USE OF THE RATE OF RETURN ON INVESTMENT IN THE EVALUATION OF PERFORMANCE OF A BUSINESS AND ITS EXECUTIVE

by

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in the Faculty of
Commerce and Business Administration

We accept this thesis as conforming to the required standards

THE UNIVERSITY OF BRITISH COLUMBIA
April, 1960.
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Date April, 1960.
ABSTRACT

This paper is concerned with the use of the rate of return on investment in evaluating the effectiveness with which the enterprise assets are used by both divisional and top management.

In large decentralized companies there is a diffusion of profit responsibility and there is a need for a common measure to evaluate the operating results of units of a business and the company as a whole, as well as to evaluate the performance of division and top management.

The rate of return on investment ratio was investigated in terms of its components: sales, income, and investment. Since the unique characteristic of the rate of return measure is the inclusion of investment, definition and control over investment were found to be overriding factors.

The conclusion of this paper is that the return on investment is one of the methods that can be used in measuring and evaluating performance. On the assumption that primary goal of business is profit, the discussion then describes certain conditions under which the rate of return on investment will effectively measure performance of a company and its divisions.
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CHAPTER 1

THE PROBLEM, DEFINITIONS OF TERMS USED, AND QUESTIONS ASKED

I INTRODUCTION

There is no one basis of evaluating managerial performance. The many variable factors involved in the successful management of business enterprise are not easily resolved into a single total impression, nor indeed can any single yardstick or standard properly measure any specific period of operations without some adaptation to the specific factors involved. Effective management is the composite of many factors and each of them must be measured and appraised differently. However, management does need a common measure to evaluate the operating results of units of a business and to compare one business results with those of other businesses. The management also needs an objective measure of an individual executive's performance.

II THE PROBLEM

Statement of the problem. It was the purpose of this study (1) to examine critically the rate of return on investment as a method of evaluating the effectiveness with which the enterprise assets are used by both divisional and top management; (2) to define objectives for and to measure the actual operating results of divisions and companies; and (3) to point out the elements in a business situation which will be favourable and unfavourable to the
effective use of the return on investment as a guide to both divisional and top management.

Importance of the study. Present-day research has defined at least eight significant factors measuring business performance:

1. Profitability
2. Market position
3. Product leadership
4. Productivity (effective use of capital, men, materials)
5. Personnel development
6. Public responsibility
7. Employee attitudes
8. Balance between long and short-term goals. 1

After reflecting on each of these criteria, the inevitable conclusion is that all factors must ultimately pay off in profitability, otherwise being number one within an industry in product leadership, market position, etc., would make little sense. This is based on the assumption that profit is still the primary objective of business activity and that the ultimate goal of management remains the long-term maximization of profit.

A perfect yardstick which measures quantitatively management’s performance will probably never be found. The quality of judgment in appraising all contributing factors to business results will continue to be an all-significant

contribution of top management.

Despite its obvious limitations and notwithstanding the foregoing, the return on investment is considered to be the best common measure of managerial effectiveness developed thus far.

**Scope of the study.** This paper concerns companies in general and also decentralized companies in which, at least for accounting purposes, the companies are divided into units to which revenues, expenses, and investment are attributed. Although the rate of return on investment can be used by investors in their appraisal of company performance, this study takes the view of the internal management and investigates the effectiveness with which total enterprise assets are utilized.

The rate of return on investment can also be used to appraise the method of financing business operations. This is usually the responsibility of top management, and any managerial evaluation should take it into account. Because of time limitations, however, the problem of financial evaluation will not be treated in detail.

Two other subjects have an important bearing on the use of return on investment to measure divisional and overall performance, viz., the functions of the capital budgeting and the pricing of transfers between divisions, the latter applicable strictly to divisions. Some suggestions will be made for a sound system of intra-company transfer pricing. Capital budgeting, although it cannot be avoided completely in a study of the use of rate of return on investment for measurement and evaluation purposes, will not,
because of time limitations, be treated in detail in this study.

Research method. Extensive review of the current literature on the rate of return on investment and related topics was undertaken and conclusions were drawn therefrom. The rate of return concept was finally applied to a number of financial statements of several companies within two Canadian industries in order to compare the overall performance of a company with that of other companies in the same industry. (See appendix, page 105.)

III DEFINITIONS OF TERMS USED

Operating effectiveness. By operating effectiveness is meant the effectiveness with which both top and divisional management have used the assets entrusted to them. The effectiveness will show itself in a profit figure or in the attainment of other stated company objectives.

Division. When both profits and investments are attributed to the units, they will be called hereafter "divisions" or "profit-investment-centers" to distinguish them from "profit-centers" to which only profits are attributed. The divisional manager will be responsible for the functional operations of the division, i.e., the production, purchasing, engineering, sales, etc.

Contribution profits. Contribution profits are those profits which arise out of matching of costs and
revenues over which the divisional manager has control.

**Investment and income.** Investment consists of items on the asset side of the conventional balance sheet. Income is generally a net income figure for the period computed under the clean surplus theory assumptions. It is net of depreciation expenses, but before the interest on funded debt and the income taxes.

Problems of investment and income definitions will be considered in detail in subsequent chapters.

IV QUESTIONS ASKED

How good is the rate of return on investment in evaluating company and divisional performance will depend on how closely it approaches the ideal yardstick which takes all the factors affecting operating performance into account and spotlights the areas of good and bad performance. A well-made measurement system can help management to see clearly the financial aspects of what the company and divisions are like, what they have done and what they are doing. It can also help the management to arrive at their own evaluations.

The validity of the rate of return on investment in the evaluation of performance will be brought out then by the following questions:

1. Does the rate of return on investment identify good and bad performance and point to where performance can be improved?
2. Does the rate of return on investment measure reflect the effect of all factors required for successful operation?

3. Does the use of the rate of return on investment lead to any better performance?

An affirmative answer to these questions has certainly been implied in most of the published writings on the subject. Nobody, however, has as yet demonstrated that high profitability and success are a direct result of the use of rate of return on investment to measure performance; indeed, it is difficult to do so. Nevertheless, it may be possible through examination of a number of situations to form some valid opinion as to whether this presumption stands up.

The answers to these questions will be sought in the analysis of the rate of return on investment formula and in the consideration of factors in business environment which favour the effective use of the rate of return on investment to measure and evaluate performance. A number of these factors may be the result of top management policy and action; others may be determined by certain characteristics of a business situation which are not controllable by anyone in the company. Managerial judgment will be better and evaluation of divisional and company performance in terms of the rate of return on investment sounder, if the limitations are known and the significance of these various factors is pointed out and understood.
Attempt will be made to devise certain business conditions, under which the rate of return on investment will be most effective in measuring divisional performance.

Management should recognize, however, that in evaluation of business results no amount of conventional and routine calculations is a substitute for their own good judgment.
CHAPTER II

HISTORICAL BACKGROUND

The concept of the return on investment as a measure of enterprise profitability is not new.

According to Iris Origo, Francesco Di Marco Datini, the fourteenth century "Merchant of Prato", was possibly influenced by the rate of return in shifting his investments from one venture to another:

It is possible that a realization of the slow and small profits of cloth-making (computed by Professor F. Melis to be 8.92%) as compared to most of his other enterprises (average of 28% made during seventeen years in the veil trade) discouraged Datini from taking any larger part in this industry. His contribution to it, as we have seen, was some capital and the good English and Spanish wool which his money bought. But the management of the business remained entirely in the hands of his partners, and after the death from the plague of both Nicolo di Ginuta and Francesco Bellandini in 1400 (the business passing into the hands of Nicolo's son Angnolo), the amount of wool which Datini bought for the company gradually diminished...1

In more recent years management has tried the rate of return concept in pricing, capital budgeting, etc. In 1920's Donaldson Brown, in his capacity of vice-president of the General Motors Corporation, made the rate of return

on investment an integral part of the company's pricing policy. In his own words:

An acceptable theory of pricing must be to gain over a protracted period of time a margin of profit which represents the highest attainable return commensurate with capital turnover and the enjoyment of wholesome expansion, with adequate regard to the economic consequences of fluctuating volume. Thus the profit margin translated into its salient characteristics rate of return on capital employed, is the logical yardstick by which to gauge the price of a commodity with regard to collateral circumstances affecting supply and demand.¹ (his italics)

Not until about 1948 was there much written on the rate of return on investment. Since then, a high level of interest can be found in the rate of return measure in applying it to many phases of internal control.

The address of T.C. Davis, the treasurer of du Pont Company, delivered before A.M.A. finance conference in 1949, aroused a widespread interest in the rate of return on investment.

The du Pont company has been using the rate of return on investment since 1919. In 1920's the Chart System was developed. The charts related the rate of return on investment of each division and department to the operating results of respective divisions and departments

in terms of the revenue, expense, and investment accounts. 1

Since World War Two, a number of large companies has applied the return on investment as an internal measure of past performance. Two significant trends, the increased decentralization and the increased rate of investment, have contributed to the increase in usefulness of the rate of return on investment concept.

The decentralization of management and the attendant diffusion of profit responsibility required some check on the overall performance of autonomous sub-units of a company. The rate of return on investment measured overall performance and therefore answered the requirements of the decentralized organization.

The business made more investment after the war than had been made for many years. Gross private domestic investment in the United States averaged 8.2 per cent of the Gross National Product in the period from 1930-1939 and from 1945-1954 it averaged 13.9 per cent, reaching a peak of 18 per cent in 1950. 2 In Canada, business gross fixed capital formation was much higher; in the period from 1930-1939 it averaged 10.4 per cent, from 1945-1954 it averaged 16.7 per cent, with the peak in the latter period


of 20 per cent in 1953, increasing to 22.1 per cent in 1956. With the accelerated growth of investment, it became more important to include the investment factor in the measure of performance. The rate of return on investment measured both profits and investment.

Some managements think that, in dynamic conditions, rate of return on investment loses significance. Others, like I. Wayne Keller, the Controller of Armstrong Cork Company, are enthusiastic supporters of the rate of return on investment. Keller has this to say about it:

The probability of realizing optimum profits is substantially greater if they are planned as a percentage of return on capital employed to produce them and the business is managed with the objective of achieving this planned ratio. A few American corporations have used return on investment on capital employed for measuring and controlling profits for many years. As a result they have been usually successful. Their employees at all levels have enjoyed relatively high incomes; their stockholders have received high dividends and have had substantial appreciation in their equity. These companies have had outstanding growth records, supplying more and more products at competitive prices which contributed to the improvement to the economy of the nation and the general standard of living. With this demonstrated record of the effectiveness of profit measurement and control it is difficult to understand why companies have been slow in using it. It is only recently that it has been receiving increased attention and has begun to be used by a growing number of companies.

It is possible that many managements do not feel that the rate of return on investment is necessary or that it is the key to success. Others may be content with just average profits and may not feel the need of exerting themselves in pursuit of higher profits. Increased use of retained earnings for business expansion and avoidance of going to the market for the necessary funds, may have been a contributing factor to this conservative attitude.

Sometimes the rate of return on investment is an important and useful part of top management control; sometimes, however, it can lead astray and must therefore be used with caution.

Very little research has been done in the area of measurement and evaluation of performance; to this day it is still a rather obscure subject. The exploration of various business processes, their effects and the correct consequent action to remedy bad or to improve on good performance must still be undertaken. This paper will not try to solve all these problems. Rather, a critical analysis of the rate of return concept will be undertaken to see how effective it is in evaluating managerial performance, and to point out certain conditions under which the managerial performance may be improved.
CHAPTER III

BASIC THEORY OF RATE OF RETURN ON INVESTMENT

I GENERAL CONSIDERATIONS

Basic formula. The formula for return on investment is the result of two factors:

1. The percentage of income on sales, and
2. Turnover. (Table 1).

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Return on Investment.

1. Income = \( \frac{\text{percentage of income on sales}}{\text{Sales}} \) $10,000 $200,000 = 5 per cent

2. \( \frac{\text{Sales}}{\text{Investment}} \) $200,000 = 2 turn - $100,000 cover

Per cent Income on Sales \( \times \) Turnover = Return on Investment

5 per cent \( \times \) 2 = 10 per cent

The same result, ten per cent on the investment of $100,000, can be obtained by simply relating income to investment. In doing so, however, the significance of costs in relation to sales and the significance of investment in relation to sales volume is obscured. Cost price relationship
is shown by the percentage of income on sales. Investment turnover measures the intensity with which the capital is employed; to the extent that company can match per cent income on sales of a competitor and use its capital more effectively so as to have a higher turnover, it has a competitive advantage. If it can achieve both a higher income on sales and a higher turnover, it has a distinct advantage for survival and growth.

The return on investment can be improved in three ways.

1. By increasing volume of sales, while maintaining the same income percentage, or by increasing net sales through higher prices.

2. By reducing costs.

3. By reducing the amount of investment through improvement in inventory levels, more rapid collection of accounts receivable, economic control of additions to fixed assets, and generally improved turnover.

The essence of this formula and its analysis lies in the introduction of a new factor, sales, in addition to income and investment. It is known as a du Pont formula and can be briefly stated as follows:

\[
\frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}} = \frac{\text{Income}}{\text{Investment}}
\]
It is important to realize that the breakdown of the return on investment is only for the purposes of analysis. The ratio of income to sales or the ratio of sales to investment means little standing by itself. Both must be considered together.

**Turnover and sales margin analysis.** The return on investment formula presents an effective method of analysing changes in the return on investment and in pointing out the areas requiring attention. It can be applied to companies or divisions in intra-company or inter-company comparisons.

In Table II, the interrelation of sales volume, income, and investment is analysed in three assumed companies.

**TABLE II**

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$500,000</td>
<td>$250,000</td>
<td>$5,000,000</td>
</tr>
<tr>
<td>Income</td>
<td>50,000</td>
<td>25,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Investment</td>
<td>250,000</td>
<td>2,500,000</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Income as a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>percentage of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sales (line 2/line 1)</td>
<td>10 per cent</td>
<td>10 per cent</td>
<td>0.5 per cent</td>
</tr>
<tr>
<td>Turnover (line 1/line 3)</td>
<td>2</td>
<td>.1</td>
<td>.2</td>
</tr>
<tr>
<td>Return on</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment (line 4 x line 5)</td>
<td>20 per cent</td>
<td>1 per cent</td>
<td>1 per cent</td>
</tr>
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</table>
Table II brings out a number of important features of a company's profitability. It points out the way a company can improve its earnings.

Exclusive reliance by Company B on the income as a percentage of sales, would make it believe that it was just as profitable as Company A; both have the sales margin of ten per cent. It would also be misleading to think that Company B was more profitable than Company C which earned only one-half of one per cent on its sales as against Company B's ten per cent sales margin. A quick look at the rates of return on investment would dispel such illusion. Company B's profitability is the same as that of Company C; both have one per cent rate of return on investment which is far less than that of Company A earning as much as twenty per cent on its investment.

If Companies A and B are in the same industry, investigation of turnover by Company B may lead it to improved profitability. Similarly, if Company A and Company C are in the same industry, Company C's inquiry into its lower income as a percentage of sales may lead it to higher profits.

Assuming uniform selling prices in the industry, Company A should not be satisfied with the income margin of twenty per cent, but it should investigate costs and find ways to reduce them and so enhance its profitability even further.

The above return on investment formula assumes that turnover and sales margin (income as a percentage of sales) are independent factors. With substantial fixed expenses
this may not be true. Higher turnover will tend to increase income as a percentage of sales, provided the selling price is maintained, because cost of sales do not, with large fixed expenses, increase proportionately with sales.

While this analysis is simple it does, however, contain certain useful features. It considers the very important factor of sales volume, and it enables handling of the return on investment in terms of two ratios rather than in terms of total dollar figures. Ratios are comparable irrespective of the scale of business; total income and total investment are not.

Proper analysis of the rate of return on investment may lead an enterprise to higher profitability through improvements in sales, reduction of costs, and more effective utilization of resources. The rate of return on investment concept and the ratio analysis are gaining an increased acceptance in business management.

Mr. William B. Harris in discussing "Pressure on Profit," has this to say:

This downward trend in profits developed in the latter part of a decade that, taken as a whole, shows a nearly ideal profit record for the largest corporations. For the 100 largest, for the full decade 1947-56, sales rose 136.9 per cent and profits 136.9 per cent. The exact similarity is sheer coincidence, of course, but the close similarity is not. The capital used to achieve this result has roughly followed the historic pattern -- 75 cents in net operating investment to produce $1 in sales. Thus while the ratio of profit to sales remaining unchanged for the group as a whole, profit ratios on
capital rose slightly. The delicate balance of these ratios is a key factor in corporate performance:

For a business that produces higher and higher sales, while maintaining its operating-profit ratio, and at the same time utilizing its funds so well that it shows consistent increases in earnings on capital, is operating ideally. 1

For these reasons both the per cent of income on sales and the investment turnover need close watching to be able to see what is happening to company operations and where managerial effort needs to be concentrated. Both should be the strategic points of control.

The answer to the question posed at the beginning of this paper, of whether the rate of return on investment reflects the effect of factors required for successful operation, is yes. The rate of return on investment measurement does not reflect all the factors in detail, but it does reflect the most strategic factors affecting operating performance: sales, income, and investment. It shows management's effectiveness in handling the resources entrusted to it.

II SIGNIFICANCE OF THE RATE OF RETURN ON INVESTMENT MEASURE

The performance of most businesses is evaluated by stockholders, creditors, and other investors by the

percentage return the company makes on the capital invested. All enterprises must compete for capital with other enterprises and the return on capital remains the ultimate criterion for continuation of the business.

Since top management is being evaluated in terms of the company's rate of return, the logical thing to do is to use the same yardstick as a guide in its actions and decisions. Profitability, however, is not the only criterion on which any particular decision may be based. Non-financial considerations may be just as important as profitability. It is assumed, however, that the rate of return on investment is an important guide to top management actions. The evaluation by management of its decisions and any proposed action are likely to be considered in the light of their effect on the company's rate of return on investment.

How stockholders evaluate a company's performance is well expressed in Walter Pepke's article in Forbes:

The only thing that really counts in business is how well management invests its dollars. In short, what kind of a return it earns on its capital. A company can easily go broke just piling up sales and assets. All a stockholder really wants to know is this: How much are the earnings and how much of them can I get?

As stated before, companies which do not rely on market for the supply of funds may temporarily disregard the evaluation of their results in terms of the rate of return.

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1 Walter Pepke, "Profit Package," Forbes, October 1, 1958, p. 11.
However, profit is the lifeblood of business; diminishing profit will compel such enterprises to concern themselves, sooner or later, with the rate of return if they want to stay in business.
CHAPTER IV

OBJECTIVES AND CONDITIONS FOR EFFECTIVE PERFORMANCE MEASUREMENT AND EVALUATION

I OBJECTIVES OF PERFORMANCE MEASUREMENT

Statement of objectives. Joel Dean feels that there are two objectives of internal performance measurement:

These are: first, the guidance of the division or other internal management — whose results are being measured and, second, the assistance of top management and its staff in their tasks of appraising and guiding divisional performance.¹

He emphasizes these two objectives by adding later, "and, aside from such usually desirable characteristics as simplicity, these are the only (his italics) objectives of a measurement system."

Joel Dean's objectives of internal profit measurement can be diagramed as follows:

First Objective -- For Divisional Management

A. To furnish a guide for division management.

B. To furnish a method by which divisional management can evaluate its own performance.

Second Objective -- for Top Management

A. To assist top management in the evaluation of divisional performance.

B. To guide divisional performance by pointing out areas requiring attention.

The purposes of internal measurement are stated in terms of people and since this paper concerns itself largely with managerial performance it will be a convenient point to base further discussion. Both objectives will be involved in appraisal of managerial performance; both are equally important. According to Dean:

Many view the second of these objectives, namely, measuring divisional performance as if it were the only one or at least the more important of the two. Our firm's experience inclines me to believe that most companies' profits are affected at least as much by the influence of a measurement system on the day-to-day behaviour of division management as by the assistance these measurements give to top measurement later on. ¹

Division managers will use that yardstick which they think is used to evaluate their performance. It may be sales, clean desk, or profit. It is, therefore, important that

¹ Ibid., p. 5.
performance measuring standard or standards are well known to those concerned, otherwise division managers are apt to maximize whatever they think is used by top management in performance appraisal; division managers' conception of what constitutes a good performance may not coincide with the top management's intent and result in actions not in accord with company objectives.

I. Wayne Keller does not distinguish between the two objectives:

The purpose of the return on capital ratio is for internal profit measurement and appraisal. Trends are more significant than percentage ratios. Consistency is of prime importance and the assets included and the method of their evaluation will not destroy the effective use of the ratios so long as they are determined on the same basis year after year and for all measurement purposes.¹

Many would not agree with this statement and would insist on a certain valuation of assets. But for a general inter-company comparison this statement may be true.

Factors outside managerial control. Any evaluation of managerial performance must discount factors outside managerial control. The operating results of a company or a division will be caused by a combination of controllable and uncontrollable factors and any system of measurement will reflect both. In order to evaluate performance of management, assumptions must be made about the extent to which

uncontrollable factors have affected the operating results. Among uncontrollable factors that may be mentioned, general business conditions are the most important. In divisional performance the uncontrollable factors may originate in top management policies or actions in other divisions. The crux of the problem is how to separate the influence of factors which are beyond the control of any responsible individual.

Although this separation is sometimes difficult, an effort must be made to separate deliberately or otherwise the uncontrollable and controllable aspects of performance if any valid evaluation is to be made of the persons involved.

Conflict of objectives. In some cases long and short-run objectives may be in conflict. The maximization of short-run profits may be at odds with the long-run objectives of survival and growth. Conflict can also arise between actions taken to improve current performance of a division or a company and actions which are aimed at improving long-run profitability. Research or maintenance are good examples. Postponement of either may result in the improvement in current performance but, as a rule, at the expense of the long-run operations and ability to compete.

II CONDITIONS FOR EFFECTIVE PERFORMANCE MEASUREMENT AND EVALUATION IN TERMS OF RATE OF RETURN ON INVESTMENT.

It is extremely difficult to devise conditions under which the rate of return on investment will ideally measure
managerial performance. What is required is the measure of achievement of company's goals. This is made very complex by the fact that businesses usually have several objectives which overlap and to some degree conflict: profits, social acceptance, employee satisfaction, development of new order, growth, market share, and eternal life.

Because of our free enterprise system and obligations to investors, profits are usually the dominant goal of business activity. They can usually be measured with reasonable accuracy; other objectives cannot be so readily presented in quantitive form. The other objectives contribute in diffuse ways to long-run profits and thus cannot be ignored in measuring and evaluating managerial performance. The main performance of executives, however, remains reflected in its contribution to company past, present, and future profits.

The attempt was made to present certain conditions where the rate of return on investment can reflect operating performance of management most effectively. These considerations may be useful to decentralized companies desiring to use the return on investment as a method of measuring and evaluating executive performance.

Company level. Every economic facility employed by the enterprise should be carefully administered by the top management with a view to income; the return on investment shows the effectiveness with which the management handled the available resources entrusted to its care.
Income, however, may be due to a contribution of controllable and uncontrollable factors. The effectiveness of the rate of return on investment in evaluating performance will therefore be greater if:

1. Controllable and uncontrollable factors are separated.
2. Performance is measured against a realistic standard.

Uncontrollable factors cannot be fully identified and eliminated. Judgment must be employed. Standards must be determined in line with other business objectives and competition. This means that they are not absolute but rather depending on the best possible achievement under the existing circumstances.

**Division level.** On the divisional level, the return on investment will effectively measure executive performance if the company is divided into independent operating units which act like economic entities free to trade inside and outside the company. Propelled by appropriate incentives, each division will try to maximize its own contribution to general overhead and profits which will also maximize the profits of the entire company. Certain conflicts may arise from the division's attempt to maximize its own profits. This problem will be developed in further discussion.

Divisional manager can be made responsible for the performance of his division and his operating performance
can be evaluated in terms of the rate of return on investment if the following conditions are fulfilled:

1. The divisional boundaries are marked off so as to preserve operational autonomy of the division manager, with cost, revenue, and investment separately recorded for his division and a minimum of allocation used.

2. Intra-company prices are negotiated in arm's length bargaining by division managers with access to data on alternative sources and markets and freedom to deal with outsiders.

3. Divisional contribution profits are measured correctly, i.e., profits over which the divisional manager has control.

4. Realistic standards of contribution profit performance are determined by review of past record and consideration of current economic climate and competitive conditions in the industry.

5. Proper incentives are established and related to the contribution profits of the division.

6. Investments are subject to negotiation with top management.
7. The division manager is not responsible for decisions made before he took over, unless he is permitted to revise the previous decision.

Referring to evaluation of divisional performance, Dean has this to say:

Contribution profits as a return on investment provides the most important guide to top management in evaluating of profit center performance.¹

Dean's comment is true, but only if most of the above conditions are fulfilled. Not all companies are willing or able to go the length suggested here. The price asked for objectivity may be too high.

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CHAPTER V

PROBLEMS OF INCOME DEFINITION.

There is not just one best way to calculate the rate of return for a division or a company. Both the investment and the income figures can be computed in many different ways resulting in significant ratio variations. The definition of income is closely related to the problem of valuation of the investment base and the definition of one must be consistent with the definition of the other.

Most of the discussion in the literature on the alternative methods has been concerned with finding an accurate rate of return -- or perhaps even some kind of "true" rate of return. Little has been said about the use of rate of return on investment in guiding and evaluating divisional and top management performance.

General background. The management is not bound to use an accounting concept of income in guiding and evaluating divisional management and in making decisions. Up to the present time, however, no better practical ways of computing income have been advanced than those developed by the accounting profession. It is suggested then that the best accounting concept of income, with proper modifications, be used in the rate of return analysis.

Before accepting the accountant's concept of income in performance appraisal, it is important to realize certain limitations inherent in the income concept and beware of a
blind reliance in its propriety and objectivity.

In general, the accounting concept of business income is an excess of revenues over costs incurred in producing the revenues. Paton and Littleton say that, "Cost is the amount of bargained-price of goods or services received or of securities issued in transactions between independent parties." 1 "Bargained-price" is simply a unit price times quantity. "Revenue," according to Paton and Littleton, "is the product of the enterprise, measured by the amount of new assets received from customers; income emerges when the assets which express revenue exceed the total of assignable costs." 2

It is implicit in the concept of business entity, a company or a division, that property dedicated to business purposes belongs to the enterprise rather than the investors. Therefore, it should be accounted for separately from the property of the investors who are, however, entitled to share in the income produced by the enterprise assets. Management is entrusted with the administration of all the enterprise assets; its effectiveness in handling the available resources is, therefore, reflected in an emerging income, which is the primary goal of all business activity.

In discussing the purpose of accounting, Paton and Littleton stress this point by saying that:

2. Ibid., p. 46.
Accounting exists primarily as a means of computing a residuum, a balance, the difference between costs (as efforts), and revenues (as accomplishments) for individual enterprises. The difference reflects managerial effectiveness and is of particular significance to those who furnish the capital and take the ultimate responsibility.

In evaluating managerial performance, the income figure is very important. But the determination of business income is a complex problem in accounting. Differing situations may require a departure from the accepted standards and conventions.

The "true" income figure can only be arrived at on the dissolution of a business or completion of a venture. Computation of income figure in case of a medieval merchant adventurer was comparatively simple. His business consisted of a series of isolated ventures, and the income on each was simply the difference between the capital sunk in each venture and the sum realized on its completion. Before the beginning and after the end of each venture, the merchant was completely "liquid" and so the growth in his capital was easily measured.

It is when business enterprises become continuous entities that it becomes difficult to attribute the income of such an enterprise to particular short periods of time,

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Ibid., p. 16.
such as a year. For if income of the enterprise for a particular period is regarded as being the growth in its capital during the period (after adjusting for new capital introduced or amounts withdrawn), a value should be placed on the enterprise at the beginning and end of the period, in order to measure this growth. And since a continuing enterprise will be carrying stocks of goods, investments, equipment, land and buildings, and such intangible "rights" as patents and copyrights or at least some of these assets; as well as assets like cash and book debts with a known face value, the problem of valuation becomes very difficult.

The problem is to some extent solved by the introduction of the concept of matching revenues and costs. The fundamental problem, on this view, is to distinguish between (a) those expenditures which should be charged against current revenue and (b) those expenditures which should be carried forward to be charged against the revenue of future periods. These latter expenditures will, until they are charged to revenue, be carried in the balance sheet, but whether they appear there described as "plant" or "stock" or "preliminary expenses" or otherwise they are always viewed as past expenditures held in suspense.

It is usually claimed for the "matching costs and revenue" approach to income measurement that it is objective in that it avoids valuations as far as possible, and substitutes cost allocations. It is the best method of
income determination devised thus far; closer examination, however, reveals certain flaws.

Consider, for example, typical expenditures which need to be allocated between two or more trading periods—say the cost of certain items of plant which will last for several years, or the cost of goods bought in a number of lots at different prices, and sold over a period of two or three years. Is there really, in the first case, any one objective method of allocating the costs of the plant to each of the years which enjoy its services? Or of saying, in the second case, what is the cost of goods sold in any one period if sale lots cannot actually be identified as having been purchased at a particular price, because identical goods are flowing in and out of the business continually while prices are changing all the time. The first of these problems is perhaps more familiar as a problem of calculating the depreciation of fixed assets. The second, that of computing the cost of goods sold during the year is simply another aspect of the problem of stock valuation because whatever outlays are not carried forward as stocks must be charged in the year's accounts. In calculating depreciation charge, straight-line, reducing balance, and other methods are used. The income figure will be different in all cases and the charge will only incidentally coincide with the effort expended to earn periodic income. In inventory valuation, "last-in, first-out," "first-in, first-out," and average methods are commonly used, each producing a different income figure.
The determination of business income is to a great extent subjective. The accounting profession has for a half a century been attempting intermittently and with inadequate power to improve on this subjective concept and arrive at objective and reasonably narrow range of meanings.

The English courts, which have wrestled with the problem of measuring business income over a long period of time, have in the language of the House of Lords in Davey v. Cory:

... declined to attempt to treat these questions in the abstract or to do that which Parliament has refrained from doing, namely to formulate precise rules for the guidance or embarrassment of business men in the conduct of business affairs. 1

There is another problem of the fallacy of accounting assumption of money being a constant measuring rod and the consequences thereof. It will be treated in subsequent chapter dealing with the problem of valuation of assets.

In practice, different methods of computing income are used by different companies. This together with an impossibility of determining the "true" income limit the comparability of income figures between companies and divisions. The limiting factors should always be born in mind when evaluating performance in terms of the rate of return on investment.

I INCOME DEFINITIONS FOR INTER-COMPANY COMPARISONS

Any definition of income should be consistent with the definition of investment when the two are related in the rate of return on investment.

Generally, income should be defined as all income arising out of the use of the assets for which the management is held responsible and over which the management has control. To define income in any other way is to limit its usefulness in appraising managerial performance.

This means that income, for the purposes of return of investment measurement in appraising performance, is the net income figure after all costs and expenses required to produce it. The net income figure should include operating income and non-recurring items over which management has control. In practice, this all-inclusive concept of income is the best, because experience shows that most of non-recurring items of income or ordinary losses are under managerial control and actually do recur, and because the line of demarcation between operating items and non-operating items is not clear-cut and is often a matter of opinion. Extraordinary losses or gains for which the management cannot be held responsible should be excluded.

In the published literature, the principal questions which arise in defining income center around the following
three categories of items:

1. Dividend income, interest income, and "other income."

2. Interest expense, income taxes, and "other expense."

3. Depreciation expense.

These items are examined in the following paragraphs in terms of the criteria established above: responsibility, control, and consistency.

**Dividend income, interest income, and other income.** Where dividends and interest are items of income, most companies include these items in earnings for the purpose of measuring return on investment. "Other income," for example gains on sale of assets, is generally included. Some companies, however, exclude "other income" on the grounds that items falling into this category are often non-recurring, such as sales of major assets, and, consequently, have nothing to do with earning power.

Since management is responsible for effective utilization of all company assets, the three categories of income should be included in net income in computing the rate of return on investment, provided the management has the requisite control to cause the income to emerge. In evaluating managerial performance all income, operating and non-operating, should be merged into one total figure. In the final analysis, there is no difference between income,
as expressed in money terms, which arises from ordinary operations and dividend or other income; all represent good money. This is not to say that separation into income categories is not desirable; on the contrary, in analysing the rate of return on investment it is imperative that various kinds of income be definitely identified with the underlying investment to see how the total result is made up and to make the necessary improvements.

The management is entrusted with certain resources and it is up to its ingenuity and foresight to invest them in those activities which result in the best possible return.

**Interest expense, income taxes, and other expense.** Since the rate of return on investment is used to measure performance of management, i.e., effectiveness of utilization of resources, interest on debt should be excluded from expenses.

Some concerns will borrow a larger portion of their capital requirements than others in similar lines; some may leave a larger portion of their earnings in the business from time to time and others avoid the necessity of heavy borrowings. The management is responsible for effective utilization of all resources irrespective of where they come from.

In the words of Paton and Littleton:

From the point of view of the enterprise as an economic entity and a center of managerial activity,
on the other hand, treatment of interest as a charge analogous to operating costs such as labor and materials is objectionable. To management the cost of operating the undertaking is not affected by the form of capital structure employed, nor by the particular kinds of instruments used in raising the necessary funds. To management the bondholders' dollars and the money furnished by the stockholders become amalgamated in the body of resources subject to administration, and the net income of the enterprise consists of the entire amount available for apportionment among all classes of investors. Interest charges, from this standpoint, are not operating costs but represent a distribution of income, somewhat akin to dividends.¹

The point to be noted is that surplus net income is substantially affected by the manner in which a company is financed, while the income from operations is quite unaffected thereby. Capital structure of a company will affect the return on stockholders' investment. It is for financial management to determine that satisfactory income earned in the conduct of a business is realized by the stockholders to the fullest extent in the form of surplus net income.

The net income figure used for inter-company comparisons is usually income after taxes; taxes are considered to be a cost which must be covered before there can be a return on investment. What is wanted, however, is the return on investment over which management has control and no management has any control over tax rates. On this view, it seems logical to use net income before taxes. In addition, comparability of income figures over time is not affected by

changing tax rates. If desired, calculation of the net income figure after taxes can be made. The Monsanto Company computes the net income figure both before and after taxes:

'Net income,' as used in the calculation, is the net income after all costs and expenses. The percentage of return on investment based on net income after taxes is the principal yardstick. However, we also determine the return of net income before taxes in order to make comparisons which eliminate the effect of changes in tax rates. 1

As with "other income" discussed above, most companies take into account "other expense" in calculating their return on investment. Using the criteria of responsibility and control, "other expense" and losses, if controllable, should be included in the computation of the net income figure.

Depreciation expense. Depreciation should always be included in operating expenses. Depreciation is not an optional charge to be recognized or not as management pleases. Obsolescence is an important factor in depreciation of assets. Absence of activity does not arrest depreciation; it should be a charge to income irrespective of whether income has been earned or not, whether income can or cannot "stand the charge." The real amount of income is determined by operating activities and economic conditions; it is not affected by the management's policy with respect to depreciation.

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Conclusion. The effectiveness with which all the enterprise resources are utilized by management should be reflected in the income figure emerging from the use of those resources. Therefore, in addition to income from operations, the net income figure should include dividend income, interest income, and other income.

For inter-company comparisons, the net income figure should be calculated after all costs and expenses including depreciation, which are incurred in its production, but before charges for interest and income taxes.

A charge for depreciation is an element of costs just as any other operating expense; its real amount depends on the operating activity of an enterprise and accompanying economic conditions. In calculating the depreciation charge, a systematic depreciation policy, based on the probable history of the depreciable assets, should be adopted. In practice, different depreciation methods are being followed. This must be born in mind when comparing and evaluating companies in terms of the rate of return on investment.

An interest charge should be excluded from the net income figure used in the rate of return measure; it is more like a distribution of income than an operating expense. The form of capital structure employed does not affect the cost of operating an enterprise; and it is the operating effectiveness that the rate of return on investment, as used in this paper, tries to measure and evaluate.
In computing the rate of return on shareholders' equity, the interest expense should be deducted from income; in this case, income applicable to the shareholders' equity is the residual amount after the payment of interest.

Income taxes are outside the control of management. The company's success or lack of success in minimizing its income taxes does not reflect operating effectiveness. Moreover, frequent changes in tax rates make comparisons over time difficult. For these reasons the computation of net income for the purpose of evaluating company performance in terms of the rate of return on investment seems to be best before income taxes.

Where the rate of return is based on shareholder's equity, income taxes are usually deducted because what is left to the shareholders is income after taxes.

II DEFINITIONS OF INCOME FOR INTRA-COMPANY COMPARISONS

Joel Dean suggests three concepts of income, or profit as used by him, that may be used in measuring divisional performance:

a. Book net profits
b. Real net profits
c. Contribution profits

Book net profits tie into stockholder reports, have a surface acceptability and are not very fudgable, but they embroil executives in fruitless debates about
allocation of corporate overheads over which they have no control and raise moot questions about capital consumption costs of plant acquisitions at widely differing price levels.

Real net profits may settle the latter questions (inflation and depreciation) but do not settle problems of allocation of overhead beyond the division manager's control.

Contribution profits have fewer of these drawbacks being confined to costs and revenues over which the profit center manager has control.

Because the purpose of the rate of return on investment is to measure, guide, and evaluate managerial performance, the assignment of responsibility for performance must be coextensive with authority; and authority implies control. No divisional manager has any control over centrally allocated overheads, such as the remuneration of top executives or the expenses of the head office.

While recovery of company overheads is important to top management, it will not be ensured by allocating them to divisional profit and loss statements. On the contrary, such allocations impede evaluation of divisional performance, because costs are attributed to the divisions over which the divisions have no control and therefore are of no value in guiding divisional performance by pointing areas needing attention. Moreover, arbitrariness of most allocating systems impairs the validity of any evaluation of past and present performance, since good and bad years can be smoothed out by the way allocations fall.

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In decentralized operations, however, the division manager has control over costs and revenues originating in his division. These are usually operating costs and operating revenue.

For these reasons contribution income, i.e., the income which emerges out of matching of costs and revenues over which the division manager has control, seems to be the most appropriate measure of divisional management. The rate of return on investment, when used as an internal managerial tool, need not be the same as that used for external comparisons and evaluation.

The contribution income avoids arbitrariness and pitfalls arising out of the allocation of company overheads and, therefore, supplies an additional reason why it should be used in evaluating divisional performance in terms of the rate of return on investment.
CHAPTER VI

PROBLEMS OF INVESTMENT DEFINITION

I DEFINING INVESTMENT FOR INTER-COMPANY COMPARISONS

In practice, the investment base upon which rate of return is computed is defined in various ways because different concepts of rate of return are used for different purposes. In appraising past results of the company as a whole, income may be related to:

1. Total assets available, i.e., total assets appearing on the left hand side of the conventional balance sheet.

2. Total assets employed, i.e., total assets available minus excess or idle assets and other assets on which management is not expected to earn a return. To put it in another way, these are earning assets, i.e., asset value depends on who owns them as distinguished from defensive assets which have the same value no matter who owns them.

3. Equity plus long-term debt.

4. Total capital employed by stockholders, i.e., stockholders' equity, generally limited to common stock equity.
All the company's resources are entrusted to managerial control. To measure managerial performance therefore, it seems logical to use total assets available as an investment base. The rate of return on investment computed on any of the other three investment bases, will reflect managerial effectiveness only partially. The total assets available figure is also consistent with the definition of income as developed in the previous chapter. An additional reason for using total assets as an investment base is that the figures are publicly available and, therefore, can be readily used in inter-company comparisons.

Companies which use total assets employed as the investment base, eliminate the assets which are not expected to earn a return. Some exclude cash; others exclude construction in progress or other assets which are held with a view to other objectives than the short-run maximization of profits.

Ideally, all enterprise assets should be earning assets. This is not always possible. Certain investments, for example construction in progress, do not bring any income until the beginning of operations. However, all defensive assets should result in the long-run profits, otherwise managerial decisions to acquire and hold such assets make little sense. Since managerial effectiveness is reflected in income arising out of all the enterprise assets, the use of total assets available rather than total assets employed seems to be a better investment base for the purpose of
company and managerial evaluation. The existence of defensive assets may lower the rate of return on total assets available; the effect of defensive assets on the rate of return on investment may, however, be allowed for when appraising the overall company performance.

Companies that use equity plus long-term debt as their investment base reason that, since current liabilities are temporary in nature, management should not be expected to earn a return on assets supplied by short-term creditors. This is, however, not a sound argument. In the first place, it is very difficult and sometimes impossible to extricate assets purchased with short and long-term funds; secondly, management is responsible for effective utilization of assets no matter who supplied the money to purchase them or even when no money was expended in their acquisition, such as donated assets.

The rate of return on shareholders' equity is used where the purpose is to measure rate of return earned on the amount of shareholders' capital employed in the business. It is of considerable interest to financial management and takes the shareholder's or outside investor's viewpoint. It is adopted where the capital stock is closely held and shareholders evaluate management in terms of its ability to improve the position of shareholders.

In discussing a definition of investment in the rate
of return on investment formula, the N.A.A. Research Report 35 says that:

Some companies interviewed were found to be using more than one investment base. These companies use rate of return for more than one purpose and therefore define capital so that the resulting rates of return will be relevant to the intended purposes.

Other companies use a variety of investment bases on occasion, but one basis as a regular, and major tool of evaluation. Thus, in making a comparison between their company and competitors, they sometimes revise their investment base to conform with the figures which are publicly available.

In internal performance measurement the user of capital, i.e., management, rather than the supplier is the key figure. Total available assets are placed at management's disposal; total assets, therefore, seem to be the best investment base to be used in managerial performance appraisal.

In some cases, certain resources, such as patents, trade marks, and leased assets, are omitted from the balance sheet. In other cases, it is difficult to put an objective value on intangible assets, goodwill, patents, trade marks, etc. The existence of such assets is generally reflected in a higher rate of return than it would be in the absence of such assets. This should be considered in comparing inter-company performance.

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Leased assets do not usually appear on the balance sheet. When such assets have a material effect on income, they should be included in investment base, otherwise the rates of return on investment cease to be comparable. Often, lease arrangements represent a form of borrowing. In these cases, interest factor imputed in rental payments is capitalized by some companies and included in the investment base. The difference between the total rent payable and imputed interest is charged as an expense of the period.

It is fairly obvious that in businesses where human resources are the major source of earnings, for example in enterprises rendering professional services, appraisal of management in terms of the rate of return on investment has little meaning.

II DEFINING THE INVESTMENT CHARGED TO DIVISIONS

The definition of divisional investment should be consistent with the definition of income. Only the assets for which divisional manager is responsible and over which he has control will effectively reflect his performance. In addition, the conditions listed in Chapter IV concerning divisional boundaries, transfer pricing, etc., must be fulfilled.

The division was defined earlier as a unit to which both income and investment are attributable. This applies largely to decentralized companies operating on semi-autonomous basis. Even here, there is a problem of what
assets to include and what assets to exclude or how to allocate facilities which are shared in common by two or more divisions.

The main criterion should be: has the divisional manager control over the asset? Can he, in other words, use the asset in any way to attain the desired objectives without restrictions or constraint from the top management. If so, the asset should be included in the investment base; if not, it should be excluded from the investment of the particular division, otherwise top management is evaluating itself.

Allocation of common facilities on arbitrary basis, as is the case in practice, and inclusion of such facilities in the return on investment calculations does not reflect the divisional manager's effectiveness. Although the divisional manager may be responsible for the use of such facilities, he has no control over them. Such arbitrary allocations should be avoided. The problem can be solved by placing such facilities under the jurisdiction of a separate head, or by placing them under the control of a major user and establishing, at the same time, sound pricing of services rendered by the facilities to different divisions.

In many cases even when facilities are largely decentralized, assets like receivables and cash are commonly centralized.

Some companies include cash; some exclude it. Some establish a certain minimum cash requirements. Whether to include or exclude cash from divisional investment base
will depend on whether division manager has control over cash. Usually, the control of cash is in the hands of top management; the cash resources are pooled from all segments of the company and administered centrally. In these circumstances, cash should not be included in divisional investment base.

Similarly with accounts receivable. Some companies include actual figures. Some companies include them by an arbitrary formula; others exclude them.

When the division manager can change the terms of sale and is responsible for the collection of accounts receivable, inclusion of the actual figure for accounts receivable in a division's investment base makes any changes in terms of collectibility of accounts reflected in the divisional performance. Under these circumstances accounts receivable should be included. However, William Rotch found that investment in accounts receivable and cash was considered by the top management to be an inflexible prerequisite of business and a part of top management financial policy.  

Inventory is usually included in the investment base. Division manager is usually responsible for operation and sales of his division, and inventory is under his control. It constitutes a buffer between production and sales. There are a number of different ways of valuing inventory, e.g., "last-in, first-out" (goods purchased

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last are sold first), "first-in, first-out" (goods bought first are disposed first), lower of cost or market, etc., and when comparing different companies and divisions it is important to recognize these differences. In times of rising prices, "first-in, first-out" method of inventory valuation will produce more current values than "last-in, first-out" method. This is more important in comparing different companies than in comparing various divisions in the same company, where the same method of valuing inventory is most likely to be used throughout the entire company.

Fixed assets are usually under direct control of division manager and should be included in his investment base. As stated before, however, division manager should not be held responsible for decisions made before he took over, which cannot be changed in short order. For example, if a plant has been closed down but not disposed of, the division manager should be relieved of responsibility for the amount of capital invested in the assets of this closed down plant, unless or until he is permitted to revise the previous decision, otherwise the rate of return on investment used in evaluating managerial performance has little meaning.

The problem of gross or net fixed assets applicable to both company and divisions is treated in subsequent paragraphs.
III ALLOCATION OF ASSETS TO DIVISIONS

The problem of allocation of assets to divisions was touched upon in the preceding section dealing with the definition of divisional investment. This section deals with the allocation of centrally administered assets and costs to divisions.

The difficulty in allocations lies not so much in the task of tracing centrally administered assets, although this may be a hard assignment, as in the inability of the division manager to control such asset balances. If these asset balances are substantial in relation to the total divisional investment base, the rate of return on investment which includes such assets is a poor reflection of the division manager's performance.

Most of the commonly used allocation methods assign centrally administered current assets, such as cash, inventories, or accounts receivable, on some arbitrary index of divisional activity, e.g., a ratio to sales or a ratio to production. These methods, however, assume a proportionality between asset balances and activity that, in fact, may not exist. An increase in sales, for example, may be achieved with less than proportional increase in inventories. If sales decline rapidly and production continues at the same rate, more than proportional accumulation of inventory balances may result.
This problem may be solved by charging to a division the actual amounts of any centrally administered assets that can be traced to that division, provided the divisional manager can control such assets. For example, if inventory balances control is a divisional responsibility then any changes in inventory levels should be reflected in the rate of return on investment. On the other hand, if inventory levels are controlled by the head office, fluctuations in inventories should not be reflected in the investment base of the division.

Any centrally administered assets that cannot be traced to divisions or are not subject to control by the division managers should be left out of the divisional investment base altogether; otherwise, the evaluation of the division managers' performance is apt to be misleading. If allocations are made in order to review historical profitability of the division separately from the performance of the manager, the resulting rate of return on investment should not be used in appraising divisional management. In fact, two rates of return on two different investment bases should be calculated: one for evaluating the division as a unit, the other for appraising the divisional manager's performance. The allocations of centrally administered assets to measure the profitability of the division as a unit can be done according to some budget formula. In effect, no distortion of the managerial performance evaluation would result.

Common costs which are incurred to enable all
divisions to carry out their operations can only be allocated on arbitrary basis. These costs would not be different even if the division closed down. Therefore, mere allocation of such costs has no relevance in ascertaining the level of divisional management performance and no aid in determining the relative performance of different divisions. Common costs are, usually, allocated on one of the two bases:

1. As a predetermined lump sum, if costs are unaffected either by the volume of activity in the division or by the divisional demand for services.

2. At a predetermined rate or price times index of activity or demand for services in the division.

Predetermined lump sum assumes no controllability. The application of the predetermined rate presumes controllability over quantities but none over prices per unit of quantity. Neither the first nor the second seems to be a good solution. What is wanted is the divisional income figure which adequately reflects the degree of control that the division manager is able to exert. This can only happen if the division manager has control both over prices and quantities. Where these conditions prevail, it is better to charge central costs directly to the division rather than use arbitrary allocations.

IV FIXED ASSETS

Background. Fixed assets constitute, usually, the
most significant item in most companies using the rate of return on investment in evaluating managerial performance. Fixed assets loom large in the literature on the rate of return on investment.

The fixed asset is defined by Kohler as:

A tangible asset held for the services it yields in the production of other goods and services; any item of plant.

The greatest problem arises in how to treat fixed assets in the investment base, i.e., use of gross fixed assets or fixed assets net of accumulated depreciation. The difference between gross and net fixed assets arises then from the treatment of accumulated depreciation which is deducted from the original cost to arrive at net fixed assets. There are also valuation accounts for assets other than fixed, such as an allowance for bad debts, an allowance for inventory losses, etc., and the question also exist in the valuation of other assets. Since the other valuation accounts are much smaller than the accumulated depreciation allowance on fixed assets, the discussion will be confined to the handling of accumulated depreciation allowance.

Before proceeding to discuss this subject, however, it is important to consider what is meant by an asset and to see what distinguishes an asset from an expense, since

assignment of cost to one or other category may affect significantly the rate of return on investment.

First of all there is no unanimity in practice as to what is meant by assets. The amount of assets shown in any financial statement depends in part upon the attitude that is taken with regard to "capital versus revenue" expenditures. The distinction between capital and revenue is fundamental to most accounting procedures, though the nature of the distinction is not always made clear by the textbooks. It is often said for instance, that capital expenditure is that expenditure which results in the acquisition of an asset. But it might be said that an asset is what results from capital expenditure. This brings us back to the problem of defining an asset. Besides, even if common parlance is accepted for the moment, it might be said that all expenditure results in the acquisition of an asset.-- twenty-five cents spent on a bottle of ink, for instance. Bottles of ink are not capitalized; they are written off as part of the cost of "printing and stationary." But if a gross of bottles were bought, the unused stock might possibly be carried forward at the end of the period as an asset in the balance sheet. This should help to make clear what distinction between capital and revenue expenditure really is. Capital expenditure is expenditure the direct benefits of which are to be received in future accounting periods. Thus it is not only the nature of the expenditure but the length of the accounting period which is material. Thus a year's rent paid in advance on January 1 is wholly a charge to revenue in an
account prepared for the year ended on the following December 31; but in an account ending on June 30, only half the amount is revenue expenditure, and half is carried forward as capital expenditure.

This distinction is significant in the rate of return on investment calculations. For example, if a $1,000 item is charged as revenue expense instead of being treated as a capital addition, it reduces income but leaves the investment base unaffected. If this item is treated as an asset addition, the income would not be reduced, but the investment base would be increased.

Then, if the income had been $5,000 on a $100,000 base without including the $1,000 charge, treating $1,000 as a revenue expenditure produces 4 per cent return on investment. If on the other hand, $1,000 is capitalized, the investment base increases to $101,000, on which a $5,000 return is 4.95 per cent. These fluctuations in the rate of return are magnified because such items, though small in relation to sales or assets, are large in relation to net income figure.

Choice of gross or net fixed assets. In the March 1958 issue of N.A.A. Bulletin, the following arguments were used in favour of the gross figure for fixed assets:

1. It provides some equalization of facility values of the different divisions or companies, especially between those with old plants built at relatively low cost and those with new plants built at high cost.

2. Assets of manufacturing companies, unlike mining companies, are considered to be on a continuing
basis rather than depleted and abandoned.

3. Gross assets of one plant can be compared with those of another plant where depreciation practices may be different.

4. Reserve for depreciation is not deducted from the gross asset value of property, since it represents the retention in business of the funds required to keep intact the original investment by stockholders. Actually the fixed assets are used to produce net income during their entire life and, therefore, full cost value is considered a sort of investment until the assets are retired from use.

5. A deduction for liabilities and reserves from the amount invested in operating properties would show a fluctuation in operating investment due to growth of reserves and change in amount of stockholder capital which, in turn, would produce such a distortion in the return on investment as to render it meaningless.  

The following reasons were advanced for the use of net assets:

1. While invested capital is conventionally understated at the present time, the wrong method of increasing it cannot be relied on to furnish the right results and the attempt can only add to the existing confusion in accounting thinking. Cash built up via a depreciation reserve, if added to the gross assets, amounts to overstating the investment.

2. Fixed assets are shown at net depreciated values thus avoiding duplication of asset values.

3. An investment is something separate and distinct from the media through which it was made. The purchase

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price of a machine should be regarded as the prepaid cost for the number of years of production expected.

Its value, and hence the limits to its investment status at any time thereafter, will depend not on its current mechanical efficiency but on the number of years of future production it can promise. Each year this number will decline and the decline should be offset by cash withheld from gross revenues.

The function of depreciation accounting is to maintain the aggregate invested capital by providing substitute assets currently (originally cash from revenues) to replace the aggregate asset consumption (depreciation) of the year.¹

These arguments fall into three categories:

(1) Ensuring comparability of one division with another or one company with another;

(2) establishment of a "true" rate of return;

(3) reflection of changes in the rate of return by changes in managerial performance.

Inter-company and intra-company comparisons. Arguments (1) and (3) for the use of gross assets and argument (1) for the use of net assets are in favour of establishing investment base which will be comparable from division to division and between companies. The arguments for gross assets are:

1. It provides some equalization of facility values of different divisions or companies, especially between those with old plants built at relatively low cost and those with new plants built at high cost.

3. Gross assets of one plant can be compared with those of another plant where depreciation practices may be different.

The argument for net assets seeking the same result is:

1. While invested capital is conventionally understated at the present time, the wrong method if increasing it cannot be relied on to furnish the right results and the attempt can only add to the existing confusion in accounting thinking. Cash built up via a depreciation reserve, if added to the gross assets, amounts to overstating the investment.

The arguments for gross assets say in effect that in order to compare two companies or divisions, the investment bases should be comparable. Original cost is advocated to reduce the effect of inflation and distortions due to different depreciation methods.

The argument for net assets also aims at comparability of investment bases, but says that this cannot be accomplished by the use of original cost.

It is desirable to have valuation bases comparable between companies and divisions, but it is doubtful whether such comparability can be achieved by the use of gross assets. Eliminating depreciation from consideration does not solve the problem but only adds confusion. What is needed is the
current valuation of assets rather than artificial smoothing of fluctuations in price levels by ignoring the facts and accepting a far-fetched figure of gross assets. The original cost was the correct asset value at the time of purchase. With the passage of time, there is a growing disparity between the original cost and the current asset value.

The third argument, although right in criticizing gross assets basis of valuation, is wrong in stating that, "Cash built up via a depreciation reserve, if added to the gross assets, amounts to overstating the investment." This is misapplication of accounting ideas. Cash is certainly not built up to await the replacement of depreciated asset; it is invested in other assets.

Current rate of return. Establishment of some kind of "true" rate of return is sought by arguments (2) and (4) for the use of gross assets and argument (3) for net assets.

The arguments for gross assets are:

2. Assets of manufacturing companies, unlike mining companies, are considered to be on a continuing basis rather than depleted and abandoned.

4. Reserve for depreciation is not deducted from the gross asset value of property, since it represents the retention in business of the funds required to keep intact the original investment by stockholders. Actually the fixed assets are used to produce net income during their entire life and, therefore, full cost value is considered a sort of investment until the assets are retired from use.
The argument for net asset valuation aiming at a "true" rate of return is:

3. An investment is something separate and distinct from the media through which it was made. The purchase price of a machine should be regarded as the prepaid cost for a number of years of production expected. Its value, and hence the limit to its investment status at any time thereafter, will depend not on its current mechanical efficiency but the number of years of future production it can promise. Each year this number will decline and the decline should be offset by cash withheld from gross revenue.

The function of depreciation accounting is to maintain the aggregate invested capital by providing substitute assets currently (originally cash from revenues) to replace the aggregate asset consumption (depreciation) of the year.

The arguments imply that a true rate of return can be arrived at by computing it from a certain standard which is maintenance of original capital intact. This is similar to the economic concept of income which is expressed as the maximum amount that could be consumed and still leave the individual or entity as well off at the end of the period as at the beginning.

It is important for the measure to be accurate; this accuracy, however, is achieved by neither a ratio of income to gross assets nor to net assets. Neither accounts for:

(1) Income derived from reinvested funds recovered through depreciation charges.
(2) Timing and shape of earnings received or to be received from current investment.

(3) Changes in price levels.

The above three factors can be accounted for by estimating the time curve of future gross receipts of a business and future gross payments and discounting them to the present. This involves, however, choice of appropriate discount rate and forecasting of revenues and expenditures. Theoretically, this view has much to commend it. Practically, it is not feasible. In the words of George O. May:

... to accept a 'discounting of the future' method of implementing the concept would be wholly unacceptable to them; first, because it would involve counting chickens before they are hatched; and secondly because it contemplates the use of estimates and discount rates that necessarily are subjective, conjectural, and unverifiable.

The third argument needs a special comment as it leads to confusion of accounting concepts. Depreciation is confused here with financing of replacement. Basic purpose of accruing depreciation is conceived by this argument as accumulation of funds to provide for the renewal of the assets. At best, this is only half-truth which may lead to erroneous conclusions. The real purpose of depreciation is matching of periodic costs and revenues.

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As stated by Paton and Littleton:

The booking of depreciation has no direct relation to the problem of replacement. If periodic income is to be properly measured it is necessary to match revenue with all costs, including depreciation, and this requirement remains in force even if there is no prospect that other generations of plant will succeed the original installation. Further, no funds are provided by the process of accruing depreciation. It is through the revenue stream of realized production that the financial sinews are renewed and in general it is fair to say that the size of the stream is not affected by the amount of assigned cost.¹

In line with this argument, the net fixed asset base seems to be logical to use in the rate of return on investment measure; it is consistent with income determination and definition. In some cases, gross fixed asset figure may be better to use to attain a certain objective, for example early retirement of facilities. When the gross value is used in the investment base, the retirement of a fixed asset takes the original cost out of the denominator, and so takes out a greater figure than the net asset value. Management with an eye to an operating rate of return will be encouraged by this to retire assets wherever it finds that improvements in the rate of return can be made.²


I.W. Keller argues that net fixed assets are equalizing profits arising out of the older and newer facilities:

Second, fixed assets are taken at cost, because it provides a better basis of comparison of units of the company, some of which may have new assets and others older and well-depreciated assets. This too is correcting only one phase of a problem. Older production facilities are generally less efficient and require more maintenance than new ones. The use of original cost penalizes the unit using older facilities, in that it has higher cost and thus lower profits. If these are measured against depreciated values, its return is more nearly comparable with that of a newer unit.  

Although generally this is true, in the case of an asset still in use but fully depreciated, older facilities are overcompensated and any income produces an extremely high rate of return. This is due to an incorrect estimate of the useful life of an asset in the first place. Theoretically, this can be remedied by an adjustment of past income; in practice, the adjustment is made by a charge to depreciation allowance and a credit to income in the period when the determination of a correct net value of an asset is made. This vitiates comparison over time and therefore should be allowed for in evaluation of managerial performance.

Reflection of performance changes in the rate of return on investment. Argument (5) for the use of gross assets states that:

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A deduction for liabilities and reserves from the amount invested in operating properties would show a fluctuation in operating investment due to growth of reserves and changes in amount of stockholder capital which, in turn, would produce such a distortion in the return on investment as to render it meaningless.

This argument is sound in principle. Any change in performance should be reflected in the change of the rate of return on investment. It implies, however, a diminution in investment base through deduction of accumulated reserves and forgets that these reserves are represented by some assets in the business. Moreover, a continuing business with continuing retirements and purchases, will have, approximately, the same percentage of net to gross fixed assets; and, unless it changes its expansion rate, the rate of return on investment will not be distorted.

Effect of gross or net assets on rate of return on investment. The choice between the gross and net value of fixed assets affects the rate of return on investment and may lead to different evaluations of performance.

Table III shows the magnitude of the discrepancy which may arise between computations of the rate of return on the gross and net investment. The difference may be not as great as that shown in the table if annual net income is permitted to fluctuate with the net average investment for the year, i.e., if instead of a constant net annual income of $10,000 per annum a diminishing income figure is assumed reflecting diminishing productivity of the assets. The table, also, ignores new additions of assets which is the usual
TABLE III
Comparison of Rate of Return on Gross Assets with Rate of Return on Net Assets.

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross Investment</th>
<th>Accumulated Depreciation</th>
<th>Net Investment End of Year</th>
<th>Average Net Investment for Year</th>
<th>Annual Net Income</th>
<th>On Gross Investment</th>
<th>On Net Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$100,000</td>
<td>$25,000</td>
<td>$75,000</td>
<td>$87,500</td>
<td>$10,000</td>
<td>10%</td>
<td>11.42%</td>
</tr>
<tr>
<td>2</td>
<td>100,000</td>
<td>50,000</td>
<td>50,000</td>
<td>62,500</td>
<td>10,000</td>
<td>10%</td>
<td>16.00%</td>
</tr>
<tr>
<td>3</td>
<td>100,000</td>
<td>75,000</td>
<td>25,000</td>
<td>37,500</td>
<td>10,000</td>
<td>10%</td>
<td>26.60%</td>
</tr>
<tr>
<td>4</td>
<td>100,000</td>
<td>100,000</td>
<td>0</td>
<td>12,500</td>
<td>10,000</td>
<td>10%</td>
<td>80.00%</td>
</tr>
<tr>
<td>5</td>
<td>100,000</td>
<td>100,000</td>
<td>0</td>
<td>0</td>
<td>35,000</td>
<td>35%</td>
<td>Infinite</td>
</tr>
</tbody>
</table>

(1) Original cost of assets.
(2) Depreciation based on expected life of four years; straight-line used. Assets actually were used for five years.
(3) Column (1) minus Column (2)
(4) Net investment at beginning of year plus net investment at end of year divided by two (e.g. $100,000 + $75,000 = $87,500)
(5) Assumed constant income figure of $10,000. Because no depreciation charge was made in the fifth year, the income figure rises to $35,000 in that year.
(6) Column (5) divided by Column (1)
(7) Column (5) divided by Column (4).
occurrence in practice. Under these conditions the rate of return on net assets may conceivably be the same as that on gross investment.

**Conclusions.** If a constant standard is imposed from which to measure the rate of return, the choice between gross and net asset base should probably depend on which method is more likely to produce a constant book return on investment each year during the life of the facilities. Neither arguments for gross assets nor arguments for net assets are convincing.

For example, if age has no influence on earning power, the gross assets base provides a more reliable base for identifying variations in income due to other causes. But, if earnings decline with age, older facilities are penalized by relating declining earning power to a constant base. In this case, net assets are most likely to reflect the correct earning power.

On the assumption that earning power does generally decline with age, net assets are more likely to reflect the earning power than gross assets, provided depreciation allowance corresponds with the stream of services rendered by the assets and a minimum of overstatement or understatement of depreciation in any one period occurs.

The fact is, however, that both gross and net assets are imperfect measures of the economic value of equipment. The net asset base, although it does not establish a "true" rate of return, is more consistent with the definition of
income than the gross asset base. It is also the amount that appears in published statements.

I. Wayne Keller suggests that:

The prime danger in departing from the published financial statements is that management time, which should be devoted to holding and improving the ratios, will be diverted to attacks upon the validity of the amount of capital in determining the ratios.¹

The majority of informed opinion seems to favour the use of net assets in the investment base. N.A.A. Research Report 35 issued in 1959 states that:

... field interviews in this study show that 18 out of 28 companies using total assets as the investment base do deduct accumulated depreciation.²

In addition, for a company as a whole, the aggregate net assets figure tends to be stabilized by reinvestment of capital recovered or even increased by additional investments. Retention of recovered capital in the company tends to offset the reduction of assets by depreciation and stabilize the rate of return on investment.

Where the proper guidance of division managers is the main objective, gross assets may be used to encourage early retirements and replacements and net assets may be used to discourage such retirements.

CHAPTER VII

USES OF THE RATE OF RETURN ON INVESTMENT

The main uses of the rate of return on investment that were considered in this paper concern evaluation of both company and divisional performance. The two unanswered questions posed at the beginning of this paper are:

1. Does the use of the rate of return on investment lead to any better performance?

2. Does the rate of return on investment identify good and bad performance and point to where performance can be improved?

If the rate of return on investment does not lead or might not lead to any better performance, then a very good reason for its adoption is missing. Also, if it does not help in identifying good and bad performance, it cannot be used as a guide to action nor can it be used in evaluating managerial performance.

Even if it is concluded that the rate of return on investment is a good measure of performance, evaluation of results must be still undertaken. This implies determination, conscious or unconscious, of standards indicating what is a satisfactory rate of return. Because of uncontrollable factors affecting performance, standards cannot be made inflexible; the evaluation should take all relevant factors into account.
Improvement in performance through use of rate of return on investment. The following are some of the things that both division and top management might do in order to improve performance. It does not mean that these are the things that management will do; proper incentives and motivation must be applied to induce managers to use the rate of return on investment in seeking improvements in their performance.

It is reasonable to expect a different action with respect to fixed assets. In replacements of fixed assets and, generally, in capital budgeting, managers have an opportunity to base their decisions on the rate of return calculations. Selection of investments with high income contributions will undoubtedly lead to a better performance.

The rate of return on investment can also be a useful guide in changing inventory level from one level to another, for example, from 15 to 20 days supplies. Once, however, a certain level has been decided on, it is no longer an investment decision but rather carrying out of previous decision.

Similarly with accounts receivable. The change of terms, when this is possible, will be influenced by the rate of return on investment.

Frederick J. Muth indicated the way the rate of return can be used to improve profitability by choosing the right products:
Because of the many products in the Armstrong line, it was recognized that the approaches to improvement in return would necessarily differ. As a guide for management planning, The President's Office suggested that all products be classified under three categories: (1) those earning a relatively high return, (2) those earning a modest return, and (3) those earning an unsatisfactory return or showing a loss.

Obviously, the objective in dealing with commodities in Category 1 is to play to strength, to increase the share of the company's business that is done in these profitable enterprises. This is implemented by striving to increase sales volume through special sales effort, advertising and promotion, and investment for increased productive capacity where it can be sold. These commodities receive intensive research to develop new uses and markets. They also are studied to analyze characteristics which can possibly be matched in other commodities to promote the development and offering of companion products or other items serving the same or similar markets.

Items in Category 2 are studied to seek ways by which they might be improved into the more profitable Category 1 through some combination of the following approaches.

1. Cost reduction
2. Sales pressure for increased volume.
3. Higher sales prices.
4. Reduction in capital employed through reduced inventory of finished goods, goods in process and raw materials, simplification of product lines, obsolescence of unnecessary equipment, etc.
5. Elimination of the least profitable items, especially loss items, if any, within the commodity or product line.

Any commodity or product group in Category 3 is a drag on the company, since it represents capital and
effort that do not provide an adequate return to insure our future strength, stability, and growth; therefore, all products in Category 3 are kept under close scrutiny in an attempt to achieve, as promptly as possible, either a satisfactory rate of profit or elimination of the commodity. 1

Paul W. Lyon has described in his article "Operating Return on Operating Investment" how his company, West Virginia Pulp and Paper Company, improved performance through application of the rate of return on investment:

After localizing our problems in performance among operating units, we began to use our analytical tool inside the individual operating units. Specifically, we started to develop cost information which would show what rate of return on investment any given grade of paper would yield on any given machine in each of our mills.

Again, as when comparing one mill against another, we found that there were sizable differences in the profitability of grades produced. In certain mills which had some relatively marginal grades, we found orders of magnitude of six or seven to one in terms of differences in profitability as expressed by rate of return on investment.

In many cases, these differences in profitability would not have been uncovered had we used only a margin-of-profit-with-respect-to-sales type of analysis. For example, we have some grades of paper which show better margins of profit on sales than other grades which can be produced on the same equipment. Yet, because of differences in the amounts of paper which

can be produced per hour, the rate of return on investment yielded by the grade with lower margin of profit can be substantially greater.\(^1\)

With a proper allocation of investment and costs, the same analysis can be carried through with respect to plant and sub-units of a company. It does not mean, however, that the use of the rate of return on investment measure is an insurance against poor decisions; what is advanced is that through certain kinds of action, similar to those described above, an improvement in the rate of return, if any, can be attained.

Another important variable is the psychological effect of the rate of return on investment on managers. It may symbolize to them independence and thus result in improved performance. Powered with the right incentive, the rate of return on investment may become a potent force compelling managers to look for improvements in performance. There is not, however, statistical evidence that this is the case; such possibility should not be ruled out. William Rotch thinks, however, that the feeling of independence is short-lived and tends to be overrated by top management who assume that the rate of return on investment gives subordinates more enthusiasm for their jobs than is the case in fact.\(^2\)


The conclusion is that the use of rate of return on investment may identify good and bad performance and may lead to a better performance.

Problems in evaluating the rate of return on investment. Appraisal of performance in terms of the rate of return implies certain optimum standards of performance against which actual performance is measured. I. Wayne Keller says that no formula has been developed to do this and suggests certain ways of setting standards:

If profits are to be measured and controlled, there should be some method of determining the optimum and the maximum return on capital employed. Unfortunately, no formula has been developed which will do this, judgment, based on comparisons with other companies and the experience of the company, is the only method of selecting optimum and maximum return-on-capital-employed objectives. The major factors to be considered are:

1. The best and the average returns of all companies.
2. The best and average returns of similar industries.
3. The company position in the industry.
4. The competitive value of patents or secret processes of the company.
5. Possibility of new businesses entering the field and becoming significant competitors. 1

William J. Vatter in discussing the problem of determination of a normal return for the risk of a given enterprise states that this question is:

... answerable only in terms of averages or comparisons with other firms, there is no way to establish objectively and positively the rate of return which just covers normal risks of an industry. Thus our rate of return measure must always be a relative measurement, with no absolute scale of reference. This does not invalidate the rate of return, but it certainly calls for comparisons and analysis before conclusions are drawn.¹

In the selection of standards of evaluating the rate of return as a measure of performance all relevant factors must be considered. It is suggested that in addition to comparisons of a company with other firms, a historical review of company performance over time might be useful in appraising management, e.g., comparison of this year's performance with that of the last year.

Divisions can be compared with other divisions, or with the company as a whole, or with the divisional performance of this year with previous years. These comparisons, however, require interpretation and judgment. Comparisons with other divisions or with the company as a whole must take into account differing risks in the business and different costs in divisions, such as product development research carried by one and not by the other, or the costs of putting new facilities into operation.

Theoretically, comparisons with other companies are easy. In practice, this is hampered by differences in accounting systems or, in some cases, lack of published

¹ William J. Vatter. "Does the Rate of Return Measure Business Efficiency?" N.A.A. Bulletin, January, 1959, p.34.
figures. A comparison of a division of one company with a division of another company is not feasible because of lack of rate of return figures.

Comparisons of a company or a division with the industry are easy but only useful to get rough levels of return. Even within an industry, companies differ significantly in their rates of return.

I. Wayne Keller says that, "Companies with high, average, and low returns are found in every industry. The return achieved is the result of management, and no company should feel that its return is satisfactory until it is in the upper quartile of all companies."\(^1\)

Later, Keller goes on to say:

Because of these various influences on return on capital employed, a company with a broad product line should not expect to realize the same return on all products. Separate objectives need to be established for each line and for the total company.

The maximum average return over the period of a business cycle should not be so high that it subsidizes inefficient competitors or invites new competition. As a rule of thumb, it would appear that a return on capital of 20% in a product line is almost the maximum that should be expected to be held over a period of years, even with patent protection. For total company return, the historical pattern is a range of from 10% to 15% for companies which are generally considered to be successful growth companies.\(^2\)

---


\(^2\) Ibid., pp. 318-319.
In view of the above comments, lack of precise standards seems to be not a sufficient reason to abandon evaluation in terms of the rate of return. Comparisons with other companies in the same industry or with the best managed companies may help to set attainable standards for the company. Comparisons of a division with other similar divisions in the same company, in case of divisions decentralized geographically, or with the rate of return set for the company as a whole, or comparisons of a divisional performance over time, should guide top management in establishing divisional profit objectives. As suggested by Keller in the above quotation, profit objectives for different product lines or divisions should take into account special characteristics surrounding them.

The most important problem in the use of rate of return on investment in evaluation of performance lies in that all situations have special characteristics. Reflected in the rate of return figure are special characteristics of a division, a company, or industry in question. Impossibility of determining precise standards of performance in a reliable manner, forces top management to interpret comparisons in the light of its knowledge of business and specific conditions surrounding operations and come to a conclusion about what a good rate of return is.

Performance appraisal of a company. Appraisal of a company performance and, at the same time, of top management's effectiveness in utilizing the resources under its
control can be made in three stages:


3. Present company performance in relation to companies nationally recognized to be well-managed businesses.¹

For the purposes of illustration, a hypothetical company "X" is assumed.

Historical comparison of performance. The return on investment of "X" Company from 1953 to 1958 has been as shown in Table IV:

<table>
<thead>
<tr>
<th>Year</th>
<th>Per cent Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953</td>
<td>11</td>
</tr>
<tr>
<td>1954</td>
<td>12</td>
</tr>
<tr>
<td>1955</td>
<td>13</td>
</tr>
<tr>
<td>1956</td>
<td>9</td>
</tr>
<tr>
<td>1957</td>
<td>7</td>
</tr>
<tr>
<td>1958</td>
<td>5</td>
</tr>
</tbody>
</table>

The table shows a diminishing rate of return to a

low figure of five per cent in 1958. It is, therefore, necessary to investigate further and determine whether "X" Company suffered from general economic conditions or whether poor results are an indication of lessening of managerial effectiveness. This leads into the next stage of comparison -- the comparison of "X" Company's performance with competition.

Comparison with competition. Table V makes the comparison with competition; it shows that companies in the same industry have not suffered a decline in their earnings and, therefore, the explanation for diminution of "X" Company's rate of return must be sought in its operations.

**TABLE V**

<table>
<thead>
<tr>
<th>Company</th>
<th>Per Cent Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
</tr>
<tr>
<td>C</td>
<td>11</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
</tr>
<tr>
<td>E</td>
<td>9</td>
</tr>
<tr>
<td>F</td>
<td>8</td>
</tr>
<tr>
<td>G</td>
<td>7</td>
</tr>
<tr>
<td>&quot;X&quot; Company</td>
<td>6</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
</tr>
</tbody>
</table>

The results of each company are broken down in Table VI in terms of the rate of return on investment formula:

\[
\frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}} = \text{Return on Investment}
\]
TABLE VI

Analysis of the rate of return of chosen companies in the same industries

<table>
<thead>
<tr>
<th>Company</th>
<th>Return on Investment (per cent)</th>
<th>Income on Sales</th>
<th>Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>14</td>
<td>8</td>
<td>1.7</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
<td>6</td>
<td>2.0</td>
</tr>
<tr>
<td>C</td>
<td>11</td>
<td>11</td>
<td>1.0</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
<td>5</td>
<td>2.0</td>
</tr>
<tr>
<td>E</td>
<td>9</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>F</td>
<td>8</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>G</td>
<td>8</td>
<td>5</td>
<td>1.6</td>
</tr>
<tr>
<td>&quot;X&quot; Company</td>
<td>6</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>I</td>
<td>5</td>
<td>3</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Table VI reveals why income on sales is not a good measure of performance. Company C has the highest income on sales, eleven per cent, yet it stands third in the rate of return on investment ranking. By analysing income on sales and turnover figures for competitive companies, it can be found that, although "X" Company's income on sales is the same as that of company F and even better than that of company E, its turnover is much lower. By improving its turnover, "X" Company will be able to raise its rate of return on investment. More intensive sales effort is indicated; increase in sales may lead to lower costs through better utilization of existing facilities. Detailed analysis of operations in terms of rate of return may help to uncover ways of improving performance.

Comparison with well-managed companies. Finally, "X" Company can be compared with the well-managed companies,
not necessarily in the same industry. For the purposes of illustration, six firms were selected from the 500 largest U.S. Industrial Corporations appearing in the Fortune Directory in 1959.

### TABLE VII.

**Comparison with well-managed companies.**

<table>
<thead>
<tr>
<th>Company</th>
<th>Rate of Return on Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Du Pont (E.I.) de Nemours</td>
<td>12.16</td>
</tr>
<tr>
<td>Eastman Kodak</td>
<td>12.04</td>
</tr>
<tr>
<td>Standard Oil of California</td>
<td>10.51</td>
</tr>
<tr>
<td>General Electric</td>
<td>10.00</td>
</tr>
<tr>
<td>General Motors</td>
<td>8.71</td>
</tr>
<tr>
<td>International Paper</td>
<td>8.07</td>
</tr>
<tr>
<td>&quot;X&quot; Company</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Competitive companies shown in Table V, companies A, B, C, D, E, and F, show rates of return from eight per cent to fourteen per cent; this compares favourably with the rates of return of the best managed companies. It can be concluded that "X" Company is engaged in an industry which can produce a return on investment equivalent to those produced by outstanding management of companies in Table VII.

With these basic data established, "X" Company is in a position of evaluating its performance trend against

past experience, competition, and the record of the selected group of well-managed companies.

This initial diagnosis must be followed through by examining divisional performance, plant performance, product performance, and so on, looking for areas of strengths and weaknesses.

Appraisal of divisional performance. Since it is not possible to establish the "right" rate of return and because it is usually not possible to obtain relevant data on performance of similar divisions in other companies, comparisons of current divisional performance must be limited to a historical review of past performance, i.e., performance of other divisions within the company, and to the performance of the company as a whole.

The analysis suggested in the previous paragraph can be also undertaken in appraising divisional performance. It must be, however, born in mind that certain conditions, enumerated earlier in Chapter IV, must be met if the rate of return on investment is to reflect the performance of a divisional manager. In describing Armstrong Cork Company experience, Frederick J. Muth stresses the importance of divisional manager's independence:

The company is decentralized to the divisional level, from which point it is highly centralized, recognizing that responsibility for return on
divisional investment is delegated to the divisional manager. The divisional manager directs the production and distribution of the products within his division and does not expect interference from top management beyond the point of common counselling in decisions as to both manufacturing and sales matters unless they conflict with over-all company planning. This proper delegation of profit responsibility is often difficult for top management groups to achieve, but it is a 'must' under the return-on-investment theory.¹

If this is not done, then the top management is evaluating itself. In appraising divisional performance, allowance must be made for uncontrollable factors; as mentioned before, these are often inextricably intertwined with factors over which the division manager has control and thereby obscure evaluation.

Of necessity, the divisional standard must be a relative measure. Past experience and company expectations should serve as guides in setting standards for division managers. To be effective, standards must be known and related to some kind of an incentive system.

CHAPTER VIII

SPECIAL PROBLEMS OF THE RATE OF RETURN ON INVESTMENT

In the following paragraphs some of the problems not covered in previous chapters are touched upon and the limitations of the rate of return summarized. The problems concern the use of rate of return on investment in appraising divisional performance, namely, establishment of transfer prices, leasing of facilities, and investment decisions made at division level.

I ESTABLISHMENT OF TRANSFER PRICES

General background. When divisions are evaluated in terms of the return on investment and transfer products from one division to another, it is important that value added be reflected in transfer prices, otherwise distortion of divisional performance will result. There are a number of systems which can be used to establish the price. The price may be negotiated by the division managers, it may be based on market, or on cost plus a percentage return on investment, or a combination of all these methods. Whatever method is used, the divisional manager should not be compelled to use any method which will detrimentally affect his rate of return on investment.

From the point of maximizing company's profit, the only transfers that should be made are those which increase the profit of the company. The division manager should not
be able to increase his profit at the expense of overall profitability. One division should not be favoured at the expense of another. Intra-company price discrimination is not good business; such measures are bound to be arbitrary and authoritarian and provide a poor basis for appraising divisional performance, obscure profits, and divert efforts into uneconomic channels. The divisional objectives should be identical with the interests of the company as a whole; at the same time, the division manager's autonomy must be preserved, otherwise the evaluation of his performance in terms of the rate of return on investment loses significance.

Negotiated transfer prices. Joel Dean feels that the best way to achieve the identity of purpose and objectives between divisions and the company is to adhere to the following principles:

(1) Prices of all transfers in and out of a profit center should be determined by negotiation between buyers and sellers.

(2) Negotiators should have access to full data on alternative sources and markets and to public and private information about market prices.

(3) Buyers and sellers should be completely free to deal outside the company.

Under these conditions top management can delegate authority to division managers without undue fear because the division managers' profit goals are the same as those of

---
the top management. The buying division will not buy at higher prices than the market, and the selling division will not sell for less than the market. In seeking to maximize its own profits, the division will also maximize the profits of the entire company.

Although theoretically sound, Dean's proposition may be, in practice, difficult to implement and accept. The access to public and private information about market prices is not always available. But even if market prices could be obtained, they would not be the same as the prices emerging in the case where large transfers, instead of being traded inside the company, were thrown on the market. This drawback, however, is remedied by negotiations. But here again it may be the skilled bargaining ability rather than economic feasibility of a transaction that will prevail.

Unfettered selfishness of the division managers may, at times, be short-sighted by foregoing long-run advantages and concentrating on short-term results. Some divisions may prove to be unprofitable at the moment, but promise rich rewards in the future. Elimination of such divisions may result in injuring the prospects of survival for the company. Therefore, some interference and direction from the top management may be advisable. Nevertheless, negotiations over prices have the advantage of avoiding arbitrariness and creating agreement among executives.

**Transfers at cost.** Transfers at cost are not conducive to agreement; friction is likely to develop between
divisional managers using costs in intra-company transfer pricing. The method sounds simple, but it is extremely difficult to implement without some authoritarian direction from above. The word "cost", though simple, stands for a set of complex ideas. For example, in a division producing several products at different costs, the question is which costs are the most appropriate to use. Should the transfers be at cost on the low-cost line, at cost on the high-cost line, at an average cost of all products or a cost-plus figure? Should it be at standard cost, or an actual cost? Should overhead be included or not? This paper will not try to answer all these questions. No one cost method meets the requirements of the rate of return on investment measure.

There are various degrees of arbitrariness in all cost methods. In addition, when many divisions handle products in succession, transfers at cost do not provide any profit to the inside selling division -- all the profit is taken up by the division selling to the outside market. Also operating management may overlook profitable changes in methods or product flows because the inefficiencies of one division are covered up by the low cost of more efficient divisions that worked on the product in earlier stages.

Transfers at cost plus a return on investment. In the cost plus a return on investment transfer pricing all the difficulties of transfers at cost are also present, with some more problems added.
It is hard for the divisions to agree on the rate of return on investment, especially in the case of divisions with a different asset mix, i.e., assets purchased at various times and price levels. The main advantage of this method is that the division manager is forced to think in terms of the return on investment. However, divisions nearest to the final market, if there is a succession of transfers, might find it unprofitable to make sales that would bring less revenue than their costs, even though the company as a whole may profit by increased sales. The weaknesses of the cost plus a return on investment method cumulate; their impact falls on the division which deals with the external market. The method is bound to be arbitrary.

**Transfers at market prices.** Transfers at market prices, though better than transfers at cost or at cost plus a rate of return on investment method, have a number of disadvantages. Published market prices may not be the best guide, because they might be just nominal price quotations or inadequate as to quality, timing, and location of products. If the flow of goods traded outside the company is smaller in comparison with intra-company transactions, the market does not offer a real alternative. Also, if dealings with outside market are not permitted, the transfers become authoritarian. This limits the utility of the rate of return on investment in performance evaluation.

**Conclusion.** The conclusion seems to be that competitively negotiated transfer prices have the least number of disadvantages and, therefore, are the best. The compet-
itively negotiated transfer pricing preserves independence of operating divisions and presents a meaningful measure of economic performance. The system eliminates unprofitable divisions by means of division buyers and sellers purchasing or selling outside the company. Competition to make the best profit showing encourages hard-headed negotiation; and the promotion of mutual economic interests leads, as always, to co-operation.

Negotiated transfer prices can be used irrespective of whether there is a market price or not. On the other hand, transfers at market prices can be utilized only if market quotations can be obtained.

Other methods for setting transfer prices are inadequate. They keep many losses hidden and may have a negative value in the making of managerial decisions.

II LEASING OF FACILITIES

Divisional performance may be improved by selling and leasing the facilities used by the division, but, at the same time, this may result in a lower rate of return for the company as a whole. This can happen if the division's rate of return is higher than the lessor's interest and profit included in the rent, but, at the same time, the company's cost of capital is lower than the lessor's capital charges.

Under these circumstances, the manager can improve
his return on investment by reducing his investment base by greater percentage than his income. From the company's point of view, this is unprofitable; its cost of capital is lower than the interest charged in rentals.

The conflict can be avoided by including a capitalized value of the leased facilities in the division's investment base. The conflict arises, mainly, because on the divisional level, the operating activities are separated from the financial management, i.e., source of capital, and because leasing affects the company's credit. The problem can be partially solved by charging divisions with the company's cost of capital and evaluating performance in terms of contribution income. It seems reasonable, however, to expect that top management will want to retain control of leasing, especially of major leases.

III INVESTMENT DECISIONS AT DIVISION LEVEL

If the divisional operating rate of return is higher than the projected rate of return on contemplated investment, the division manager will not make the decision to invest. Various divisions may have different rates of return; one may have 20 per cent, the other 30 per cent return on investment; these rates of return will serve as minimum acceptable rates in considering various investments. For a division earning 30 per cent rate of return, any investment

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1 For further discussion see William Rotch, "Return on Investment as a Measure of Performance" (Unpublished Doctor's dissertation, Harvard University, 1958), Appendix.
whose expected rate of return is lower than 30 per cent will be rejected. Similarly with a division earning 20 per cent rate of return -- the expected return of 19 per cent on new investment will lower the overall divisional rate of return and will, therefore, not be accepted. If the company's rate of return is 25 per cent, a new investment with the expected return of, say, 23 per cent is likely to be accepted by the division with the cut-off rate of 20 per cent, but it is probably not going to be accepted by the top management. The problem is more serious with a high return division; investments acceptable to the company are likely to be rejected by it.

The conflict results from differences in the cost of capital between divisions and the company. The rate of return on divisional investment constitutes the cost of capital of the division. The conflict can be partially solved by reviewing investment decisions contemplated by the division manager or by charging the division with the company's cost of capital based on the divisional total investment. In the latter case, the performance is measured by total income after the interest charge. This, however, ceases to be a rate of return on investment measure.

LIMITATIONS OF THE RATE OF RETURN ON INVESTMENT IN EVALUATING PERFORMANCE

Managerial performance is the result of many factors. Some of them were enumerated in Chapter I. Income was
assumed to be the primary goal of business activity and the rate of return on investment, though reflecting managerial performance in profit terms, may not reflect managerial performance in terms of the achievement of other business objectives.

But even the achievement of profit goal is not measured ideally by the rate of return on investment. First of all, though theoretical definition of income may be advanced, measurement of income in practice is an immense proposition. Existence of a multiplicity of accounting methods, each producing different income figures, testifies to the magnitude of the problem. Secondly, definition of the investment base is fraught with many difficulties, mainly, on account of impossibility of ideal matching of cost and revenue and, also, because of the problem of valuation of assets.

Very important in this connection is the problem of price level fluctuations. After a period of inflation, long-life property is a mixture of assets acquired at substantially different price levels. Divisions with an older asset mix will have a lower historical cost investment base than younger divisions and also lower depreciation charges. This introduces some distortions into comparison between divisions and interperiod comparisons for a single division. Comparisons between companies are similarly distorted.

Indexes of price level changes can be used to restate asset values and depreciation charges in dollars of comparable size, but the value of this step is open to question.
It was suggested that this problem can be avoided, to a certain extent, by adjusting managerial performance standards to individual situations and by taking price level changes into account. This involves judgment and, therefore, lessens the usefulness of evaluation in terms of the rate of return.

The question of standards is crucial in evaluations. An ideal standard must point to what a rate of return on investment should be under certain conditions. Standards used at the present time are, mainly, a review of past history; and past performance is not necessarily the best possible performance that both the top and the division management should follow.
CONCLUSIONS OF THE STUDY

The primary purpose of the rate of return on investment is to guide divisional managers in their performance and to help top management in evaluating its own and the divisional performance.

In evaluating performance, the top management must consider and distinguish between the performance over which divisional managers have control and that attributable to other uncontrollable factors. Next, the top management must establish standards. These are, usually, determined by comparisons with other companies and divisions in the same industry. The standards must be considered only as guideposts and not as some immutable truths. Managerial judgment must always be used.

Performance standards must be made known to those concerned so that they know what to maximize.

Despite the limitations listed in the preceding chapter, the rate of return on investment is considered to be a useful method in evaluating managerial performance. It does not eliminate judgment completely from evaluation, but it does limit the area of judgment and is, therefore, more objective and all-embracing than anything that has been used hitherto. In addition to income and sales, the rate of return measure includes investment. It measures the effectiveness with which
management handled the resources entrusted to its care and points to the areas where the performance can be improved. The psychological influence of the rate of return on investment, especially when it is coupled with proper incentives, should not be overlooked as it may result in an improved performance.

On the company level, the rate of return on investment can be used in evaluating top management, provided uncontrollable influences are eliminated from performance. On the divisional level, the rate of return does not adequately reflect managerial performance, unless certain conditions are fulfilled, i.e., the divisional boundaries are properly marked off, transfer prices are established, contribution profits properly measured, realistic standards set, etc.

Generally, the conclusion seems to be that the rate of return on investment is a good measure to use in evaluating performance; however, special characteristics of each situation and limitations inherent in the method should always be born in mind. It must be remembered that the rate of return on investment is not the single all-purpose, all-revealing figure; neither is it a precise figure. Far more research in this area is necessary than has been done hitherto to make the rate of return on investment a reliable measure of performance. It is doubtful whether a single figure can ever answer all the managerial problems. What is right for one purpose may be entirely wrong for another.

In a business enterprise which is a complicated organism operating in a complex world, the executives'
search for a magic formula which eliminates judgment must be doomed to failure.

The rate of return on investment, although simple to understand, has its limitations; these were pointed out and discussed in this paper. Nevertheless, the rate of return measure can be of great help to management in evaluating performance and decision making. It is an approximate measure, but it has several important advantages — (1) inclusion and consideration of the most important figures in business, sales, investment, and income, and (2) the speed with which it can be produced. These are of great significance to management whose function and art must remain making irreversible decisions on the basis of the best information available.
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APPENDIX

Three companies in each of the two chosen Canadian industries are compared in terms of the rate of return on investment on the intra-industry basis.

The industries chosen are:

(1) Integrated Oil Industry, and

(2) Paper and Pulp Industry.

Definitions of income and investment used in the comparisons are as advanced in this paper. Income is defined as the net income of the company, whether recurring or not, but before interest on funded debt and income taxes. Investment is defined as the total assets available after depreciation allowances and other valuation accounts.

For the purpose of comparison, the average of the investment at the beginning and at the end of the period is taken.

The figures for net sales, net income, and average assets are shown in thousands. Small discrepancies in the rate of return figures may arise due to the rounding off of the per cent on sales and turnover ratio.

The companies are analyzed in terms of the rate of return on investment formula:

\[
\frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Investment}} = \text{Per cent return on investment}
\]

The principal sources of data used in computing the rates of return on investment in this appendix were published financial statements of the companies in their annual reports to shareholders and Moody's Industrial Reports.
I ANALYSIS OF RATES OF RETURN ON INVESTMENT IN PETROLEUM, PRODUCING, REFINING, TRANSPORTING, AND DISTRIBUTING COMPANIES

The following companies are analyzed in terms of the rate on investment formula:

(1) Canadian Oil Companies Limited
(2) Texaco Canada Limited
(3) British American Oil Company Limited.

Table VIII, page 110, Table IX, page 111, and Table X, page 112, analyze the performance of companies over time, for the period of five years from 1954 to 1958 inclusive. Table XI, page 113, compares inter-company performance for 1958.

**Canadian Oil Companies Limited.** The performance of Canadian Oil Companies Limited, as shown in Table VIII, page 110, is declining in terms of the rate of return on investment. The fluctuating income, as a per cent of sales, and the worsening of turnover ratio are contributing factors. Income, as a per cent of sales, increased from 8.38 per cent in 1954 to 11.22 per cent in 1956 and dropped to 7.85 per cent in 1958. On the other hand, the turnover ratio declined from .94 in 1954 to .76 in 1958. As a consequence, the return on investment decreased from 7.88 per cent in 1954 to 5.97 per cent in 1958.

Comparison with competition, Table XI on page 113, shows that the company's performance can be improved by increasing the asset turnover, i.e., increase in sales and more
effective utilization of resources, and an increase in sales margin.

**Texaco Canada Limited.** The analysis of the rate of return on investment of Texaco Canada Limited is shown in Table IX, page 111. The company's rate of return on investment is deteriorating. There is a marked decline in the company's income as a per cent of sales; the decline is from 14.73 per cent in 1954 to 9.88 per cent in 1958. The company's turnover ratio also dropped in the same period from 1.13 in 1954 to 1.09 in 1958. Nevertheless, of the three companies investigated in the integrated oil industry, Texaco Canada Limited ranks first in terms of the rate of return formula: income as a per cent of sales and turnover (See Table XI, page 113.) This accounts for the company's higher return on investment than in the case of the other two companies. However, measures must be taken to arrest and reverse the downward trend in the rate of return on investment. Detailed study of company operation is indicated.

**British American Oil Company Limited.** As shown in Table X, page 112, the performance of British American Oil Company Limited is characterized by rapidly decreasing ratio of income to sales and turnover of assets. In fact, of the three companies considered here, British American Oil Company Limited presents the poorest picture of performance. (See Table XI, page 113.) Improvements in both ratios, income to sales and sales to assets, are needed to bring the company to par with the other two companies.
Conclusions. More information is needed about specific characteristics of each company in order to arrive at sound conclusions about the individual company performance. Examination of Tables, VIII, IX, and X, however, indicates that the three companies are faced with the same problem, i.e., a declining rate of return on investment. It may be, therefore, that some external and uncontrollable forces are at work in all three cases. The study of external forces, however, is beyond the scope of this paper.
<table>
<thead>
<tr>
<th>Year</th>
<th>Net sales ($000)</th>
<th>Net income ($000)</th>
<th>Average assets ($000)</th>
<th>Income as a per cent of sales</th>
<th>Turnover</th>
<th>Per cent return on investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>58,518</td>
<td>4,906</td>
<td>62,479</td>
<td>8.38</td>
<td>.94</td>
<td>7.88</td>
</tr>
<tr>
<td>1955</td>
<td>66,197</td>
<td>6,273</td>
<td>76,869</td>
<td>9.47</td>
<td>.86</td>
<td>8.14</td>
</tr>
<tr>
<td>1956</td>
<td>76,171</td>
<td>8,554</td>
<td>95,720</td>
<td>11.22</td>
<td>.80</td>
<td>9.98</td>
</tr>
<tr>
<td>1957</td>
<td>84,318</td>
<td>8,379</td>
<td>104,731</td>
<td>9.93</td>
<td>.80</td>
<td>7.94</td>
</tr>
<tr>
<td>1958</td>
<td>85,928</td>
<td>6,748</td>
<td>113,695</td>
<td>7.85</td>
<td>.76</td>
<td>5.97</td>
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</tbody>
</table>
# TABLE IX

RATE OF RETURN ANALYSIS
TEXACO CANADA LIMITED

<table>
<thead>
<tr>
<th>Year</th>
<th>Net sales ($000)</th>
<th>Net income ($000)</th>
<th>Average assets ($000)</th>
<th>Income as a per cent of sales</th>
<th>Turn-over</th>
<th>Per cent return on investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>101,275</td>
<td>14,921</td>
<td>89,411</td>
<td>14.73</td>
<td>1.13</td>
<td>16.64</td>
</tr>
<tr>
<td>1955</td>
<td>115,121</td>
<td>18,114</td>
<td>95,615</td>
<td>15.73</td>
<td>1.20</td>
<td>18.88</td>
</tr>
<tr>
<td>1956</td>
<td>142,874</td>
<td>24,226</td>
<td>122,745</td>
<td>16.95</td>
<td>1.16</td>
<td>19.66</td>
</tr>
<tr>
<td>1957</td>
<td>183,467</td>
<td>26,416</td>
<td>154,010</td>
<td>14.39</td>
<td>1.19</td>
<td>17.12</td>
</tr>
<tr>
<td>1958</td>
<td>175,308</td>
<td>17,336</td>
<td>161,342</td>
<td>9.88</td>
<td>1.09</td>
<td>10.77</td>
</tr>
<tr>
<td>Year</td>
<td>Net sales ($000)</td>
<td>Net income ($000)</td>
<td>Average assets ($000)</td>
<td>Income as a per cent of sales</td>
<td>Turnover</td>
<td>Per cent return on investment</td>
</tr>
<tr>
<td>------</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>1954</td>
<td>242,713</td>
<td>30,095</td>
<td>231,840</td>
<td>12.39</td>
<td>1.05</td>
<td>13.01</td>
</tr>
<tr>
<td>1955</td>
<td>268,556</td>
<td>34,479</td>
<td>253,346</td>
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<td>1.06</td>
<td>13.60</td>
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<tr>
<td>1956</td>
<td>278,049</td>
<td>31,068</td>
<td>261,253</td>
<td>11.17</td>
<td>0.86</td>
<td>9.61</td>
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<tr>
<td>1957</td>
<td>308,290</td>
<td>35,759</td>
<td>402,872</td>
<td>11.59</td>
<td>0.76</td>
<td>8.81</td>
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<tr>
<td>1958</td>
<td>318,502</td>
<td>24,381</td>
<td>469,087</td>
<td>7.65</td>
<td>0.68</td>
<td>5.20</td>
</tr>
<tr>
<td>Company</td>
<td>Income as a per cent of sales</td>
<td>Turn-over</td>
<td>Per cent return on investment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Texaco Canada Ltd.,</td>
<td>9.88</td>
<td>1.09</td>
<td>10.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Table IX)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Canadian Oil Companies Ltd.,</td>
<td>7.85</td>
<td>.76</td>
<td>5.97</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Table VIII)</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>British American Oil Company Ltd.,</td>
<td>7.65</td>
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<td>5.20</td>
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<tr>
<td>(Table X)</td>
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</tr>
</tbody>
</table>
II ANALYSIS OF RATES OF RETURN ON INVESTMENT
IN PAPER AND PULP COMPANIES

The analysis of the rates of return on investment is made in the following three companies:

(1) Abitibi Power and Paper Company Limited
(2) St Lawrence Corporation Limited


Abitibi Power and Paper Company Limited. Table XII, page 117, shows that the company's performance in the last two years, 1957 and 1958, deteriorated appreciably, both in terms of income, as a per cent of sales, and turnover ratio. As a consequence, the return on investment dropped from 18.48 per cent in 1956 to 14.43 per cent in 1957 and to a low of 11.70 per cent in 1958. It seems that both net sales and net income did not keep up pace with the asset expansion.

Table XV, page 120, however, shows that the company takes the first place in income, as a per cent of sales, and the second place in turnover ratio ranking. This puts the company on the top of the list as far as the rate of return on investment is concerned. Nevertheless, improvements in
both ratios are possible through a detailed examination of
the company's operations and concentration on areas of weak-
ness, not forgetting, at the same time, to exploit fully the
company's strong points.

St Lawrence Corporation Limited. Table XIII, page
118, shows a deterioration in the performance of St Lawrence
Corporation Limited. The company's income, as a per cent of
sales, decreased from a high of 24.15 per cent in 1956 to a
low of 17.28 per cent in 1958. The company's turnover ratio
dropped from .80 in 1956 to a low of .62 in 1958. Therefore,
the return on investment declined from a high of 19.32 per
cent in 1956 to a low of 10.71 per cent in 1958.

Table XV, page 120, shows that of the three companies
investigated, St Lawrence Corporation Limited is second in its
income, as a per cent of sales, but last in its turnover ratio
ranking. Steps, similar to those indicated in the case of
Abitibi Power and Pulp Company Limited, must be taken to arrest
the unfavourable trend in the company's return on investment.

Anglo-Canadian Pulp and Paper Mills Limited. The
performance of Anglo-Canadian Pulp and Paper Mills Limited,
as shown in Table XIV; page 119, declined from 1956 to 1957
and improved in 1958; income, as a per cent of sales, dropped
from 21.20 per cent to 13.46 per cent and increased to 16.06
per cent in the years 1956, 1957, and 1958, respectively. The
turnover ratio, on the other hand, stayed during the whole
period remarkably unchanged, thus reducing the shock of wide
fluctuation in income.

In inter-company comparison, the company has the highest turnover ratio but the lowest income as a per cent of sales. (See Table XV, page 120.) The interaction of the two forces puts the company in the second place in the return on investment ranking. Improvements in sales are necessary to better the company's profitability.

Conclusions. In this industry as in the oil industry discussed previously, the knowledge of the special conditions surrounding the industry and the companies in question is necessary to make proper evaluations of performance and advise on remedial steps. However, the fact that the three companies suffered a decline in their rates of return indicates the existence of some external and uncontrollable economic forces which exert an important influence on the performance of the three companies.
### TABLE XII

**RATE OF RETURN ANALYSES**  
**ABITIBI POWER AND PAPER COMPANY LIMITED**

<table>
<thead>
<tr>
<th>Year</th>
<th>Net sales ($000)</th>
<th>Net income ($000)</th>
<th>Average assets ($000)</th>
<th>Income as a per cent of sales</th>
<th>Turn-over</th>
<th>Per cent return on investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954</td>
<td>113,998</td>
<td>24,446</td>
<td>155,196</td>
<td>21.44</td>
<td>.73</td>
<td>15.65</td>
</tr>
<tr>
<td>1955</td>
<td>123,173</td>
<td>29,644</td>
<td>160,087</td>
<td>24.06</td>
<td>.76</td>
<td>18.28</td>
</tr>
<tr>
<td>1956</td>
<td>132,498</td>
<td>32,227</td>
<td>173,999</td>
<td>24.32</td>
<td>.76</td>
<td>18.48</td>
</tr>
<tr>
<td>1957</td>
<td>128,199</td>
<td>27,204</td>
<td>188,437</td>
<td>21.22</td>
<td>.68</td>
<td>14.43</td>
</tr>
<tr>
<td>1958</td>
<td>123,386</td>
<td>22,211</td>
<td>190,237</td>
<td>18.00</td>
<td>.65</td>
<td>11.70</td>
</tr>
<tr>
<td>Year</td>
<td>Net sales ($000)</td>
<td>Net income ($000)</td>
<td>Average assets ($000)</td>
<td>Income as a per cent of sales</td>
<td>Turnover</td>
<td>Per cent return on investment</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>1954</td>
<td>59,358</td>
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<td>78,434</td>
<td>20.36</td>
<td>.76</td>
<td>15.47</td>
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<tr>
<td>1955</td>
<td>70,727</td>
<td>15,344</td>
<td>84,756</td>
<td>21.69</td>
<td>.83</td>
<td>18.00</td>
</tr>
<tr>
<td>1956</td>
<td>78,363</td>
<td>18,929</td>
<td>98,388</td>
<td>24.15</td>
<td>.80</td>
<td>19.32</td>
</tr>
<tr>
<td>1957</td>
<td>75,696</td>
<td>15,884</td>
<td>114,125</td>
<td>20.98</td>
<td>.68</td>
<td>14.27</td>
</tr>
<tr>
<td>1958</td>
<td>68,958</td>
<td>11,920</td>
<td>110,380</td>
<td>17.28</td>
<td>.62</td>
<td>10.71</td>
</tr>
<tr>
<td>Year</td>
<td>Net sales ($000)</td>
<td>Net income ($000)</td>
<td>Average assets ($000)</td>
<td>Income as a per cent of sales</td>
<td>Turnover</td>
<td>Per cent return on investment</td>
</tr>
<tr>
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<td>-------------------------------</td>
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<tr>
<td>1954</td>
<td>43,373</td>
<td>9,763</td>
<td>57,447</td>
<td>22:51</td>
<td>.75</td>
<td>16.88</td>
</tr>
<tr>
<td>1955</td>
<td>46,501</td>
<td>10,965</td>
<td>63,850</td>
<td>23.58</td>
<td>.73</td>
<td>17.21</td>
</tr>
<tr>
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<td>49,337</td>
<td>10,462</td>
<td>68,418</td>
<td>21.20</td>
<td>.72</td>
<td>15.26</td>
</tr>
<tr>
<td>1957</td>
<td>50,994</td>
<td>6,865</td>
<td>72,985</td>
<td>13.46</td>
<td>.70</td>
<td>9.42</td>
</tr>
<tr>
<td>1958</td>
<td>55,808</td>
<td>8,966</td>
<td>77,585</td>
<td>16.06</td>
<td>.72</td>
<td>11.56</td>
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TABLE XV

RATE OF RETURN ANALYSIS
INTER-COMPANY COMPARISON OF RATES OF RETURN ON INVESTMENT FOR 1958

<table>
<thead>
<tr>
<th>Company</th>
<th>Income as a per cent of sales</th>
<th>Turn-over</th>
<th>Per cent return on investment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abitibi Power and Paper Company Ltd.,</td>
<td>18.00</td>
<td>.65</td>
<td>11.70</td>
</tr>
<tr>
<td>(Table XII)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Anglo-Canadian Pulp and Paper Mills, Ltd.,</td>
<td>16.06</td>
<td>.72</td>
<td>11.56</td>
</tr>
<tr>
<td>(Table XIV)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>St Lawrence Corporation Ltd.,</td>
<td>17.28</td>
<td>.62</td>
<td>10.71</td>
</tr>
<tr>
<td>(Table XIII)</td>
<td></td>
<td></td>
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</tbody>
</table>