

THE ROLE OF PROFITS IN MOTIVATING FIXED CAPITAL EXPENDITURES
BY PRIVATE BUSINESS FIRMS IN THE UNITED STATES

by 45

Albert Leo Winkler

B.A., Kansas State University, 1967

A MASTER'S REPORT

submitted in partial fulfillment of the
requirements for the degree

MASTER OF ARTS

Department of Economics

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1969

Approved by:


Major Professor

LD
2668
R4
1969
W55

PREFACE

The purpose of this report is to survey the studies of profit and its relationship to investment in plant and equipment. It is because such investment is so unstable and yet so crucial to employment and economic growth that more knowledge of its determination is considered desirable.

In an attempt to get a more complete analysis of the topic, consideration of individual studies will be limited largely to reviewing their conclusions where appropriate. Because industrial growth and the predominance of the corporate structure in industry today have greatly changed the methods of making business investment decisions, this study will concentrate on the relatively recent writings on investment decisions. Some of the later work in this area has been in the fields of finance and business.

Profits are only realized on business which has been completed; all the effects of known profits are from experienced profits. It will therefore be assumed for the purposes of this paper that if profits affect investment directly or indirectly, it is past profits which do so, present profits being unknown. Profits will be used to mean known profits, which are all in a strict sense past profits.

The expectation of profits, or the marginal efficiency of capital, to use Keynes' definition, will not be discussed

directly because that is a topic deserving of a more specialized and lengthy study of its own.

TABLE OF CONTENTS

	Page
PREFACE	ii
CHAPTER	
I INTRODUCTION.	1
II THE MEANING OF PROFIT IN AN ECONOMIC SENSE (summary).	4
III THE ROLE OF PROFITS IN MOTIVATING FIXED INVESTMENT.	15
Relationship of Profits to Expected Profits	17
Profit Relationship to Sales.	21
Internal and External Funds and their Relation to Fluctuations in Investment	27
The Relation of Profits to Financial Risk	34
IV THE DYNAMIC RELATIONSHIP BETWEEN PROFIT AND INVESTMENT	38
V CONCLUDING REMARKS.	42
BIBLIOGRAPHY.	45

CHAPTER I

INTRODUCTION

"There is one end, finally, to business activity, and this is already decided upon before the business is founded; that is, to make money."¹

These words of Frank H. Knight imply that it is profit expectations which motivate business investment. In studying how much, when, and where a relationship exists between profit and investment a definition of the terms will be helpful. It has been said that the solution to a problem is usually evident in an understanding of the problem itself.

In Webster's New Collegiate Dictionary investment is defined as the "act of investing, or state of being invested; . . .", i.e., the term can be used either as a dynamic concept denoting change or as a static idea meaning without change. He further describes the term as "the investing of money or capital for income or profit; also, the sum invested or the property purchased." This distinction between the dynamic and static usage of the word is critical to its relationship with profit, which also has different effects depending on its state of change. Webster's interpretation of investment change appears sufficient for this paper, but a working knowledge of

¹Frank H. Knight, Risk, Uncertainty and Profit, (Boston: Houghton Mifflin Company, 1921), p. 292.

profit in an economic sense is much more involved.

A chapter will be devoted to a summary of the theory of profit, which Webster describes as the "excess of returns over expenditure. . . during a given period of time." Profits can be either gross or net, he says, depending on whether only direct expenditures are deducted or whether all forms of expense or outlay are considered. He also says profit is the "share of the employing classes in the distribution of the products of industry, as distinct from wages and rent."²

The economists' definition of profit varies somewhat from the accounting interpretation used by Webster. In addition to subtracting from revenue the currently incurred or variable costs and the preincurred or fixed costs economists also consider the relevant opportunity costs of equity capital inputs.³ The receiver of profits is considered an entrepreneur by economists, rather than an employer, because of his enterprising role in accepting uncertainty in the hope of receiving a profit.

Uncertainty is distinguished from risk, risk being considered measurable and hence its return not deserving of the title profit. Competition is theoretically capable of eliminating profit in the long run, but Knight says, ". . . in actual society, cost and value only tend to equality; it is only by an occasional accident that they are precisely equal in fact;

²Wages and rent are italicized in Webster's dictionary.

³D.M. Lamberton, The Theory of Profit, (Oxford: Basil Blackwell and Mott, Ltd., 1965), pp. 147-8.

they are usually separated by a margin of "profit", positive or negative."⁴

The possible effect of profits on investment decisions is apparently determined not only by the amount of profits but also by their rate of change and the timing of such change. That is, the fluctuations of profit must be considered in determining its effect and relation to uncertainty and expectations. It seems reasonable to consider first the effects of such aspects of profit on original business investment, and then to look at their relationships to fixed capital expansion by the firm. This will be done in chapter three.

In discussing the behavior of profits in motivating expansion of the firm, factors which cause profits to indirectly influence investment will be considered. Profits not only have external effects on expectations of future profit and on external sources of funds, but also are influenced by or influence certain internal factors, which help determine investment in the firm. Retained earnings and cash flows, liquidity and debt (financial risk), and wealth and capital stock can each be influenced by profits, and each can in turn be considerations in investment decisions. Sales orders, or the ratio of demand to capacity, have more recently been considered to be prime determinants of fixed investment growth, but even here profit is considered a proxy variable, i.e., positive profit is assumed to be implied by the sales orders or demand.

⁴Knight, pp. 18,19.

CHAPTER II

THE MEANING OF PROFIT IN AN ECONOMIC SENSE

J.R. Hicks said of Knights; Risk, Uncertainty and Profit (1921):

. . . (it) has laid securely the first foundation on which any future theory of profits must rest-the dependence of profits on uncertainty. That is a service whose importance can hardly be over-estimated. It commits us finally to one and only one of the various roads that earlier economists had explored. It puts us on the right track.⁵

Knight says there is a "tendency" for profits or losses to be eliminated by competition, that is to ". . . bring the value of economic goods to equality with their cost."⁶ This is known as the "zero profit" condition, which exists largely in theory only. Hence Knight indicates that the problem of profit is one feature of the contrast between perfect and actual competition.

The key to the previous confusion on profit theories lies in the ambiguities of risk or uncertainty, according to Knight. He believed that the familiar notion of risk was different from uncertainty. Risk, he believed, was measurable and therefore not an uncertainty in a strict sense.

In discussing theories of profit, Knight said, "It is, of course, impossible to take up even the important theorists

⁵J.R. Hicks, "The Theory of Uncertainty and Profit", Economica, II (May, 1931), p. 170, taken from Lamberton, p. 22.

⁶Knight, p. 18.

in all countries and summarize their views, while any brief treatment by schools or groups would be misleading rather than helpful."⁷ A common procedure at that time was to treat profit as a special case of monopoly gain. General Francis A. Walker was credited with the first notable American work on profit theory. Walker emphasized the entrepreneur or "captain of industry" as the profit earner.⁸

Then the center of interest on profit moved from Walker's theory to the "dynamic theory" of J.B. Clark and the "risk theory" of F.B. Hawley. The dynamic theory is a correlate of the theory of distribution in the profitless "static state," which is the state of "natural" adjustments of Ricardo and the early classical writers, the state where the prices of goods equal the cost of producing them.⁹

According to Knight, Joseph Schumpeter pointed out that in the static state there was no clear profit to the entrepreneur for prices would then conform to the cost of production. To realize the static state five kinds of change would need to cease, namely changes: in population, in capital, in technology, in the forms of industrial establishments, and in consumer wants. "Profits are, then, the result exclusively of dynamic change. . . .thus the effect of any one dynamic change is to produce temporary profits."¹⁰

⁷Knight, p. 30.

⁸Ibid., p. 31.

⁹Ibid., pp. 32,34.

¹⁰Ibid., pp. 33,34.

In another sense, Knight attributes profit to "friction."
 "The interval between actual wages and the static standard is the result of friction; for, if competition worked without let or hindrance, pure business profit would be annihilated as fast as it could be created. . . ." ¹¹ Apparently then, one of the prerequisites for profit is the lag between discovery or invention of new techniques and the complete innovation of them. The entrepreneur acts as an innovator, who faces uncertainty.

A criticism of using changes in conditions as the explanation and cause of profit is that ". . . it overlooks the fundamental question of the difference between a change that is foreseen a reasonable time in advance and one that is unforeseen. . . ." ¹² Change cannot be the cause of profit ". . . if the law of the change is known.", says Knight. "The connection between change and profit is uncertain and always indirect. Change may cause a situation out of which profit will be made, if it brings about ignorance of the future. . . . It is this fact that change is a necessary condition of our being ignorant of the future (though ignorance need not follow from the fact of change and only to a limited extent does so) that has given rise to the error that change is the cause of profit." ¹³

Profit may occur even without the "dynamic" or progressive changes given by Professor Clark. Conditions subject to

¹¹T.N. Carver, The Distribution of Wealth, 1900, p. 410, cited in Knight, p. 34.

¹²Knight, p. 34.

¹³Ibid., p. 37.

unpredictable fluctuations may also create expectations of change which result in the same ignorance of the future and inaccuracies in the competitive adjustment which result in profit. Hence ". . .the failure of an anticipated change to occur is the same in effect as the occurrence of an unanticipated one. It is not dynamic change, nor any change, as such, which causes profit, but the divergence of actual conditions from those which have been expected and on the basis of which business arrangements have been made."¹⁴

Professor Clark gave little attention to the effect of risk, saying ". . .the greater part of them arise from dynamic causes."¹⁵ He also believed that only the capitalist could accept risk or be rewarded by it. But F.B. Hawley described risk taking as the essential function of the entrepreneur, or "enterpriser." "Enterprise is the only really productive factor, strictly speaking, land, labor, and capital being relegated to the position of means of production,"¹⁶ said Hawley, who agreed with Clark that profit was a residual income. But Hawley insisted that residual income and uncertain income are interchangeable concepts.¹⁷

Hawley admits that the entrepreneur may reduce his risk by insurance in some cases, but contends that this abdicates so much of the business man's entrepreneurship, for eliminating

¹⁴Ibid., p. 38.

¹⁵Ibid., p. 39.

¹⁶Ibid., p. 40.

¹⁷Ibid., p. 42.

all risks would clearly eliminate profits. The difference between the premium and the loss is the reward of the insurer.¹⁸ Apparently these insurable risks are an example of what Knight means by measurable risks, for Knight also says, "Hawley repeatedly refers to the fact of uninsurable risk as well as to "pure luck" and to "changes that no one could have foreseen," but he fails to inquire into its meaning or to recognize its theoretical import.¹⁹ Knight further contended that Hawley failed to "develop the point and draw the consequences from the fact that the actuarial value of the risk undergone by any venturer is not known, either to himself or to his competitors." He continues:

In a sense Mr. Hawley comes still nearer to the crux of the matter in his insistence on the responsibility and risk of proprietorship as the essential attributes of entrepreneurship. The entrepreneur is the owner of all real wealth, and ownership involves risk; the coordinator "makes decisions," but it is the entrepreneur who "accepts the consequences of decisions." He admits that others than the recognized entrepreneur are subject to risk; the landlord is also a proprietor, and his land may change in value; the capitalist especially requires payment for the large risk he runs, and a part of both rent and interest is accordingly profit. A person who invests his own capital in any form of opportunity necessarily combines the two functions of capitalist and enterpriser. The same could apply to the laborer, who is also admitted to run risks.²⁰

Knight finally contends that both the Clark and the Hawley school failed to recognize the basic difference between a "determinate uncertainty or risk and an indeterminate,

¹⁸Ibid., p. 43.

¹⁹Ibid., p. 44.

²⁰Ibid., p. 44.

unmeasurable one." ". . . a known degree of uncertainty is practically no uncertainty at all, for such risks will be born [by insurance, etc.] in groups large enough to reduce the uncertainty to substantially negligible proportions" (when the technique of business organization has reached a fairly high stage of development).²¹

On the other hand Knight agrees that there is an element of truth in both the "dynamic" and the "risk" theories. Profit is bound up in economic change because change is the condition of uncertainty, and profit is the result of a unique kind of risk, that which is not measurable.²² He then treats the meaning of uncertainty and the different kinds of uncertainty which need not be discussed here.

In his book on The Theory of Profit, Lamberton says "The multiplicity of definitions and related theories makes it impossible to give an outline of the "conventional" theory of profit; little more could be done than to select the work of some contributors of obvious quality or to adopt the eclectic approach which characterizes the chapter on the theory of profit in so many textbooks."²³ The historical development of the theory comprises a subtracting or stripping away of capital charges and wage elements to reach a pure profit, according to Lamberton. He compares Marshallian profit with the profit concept of recent contributions to the uncertainty theory.

²¹Ibid., p. 47.

²²Ibid., p. 48.

²³Lamberton, p. 18.

"Uncertainty has been regarded as the necessary and sufficient condition for a residual," says Lamberton, "because competitive equilibrium entails zero pure profit levels." Profit is not considered a functional return in this sense, but a forecasting error applicable to all income categories. Such profit Lamberton believes to be irrelevant to business behavior because it cannot be an objective of the firm's planning and activity, since it can be observed only as budget data is compared with realized income. "It may, however, retain significance as a means to action if the assumption of a perfectly competitive capital market is abandoned."²⁴

Market imperfections, uncertainty, and disequilibria could give rise to profits. By defining an entrepreneurial function of uncertainty-bearing or by linking innovation as the principal activity of the entrepreneur with uncertainty, disequilibria, and economic change an entrepreneurial theory may be developed.²⁵ Lamberton gives two good reasons for the "dominance of the uncertainty theory" of Knight: ". . .however the function of entrepreneurship is interpreted--organizing, adapting, innovating, or more generally decision making--it is occasioned by the basic fact of uncertainty about the future, and if profit is attributed to monopoly there is the problem that the creation and maintenance of a monopoly situation can

²⁴Ibid., p. 19.

²⁵Ibid., p. 23.

be regarded as a response to uncertainty.²⁶

Lamberton thus basically agreed with the work of Knight and praised it as the "most significant elaborate statement of the connection between profit and uncertainty." Though Lamberton mentions and discusses the works of others on the topic, he generally considers the criticisms of Knight insignificant. Others he discusses who contributed to knowledge on profit and uncertainty are: A.H. Willett, A.C. Pigou, C.O. Hardy, R.A. Gordon, J.Fred Weston, J.A. Stockfish, R.M. Davis, J.R. Hicks, K.J. Arrow, and more recently a joint work by Marschak, Makover, Tintner and others. Even this comparatively recent treatment of the subject of uncertainty does not achieve any significant advance, says Lamberton.²⁷ "Outcomes are assigned likelihoods which are not probabilities but only subjective feelings based in a vague way on a 'combination of experience, analysis, and hunch.'"²⁸ These are, however, treated as probability equivalents to permit the derivation of certainty-equivalents from postulating a preference for more definite expectations rather than for less definite expectations. Uncertainty could then be measured by standard deviation, coefficient of variation, or practical range.²⁹

²⁶Ibid., p. 46.

²⁷Ibid., p. 63.

²⁸W.J. Baumol, Economic Dynamics, second edition (New York: The Macmillan Company, 1959), p. 89, cited from Lamberton, p. 63.

²⁹Lamberton, p. 63.

G.L.S. Shackle did notable work on expectations and the theory of decision. He based his treatment of profit on Erik Lindahl's concept of income which was "a change in capitalized value of future receipts between two points in time," or "the appreciation of services, other than the next one to be realized, by virtue of the passage of time."³⁰ Shackle deleted the service from Lindahl's capitalized value and called profit realized receipts. This was expressed as the change in capital value, at a point, of the expected services over the change in time. Services expected were valued in money units of stable purchasing power to be yielded per unit time by all the concrete property he owns and by his own powers.³¹ This definition of profit can be summarized as the change in the present value of the net worth of the firm or enterprise. Having defined Shackle's profit, Lamberton said, "Income will depend upon the policy adopted, in the sense of committing the resources to a certain course of action."³²

This discussion of profit, though incomplete, is intended to help understand what role profit may play in motivating fixed investment. Even though the entrepreneur is quite unlikely to be consciously aware of the various theories of profit in regard to his decisions, he is likely to act as though he were aware of them, assuming the theories are valid.

³⁰Ibid., p. 69.

³¹Ibid., p. 70.

³²Ibid., p. 69.

That is, he behaves as the billiard player in Milton Friedman's example, shooting as though he were making the necessary calculations from formulas.³³

So in considering the empirical studies of the determination of investment, it is well to have a minimal conception of the role that profits could theoretically play. For it is quite unlikely that most of the respondents to the studies have very thorough understandings of the definitions of profit being used, or even of what really motivated them to invest. As W.J. Baumol wrote:

There is no simple method for determining the goals of the firm (or of its executives). One thing, however, is clear. Very often the last person to ask about any individual's motivation is the person himself (as the psychoanalysts have so clearly shown). In fact, it is common experience when interviewing executives to find that they will agree to every plausible goal about which they are asked. They say they want to maximize sales and also to maximize profits; that they wish, in the bargain, to minimize costs; and so on. Unfortunately, it is normally impossible to serve all of such a multiplicity of goals at once.³⁴

In his chapter "Enterprise and Profit" Knight summarizes the economists' interpretation of profit and its relation to capital:

³³Milton Friedman, "The Methodology of Positive Economics", Essays in Positive Economics (Chicago: The University of Chicago Press, 1953). p. 21.

³⁴William J. Baumol, Economic Theory and Operations Analysis, Ch. XIII. "The Firm and Its Objectives," (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1965). p. 295.

In general practice the ownership of property is necessary to the assumption of genuine responsibility, and in the typical modern business organization the responsible owner furnishes no labor services to the business, but property services only. In such a case profit in our sense of the term appears as a difference between the rate of return on the owner's investment and a competitive rate of return on investment generally. The scientific use of the term "profit" must therefore be distinguished from the various loose uses of the term in business and particularly from the net revenue of the owner; it is well to use a special expression, such as "pure profit," to distinguish the share which is accurately residual, theoretically different from the returns from routine functions, imputed by competition to the agents which earn them.³⁵

³⁵Knight, p. 309.

CHAPTER III

THE ROLE OF PROFITS IN MOTIVATING FIXED INVESTMENT

This chapter will discuss four ways in which profits may encourage fixed investment. Profits will be considered in their relationships to expected profits, to sales, to internal funds and to financial risk. Studies on these topics by economists and by other professional and businessmen will be summarized.

Fixed investment can essentially be divided into two principal phases, original and subsequent. Subsequent or secondary investment would include both replacements and additions to plant and equipment. Since the free enterprise system is considered to be profit-oriented, original fixed investment by firms in private industries is generally assumed to have profit motivations. Rationally only past profits in the relevant or a related industry could generally motivate the entrepreneur to make an original investment, for profit motivation implies expectations which, for practical purposes, must be derived from some past or present performance. And present conditions are a result of the past; also, as noted earlier, present profits are unknown. As Knight indicated, "There is one end, finally, to business activity, and this is already decided upon before the business is founded; that is to make money."³⁶

³⁶Knight, p. 292.

What has been questioned is the continued effect of profits on the replacement and additions to long-term capital outlays. If the role of profits is not constant in this dynamic function then some understanding of the instability in fixed investments may be evident in a better understanding of the role of profits in this respect, if its role changes as business conditions change. It is this instability in investment which plays a large role in substantial employment and income fluctuations.

Joan Robinson, in 1953, aptly portrayed the dynamic role of profits in investment when she said of the aim of the entrepreneur:

If we neglect the promoter, who starts a business in order to sell it to the public, and the short-lived "mushroom," who springs up to make a quick profit in a seller's market, it seems to me that the most valid simple generalization is that the aim of the entrepreneur is for the firm first to survive, and secondly to grow. To this end he must secure profit, but he must avoid action which, though profitable in the present, will damage his future position, and since this is partly bound up with reputation, his course of conduct will be much influenced by the climate of opinion in which he operates.³⁷

In other words, the role of profit in motivations is not constant.

Probably a classic pioneering work on the determinants of business investment was done by J. Tinbergen on aggregate economic activity in production and consumption of steel and

³⁷Joan Robinson, "Imperfect Competition Revisted," Economic Journal, LXIII, September, 1953, p. 582.

iron for forty years prior to WWI in the United States, Germany and France, and also in the inter-war period of about fifteen years in the United States and the United Kingdom. He concluded that fluctuations in investment are "in the main" determined by profits earned in the industry some months earlier. The influence of other factors he held to be "not considerable" and "in many cases, numerically uncertain."³⁸ Tinbergen stressed the importance of profits and financial consideration in investment.

Relationship of Profits to Expected Profits

In 1948 C.F. Roos made what has been considered the most notable departure from Keynes' marginal efficiency of capital (MEC) concept. Keynes had defined the MEC in his The General Theory, originally published in 1935, "as being equal to that rate of discount which would make the present value of the series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price."³⁹ Keynes then points out that the MEC is a function of the expectation of yield and of the current supply price of capital assets.

³⁸J. Tinbergen, Statistical Testing of Business Cycle Theories. Vol. I: A Method and Its Application to Investment Activity (Geneva: League of Nations, 1939), p. 49. cited in Commission on Money and Credit. A Series of Research Studies. Impacts on Monetary Policy. (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963), p. 140.

³⁹John Maynard Keynes, The General Theory, (New York: Harcourt, Brace and World, Inc., 1965), p. 135.

"It depends on the rate of return expected to be obtainable on money if it were invested in a newly produced asset; not on the historical result of what an investment has yielded on its original cost if we look back on its record after its life is over."⁴⁰

Roos disagreed with Keynes on these grounds, ". . . studies indicate that actual investment lags returns on profits rather than leads them. Thus, past rather than future profits determine investment, and so Keynes has overemphasized the role of expected profits and consequently produced a somewhat unrealistic idealized theory."⁴¹ However Keynes did recognize the effect of past profits upon future profits.

That low horizons of most business calculation concerning future returns probably limits these business calculations to a considerable extent to present experience or that of the recent past was discussed in an empirical study by M.D. Brockie and A.L. Grey in 1956.⁴² A survey, by mail, of 175 manufacturing firms was conducted to relate the MEC to investment. The firms were selected at random from 644 corporations whose securities were actively traded on the New York Stock Exchange

⁴⁰Keynes, p. 136.

⁴¹C.F. Roos, "The Demand for Investment Goods," American Economic Review, XLVIII, (May, 1948), Suppl. 313.

⁴²M.C. Brockie and A.L. Grey, "The Marginal Efficiency of Capital and Investment," Economic Journal, (December, 1956),, p. 671.

(to find firms experienced in investment financing). Care was taken also to represent only those firms knowledgeable of the MEC concept.⁴³

Thirty-seven per cent of the responding firms made studies of the anticipated market the "basis of their determinations" regarding the profitability of investment proposals. Thirty-two per cent used extrapolations of present (or immediately past) performance of profits for this purpose. The conclusion was that more detailed inquiry may have shown more widespread dependence of investment plans on immediately past earnings records.⁴⁴ This apparently recognizes that the effect of profits on "the anticipated market" or on expectations in the MEC is difficult to measure.

A Professor of Finance at the University of Michigan, Douglas A. Hayes stresses the continuity in corporate affairs in his chapter "Estimating Earning Power."⁴⁵ He stresses the need of a statistical record of income statements covering a period of a number of years including both prosperity and depression to support his initial hypothesis that earning power is "not likely to be entirely unrelated to the record. . . ."⁴⁶ He uses the accounting "cash-basis" for earnings which includes

⁴³Ibid., p. 662.

⁴⁴Ibid., p. 671.

⁴⁵Douglas A. Hayes, Investments: Analysis and Management, (New York: The Macmillan Company, 1961), pp. 289, 290.

⁴⁶Ibid., pp. 289, 290.

all the depreciation and amortization charges added back to the earnings stream.

Though qualitative information may refute this assumption "there should be convincing evidence of a very substantial change in the entire nature of the company's business before the analyst is justified in completely discarding the past record as evidence of the future."⁴⁷ According to Hayes it may be costly to commit a common error in security analysis--giving an overenthusiastic appraisal of some dramatic but relatively minor development--which would cause an earnings estimate significantly greater than experienced earnings.⁴⁸

The analysis of Hayes assumes that the income statements reflect the economic results applicable to the years included in the statistical record used. "If substantial nonrecurring or temporary income is included in the published statements, proper adjustments should be made. The objective is to make the past record indicative of the economic activities which seem more likely to prevail in the future," he says, and also "that any conclusion pointing to an earnings stream for the future substantially discontinuous from the past should bear a heavy burden of proof to be acceptable."⁴⁹

There are two reasons, given by Robert Eisner, for using profits to explain fixed investment. First, due to imperfections

⁴⁷Ibid., pp. 289, 290.

⁴⁸Ibid., p. 290.

⁴⁹Ibid., p. 290.

in the capital market, (i.e., the real cost of internal funds is not equal to the real cost of external funds to the firm), or due to particular practices of industrial management there is a tendency for firms to reinvest past profits. Second, ". . . it is argued that although past profits per se have nothing to do with capital expenditures, they serve as a "proxy" variable for other factors related to capital expenditures. Thus firms which have been producing at or above "capacity" for some time are likely to have been making large profits. (If they produce to the rising portion of their average cost curves and charge prices equal to or above marginal cost they will be enjoying large short run profits and will have an incentive to expand plant and thus move to a lower portion of a new short run cost curve.)"⁵⁰ Eisner says that therefore a serial correlation between past and current profits and expected profits on investment will result, "the last of which is relevant to capital expenditures."⁵⁰ Here he does not recognize any direct effects of known profits on investment.

Profit Relationship to Sales

Eisner treats profits in a way similar to Keynes' MEC concept. Risk and uncertainty cause business firms to try to maximize the mathematical expectation of some monotonic increasing function of expected future profit, according to Eisner.

⁵⁰Robert Eisner, "A Distributed Lag Investment Function," Econometrica, XXVIII (January, 1960), pp. 7,8,

Experiencing diminishing marginal returns to each factor and positive cross partial derivatives means that to firms initially in equilibrium it will pay to increase the stock of capital for continuous or expected increases in demand for output.⁵¹

Eisner then explains why he believes only expectations affect the investment function;

To the extent that observed correlations between capital expenditures and past or current profits are due to the second factor (proxy variable) listed above, it should be possible to account for this correlation by introducing variables that are directly related to capital expenditures. In particular, it may be expected that firms that are close to or above a relevant "capacity" will be firms that have shown increases in sales over a number of years. Thus, if we introduce a sufficient sequence of past changes of sales into our relationship we should expect the partial regression coefficients of capital expenditures on profits not to differ significantly from zero, even though the zero order regression coefficients (and simple correlations) were positive. If current or past profits do enter into a correct statement of the structural relation determining investment, however, it should not be possible to eliminate the positive relation between profits and capital expenditures as we move from zero order to higher order partial coefficients.⁵²

In his multiple regression analysis Eisner included the variables profits, sales, depreciation charges and both net and gross fixed assets. The depreciation variable was used to account for some of the interfirm variance in the capital expenditures ratio due to differences in durability and resulting replacement demand. The ratio of the net to fixed assets variable was used to measure plant and equipment age

⁵¹Ibid., p. 1.

⁵²Ibid., p. 8.

and the consequent replacement demand. Sales change and profit variables were lagged.⁵³ This was considered necessary to account for lags either in the decision to invest or in the implementation of that decision. Also the accelerator, or sales change variable, was assumed to be nonlinear in character--investment may not fall below a minimum rate no matter how rapidly demand may fall.⁵⁴

To better illustrate the conclusions of Eisner's analysis, it seems important to first list his hypotheses in his own words:

1. Increases in sales should generate investment over a period of years and consequently it should be possible to write investment as a function of changes of sales over a number of previous years, with positive coefficients for each of these previous sales changes.
2. The accelerator coefficients should be higher, the higher the proportion of the sales change to which they relate that can be considered permanent rather than transitory.
3. Accelerator coefficients should be higher for firms that can be considered close to capacity than for others.
4. Accelerator coefficients should be higher for firms whose sales are rising than for firms whose sales are falling; indeed, the coefficients may be zero for firms whose sales are falling.
5. Since investment is made in response to expectations of the future return on investment, past profits should not per se be relevant to investment except for imperfections of the capital market (which this writer does not believe to be important for the investment of large existing firms.)⁵⁵

⁵³Ibid., p. 9.

⁵⁴Ibid., p. 2.

⁵⁵Ibid., p. 2.

The results of the analysis covering the 1949-1955 period of a distributed lag investment function pertaining to some two hundred large nonfinancial corporations ". . . indicate that accelerator coefficients are significantly positive for at least four annual sales change lags. Profits variables, while showing positive zero order relations with expenditures, do not generally reveal similarly significant coefficients in our multiple regression (when sales changes are included); profit coefficients are indeed frequently negative."⁵⁶

The accelerator effects were greater among firms with rising sales and rapid growth, agreeing with the hypotheses of nonlinearity of Hicks and others. "Not profits per se but sales increases bringing pressure upon capacity, for which profits may be a "proxy," seem to influence capital expenditures."⁵⁷

The accelerator coefficients for four of seven annual sales change lags summed to about .5 for 1955 and 1954 investment, indicating that about half of sales changes are reflected in proportionate changes in capital stock. Eisner then concludes that there was a ". . . substantial problem in both formulation of the model and estimation because of the intermingling of transitory or stochastic and permanent changes in sales."⁵⁸

Edwin Kuh also expressed reservations about Eisner's study when he wrote ". . . cross sections are unlikely to be

⁵⁶Ibid., p. 28.

⁵⁷Ibid., p. 1.

⁵⁸Ibid., pp. 28,29.

the correct sort of data on which to test essentially dynamic phenomena, so that it would be imprudent to place exclusive reliance on Eisner's interesting negative conclusion."⁵⁹

The main conclusion Kuh draws from his examination of studies is that;

Capacity acceleration motivation (sales) is more important than profits or internal funds in explaining the cyclical path of investment although profits still have a significant, if secondary role to play. The role could arise either through the internal funds cost approach which has been advanced here or possibly for expectational reasons. However, when profits are viewed primarily as an expectational variable, expected output is probably the dominant motivation to which profits are closely related.⁶⁰

He also says that corporate savings and profits are positively correlated with each other and with investment. But "profits or retained earnings need not be a basic investment determinant since cyclical fluctuations in output, the main ingredient of the acceleration principle (along with the stock of capital) are also correlated with profit fluctuations."⁶¹

The rather rigid price behavior in manufacturing, the result of prevalent corporate pricing policies and cost characteristics, cause us to expect corporate profit changes to be heavily determined by changes in sales. An approximate linear relationship between profits and sales is assumed to result. "This short-run relationship is, I believe," says Kuh,

⁵⁹Edwin Kuh, "Theory and Institutions in the Study of Investment Behavior," American Economic Review, LIII, (May, 1963), p. 265.

⁶⁰Ibid., p. 264.

⁶¹Ibid., p. 262.

"quite generally thought to exist, particularly in manufacturing. Its existence makes it very difficult to discriminate between hypotheses which have investment moved mainly by sales and those which have investment moved mainly by profits."⁶²

Tests, similar to those of Eisner, with a simple correlation coefficient relating investments and profits, found the coefficient distinctly positive and significant for J.J. Diamond. However the introduction of other variables reduced the role of profits to a proxy variable, as it did for Eisner.⁶³

By the use of analysis of variance and covariance using comparisons of between-group and within-group regression coefficients Eisner argues later that investment is a stable function of "permanent" changes in output, supporting his earlier work. The enigmatic results of previous studies on this topic was alleged to be due to attempts to estimate the unstable proxy relation including large elements of "transitory" changes in output.⁶⁴ He doubted even the argument that "...the timing of investment or its distribution among firms is partially influenced by recent or current profits. ...the intragroup sales change variance may be in such large part transitory as to allow profits to serve as a proxy for the ratio of expected demand to

⁶²Ibid., p. 262

⁶³J.J. Diamond, "Further Development of a Distributed Lag Function," Econometrica, XXX. (October, 1962), 793.

⁶⁴Robert Eisner, "Investment: Fact and Fancy," American Economic Review, (May, 1963), p. 238.

capacity. The true structural role of profits is then seen in the low (even negative) coefficients of the profits variable in the between-group regressions."⁶⁵

Kuh also discussed a study by R.M. Solow, E.C. Brown, A. Ando and J. Kareken on a distributed lag investment relation. Stabler empirical results were obtained when corporate profits were included as an independent variable and a rough measure of capacity (meant as a substitute for the stock of capital) was excluded. They estimated lagged dependence of quarterly, producer durable equipment orders on: output measured by the Federal Reserve Board Index of Industrial Production, a private long-term interest rate, and corporate profits. ". . .we do not wish to choose once and for all between a profits theory on one side and an acceleration theory on the other--nor do we believe the two to be necessarily mutually exclusive. . . ." ⁶⁶

Internal Funds and their Relation to Fluctuations in Investment

The financial, or appropriations, budget of corporations sets up a dollar ceiling for plant and equipment outlays. The gross ceiling is arrived at by totaling expected profits before taxes, depreciation provisions, proceeds of sales of long term investments and machinery, decreases in working capital, and planned outside financing. Then projected dividends, income taxes, long term debt repayment and inventory expansion and

⁶⁵Ibid., p. 246.

⁶⁶Kuh, p. 265.

other increases in working capital requirements are subtracted to obtain the net ceiling for capital expenditures. "This ceiling is in most cases subject to frequent but unscheduled revisions, especially in response to unexpected changes in profits and working capital position."⁶⁷

Heller concludes that realized profits are a vital "lubricant" for private capital investment ". . . both as a lure for taking additional risks and as a source of funds for managements which are unable to get, or are reluctant to use, outside funds."⁶⁸ He then qualifies this statement with:

This is not meant to imply that non-profit motives play no role in investment decision. To be sure, such factors as pride in a modern plant, the attractions of size itself, and the satisfaction derived from technological leadership were all found to enter the decision-making process. But their role, though elusive, seems to be definitely subordinate.⁶⁹

There is some disagreement with Heller's statement by C.F. Roos, who contends that since 1942 corporate profits alone have been "neither valid nor necessary" as a proxy variable for corporate purchasing power. Special amortization "certificates of necessity" which were introduced during World War II and the Korean War required at least a temporary adjustment of the original "proxy variable". The measure of

⁶⁷W.W. Heller, "The Anatomy of Investment Decisions," Harvard Business Review, (March, 1951), p. 97.

⁶⁸Ibid., p. 99.

⁶⁹Ibid., pp. 99, 100.

corporate purchasing power, as revised by Dr. Roos, is ". . . defined as corporate profits retained plus new financing plus depreciation and obsolescence."⁷⁰ Depreciation is thus introduced as a variable.

While Roos minimizes the effects of profits per se on corporate purchasing power he neglects to recognize the effects of rapid or accelerated "wartime" depreciation allowances on profits. (These special allowances can be a form of profit.) Such special allowances were specifically designed, in part, at least, to encourage investment. This is somewhat illustrated by W.L. White, who said, ". . . it is a reasonable conjecture, in view of the apparent reluctance of some firms to obtain investment money from external sources, that the depletion of accumulated surpluses has been a subsidiary reason for the decline in the aggregate investment outlays."⁷¹

Empirical findings showed that internal sources (retained earnings and depreciation or depletion allowances) supplied 64% of total corporate capital requirements in the 1946-1953 period.⁷² In a study of the structure of uses and sources of funds among the three postwar business cycles, the share of internal financing, if inventory profits were included, in

⁷⁰C.F. Roos, "Survey of Economic Forecasting Techniques," Econometrica, XXIII (October, 1955), p. 392.

⁷¹W.H. White, "The Rate of Investment, Marginal Efficiency of Capital, and Investment Programming - A Rejoinder." Economic Journal, LXIX (June, 1959), p. 335.

⁷²Brockie and Grey, p. 666.

total sources was found to be three-fifths (60%) of total fund sources for non-financial corporations in all three cycles. External funds were said to provide an increasing share of total sources of funds in the postwar period.⁷³ From 1950 through 1955 internal sources of funds in manufacturing comprised about three-fourths (75%) of the total sources of funds.⁷⁴ (Note: manufacturing and non-financial corporations are not identical).

Definitions of funds used in the studies of Goldsmith and of Meiselman and Shapiro were similar, accounting definitions. The latter work included in total fund sources: accounting profits, exclusive of capital gains and losses, depreciation, amortization and depletion, other internal charges, insurance benefits, tax refunds, short term borrowing, total long term borrowing, short and long term bank debt, new bond and new stock issues, sale leaseback, mortgages, and debt to government. Uses of funds were: plant and equipment, other capital expenditures, change in inventory, income tax payments, renegotiation payments, dividends, currency deposits, federal, state and local obligations, notes and accounts receivable, corporate securities, bad debt charges, and retirements of bonds and stock.

It is also interesting to note that expenditures on

⁷³Raymond W. Goldsmith, The Flow of Capital in the Postwar Economy, (New York: National Bureau of Economic Research, 1965), p. 130.

⁷⁴David Meiselman and Eli Shapiro, The Measurement of Corporate Sources and Uses of Funds, (New York: National Bureau of Economic Research, 1965), p. 7.

plant and equipment in manufacturing during the same period was their largest use of total (internal and external) funds, federal income tax payments being second. Plant and equipment outlays used about one-fourth of total funds expended in manufacturing during the five years. The total amount for this purpose in 1955 was some \$11 billion.⁷⁵ The effect on the economy of this type of spending could normally be expected to have a larger multiplier than most other spending due primarily to its influence on employment.

Since three-fourths of total fund sources in manufacturing come from internal sources, large changes in the net amount of internal funds would cause serious fluctuations in investment. "Corporate managers have a definite preference for internal funds. . . .the imputed cost of internal funds is less than the cost of external funds."⁷⁶

The main implications of this are two: ". . .the greater are gross profits, the greater will be the level of internally generated funds, given normal dividend behavior and, second, the greater are internal funds, the greater will be the rate of investment."⁷⁷ Fluctuations in investment can also be due to changes in expectations, however, and expectations are determined by more than profits alone.

Using multiple regression equations to study the response of investment to interest rates, the exogenous variables, Gehrels

⁷⁵Ibid., p. 8.

⁷⁶Kuh, pp. 262, 263.

⁷⁷Ibid., p. 263.

and Wiggins found that:

Prewar fixed investment did not show as sharply defined a lagged response to the exogenous variables as did postwar capital outlay; both one year lags and shorter lags gave satisfactory fits, with the profits coefficients changing sign according to lag. This suggests that our simple model may have good predictive value for a period of general prosperity and moderate fluctuations, but that it may have less value for a period of depression and great uncertainty.⁷⁸

And so we are back to discussing uncertainty and expectations, both of which were originally considered too volatile to measure. Much recent work has been done in this area, nevertheless. It seems that in general, firms with large cyclical fluctuations in output prefer internal financing (measured by cash flow) and those with steadily increasing output will use more external financing (measured by the interest rate).⁷⁹

Output or profit fluctuations not only affect choices of the type of funds used, but also affect investment itself. With respect to industry's approach to investment, "A relatively high profit margin is a favorable characteristic, a low profit margin, unfavorable. Wide fluctuations in profit margins are likewise unfavorable."⁸⁰ Also the relative market performance of an industry's securities and the markets' evaluation in

⁷⁸F. Gehrels and S. Wiggins, "Interest Rates and Manufacturers' Fixed Investments." American Economic Review, XLII, (March, 1957), pp. 81,92.

⁷⁹M.K. Evans, "A Study of Industry Investment Decisions." Review of Economics and Statistics, XLIX, (May, 1967), cited in Journal of Economic Abstracts, (December, 1967), p. 878

⁸⁰Ralph E. Badger, The Complete Guide to Investment Analysis, (New York: McGraw-Hill Book Company, 1967), p. 421.

terms of price-earnings multiples and dividend yields are significant, particularly in determining whether the market "is overvaluing or undervaluing the prospects relating to particular situations."⁸¹

Expectations about future profits from fixed investment additions are affected as well by technological change. Even though present conditions may indicate expectations of increased profit by greater investment, the maximization of profit over time may motivate a temporary delay in plant and equipment purchases in anticipation of near technological (or other relevant) changes. Put in the words of Cornell University business professors on the timing and frequency of introducing new models:

While there is no question that characteristics of equipment available in the future are relevant to investment decisions made today, especially when the decision under consideration can be deferred, there still remains the question as to the extent to which we should incorporate into our present analysis our guesses (or estimates) about the future. This is a matter of judgment and intuition and is also dependent to a great extent on the quality of the information we have about future changes in technology.⁸²

Another study, by Otto Eckstein, included expectational variables in extending De Leeuw's time series analysis of manufacturing. DeLeeuw had found manufacturing investment explained by capital requirements, flow of internal funds, and industrial bond yields. Eckstein used the ratio of unfilled

⁸¹Ibid., p. 435.

⁸²Harold Bierman, Jr. and Seymour Smidt, The Capital Budgeting Decision, (New York: The Macmillan Company, 1965), p. 87.

orders to sales as a reflection of the decision-makers expectations about the level of demand in the near future.

Addition of this variable (expectation) reduces the regression coefficient for internal funds from 1.28 to .88, a theoretically more acceptable, long run marginal propensity to invest. Unfilled orders are a measure of future capital requirements, . . . therefore investment is heavily influenced by the present and expected need for capacity.⁸³

The Relation of Profits to Financial Risk

It has been argued that for most business firms, when proper account is taken of market imperfections, the cost of capital can be lowered by relying more on debt finance. But it has been demonstrated that considerations of the real world do not necessarily recommend more debt. "The optimal financial structure is shown to depend on, among other things, the variance of the earnings stream of the firm and the "costs" of insolvency.⁸⁴ Variance of expected earnings of the high levered (high debt) firm, due to higher expectations of bankruptcy, leads to increased overall cost of capital to that firm. Real costs associated with bankruptcy can also reduce the total value of the firm.⁸⁴

An empirical study of investment decisions of twenty three chemical corporations from 1954 to 1960 showed that a

⁸³Otto Eckstein "Manufacturing Investment and Business Expectations: Extensions of DeLeeuws Results," Econometrica XXXIII, No.2 (April, 1965), 420-4, cited in Journal of Economic Abstracts, (July, 1965), p. 293.

⁸⁴N.D. Baxter, "Leverage, Risk of Ruin, and the Cost of Capital," Journal of Finance, XXII (3) (September, 1967), pp. 395-402.

firm desires security as well as income. The firm's net debt to equity ratio was taken as a measure of the firm's risk, or security, which was considered to change with changes in profitability of investment. The predicted investment for the firm was determined to be equal to internally generated funds during the period plus the amount by which its desired net debt exceeds its actual net debt at the start of the period.⁸⁵ (Net debt is total liabilities minus monetary assets, which can be + or -.)

The firm would theoretically maximize its expected income subject to the constraint of a satisfactory level of security. That is, if the utility of the expected additional income resulting from new debt exceeded the expected disutility of the debt, then more external financing of investment would occur. Gordon's study was an empirical adaptation of the models of Markowitz, Farrar, Tobin and others in which the firm's investment is governed by the objective of maximizing its utility and its utility is a concave function of its wealth.⁸⁵ Gordon also said his earlier study showed "that profitability of investment determines its level, on the grounds that anticipated profitability (profits on new investment) is highly correlated with profits realized on the existing stock of capital."⁸⁵

Risk avoidance showed up in an analysis, by W.H. Locke

⁸⁵Myron J. Gordon, "Security and Investment: Theory and Evidence," Journal of Finance, (December, 1964), pp. 607, 608.

Anderson, of borrowing, liquidity management, and capital investment in the United States manufacturing industry over the 1948-1960 period.⁸⁶ On page two of the abstract of his book Anderson says, "Its principal finding is that firms try to achieve a balance between the amount of liquidity relative to the determinants of safe debt. A clear aversion to the risks of illiquidity and indebtedness is demonstrated."

Existing physical capital is considered to have a possible influence on investment.⁸⁷ The market value of the firm and the stock of plant and equipment show strong co-movements with investment expenditure over time. ". . .the value of the firm incorporates expectation factors that are relevant for investment behavior."⁸⁸ But as, Harberger says, experienced profit is a large factor in the market value of the firm, both in asset value and good-will value, i.e., expectations. He gives as a reason for the advantage of the "value of the firm" in explaining investment behavior:

. . .that it measures the result of a complex market mechanism that tries to . . .summarize and evaluate all the information that is relevant to the future demand conditions of the firm's product and the supply conditions of its factors so as to obtain a reliable forecast of its future profits. The participants of the stock market have of course strong economic incentives to base their decisions

⁸⁶W.H.Locke Anderson, Corporate Finance and Fixed Investment (Boston: Division of Research, Graduate School of Business Administration, 1964), p. 125.

⁸⁷Yehuda Grunfeld, "The Determinants of Corporate Investment," in The Demand for Durable Goods, ed. by Arnold C Harberger (Chicago: The University of Chicago Press, 1960), p. 217.

⁸⁸Ibid., p. 265.

on a careful examination of all the relevant existing information. Not everybody in the stock market has to obtain all the information available or know how to evaluate such information. . . . It suffices that a relatively small group of informed, well trained, and well financed traders will act on the basis of all the information available. . . .⁸⁹

This view is recognized by Harberger to be in contrast to that of many economists who agree with Keynes that most stock market investors today are more concerned with short run speculation on "higher degrees" of market expectations than on long-term forecasts.⁹⁰ Obviously then, the market value of the firm must be used with care in evaluating investment decisions.

⁸⁹Ibid., p. 225.

⁹⁰Keynes, pp. 154-56, cited in Harberger, p. 226.

CHAPTER IV

THE DYNAMIC RELATIONSHIP BETWEEN PROFIT AND INVESTMENT

In evaluating profit expectations on investment it is the expected changes in profit on change in investment--"the efficiency of investment"--that is relevant. "One should not expect a firm, no matter how high its current profits or expected future profits, to wish to invest unless the contemplated addition to capital stock is expected to increase expected profits, or have an expected return higher than that from alternate uses of funds."⁹¹ Eisner and Strotz qualify this as pertaining to individual firms having free access to capital markets and "to the extent that profit maximization underlies rational investment decisions."⁹¹

Studies by the National Industrial Conference Board tend to bear out the above contentions:

. . . With rising profit margins and rising profits we get a pattern of expanding capital appropriations; with shrinking profit margins but stable profits we get a neutral pattern of capital appropriations; but with the continued negative sign of lowered profits we get still a third pattern of sharply contracted capital appropriations. There may be a three month's or six month's lag, but in an unfavorable situation, even among companies with an excellent long-range

⁹¹Robert Eisner and Robert Strotz, "Determinants of Business Investment," in Impacts on Monetary Policy, prepared for The Commission on Money and Credit (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1963), p. 124.

future, immediate implementation in the way of capital appropriations shrinks.⁹²

Changes in profits thus have a dynamic, or "growth" effect on investment. "The fundamental growth factor is the rate at which per share earnings can be built by reinvestment of earnings. High return provides a business with funds for more rapid growth and attracts other capital."⁹³

A study of the effect of the rates of growth, and their differences, between International Business Machines (IBM) and General Motors (GM) illustrates the importance of this new tool in the study of investment decision making. The questions were asked: "What makes stock prices? Why should the common shares of IBM sell at more than 35 multiples while those of G.M. are priced at less than 18 times earnings?"⁹⁴ The answer was that "IBM's rate of growth in net income per share, . . . , has been considerably more rapid than that of G.M. We note also that IBM's growth has been more stable in the sense that

⁹²Robert Eisner and Robert Strotz "Planning Capital Expenditures - The Company's Future," Business Horizons (Spring, 1958) p. 78. cited in White, p. 336.

⁹³Ralph E. Badger, and others, Investment Principles and Practices (Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1961), pp. 150-1.

⁹⁴Volkert S. Whitbeck and Manown Kisor, Jr., "A Tool in Investment Decision-Making," Financial Analyst Journal, IX No. 3, (May-June, 1963), in Frontiers of Investment Analysis, ed. by E. Bruce Fredrikson, (Scranton, Pennsylvania: International Textbook Company, 1965), p. 335.

the deviations from its trend in earnings have been much less marked than those of G.M."⁹⁵ (The trends were computed by "least squares" regression.)

IBM's common shares were selling at 34.8 times their earnings with a 17.0% rate of growth for the company, while G.M. shares were priced at 13.8 times earnings for its 3% growth rate at the time of the study.⁹⁶ Apparently the 21 multiples more in price/earnings ratio of IBM to G.M. with less than a six multiple IBM/GM (17/3) rate of growth may illustrate, among other things, the effect of greater earnings fluctuations of GM on its market evaluated risk of investment.

In determining an appropriate multiplier for the estimated earning power the major summary factors may be: "(1) the economic position of the company in the economy, (2) the trend of the earnings, (3) the capital structure and financial position, and (4) the stability of the earnings record."⁹⁷ Hayes says the "main determinant of common stock values is the estimated earnings potential. . .because the common stock 'contract' vests the owner with an interest in all the residual profits of the company. . ."⁹⁸

Walter W. Heller wrote, "For private business, profits are the end--not the only end, but the living end-- of

⁹⁵Ibid., pp. 335, 336.

⁹⁶Ibid., p. 341.

⁹⁷Hayes, p. 304.

⁹⁸Ibid., pp. 283, 284.

policy."⁹⁹ His paper concentrated on public policies to appraise "the record of measures to improve profits and productivity. . . .But the interplay of public and private policies is so close that it would be a serious omission to overlook the role that the quality of private management has played in this (economic) expansion."¹⁰⁰

The living end of policy for private business, according to Heller, is profits, which he says are for government primarily a means:

They enter growth policy as a goad to private risk taking and innovation, as a source of funds for expansion, and as a guide to efficient resource flow. They enter balance-of-payment policy as an incentive to the productivity advances that bring lower costs and a stronger competitive position; they enter too as a source of the higher domestic rates of return that keep American capital at home. They enter price policy both indirectly as a stimulant to cost-cutting modernization and directly as a reflector of rapid productivity gains that permit price reductions. They enter full-employment policy, partly as an ingredient (as a contributor to the investment component of full-employment demand) but mainly as the by product of success in such policy. They enter distributional policy, especially through taxation, as a focus of measures to strengthen one distributive share relative to another.¹⁰¹

⁹⁹Walter W. Heller, "The Role of Profits in National Economic Policy," in Profits in the Modern Economy, Harold W. Stevenson and J. Russel Nelson, (Minneapolis: University of Minnesota Press, 1967), 182.

¹⁰⁰Ibid., p. 189.

¹⁰¹Ibid., pp. 182-3.

CHAPTER V

CONCLUDING REMARKS

The disagreement in conclusions of studies on the role of profits seems to hinge mostly on differences of defining the degree of directness in the effect of profits. Results vary from no role for profits in investment decisions to an indirect role as a proxy variable to a belief that profits directly motivate investment. The two views appear to be converging as studies progress and terms become more clearly defined. The opposing views are summarized by two writings: Eisner and Strotz on deemphasizing the role of profits and Heller on stressing its importance.

Eisner and Strotz admit that where the firm does not have free access to capital markets or where funds are dependent on current or expected profits, then investment is thereby influenced. They then point out that the distribution of income from workers and rentier groups to common shareholders through retaining earnings can increase the important total supply of funds while implying a smaller average propensity to consume due to a greater average propensity to save. From the principle of derived demand, investment could be curtailed following the lower average propensity to consume. The crux of their argument is that:

. . . Only if the increased supply of funds can depress the interest rate enough so as to raise sufficiently the desired capital-output ratio could the

demand for additional capital rise when consumption would otherwise decline. This may of course be the case. But without the assumption of perpetual full-employment, it would seem difficult to argue with any assurance that lowering the propensity to consume (by altering the income distribution in favor of profits) would have a greater positive effect on investment as a consequence of lower interest rates (or easier supply of capital) than its negative effect as a consequence of the reduction in consumption demand.¹⁰²

It is then pointed out that current profits may be important to the individual firm in an imperfect capital market, but that from this. . . "one may acquire a mistaken notion of the importance of aggregate profit on aggregate investment. . . .the role of profits might then be to determine which firms will be able to invest."¹⁰³

Heller, writing on "The Role of Profits in National Economic Policy," bases his argument considerably on the history of the full-employment policy adopted by the United States, and the results of this policy as seen from the Employment Act of 1946 through the consequences of the tax reduction (revenue act) of 1964. He said, ". . .full profits are an important by-product of full employment of our resources."¹⁰⁴ Then he illustrated the sensitivity of the profits share in output to changes in use of resources which showed that when total economic performance is deficient, profits are deficient. "The strongest single boost to profits

¹⁰²Eisner and Strotz, pp. 124-5.

¹⁰³Ibid., p. 125.

¹⁰⁴Heller, p. 187.

and anticipation of profit--and therefore to investment--that any government can provide comes from a full-employment, full-utilization policy without inflation."¹⁰⁵

In looking at the most illustrative example, the "actual profits record of the 1961-1966 expansion," Heller wrote:

That reflection is encouraging. There have been good profits. Their growth has been unusually well sustained. And up until very recently, they have not been associated with price increases or with attempts to inflate margins. Profit increases will be slowing now that capacity is starting to limit the rate of economic expansion and a larger fraction of subsequent output gains is likely to accrue to labor. The present challenge is to avoid inflation in the environment by avoiding the battle over shares that would unleash it. Or, to put it in terms of profits, the challenge is to keep profits advancing out of higher productivity, not at the expense of healthy (i.e., productivity-founded) wage growth and price stability.¹⁰⁶

Then he outlines what must be done by explaining two requirements. First, demand must be kept at full employment levels, and second, private decision makers need to continue good management practices including restraint in wage negotiations and price making.¹⁰⁷

These remarks by Heller show no basic disagreement with those of Eisner and Strotz, so that in the final analysis the opposing arguments on the role of profits in investment appear to merge. Put in the words of Kenneth Boulding, "Serviceable enterprises can attract both capital and labor; what is serviceable will be profitable and what is profitable will be done."¹⁰⁸

¹⁰⁵Ibid., p. 188 ¹⁰⁶Ibid., p. 192. ¹⁰⁷Ibid., p. 193.

¹⁰⁸Heller, "The Role of Profits in National Economic Policy," p. 183.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Ackley, Gardner. Macroeconomic Theory, Chapter XVII. New York: The Macmillan Co., 1967.
- Anderson, W.H. Loche. Corporate Finance and Fixed Investment. Boston: Harvard University, 1964.
- Badger, Ralph E., and Coffman, P.B. The Complete Guide to Investment Analysis. New York: McGraw-Hill, 1967.
- Badger, Torgerson and Guthman. Investment Principles and Practices. Englewood Cliffs, New Jersey: Prentice-Hall Inc., 5th Edition, 1961.
- Baumol, William J. Economic Theory and Operations Analysis, Ch. XIII, "The Firm and Its Objectives", Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1965.
- Baxter, N.D. "Leverage, Risk of Ruin and the Cost of Capital." Journal of Finance, XXII Vol. No. 3 (September, 1967), 395-402.
- Bierman, Harold Jr. and Smidt, Seymour. The Capital Budgeting Decision. New York: The Macmillan Co., 1965.
- Brockie, M.D. and Grey, A.L. "The Marginal Efficiency of Capital and Investment." Economic Journal, LXVI (December, 1956), 662-675.
- Commission on Money and Credit. A Series of Research Studies Impacts on Monetary Policy. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1963.
- Day, R.H. "Profits, Learning and the Convergence of Satisficing to Marginalism." Quarterly Journal of Economics, LXXXI (May, 1967), 302-11.
- Dean, J. "Better Management of Capital Expenditure through Research." Journal of Finance, VIII (May, 1953), 119-28.
- Diamond, J.J. "Furthur Development of a Distributed Lag Investment Function." Econometrica, XXX (October, 1962), 788-800.
- Eckstein, Otto. "Manufacturing Investment and Business Expectations: Extensions of DeLeeuw's Results." Econometrica, XXXIII, No. 2 (April, 1965), 420-4.

- Eisner, R. "A Distributed Lag Investment Function." Economica, XXVIII (January, 1960), 1-29.
- Eisner, R. "Investment: Fact and Fancy." American Economic Review, LIII (May, 1963), 237-46.
- Eisner, R. and Strotz, R.H. "Determinants of Business Investment." in Impacts on Monetary Policy, a series of research studies prepared for commission on Money and Credit (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1961).
- Evans, M.K. "A Study of Industry Investment Decisions." Review of Economics and Statistics, XLIX, No. 2. (May, 1967), in Journal of Economic Abstracts, (December, 1967), 878-9.
- Fredrickson, E. Bruce. (ed.) Frontiers in Investment Analysis. Scranton, Pennsylvania: International Textbook Company, 1965.
- Friedman, Milton. "The Methodology of Positive Economic," Essays in Positive Economics, (Chicago: The University of Chicago Press, 1953), 3-43.
- Gehrels, F. and S. Wiggins. "Interest Rates and Manufacturers' Fixed Investment." American Economic Review LXVII (March, 1957), 79-92.
- Goldsmith, Raymond W. The Flow of Capital Funds in the Postwar Economy. New York: National Bureau of Economic Research, 1965.
- Gordon, Myron J. "Security and Investment: Theory and Evidence." Journal of Finance XIX (December, 1965), 607-17.
- Greenberg, E. "Appropriation Data and the Investment Decision." American Statistical Association Journal, LX (June, 1965), 503-15.
- Griliches, A., and Wallace, N. "The Determinants of Investment Revisited." International Economic Review, VI (September, 1965), 403-08.
- Grunfeld, Yehuda. "The Determinants of Corporate Investment," in The Demand for Durable Goods, ed. by Arnold C. Harberger (Chicago: The University of Chicago Press, 1960).
- Hammer, Frederick S. The Demand for Physical Capital: Application of a Wealth Model, Englewood Cliffs, New Jersey: Prentice Hall Inc., 1964.

- Hanssman, Fred. Operations Research Techniques for Capital Investment. New York: John Wiley and Sons Inc., 1968.
- Harberger, A. (ed.) The Demand for Durable Goods. Chicago: University of Chicago, 1960.
- Hayes, Douglas A. Investments: Analysis and Management. Chapter XIII. New York: The Macmillan Co., 1961.
- Heller, W.W. "The Anatomy of the Investment Decision." Harvard Business Review, XXIX (March, 1951), 95-103.
- Heller, W.W. "The Role of Profits in National Economic Policy," in Profits in the Modern Economy, (eds.) Harold W. Stevenson and J. Russell Nelson, (Minneapolis: University of Minnesota Press, 1967).
- Hickman, Bert G. Investment Demand and U.S. Economic Growth. Washington D.C.: The Brookings Institution, 1965.
- Keynes, John Maynard. The General Theory. New York: Harcourt, Brace and World Inc., 1965.
- Klein, L.R. "Studies in Investment Behavior." Conference on Business Cycles, Simon Kuznets, Chairman. New York: National Bureau of Economic Research, Inc., 1951. 233-77.
- Knight, Frank H. Risk, Uncertainty and Profit. Boston and New York: Houghton Mifflin Company, 1921.
- Knox, A.D. "The Acceleration Principle and the Theory of Investment." Econometrica, XIX (August, 1952), 269-297.
- Kuh, E. "Theory and Institutions in the Study of Investment Behavior." American Economic Review, LIII (May, 1963), 260-68.
- Lamberton, D.M. The Theory of Profit. Oxford: Basil Blackwell and Mott, Ltd., 1965.
- Meiselman, David and Shapiro, Eli. The Measurement of Corporate Sources Uses of Funds. New York: National Bureau of Economic Research, 1964.
- Meyer, J.R. "An Experiment in the Measurement of Business Motivation." Review of Economic and Statistics, XLIX (August, 1967). 304-19.
- Meyer, John R. and Glauber, Robert R. Investment Decisions, Economic Forecasting, and Public Policy. Boston: Harvard University, 1964.

- Meyer, John R. and Kuh, Edwin. The Investment Decision. Cambridge, Massachusetts: Harvard University Press, 1957.
- Pullara, S.J. and Walker, L.R. "The Evaluation of Capital Expenditure Proposals: a Survey of Firms in the Chemical Industry." Journal of Business, XXXVIII (October, 1965), 403-08.
- Robinson, Joan. "Imperfect Competition Revisited." Economic Journal, LXIII (September, 1953), 579-93.
- Roos, C.F. "The Demand for Investment Goods." American Economic Review, XLVIII (May, 1948), Supplement, 311-320.
- Roos, C.F. "Survey of Economic Forecasting Techniques," Econometrica, XXIII (October, 1955), 363-95.
- Stevenson, Harold W. and Nelson, J. Russell. (eds.) Profits in the Modern Economy. Minneapolis: University of Minnesota Press, 1967.
- Tinbergen, J. and Polak, J.J. The Dynamics of Business Cycles: A Study in Economic Fluctuations. Chicago: University of Chicago Press, 1950.
- Whitebeck, Volkert S. and Kisor, Manown Jr. "A New Tool in Investment Decision-Making," Financial Analyst Journal, IX No. 3 (May-June, 1963), in Frontiers of Investment Analysis, ed. by E. Bruce Fredrikson, (Scranton, Pennsylvania: International Textbook Company, 1965).
- White, W.H. "The Rate of Investment, Marginal Efficiency of Capital, and Investment Programming-A Rejoinder." Economic Journal, LXIX (June, 1959), 333-343.

THE ROLE OF PROFITS IN MOTIVATING FIXED CAPITAL EXPENDITURES
BY PRIVATE BUSINESS FIRMS IN THE UNITED STATES

by

Albert Leo Winkler

B.A., Kansas State University, 1967

AN ABSTRACT OF A MASTER'S REPORT
submitted in partial fulfillment of the
requirements for the degree

MASTER OF ARTS

Department of Economics

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1969

The purpose of this report was to review recent studies on the role of profits in the determination of investment. Because of the changing nature of business decision-making due to the growth of corporations and their effect on financial structure, the empirical studies summarized were limited to the post-WWII period.

Because the relation between profit and investment appears to vary over time the empirical studies were considered in chronological sequence. Since the relationship between profits and investment is often indirect and complex, four factors related to investment which are in turn related to profit were considered. These factors were how profits are related: (1) to expected profits, (2) to sales, (3) to internal funds, and (4) to financial risk and external funds.

How changes in profits affect changes in investment is also considered in this report. It is knowledge of this dynamic relationship which would seem to be most useful.

To better understand how profits may theoretically affect investment a chapter was devoted to a short summary of some of the definitions of profit. In defining profit reference was made to Frank Knight, D.M. Lamberton, F.A. Walker, J.B. Clark, Joseph Schumpeter, F.B. Hawley, and G.L.S. Shackle. Knight defined profit as a difference between the rate of return on the owner's investment and a competitive rate of return on investment generally. In the empirical studies reviewed,

other definitions may have been used.

A brief discussion of the nature of investment was given. A common definition used by economists is the money paid out for capital goods.

Studies by C.F. Roos, by M.C. Brockie and A.L. Grey, by D.A. Hayes, and by Robert Eisner compared past to expected profits in investment determination. Two studies stressed the importance of past profits, and two studies pointed out that expected profits were more meaningful. Eisner indicated a serial correlation existed between known profits and expected profits, the last of which was considered relevant to investment, assuming perfect capital markets.

In relating profits to sales Eisner found the coefficients of the profits variable became practically zero when a sales variable was injected into the statistical model. J.J. Diamond also found profits to serve as a proxy variable for sales. Edwin Kuh stated that sales, in effect, directly anticipate profits due to the rigid price behavior of most manufactured products.

Realized profits are an internal source of funds for managements which are unable to get or reluctant to use outside funds, said Walter Heller. Several empirical studies by Brockie and Grey, R.W. Goldsmith, and D. Meiselman and E. Shapiro indicated internal funds supplied at least 60% of business capital requirements. Kuh noted that the imputed cost of internal funds is less than the cost of external funds. External funds were said to provide an increasing share of total

sources of funds in the post-war period.

Risk was shown to be as related to profits as illiquidity is. M.J. Gordon used the net debt to equity ratio to measure risk, with net debt being liabilities minus monetary assets. He and others found firms considering security as well as income in determining investment.

Fluctuations in profits were shown to cause investments to fluctuate, illustrating their dynamic relationship. Studies showed pre-WWII fixed investment implied more use of internal funds during depressions. Growth and stability of net income per share were used to explain the differences between IBM's and GM's multiples of stock prices to earnings, which is an indicator of ability to obtain external funds. A high multiple of common stock price to earnings indicates greater ease in issuing new stock or selling bonds.

R. Eisner and R. Strotz wrote that only with the assumption of perpetual full employment will an increase in profits have a greater positive effect on investment than its negative effect as a consequence of the reduction in consumption demand.

Walter Heller indicated the need for sufficient profits to attain sufficient total economic performance, which, he says, depends much on a full employment, full utilization government policy, without inflation.