reason) from the calculations all adjustments to net monetary assets.

Table 3

## "Fictitious Profit" Elements

| | Fixed Assets | Inventories | Net Monetary Assets | Sum |
|---|---|---|---|---|
| | | in Mill. S | | |
| 1955 | 342 | 200 | 18 | 560 |
| 1956 | 374 | 303 | 33 | 710 |
| 1957 | 537 | 130 | 13 | 680 |
| 1958 | 601 | - 135 | 9 | 475 |
| 1959 | 688 | - 26 | 20 | 682 |
| 1960 | 822 | 140 | 27 | 989 |
| 1961 | 887 | 145 | 54 | 1.086 |
| 1962 | 1.046 | 15 | 8 | 1.069 |
| 1963 | 1.064 | 38 | 31 | 1.133 |
| 1964 | 1.238 | 70 | 93 | 1.401 |
| 1965 | 1.291 | 136 | 216 | 1.643 |
| 1966 | 1.305 | 93 | 72 | 1.470 |
| 1967 | 1.203 | 53 | 170 | 1.426 |
| 1968 | 1.498 | - 25 | 153 | 1.626 |
| 1969 | 1.726 | 152 | 176 | 2.054 |
| 1970 | 2.034 | 563 | 275 | 2.872 |
| 1971 | 2.522 | 556 | 261 | 3.339 |
| 1972 | 2.366 | 379 | 387 | 3.132 |
| 1973 | 3.161 | 473 | 527 | 4.161 |
| 1974 | 3.906 | 4.201 | 452 | 8.559 |
| 1975 | 3.652 | 1.249 | 320 | 5.221 |
| 1976 | 3.328 | 513 | 412 | 4.253 |
| 1977 | 3.139 | 807 | 416 | 4.362 |
| 1978 | 2.863 | 136 | 134 | 3.133 |

## 2.5 Total Capital and Equity Capital

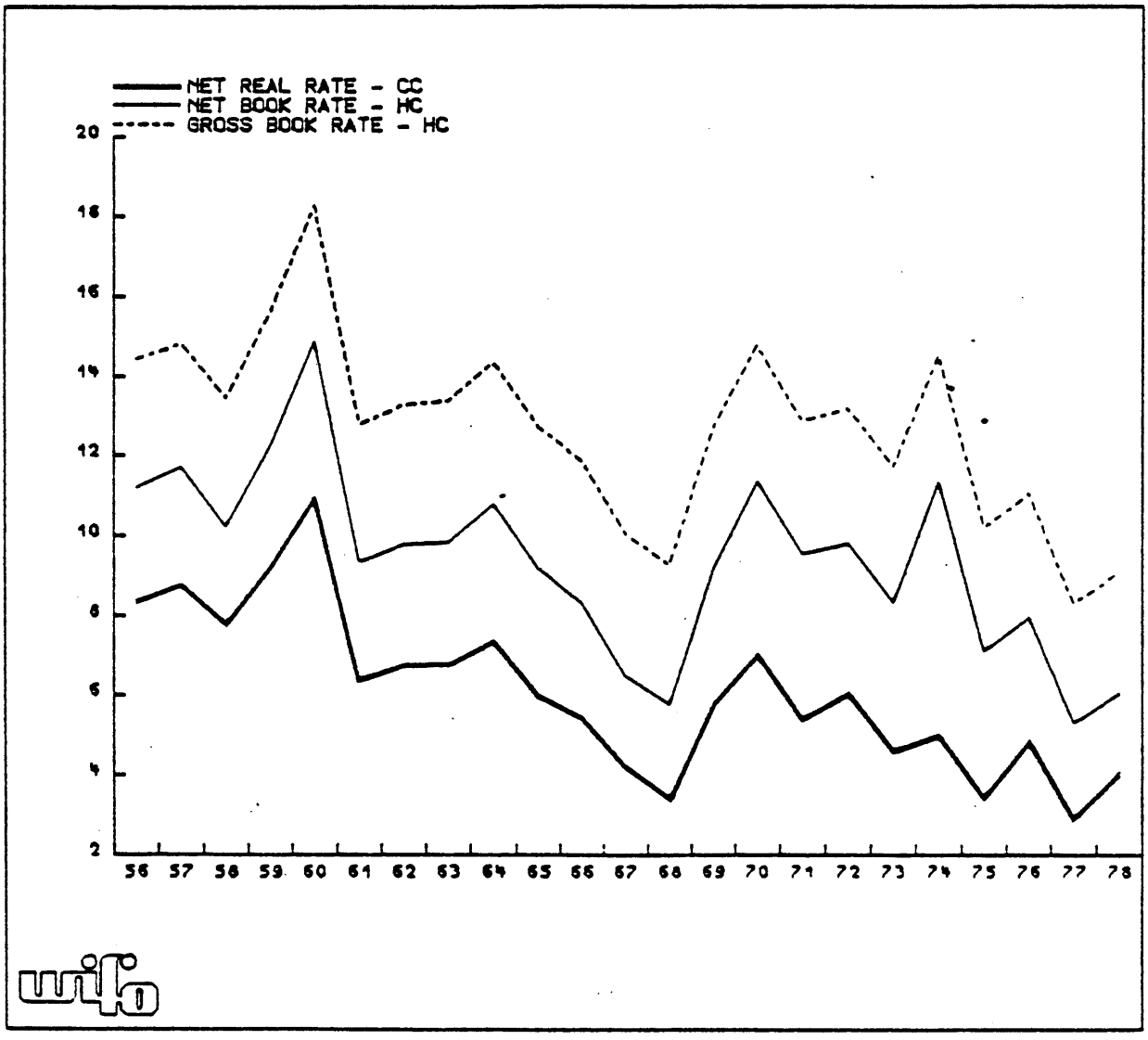
As mentioned above, the primary purpose here is to estimate rates of return on all capital invested by the corporations, i.e. on equity plus debt. In this entity view of the corporations the gains accruing to the equity owners through the fall in the real value of the nominal debt in times of inflation is compensated by the equivalent loss to the creditors. When returns on equity alone are calculated, however, this income transfer from creditors to capital owners plays an important role, as the calculations show. Comparisons between rates of return on total capital and on equity exhibit these transfers.

In Austria there is a lot of discussion on whether to classify some capital components which in general go by the name of "social capital" as equity or debt. This term refers mainly to superannuation reserves, severance pay reserves, pension reserves and other provisions of a "social" character, additions to which are (to a varying extent) tax-free. Legally, in Austria some of these reserves are classed equity, some debt, even though they are very similar in character. Most of the social capital is ear-marked for the benefit of employees. Up to 1978 additions to social capital were tax-free practically without limit, since then tax-free net additions, and also the total amount of social capital have been limited. Up to that year provisions for "social capital" increased significantly from year to year, because they enabled firms to reduce their tax burden. If these provisions do not add to the equity owner's income in many cases, they certainly increase the firms' liquidity. Especially those parts of social capital which with high certainty are of a long-range character can be reinvested by the firms and/or represent at least an interest-free loan.

In order to take account of the increasing importance of "social capital" and also of the difficulty of classing it as equity or debt, in this paper equity capital is defined once as including social capital, the other time as excluding it. The data situation does not allow a clear definition of "social capital" for all years investigated, but gaps were filled by estimates.

Figure 1

RATES OF RETURN ON TOTAL CAPITAL



## 3. Empirical Analysis

### 3.1 Sectoral Structure

The sectoral structure of the calculated rates of return is very sensitive to definitional differences, especially to whether inflation accounting has been applied or not. Table  gives an overview of this structure according to various definitions. For our main result, the real rate of return on total capital, the ranking shows above-average rates (over the total period) for the stone and clay industry, machinery and vehicles, the chemical industry, electrical engineering and foodstuffs, and below-average rates for mining and petroleum (!), iron & steel, paper and textiles and clothing. The major remarkable result in this ranking is that of the mining and petroleum sector where the rates seem lower than expected. Several factors account for that: on the one hand, the very profitable petroleum sector is lumped together with the traditionally ailing coal and ore mining industries, on the other hand inflation accounting has by far the strongest effect on this sector, because it is extremely capital-intensive and because also inventory-valuation adjustments (oil reserves) are very high. This is presents  a problem, because the Austrian oil industry does not only refine the crude oil which it extracts itself, but imports the major share. The problem of increasing prices of crude oil imports thus is not completely equivalent for the petroleum industry as that of rising inventory costs in other sectors, since the Austrian oil industry also has a major influence on influencing the prices of its inputs. In addition, part of the revenues of the (nationalized) oil industry stem not from production, but from trading activities, to which in the

EQUITY RATES OF RETURN

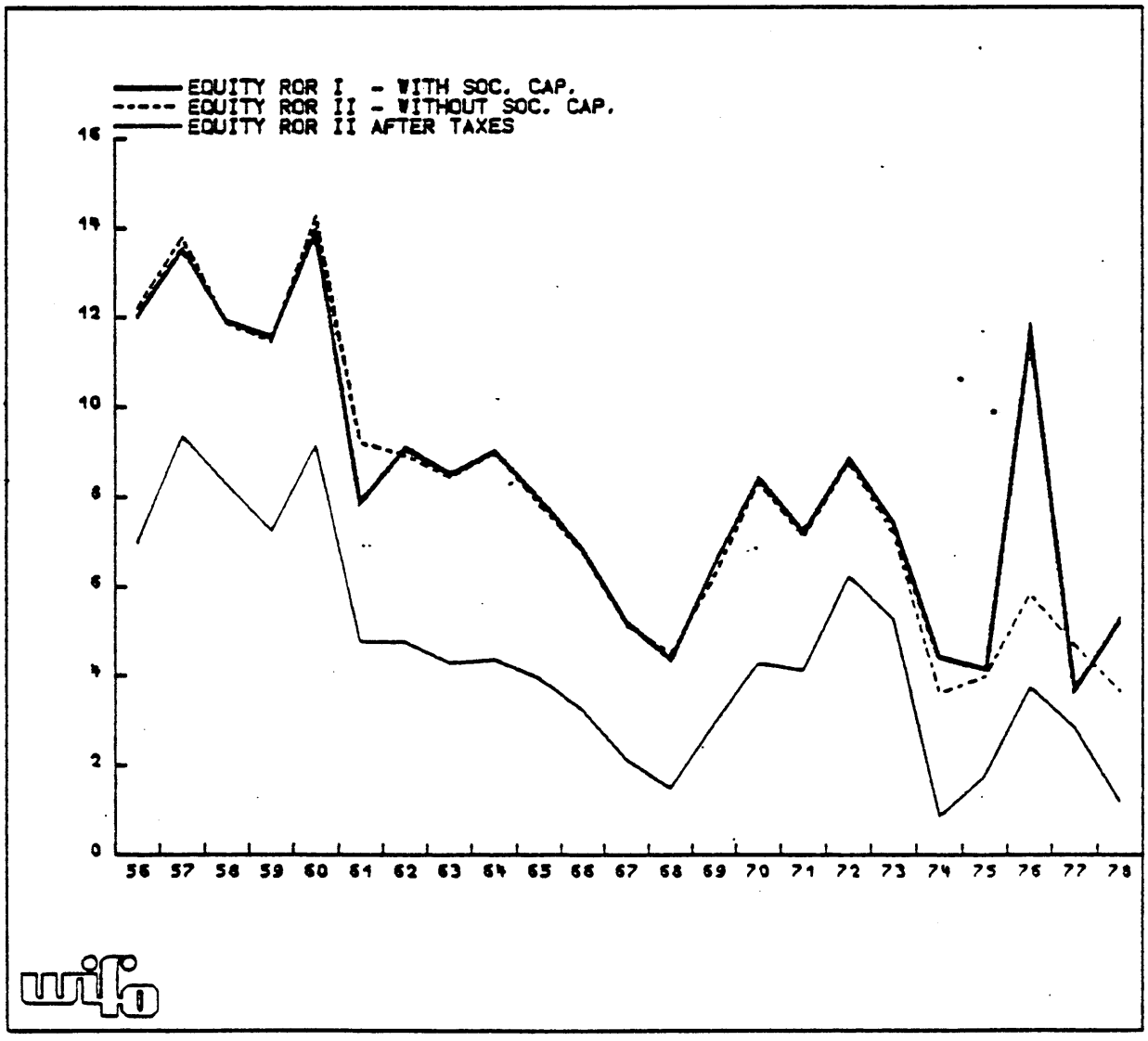


Table 4

## Sectoral Structure of Rates of Return

## (Average ROR 1956-78 in Percent)

| Sector | Net Rates of Return on Physical Capital[1] | | Total Capital | | Equity 1 | | Equity 2 | |
|---|---|---|---|---|---|---|---|---|
| | HC | CC | HC | CC | HC | CC | HC | CC |
| Stone & Clay, Glass | 16,1 | 10,7 | 13,1 | 9,1 | 16,5 | 11,0 | 16,4 | 10,9 |
| Electrical Engineering | 13,3 | 9,6 | 8,9 | 7,0 | 16,3 | 11,7 | 16,1 | 11,3 |
| Machinery, Vehicles | 13,2 | 9,2 | 9,8 | 8,0 | 18,8 | 14,1 | 18,9 | 14,1 |
| Chemicals | 13,6 | 8,7 | 10,0 | 6,9 | 14,5 | 9,0 | 13,9 | 8,9 |
| Food Tobacco | 12,6 | 8,1 | 9,5 | 6,4 | 13,5 | 8,7 | 13,0 | 8,3 |
| Iron, Steel, Metal Prod. | 10,2 | 6,2 | 8,1 | 5,4 | 11,8 | 7,2 | 11,2 | 6,7 |
| Mining, Petroleum | 15,3 | 6,0 | 12,9 | 5,9 | 16,6 | 7,1 | 16,2 | 6,7 |
| Paper | 9,4 | 5,8 | 8,3 | 5,5 | 11,4 | 7,0 | 11,2 | 6,9 |
| Wood Products | 11,4 | 5,5 | 8,6 | 5,7 | 12,7 | 7,7 | 12,0 | 7,6 |
| Leather, Textiles, Clothing | 6,6 | 3,4 | 5,9 | 3,6 | 7,5 | 4,4 | 7,4 | 4,3 |
| Total Industry | 12,0 | 7,2 | 9,4 | 6,1 | 13,9 | 8,3 | 13,5 | 7,9 |

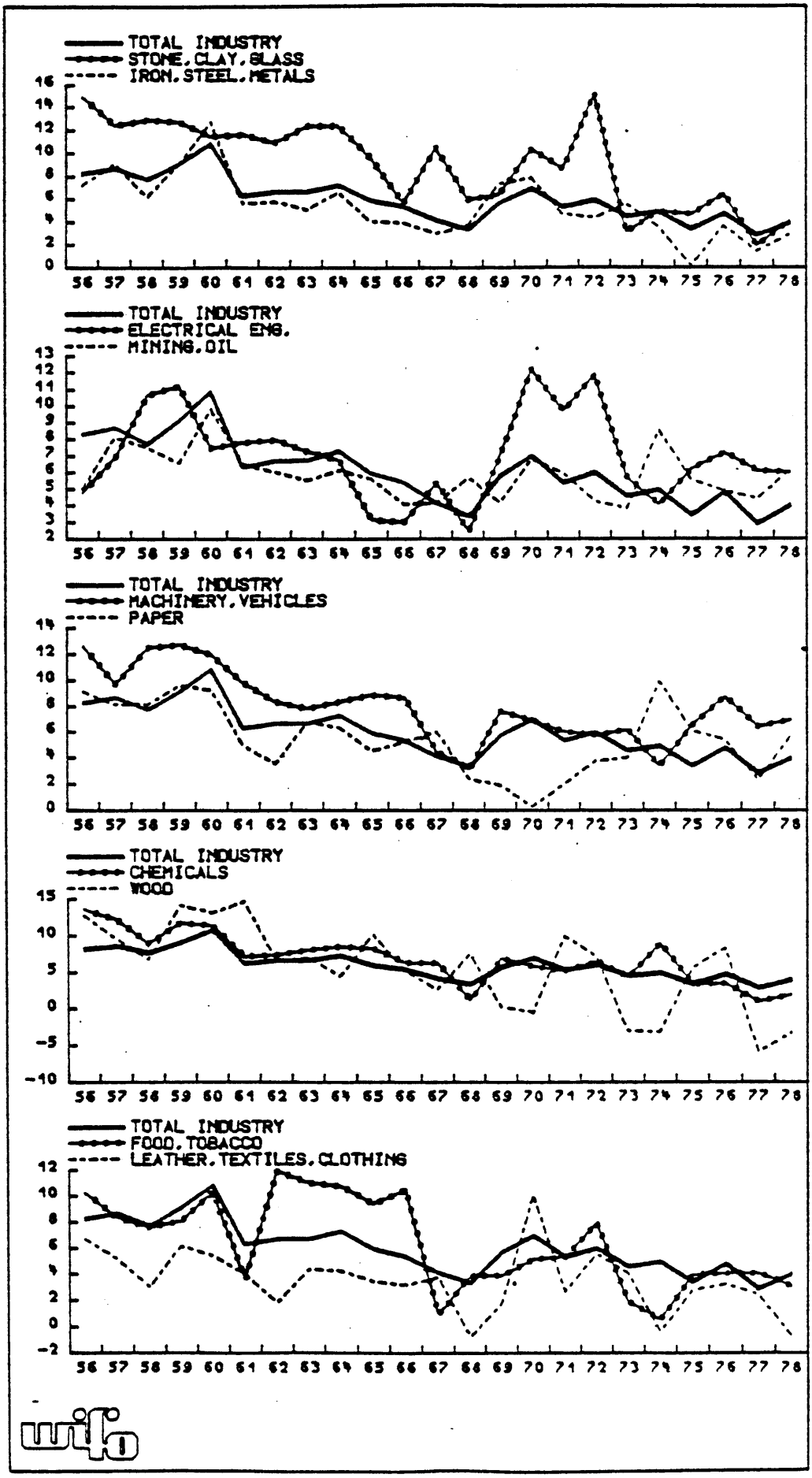
Equity 1: invlusive "Social Capital"

Equity 2: exclusive "Social Capital"

1) 1956-77 only

Figure 3

SECTORAL NET REAL RATES OF RETURN



opinion of this author the rationale and concepts of inflation accounting cannot be applied in the same way as to production activities.

The ranking in terms of real equity rates of return is very similar to that of total capital, only for the chemical industry is there a rank difference of more than one (two). The equity rates are on average higher for all sectors, showing the effect of positive leverage. This effect is highest for the machinery and vehicles and the electrical engineering sectors and lowest for the mining and petroleum and the leather, textiles, clothing sectors. The size of the leverage factor is positively correlated with the size of the debt-equity ratio. The only significant exception is the foodstuff industry which in spite of the second-lowest debt-equity ratio exhibits an above-average leverage effect. It is likely that because of this low debt-equity ratio (which also remained constant over time) the firms in this sector were able to obtain very favorable credit conditions which led to low interest rates on debt. But these firms did not attempt to maximize their equity rates of return by increasing their debt-equity ratios. An explanation for this can be found in the ownership structure of this highly concentrated sector (nationalized industry and traditionally strong family ownership).

## 3.2 Short and Long-Run Behavior: Testing Three Causal Hypotheses

A host of literature deals with explanations about the short and long-run behavior of rates of return. In this paper three alternative hypotheses of

so-called "crisis theory" are tested as to their applicability to Autrian data (see Weisskopf 1980). Each of these hypotheses posits a different reason for the initial fall in the rate of return which in turn leads to a reduction in investment and output and thus to a crisis. Each of these hypotheses can be formulated either as a long-run or a short-run theory, explaining either the trend in the rate of return or its cyclical behavior:

The theory concerned with technological change and the "rising organic composition of capital" maintains that the capitalist process of accumulation sooner or later generates an increase in the organic composition of capital (approximated here by the capital-output ratio) which is caused by changes in the relative prices of labor and capital. By means of a falling capital productivity this leads to a fall in the rate of return.

Another hypothesis maintains that a major reason for the fall in the rate of return can be found in the struggle over distribution exacerbated by the rising strenght of labor. According to this view the long phase of prosperity after World War II resulted (among others) in a strengthening of the position of labor and its representatives which then led to a rise in the wage share at the expense of the profit share. The short-run version of this hypothesis is based on the notion of a periodic depletion of labor market reserves which strengthens labor's bargaining position: if wages rise faster than productivity, and if this increase in unit labor costs cannot fully be passed on into prices, the wage share will increase and thus lead to a fall in the profit share and also (at constant utilization rates and capital-output ratio) of the profit rate. Sometimes it is argued that the pressure

of international competition additionally prevents wage increases from beeing passed on in output prices.

The third version tested here refers to the so-called "realization problem". It maintains that in the course of accumulation imbalances arise which make it impossible to sell all the goods produced at profitable prices, since there is a lack in effective demand. There are versions of "underconsumption" (Marx, Baran-Sweezy) and of "underinvestment" (Kalecki, Steindl) in the literature as the causes of this lack of effective demand. Reductions in production then lead to under-utilization of existing capacity and thus to a fall in the profit rates.

In order to test these three hypotheses the net rate of return is decomposed into three parts: the profit share, capacity utilization and the capacity-capital ratio (the inverse of the capital-output ratio at full capacity).

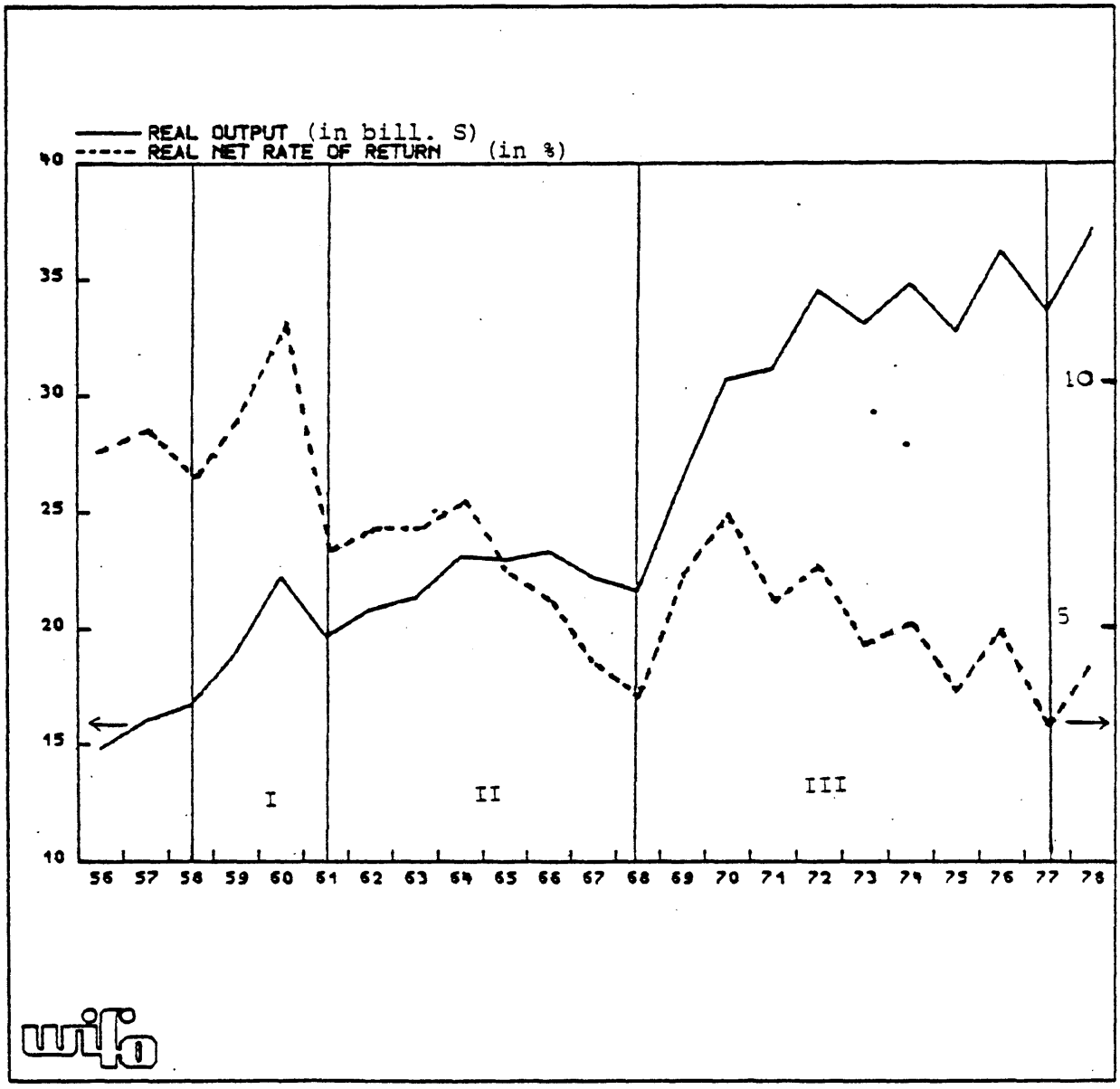
$$(1)\ r = \frac{P}{K} = \frac{P}{Y} \cdot \frac{Y}{H} \cdot \frac{H}{K} = a.b.c$$

where P is defined as inflation-adjusted operating surplus, K as net capital stock, Y as net output (approximated by the sum of profits and wages) and H as capacity output.

The change in each of these three components then can be aligned with one of the three hypotheses mentioned above. Thus the contribution of the change of each component (hypothesis) to the change in the rate of return can be determined. For the short-run analysis the total period was diveded into business

Figure 4

OUTPUT AND PROFITABILITY



cycles (Figure 4). The boom phase of each cycle is further diveded into an early (A) and a late (B) phase, in order to show the special role of the changes in the rate of return.

Over the whole period (1956-1977) this analysis shows that the rate of return falls on average by 5,4% p.a. At the same time the profit share decreased by 4,0%, while the capacity-capital ratio rose on average by 1,3% and capacity utilization by 0,04% p.a. (table 5)9).

The empirical tests show that in the short-as well as in the long run changes in the wage share exert the strongest influence on the rate of return. In the long run, about 80% of the fall in the rate of return is contributed by an increase in the wage share. Over the total period the long-run increase in the capital-output ratio also exerts a certain negative influence on the rate of return, but this effect amounts only to about 1/3 of that of the wage share. Long-run changes in capacity utilization (a slight long-run increase) are hardly of importance for changes in the rate of return.

Between the three discernible cycles (1958-1961, 1961-1968, 1968-1977) the rates of return also fell (table 6). During the fifties-sixties cycles only about 60% of the fall are accounted for by the rising wage share, while between the sixties and seventies this contribution was roughly 90%. Between the fifties and sixties the increasing capitalization of Austrian industry contributed around 30% to the fall in the rate of return, while this contribution was around 45% in the latter phase. The major difference between these periods lies in the effect of

Table 5

## Values of Basic Variables: Cycle and Full Period Averages

| | Cycles | | | Full Period |
|---|---|---|---|---|
| | I | II | III | |
| Rate of Return, r | 8,6 | 5,8 | 4,9 | 6,0 |
| Profit share, a | 36,6 | 28,9 | 24,9 | 28,8 |
| Utilization, b | 90,6 | 87,0 | 91,9 | 90,0 |
| Capital Productivity, c | 25,7 | 22,8 | 21,0 | 22,6 |

Table 6

## Average Annual Growth Rates Between Cycles

| | I - II | II - III | Full Period |
|---|---|---|---|
| Rate of Return, r | - 8,1 | - 2,2 | - 5,4 |
| Profit share, a | - 4,8 | - 2,0 | - 4,0 |
| Utilization, b | - 0,8 | + 0,7 | + 0,1 |
| Capital Productivity, c | - 2,4 | - 1,0 | - 1,3 |

capacity utilization which between the fifties and sixties a significant positive effect on the rate of return.

Within the business cycle the following pattern emerges:
During the early boom phase (phase A) when the rate of return increases, more than 2/3 of this increase is due to a rising profit share; increasing capital productivity accounts for 20% of the increase in the profit rate, the rest is contributed by improved capacity utilization. During late expansion (phase B), production and capacity, utilization still increase, but a falling profit share and falling capital productivity (due to still high rates of capital accumulation) account for a slow fall in the rate of return. During the contraction phase of the cycle of rapid fall in the rate of return is caused by a quickly rising wage share, falling capital productivity and falling capacity utilization (table 7).

These tests show that the distribution parameter (profit share) and thus the hypothesis of the struggle over income distribution exert the strongest influence on the rate of return in Austrian industry. The theory of the rise in the organic composition of capital receives far less support. No evidence can be found for a theory based on realization failures. It should be noted, however, that these tests can only be considered first steps in the causal explanation of long and short-run changes in the rates of return.

Table 8 shows trend and cyclical behavior for several definitions of rates of return for all industrial corporations. These equations just represent a way of presenting the data in an organized way and do not attept to estimate causal

Table 7

## Average Growth Rates During Cyclical Phases

| | A | B | C |
|---|---|---|---|
| Rate of Return, r | 19,6 | - 7,6 | - 25,6 |
| Profit share, a | 13,8 | - 6,1 | - 18,4 |
| Utilization, b | 1,8 | 0,5 | - 1,0 |
| Capital Productivity, c | 3,9 | - 2,3 | - 7,8 |

relationships. Contrary to other countries, for Austria the inclusion of a cyclical variable (full employment gap) increases both the size and the significance of the trend term in all equations tested (table 8). The reason for this is that in Austria capacity utilization in the early seventies was significantly higher than for any period after the war. Thus it can be assumed on statistical evidence, that the fall in the real rate of return over time, and especially since the 1974/75 recession in Austria is part of a long-term phenomenon and not just a temporary effect of lower capacity utilization in the seventies as has been maintained for the U.S. (Holland-Myers) and Great Britain (King).

These results make it clear, however, that changes in depreciation and taxation rules have eased the fall in the pre-tax rates significantly, in other words, the effective burden of taxation on company profits has decreased significantly over time. The results also show that the inclusion of financial assets into the rate of return calculations reduce the fall in the rates, implying that returns on financial assets have fared better during this period than those on real assets. The basic long-term pattern of the real rates during the past 25 years can also be presented by dividing the total period into five sub-periods which cover similar cyclical developments: they range from the first year after a recession to the next recession year. (Table 9).

For total industry the rates fall during the first three periods (1956-58, 1959-63, 1964-68) recover during the late sixties and early seventies (1969-75) and reach their lowest level in the three years after 1975.

## Long-Term Behavior of Different Rates of Return for Total Industry

| Dependent Variable | Regression Coefficients[1)2)] Time Trend | Cyclical Variable | $R^2$ | Standard Error |
|---|---|---|---|---|
| Gross RoR, Physical Capital HC | ,18 | | ,06 | 4,43 |
| | (90) | | | |
| | ,11 | ,66 | ,36 | 3,74 |
| | (123) | (34) | | |
| Net RoR, Physical Cap., CC | - ,34 | | ,58 | 1,84 |
| | (20) | | | |
| | - ,37 | ,33 | ,77 | 1,39 |
| | (14) | (20) | | |
| Net RoR, Total Cap.,CC | - ,23 | | ,56 | 1,31 |
| | (20) | | | |
| | - ,26 | ,21 | ,73 | 1,06 |
| | (15) | (30) | | |
| Net RoR, Total Cap., CC | - ,13 | | ,33 | 1,21 |
| | (33) | | | |
| | - ,15 | ,21 | ,61 | ,95 |
| | (23) | (28) | | |
| RoR, Equity, CC | - ,28 | | ,43 | 2,04 |
| | (27) | | | |
| | - ,31 | ,37 | ,69 | 1,54 |
| | (18) | (26) | | |
| RoR, Equity, HC | - ,24 | | ,31 | 2,22 |
| | (34) | | | |
| | - ,28 | ,40 | ,63 | 1,68 |
| | (22) | (25) | | |

1) The regression equations were:

$$RoR = a + b(t) + c(GAP)$$

where GAP is an indicator of capacity utilization calculated as the percentage of net industrial output (at constant prices) to potential output

Table 9

## Behavior Over Time of Sectoral Real Net Rates of Return on Total Capital

| Sector | 1956-58 | 1959-63 | 1964-68 | 1969-75 | 1976-78 |
|---|---|---|---|---|---|
| Stone & Clay, Glass | 13,4 | 11,9 | 8,9 | 7,6 | 4,2 |
| Electrical Engin. | 7,4 | 8,4 | 4,1 | 8,1 | 6,4 |
| Machinery, Vehicles | 11,6 | 10,1 | 6,7 | 6,1 | 7,3 |
| Chemicals | 11,6 | 9,2 | 6,1 | 5,9 | 2,1 |
| Food, Tobacco | 8,8 | 9,0 | 7,1 | 4,1 | 3,7 |
| Iron , Steel, Metal Prod. | 7,5 | 7,7 | 4,3 | 4,8 | 2,7 |
| Mining-Petroleum | 6,9 | 6,9 | 5,1 | 5,5 | 5,1 |
| Paper | 8,5 | 6,8 | 4,9 | 4,0 | 4,5 |
| Wood Products | 9,7 | 11,1 | 6,0 | 2,4 | - 0,2 |
| Leather, Textiles, Clothing | 5,0 | 4,4 | 2,8 | 3,8 | 1,7 |
| Total Industry | 8,3 | 8,0 | 5,3 | 5,4 | 4,0 |

Most sectors follow this pattern quite closely. Major exceptions are the stone & clay sector and the chemical industries which both exhibit continuously falling rates, and the paper and machinery sectors which both show falling rates until the 1974/75 recession, but a significant recovery afterwards.

The hierarchy of rates across sectors is relatively stable over time (Table 10): significant deviations are revealed by the stone & clay sector which in 1976/78 falls to fifth rank, chemical industry which fell to eighth rank during this period. On the other hand, the mining-petroleum sector improved its position throughout the total period (from ninth place in the late fifties to third place 1976/78), electrical engineering moved up from below-average rates until the late sixties into the top ranks during the past ten years, and the paper industry which also shows strong gains. The other sectors show now discernible trend, apart from the wood products industry which because of the small sample size exhibits a very unstable behavior.

All sectors show very strong cyclical fluctuations in their respective rates of return. For total industry, the cyclical influence on the rates of return was shown to be stronger than the long-term factors. In some sectors the sectoral cyclical movement deviates from that of total industry, and there the specific patterns dominate the general pattern. An example is the stone & clay industry, and the foodstuff industry which for various reasons exhibit strong specific cycles. It is quite surprising that neither the total industry average nor the majority of the sectors (only exceptions: mining & petroleum and iron, steel, metals) reach their low point at the time of the severest recession in post-war history, i.e. in 1975: machinery and electrical engineering show their lowest real rates in 1974, all other sectors in 1977. (Figure 4)

Table 10

## Changes in Sectoral RoR-Structure Over Time
## (Ranking for Respective Period)

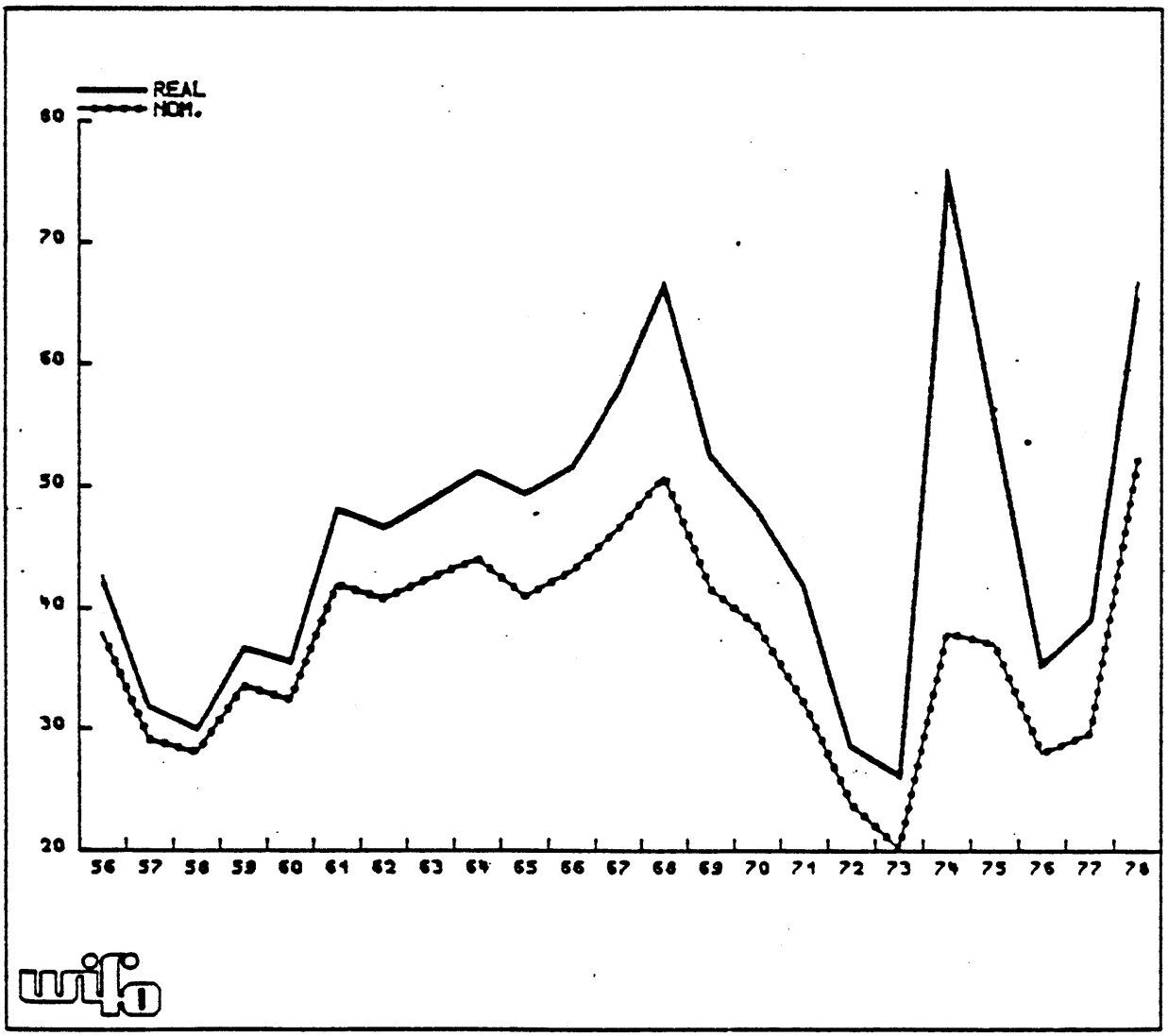
| Sector | 1956-58 | 1959-63 | 1964-68 | 1969-75 | 1976-78 |
|---|---|---|---|---|---|
| Stone & Clay, Glass | 1 | 1 | 1 | 2 | 5 |
| Electrical Engin. | 8 | 6 | 9 | 1 | 2 |
| Machinery, Vehicles | 2 | 3 | 3 | 3 | 1 |
| Chemicals | 3 | 4 | 4 | 4 | 8 |
| Food-Tobacco | 5 | 5 | 2 | 7 | 6 |
| Iron, Steel, Metal Products | 7 | 7 | 8 | 6 | 7 |
| Mining-Petroleum | 9 | 8 | 6 | 5 | 3 |
| Paper | 6 | 9 | 7 | 8 | 4 |
| Wood Products | 4 | 2 | 5 | 10 | 10 |
| Leather, Textiles, Clothing | 10 | 10 | 10 | 9 | 9 |

## 3.3 Effective Tax Rates

It has been noted above that direct taxes paid (on income, revenue and assets) by companies in relation to real profits (effective tax rates) vary quite significantly over time and between sectors. Even though legal tax rates have not changed very much during that time, depreciation allowances have been changed and other tax-related rules varied. For industry as a whole tax rates increased as a percentage of pre-tax profits during the fifties and sixties, then fell significantly during the seventies. For Austria, the year 1968 ("Wachtumsgesetze" - "Growth Acts") marks a significant turnaround in the taxation of company income. As a result of the profit squeeze during the recession 1967/68 which made apparent the effect of increased international competition in the face of an industry structure which relied heavily on basic goods and had disadvantages in the production of final goods, the government introduced a series of laws designed to facilitate structural adjustments of Austrian industry. As a result, among other effects, effective tax rates fell significantly. During the later years, a series of additional measures (especially changes in depreciation allowances) was taken to increase these effects. Thus, as a result the effective tax rate for industry as a whole during 1976/78 amounted to 29%, in contrast to the period of 1964-74 when it reached 48%. (Table 11)

Since taxes paid are not only the result of statutory tax rates and taxable profits, but also depend on capital intensity, location, and various other effects, effective tax rates differ from sector to sector and company to company. In general, above average tax rates were levied on mining & petroleum, paper,

EFFECTIVE TAX RATES



## Effective Tax Rates[1] Over Time

| Sector | 1956-58 | 1959-63 | 1964-68 | 1969-75 | 1976-78 | 1956-78 |
|---|---|---|---|---|---|---|
| Stone & Clay, Glass | 37,5 | 36,0 | 32,1 | 34,0 | 54,4 | 37,1 |
| Electrical Engineering | 28,6 | 28,8 | 56,4 | 25,7 | 23,2 | 33,1 |
| Machinery, Vehicles | 48,9 | 51,8 | 52,2 | 33,6 | 20,0 | 41,8 |
| Chemicals | 35,0 | 34,2 | 51,0 | 27,4 | 39,8 | 36,6 |
| Food, Tobacco | 33,5 | 47,2 | 28,5 | 74,5 | 54,2 | 65,8 |
| Iron, Steel, Metal Products | 29,9 | 38,5 | 42,3 | 74,1 | 27,9 | 47,7 |
| Mining, Petroleum | 32,2 | 39,0 | 63,3 | 44,5 | 31,6 | 44,1 |
| Paper | 31,4 | 35,6 | 43,4 | 79,5 | 18,5 | 47,9 |
| Wood Products | 34,1 | 42,3 | 41,5 | 30,3 | - [2] | 30,8 |
| Leather, Textiles, Clothing | 38,5 | 44,0 | 39,9 | 31,3 | - [2] | 9,9 |
| Total Industry | 34,4 | 38,8 | 47,9 | 33,1 | 28,8 | 37,2 |

1) Direct taxes actually paid by companies in relation to pre-tax net operating surplus (CC)

2) negative operating surplus

foodstuffs and machinery. In all sectors with the exception of stone & clay a similar time pattern to that of total industry is apparent, insofar as since the late 1960s effective tax rates have declined significantly. This trend pattern is even more significant when one remembers that for tax purposes inflation accounting is not permitted by Austrian law. Thus effective tax rates fall even more when applied to a book tax base (gross book profits) and not to a "real" base.

## 3.4 Capital Costs and Returns

### 3.4.1 The Hopeless Case of The Austrian Stock Market

In Austria only 41 industrial firms (57 all together) are listed at the stock exchange. The nominal value of all outstanding stock is 6,3 bill.S, their market value 13,6 bill.S (1978). The relative size of the stock market can be measured by setting the market value of the stocks in relation to the value added of the respective sector: For Austrian industry this index in 1978 amounted to 7,6%, for the whole economy to only 3,3%. Economy-wide figures for other countries are: Germany 10%, Italy 8%, France 11%, Great Britain 21%, Japan 25%, USA 37% (Bierich). This comparison shows already the limited size of the Austrian market. In addition to that, in Austria only a small percentage of shares is traded regularly (less than 1/4 is traded on more than 80% of trading days). Furthermore Austrian commercial bank occupy the "right to self-entry", by which they are allowed to take shares of their customers which are to be sold into their own portfolios. This right has been estimated to occupy between 50% to 60% of all sales, which further limits the size of the market.

Approximately 80% of all shares which are theoretically up for trade are owned by the government (nationalized industries), by nationalized banks or by families, all of whom do not trade their shares, but rather hold on to them. Thus only around 20% of the already small volume is open for trade. Under these historical and institutional circumstances it is hardly surprising that no actual "market" for shares develops and that the financing of companies via the capital market remains on a very low level. On the other hand, in the past the government has encouraged and subsidized savings in all types of bonds, which in Austria are traditionally issued by local and federal governments, the large banks and also public utility companies, but only rarely by production firms. Thus it has been argued that saving in stocks of industrial firms has been "discriminated against", even though in 1968 the corporate income tax rate on dividends was halved. Such measures in Austria do have an impact on dividend distribution, but their effect is rather short-run. The ratio of dividend payouts in relation to (nominal or real) equity profit (of all Industry corporations) shows this effect clearly for the years 1968 and 1969. (Table 12). The strong variation of this ratio for the period afterwards (standard deviation 4.2 for 1968-1977, vs. only 1.1 for 1956-1967) combines the effect of a very constant stream of dividends (especially in relation to nominal capital), with strong movements in equity profit. It has been noted elsewhere (Bayer 1980a) that Austrian stockholders (especially those majority owners who hold on to their stocks) are rather interested in a bond-like return on their stocks than in dividend ratios which fluctuate with profitability. Thus the dividend payout decisions by the management are less influenced by economic reasoning than by the wish to receive as constant a flow of dividends as possible. In this way saving in common stocks loses its specific appeal for the

Table 12

## Dividend Payout Ratios in Austrian Industry

| | Dividends | Dividends in Relation to | | | |
|---|---|---|---|---|---|
| | | Equity II | | Equity II Profits | |
| | in 1.000 S | nominal | real | nominal | real |
| 1955 | 231.549 | . | . | . | . |
| 1956 | 381.402 | 1,60 | 1,26 | 9,19 | 10,33 |
| 1957 | 409.194 | 1,56 | 1,21 | 7,99 | 8,76 |
| 1958 | 378.061 | 1,31 | 1,00 | 7,84 | 8,40 |
| 1959 | 410.911 | 1,27 | 0,97 | 7,72 | 8,46 |
| 1960 | 574.011 | 1,61 | 1,21 | 7,69 | 8,46 |
| 1961 | 536.735 | 1,38 | 1,03 | 9,67 | 11,14 |
| 1962 | 468.663 | 1,12 | 0,83 | 8,09 | 9,26 |
| 1963 | 542.122 | 1,22 | 0,89 | 9,17 | 10,56 |
| 1964 | 572.764 | 1,20 | 0,88 | 8,35 | 9,73 |
| 1965 | 537.819 | 1,08 | 0,77 | 8,12 | 9,79 |
| 1966 | 512.795 | 0,98 | 0,70 | 8,66 | 10,40 |
| 1967 | 452.566 | 0,82 | 0,61 | 9,48 | 11,84 |
| 1968 | 693.381 | 1,21 | 0,89 | 14,88 | 19,58 |
| 1969 | 848.847 | 1,44 | 1,01 | 12,86 | 16,25 |
| 1970 | 926.241 | 1,50 | 1,01 | 9,76 | 12,16 |
| 1971 | 989.349 | 1,51 | 0,97 | 10,58 | 13,70 |
| 1972 | 988.034 | 1,41 | 0,91 | 8,64 | 10,37 |
| 1973 | 732.050 | 0,95 | 0,61 | 6,58 | 8,54 |
| 1974 | 1 185.678 | 1,44 | 0,85 | 11,68 | 23,45 |
| 1975 | 849.727 | 0,97 | 0,57 | 9,54 | 14,30 |
| 1976 | 983.775 | 1,05 | 0,66 | 8,96 | 11,31 |
| 1977 | 822.022 | 0,84 | 0,55 | 8,85 | 11,68 |
| 1978 | 1 027.619 | 1,01 | 0,70 | 14,81 | 18,96 |

Equity II: Equity Capital exclusive of Social Capital

nominal: without inflation accounting

average investor who would prefer a riskier, but on average higher-yielding investment to a low-yielding risk-free bond. This peculiarity of the Austrian industrial stock "market" has resulted in a nearly continuous loss in implicit share values since the boom year 1961. Since then the ratio of market value to nominal value of industry stock has fallen by 62%. In this way, for the reasons cited above, it is an illusion to think that the capital market can provide the necessary risk-capital for further restructuring and expansion of Austrian industry.

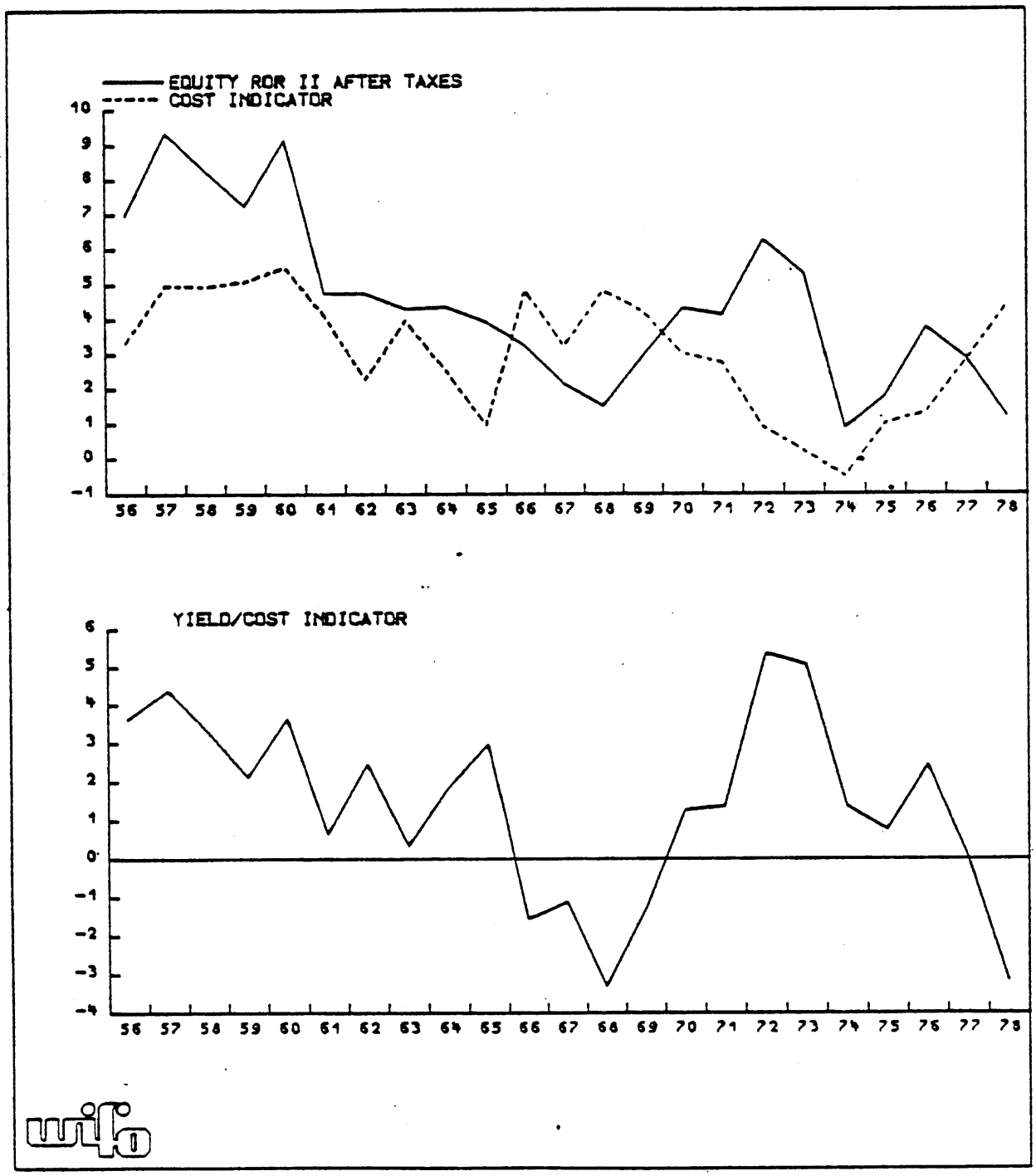
### 3.4.2 Yields and Costs of Capital

Usually yields and costs of capital are compared by contrasting rates of return on capital invested (as calculated here) with the rates of return on financial assets (firms' stocks and bonds). For the reasons; mentioned in the previous section such a comparison yields results of low value for Austria, since no "market" exists that would set stock prices reflecting the demand and supply of shares. The traded volume is too low for that purpose.

To a large extent Austrian industrial firms are self-financed. The very substantial promotion of self-financing by means of accelerated depreciation allowances (which in Austria is more highly developed than in most other Western countries (Lehner)) has led to a heavy reliance of Austrian firms to finance large parts of their investment by plowing back profits. Thus when calculated on a current cost basis, the debt-equity ratio of Austrian firms is relatively low and has increased only slightly until the early seventies. Since then, however, it has risen quite

Figure 6

CAPITAL YIELDS AND COSTS



substantially, especially since the profit squeeze during the crisis of 1974/75 has made use of accelerated depreciation scarcer, because profits were not high enough. Thus debt financing has assumed a more prominent role. Depending on the definition (whether or not provisions for "social capital" are included) the debt-equity ratio between 1973 and 1978 increased from 0,59 (resp. 0,63 inclusive of social capital) to 0,82 (1,06) after it had remained practically constant (with small fluctuations) between 1956 and 1973. Also during that time the interest-burden increased significantly, because in addition to a higher debt-ratio nominal and real interest rates reached a new high. In relation to operating surplus (inclusive of interest) interest payments rose from 31% in 1973 to 49% in 1978. Since 1978 interest rates have increased even more due to factors external to Austrian economic policy influences. This has resulted to a very heavy burden of the external debt.

One very rough approximation of the cost of capital to Austrian firms is given by the rate on long-term government and industrial bonds, deflated by the consumer price index. This rate is significant, because on the one hand it approximates the opportunity costs of potential financiers of industry (only incompletely though, because for a number of years acquisition of such bonds was subsidized), on the other hand movements in this rate (if not the actual level) are closely related to costs of bank loans. Again the approximation is incomplete, since for a vast array of industry loans investment premiums and interest subsidies are available, which have not been taken into account in this comparison. Other (real) capital

cost indicators are reflected in the interest rates paid by the firms for loans. Unfortunately, the data published in the balance sheets to not separate interest-bearing liabilities from others. Thus two series were constructed which mark a lower and an upper limit to the actual interest burden borne by the corporate sector: the lower one defined as interest payments in relation to all liabilities, the upper limit by interest payments in relation to overdrafts and bank liabilities (table 13). Both series exhibit a marked upward trend, which is steeper for the latter definition.

Comparisons between costs and yields show that in the long run (at least up to 1977) yields (rate of return) were quite significantly higher than costs (bond rate; see Fig.5).

The long-run average real net rate of return on total industrial capital (after direct) taxes amounts to 3,9%, the real rate of interest on newly issued government bonds to only 3,0%. The difference is especially large during the years of highest inflation (1972-75) when the bond rate was respectively 0,9%, 0,2%, -0,5% and 1,1%, while during those years the rate of return was 4,5%, 3,5%, 3,3% and 2,2%.

The difference between investment in productive assets (industry) and financial assets (bonds) become even more striking when real rates of return on equity capital are calculated. Depending on the exact definition, these latter amount in the long run to between 4,9% and 5,5% after taxes, depending on whether social capital is included or not. (Fig.5, table 13).

Table 13

## Indicators of Real Costs of Capital to Austrian Firms

| Year | Return to Investors | Interest Burden 1 | Interest Burden 2 | Real Bond Rate |
|---|---|---|---|---|
| 1961 | 22,8 | | | |
| 1962 | - 27,0 | | | |
| 1963 | - 6,9 | | | |
| 1964 | - 1,6 | | | |
| 1965 | - 2,0 | 3,9 | 8,2 | |
| 1966 | - 2,5 | 4,2 | 9,2 | |
| 1967 | - 4,8 | 4,7 | 10,0 | 3,2 |
| 1968 | 3,3 | 4,6 | 10,0 | 4,8 |
| 1969 | 15,4 | 4,3 | 9,3 | 4,4 |
| 1970 | 16,3 | 4,6 | 10,2 | 3,3 |
| 1971 | - 6,5 | 4,3 | 9,5 | 2,9 |
| 1972 | 25,2 | 4,2 | 10,9 | 0,9 |
| 1973 | 8,5 | 4,3 | 12,9 | 0,4 |
| 1974 | 0,6 | 5,2 | 15,4 | - 0,2 |
| 1975 | 8,2 | 5,2 | 16,6 | 1,1 |
| 1976 | 4,4 | 4,8 | 16,5 | 1,5 |
| 1977 | - 10,3 | 4,8 | 16,1 | 3,2 |
| 1978 | 5,4 | 5,0 | 16,8 | 4,6 |

Return to Investors: Dividends plus Capital Gains in Relation to Market Value of Stocks

Interest Burden 1: Interest Payments in Relation to All Liabilities

Interest Burden 2: Interest Payments in Relation to Bank Liabilities

Real Bond Rate: Real Rate of Return on Government and Private Bonds

These differences between investment in productive and in financial assets as shown here cannot be interpreted as representing risk premiums. This would only be true if one compared the real rate of return for an individual company, or a small group of companies with the bond rate. Thus the differences in the rates on financial vs. productive assets can be interpreted as "real" superiority of one investment type over another.

The period-to-period comparisons show that from the midfifties to the end of the sixties this difference decreased substantially, then recovered again to its highest value during the early seventies and was reduced again for the past few years. There are indications, however, that since 1977 rates of return on financial assets have been higher than those on productive ones.

The data presented here indicate stronghly that capital costs relative to profits have remained quite constant throughout the fifties, increated drastically throughout the sixties, fell during the expansion phase of the early seventies and have risen considerably again since 1974 (Fig.5).

Footnotes:

1) A recent study by the author (Aiginger-Bayer, Dynamik) shows some evidence that during the seventies smaller firms were more profitable than larger ones.

2) See on this point the discussion in the Spring 1976 issue of the Journal of Business Finance and Accounting, vol.3, no 1, Oxford, for the British debate, or Business Week, Oct.15, 1979 or June 16, 1980 on the U.S.debate.

3) E.g. D.Schneider 1968.

4) Ch.Kennedy, p.62., Th.Weisskopf, p.349 make this distinction.

5) See K.Bayer, Inflation Accounting, bibliography and the papers by the author quoted have.

6) K.Bayer, Inflation Accounting, p.46.

7) See e.g. R.Coen 1975 and the literature cited there.

8) Hill 1979 and Landskroner 1979, among many others, deal extensively with this point.

9) Technically, the analysis was carried out by differentiating equation (1) over time, i.e. by transforming all variables into exponential rates

$$\dot{r} = \dot{a}+\dot{b}+\dot{c}$$

where $\dot{x}(t) = \frac{dx(t)/dt}{x(t)}$

the analysis also was carried out between cycles and within each cycle, as well as for the three individual phases of the cycle. The exponential growth rates for the total period were calculated by regressing the logarithm of each variable on time. The growth rates of the variables between cycles were estimated by a two-stage process: first, the geometric mean of the variable within each cycle was determined and attributed to the mid-point of the cycle then the growth rate between cycles was approximated by the formula

$$\dot{x}(t_2/t_1) = \frac{\ln x(t_2) - \ln x(t_1)}{t_2 - t_1}$$

where $t_n$ is measured in years. Of course, quarterly analysis would be preferable, especially with relation to the cyclical behavior, but not quarterly data are available.

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