

EXECUTIVE COMPENSATION - A NEW LOOK

by

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ABSTRACT

This thesis attempts to provide a prescriptive framework for incentive plans designed for the top management of large companies, along with rules for the implementation of the framework. First the objectives of management are defined in theory. It is then shown that existing compensation is related more to corporate size than to the achievement of shareholder objectives. Existing incentive compensation plans are examined and criticised for often encouraging managers to pursue their own objectives. A new method of compensation is proposed, using the capital asset pricing model from financial theory, along with a more simplified approach based on the same assumptions. Finally some empirical work shows that for large companies there is little or no relationship between the pay of the chief executive officer and performance towards the achievement of shareholder objectives.

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CHAPTER 1: INTRODUCTION

This thesis is concerned with the compensation packages of top executives of large companies in the U.S.A. Although much of the material is descriptive of current practise, the primary purpose of this thesis is to develop a theoretical framework that is prescriptive. In a society which believes largely in free markets for labor a large element of the total compensation package will be dictated by the forces of supply and demand, thus the framework developed here is directed towards the incentive element of compensation over and above that which is necessary to secure and retain managerial services.

In financial theory shareholders are content to delegate all the decisions of the firm to management under the assumption that management will always act in the interest of the shareholders. This separation theorem will not hold if management is perceived by shareholders to be acting primarily in its own interest, or in the interest of employees, or even in the interest of society as a whole. This is not to deny that it may well be in the interest of shareholders for management to satisfy the needs of employees or to fulfil social obligations, it is merely to say that such actions should only be pursued if the interest of the shareholders is thereby served better than by not pursuing them. If these conditions are fulfilled then shareholders can retire gracefully into the background, and furthermore it can be argued that shareholder 'apathy' is indeed desirable on the grounds that shareholder knowledge of the firms operations is insufficient for them to make a positive contribution to

managerial decisions.

The organization of this thesis is as follows: Chapter 2 develops a criterion for management to use for assessing which courses of action are in the interest of the shareholders. This criterion - the maximization of the firms current market value - is a necessary criterion if the 'separation theorem' is to hold.

Chapter 3 describes empirical and theoretical evidence that compensation packages are linked most strongly to the size of the firm as measured by its sales, suggesting that managements motivation may be directed more towards increasing the size of the firm then to satisfying the interest of the shareholders.

Chapter 4 looks at current forms of incentive plans used for management and describes reasons for thinking that these plans may actually encourage management to pursue objectives other than those of the shareholders.

Chapter 5 goes to modern financial theory to develop a compensation framework for encouraging management to concentrate their efforts on their shareholders interests, and develops a rule for practical application of the framework.

The final Chapter 6 describes empirical work done for this thesis which shows that executive compensation has historically had little correlation with performance according to the framework developed in the previous chapter.

CHAPTER 2: SHOULD MANAGEMENT ACT TO MAXIMIZE THE CURRENT MARKET VALUE OF THE FIRM?

Modern financial theory is largely based on the assumption that managers should act to maximize the current market value of their firms. If managers can be trusted to act in this way then shareholders need play no part in the running of the firm.

Market value maximization as the sole objective of the firm is based on the same utilitarian assumptions as the traditional economists' candidate - maximization of long run profits. Modigliani and Miller¹ (MM) illustrated the drawbacks of the traditional economists' approach:

- (1) Under conditions of uncertainty future profits are by definition unknowable, thus they cannot be candidates for maximization in an operational sense.
- (2) Probabilistic estimates of "expected" profits are not candidates for maximization to achieve shareholder objectives because it is possible to increase expected profit by taking more risk. Thus managers would need to know their shareholders risk preferences before going ahead with any investments.

According to MM the maximization of current market value is an operational criterion (since current market value is known), and the risk preferences of shareholders can be ignored by managers so long as they always act to maximize market value, or in other words invest only in projects where the expected return to the shareholders is at least as high as the market expects for projects of equivalent risk. If some shareholders

don't like high risk projects even though they promise sufficiently high returns they can sell out and buy shares in firms with low risk projects.

MM's argument presupposes that market values are independent of who owns the firms' shares, and that investors have alternatives which are equally attractive to them at all times. These assumptions would not be accepted by everyone, but they seem fair in economies with highly developed and sophisticated capital markets - "secondary" markets in particular. It should be noted that although market value maximization is an "operational" criterion in the sense that current market value is known, any operational method for achieving the highest market value falls down for precisely the reason that MM gave in the first argument against using long run profits as the criterion! Forecasts of equity cash flows are used in financial theory together with estimates of risk to measure what will increase current market value. Since the cash flows are not known with certainty they are not an "operational" criterion, and the rules used for calculating risk adjusted expectations of the cash flows are compromises which sacrifice theoretical correctness to become "operational". However these arguments are mainly semantic. It is true to say that the market expects different levels of profitability for different levels of risk and thus the criterion of maximizing long run profits is not as good as the criterion of maximizing current market value, assuming efficient markets.

Both the market value and the profit maximization candidates for the role of sole objective of the firm assume that what is good for the shareholders is good for society as a whole. Keynes² showed that the idea of

"a divine harmony between private advantage and the public good" dates back to the early 19th century, although "strains" were evident in Adam Smith. It was then that the hedonism of Hume was married to the ideas of equality and social justice of Rousseau, Bentham and Paley. The Economists showed that "by the working of natural laws individuals pursuing their own interests with enlightenment in conditions of freedom always tend to promote the general interest at the same time....the political philosopher could retire in favor of the businessman - for the latter could attain the philosophers summum^m bonum by just pursuing his own private profit." Thus was born the principle of laissez faire.

Keynes attempted reductio ad absurdum on laissez faire with a parable about giraffes eating leaves from a tree: "the object of life being to crop the leaves of the branches up to the greatest possible height, the likeliest way to achieve this end is to leave the giraffes with the longest necks to starve out those whose necks are shorter....thus if only we leave the giraffes to themselves, (1) the maximum quantity of leaves will be cropped because the giraffes with the longest necks will, by dint of starving out the others, get nearest to the trees; (2) each giraffe will make for the leaves which he finds most succulent amongst those in reach; and (3) the giraffes whose relish for a given leaf is greatest will crane over most to reach it. In this way more and juicier leaves will be swallowed, and each individual leaf will reach the throat that thinks it deserves it most." A better definition of life's objective for this parable might have been to "plant enough trees to provide leaves for all giraffes," although the long necked giraffes would need an incentive to

work towards this and it is hard to think of one.

Keynes has no monopoly on views on the shortcomings of laissez faire. Consider Samuelson³ "A rich man's dog may receive the milk that a poor man's child needs to avoid rickets. Why? Because supply and demand are working badly? No. Because they are doing what they are designed to do--putting the goods in the hands of those who can pay the most, who have the money votes." Very few people today would argue that laissez faire is the complete answer to all our economic and social ills, although many markets are no longer competitive, thus the 'invisible hand' is not working. This has led many to postulate that managers should not have the maximization of shareholder wealth as their sole objective; they should become in some sense corporate trustees for the community with strong codes of ethics involving responsibility to employees, customers, shareholders and society as a whole. In other words we need lots of mini Platos.

Anthony⁴ attempted to formalize these thoughts by proposing that managers should be aiming for a "satisfactory" return on investment. This return cannot be defined precisely, but a lower limit is the company's "expected cost of capital" and the upper limit is related to profit opportunities within the industry in which the firm operates. According to Anthony it does not follow from this that income is distributed according to the dictates of management. Labor unions, boards of directors, bankers and the government also interact to ensure that they get their fair share. But he misses the point. With managerial discretion on what constitutes a satisfactory return on investment managers may not dictate how income is to be distributed, but they will dictate within bounds how much income

is generated. He goes on to say that "a business man is a human being, and it is completely unrealistic to expect him to exist in an ethical vacuum." This implies that in Anthony's view serving the interest of the shareholders has no ethical quality. Many shareholders would no doubt feel that managers who did not pursue their interests were being downright unethical!

Not everyone believes that managers should become the moral custodians of society. Drucker⁵ believes that "in a society which believes in economic progress, as has ours for the last two hundred years, the profit motive is an efficient mechanism of integration, because it relates individual motives and drives directly to accepted social purpose." Rostow⁶ says "if, as widely thought, the essence of corporate statesmanship is to seek less than maximum profits, postwar experience is eloquent evidence that such statesmanship leads to serious malfunctioning of the economy as a whole." In this he is supported by some rather scanty empirical evidence by Guth,⁷ where the growth rate and profitability of the firm is suggested to be inversely correlated with the "level of commitment of top-level managers to other than economic values," although there is no implication as to the direction of cause and effect.

Rostow goes on to say that "the responsibilities of corporate directors require redefinition. It may give us a warm and comfortable feeling to say that the director is a trustee for the community, rather than for his stockholders.... . It would be more constructive, however, to seek redefinition in another sense: to restate the laws of corporate trusteeship in terms which take full account of the social advances of this century,

but which direct the directors more sharply to concentrate their historic economic duties to their stockholders." In other words he is saying that society, via the medium of elected government, should determine the social constraints and objectives within which managers should pursue the economic objectives of their shareholders. Managers are thereby relieved of the necessity to make value judgements that should be made by society, which is a very attractive concept--both because it is practical and because it avoids the paternalism of unelected "corporatism."

The conclusion to all this is that there is nothing wrong with managers acting solely to increase shareholder wealth, but that society must define the framework within which this is done, and must decide how the proceeds are to be distributed via taxation. Society must also define the rules concerning whether managers should use political influence to protect - and enhance - shareholder interests vis a vis the rest of society. The purpose of this thesis is to examine how best to encourage managers to concentrate their economic duties to their shareholders. The maximization of current market value will be the yardstick by which their performance is measured.

FOOTNOTES

1. F. Modigliani and M. Miller, "The Cost of Capital, Corporation Finance and One Theory of Investment," American Economic Review, June 1958.
2. J.M. Keynes, The End of Laissez Faire, London 1927.
3. P.A. Samuelson, Economics - An Introductory Analysis, New York, McGraw-Hill, 1967.
4. R.N. Anthony, "The Trouble with Profit Maximization," Harvard Business Review, Nov/Dec 1960.
5. P.F. Drucker, Concept of the Corporation, New York, John Day Company, 1972.
6. E.V. Rostow, "To Whom and for What is Corporate Management Responsible," in The Corporation in Modern Society, Mason (ed.), Harvard 1960.
7. W.D. Guth, "The Growth and Profitability of the Firm: A Managerial Explanation," Journal of Business Policy, Spring 1972.

CHAPTER 3: THE DETERMINANTS OF EXECUTIVE COMPENSATION

INTRODUCTION

This section first looks at empirical work that has been done to determine the relationship, if any, between executive compensation and financial measures of the corporation. There is then a brief description of some of the various hypotheses about actual practise which have been put forward to explain these empirical results. Then there is a description of the remuneration process as seen by some practioners - consultants and managers who actually set salaries and bonuses. Finally there are concluding comments.

EMPIRICAL STUDIES

1. PATTON

The first postwar study of the determinants of executive compensation was done by Patton.¹ In this study the SEC salary reports for 664 companies were analysed (together with a detailed salary questionnaire by the American Management Association for 1949) for the years 1945, 1948 and 1949. The companies were split into 22 industry categories and 3 profit categories: 0-2 million, 2-7 million, 7 million and above. (For the 1949 figures companies were split down further into five profit categories). This study was not based on statistically tested propositions but on the analysis of averages.

The conclusions that Patton drew from this study were as follows:

- a) Executive compensation varies with company profits.
- b) Executives must increase profits if they want higher compensation.
- c) The fastest growing companies tend to pay more.

- d) Industry profit margins provide no guide to industry salaries. However those industries with 'creative competitiveness' pay more than those which are more pedestrian.
- e) Profit margins increase with increases in net income.

Patton went on to say that there is a 'reasonably convincing argument for a company to pay higher executive salaries than does its competition, and this was supposed to follow from the five points above. There appears to be a confusion between cause and effect here.

2. ROBERTS

Roberts² was the first person to base a study on statistical testing of hypotheses. He also introduced another variable, corporate size in terms of sales, into the study and analysed the effects of both levels and changes in corporate size and profitability on executive compensation. His study was based on the SEC salary reports for 410 companies in 1945, 1948 and 1949 and 939 companies in 1950. Stock options were not included although bonuses were.

The conclusions that Roberts drew from his study were as follows:

- a) The level of executive compensation is related significantly to corporate size, and the relationship between compensation and profits is superficial and disappears when the effects of size are discounted.

Within manufacturing and retail industries the relationship between industry and compensation disappears when size is discounted, although industries 'where there is public regulation or close scrutiny' consistently pay less.

- b) Changes in executive compensation vary with profit changes and size changes, but collinearity removes the significance.

3. McGUIRE, CHIN & ELBING

McGuire, Chin and Elbing³ used multiple regression to test the effects of sales and profits on the pay of the chief executive officer of 45 of the 100 largest corporation in the U.S.A. between 1953 and 1959. Data was taken from Fortune and Business Week. They tested lag effects through time as well as testing the effects of changes and levels of their variables.

The conclusions they drew were as follows:

- a) Compensation varies directly with sales, and not with profits.
- b) Compensation varies with current sales, last years sales, the year before's sales. Changes in compensation vary with changes in current years sales, changes in last years sales, but not consistently with changes in the year before's sales. The level of significance in each case was near enough that it was impossible to say which relationships were more significant.

4. CISCEL

Ciscel⁴ attempted to bring in even more variables to explain executive compensation. His analysis included sales, assets, net income, number of employees, previous years sales and previous years assets. He showed that the correlation for these variables was much higher for all officers and directors as the dependent variable than for the chief executive alone.

Ciscel concluded that 'growth and size, not profitability were the prime determinants of corporate financial reward.' However he pointed out that there was such strong collinearity between the independent variables

that the identification of any relationship was 'permanently obscured.'

HYPOTHESES TO EXPLAIN WHY SIZE IS THE IMPORTANT DETERMINANT OF COMPEN-
SATION

1. SIMON

H.A. Simon⁵ produced a theory of executive compensation to explain why sales appear to be the key determinant of compensation. The basis of his theory is as follows:

- Competition in the labor market determines the lowest levels of executive salary.
- There is a social determination of the steepness (number of levels) of the organizational hierarchy.
- There is a social determination of the ratio of an executives' salary to that of his subordinates.

If the number of employees in the firm varies directly with the level of sales, which is an assumption of the study, then via the above framework executive compensation will vary directly with sales. In Simon's words 'salaries are determined by requirements of internal 'consistency' of the salary scale with the formal organization, and by norms of proportionality between the salaries of executives and their subordinates.'

2. BAUMOL

W.J. Baumol⁶, as an economist, rejects the traditional economic framework that assumes that firms seek to maximize profits. He says 'I believe that the typical large corporation in the United States seeks to maximize not its profits but its total revenues which the business man calls his sales...once his profits exceed some vaguely defined level.' Baumol is

one of a number of economists who are trying to bring the sales objective into economic theory.

3. GALBRAITH

J.K. Galbraith⁷ is unequivocal in his belief that sales are the major goal of modern U.S. management:

"Once the safety of the technostructure is insured by a minimum level of profits, then there is a measure of choice as to goals. Nothing is so compelling as the need to survive. However, there is little doubt as to how, overwhelmingly, this choice is exercised: it is to achieve the greatest possible rate of corporate growth as measured in sales.

This goal also commends itself strongly to the self interest of the technostructure. Expansion of output means expansion of the technostructure itself. Such expansion, in turn, means more jobs with more responsibility and hence more promotion and more compensation...the growth of the firm serves another important purpose for the technostructure, it is the best protection against contraction."

Galbraith appears to believe that it is impossible to expect management to act in their shareholders interest if there is a separation between ownership and management. 'One might imagine that a man of vigorous lusty and reassuringly heterosexual inclination eschews the lovely, available and even naked women by whom he is intimately surrounded in order to maximize the opportunities of other men whose existence he knows of only by hearsay. Such are the foundation of the maximization doctrine when there is full separation of power from reward.'

THE PRACTITIONERS VIEW OF THE COMPENSATION PROCESS

The basis for the following discussion of how practitioners see the compensation process for chief executive and chief operating officers is the report of a symposium on the subject carried out by Compensation Review.⁸ The people who took part in this symposium were as follows:

- T.J. Castle, Director of Compensation, American Airlines, Inc.
- B. Ellig, Corporate Director of Compensation and Benefits, Pfizer, Inc.
- K. Foster, Director of Compensation Planning, Towers, Perrin, Forster and Crosby.
- V.E. Landauer, Principal, Frank B. Manley and Company.
- D. McLaughlin, Principal, McKinsey and Company, Inc.
- J. Reen, Director of Compensation and Benefits, GTE International.
- J.G. Stevens, Consultant, Executive Compensation, General Electric Company.
- E.C. Miller, Editor, Compensation Review.

The strains of thought picked out from this report are not of course intended to indicate that all those present were in agreement.

1. Procedure of Determination

The most prevalent procedure for determining top officers pay in large companies is to have a board compensation committee. These committees use salary surveys, comparisons with other selected companies and general judgement of the adequacy of company performance and management capability to set salaries. They are however selected by management, as are external consultants who are called in. They are not, therefore, truly independent.

2. Base Salary

Base salary is mainly influenced by size and the industry segment in which the firm operates. Other factors can include the salary position of the individual as he has moved up the organization, age of the officer, the length of time he will remain in the job, company performance (although this does not affect base salary downwards very much), philosophy of the CEO and philosophy of the Compensation Committee. It is more likely that the CEO would be changed than have his base salary lowered.

3. Total Compensation

A very high proportion of what is paid at the top can be explained by the growth in size of the corporation, industry patterns and general economic trends. In spite of lower profits compensation increases 'in too many instances.' 'The pattern that actually exists in far too many companies, that is, no obvious relationship between performance and pay, just adds fuel to the fire of anti business attitudes.'

4. Bonus Setting

'The single strongest determinant by far of bonus size is present salary.' Most firms have a set-aside that is a percentage of stockholders equity before the fund is created to determine a minimum performance before incentives will be paid. Some firms specify a maximum bonus size for individuals as a percentage of salary. Industry patterns also set norms for bonus size. For example in the insurance industry bonuses are rarely more than 30-35% of salary, while in retailing an equivalent figure might be 100%.

CONCLUSIONS

There seems to be little conflict between the results of empirical studies and the actual process of setting executive salaries. The fact that sales appear to be so important in determining executive compensation gives credence to the views of Galbraith and Simon, and raises doubts about the motives of management as seen from the shareholder perspective.

FOOTNOTES

1. A. Patton. "Current Practises in Executive Compensation," Harvard Business Review, January 1951.
2. D.R. Roberts. "A General Theory of Executive Compensation Based on Statistically Tested Propositions," Quarterly Journal of Economics, May 1956.
3. J.W. McGuire, J.S.Y. Chin and A.O. Elbing. "Executive Incomes, Sales and Profits," American Economic Review, September 1962.
4. D.H. Ciscel. "Determinants of Executive Compensation," Southern Economic Journal, April 1974.
5. H.A. Simon. "The Compensation of Executives," Sociometry, March 1957.
6. W.J. Baumol. "On the Theory of Oligopoly," Economica, August 1958.
7. J.K. Galbraith. The New Industrial State, Boston: Houghton Mifflin Co., 1967.
8. Compensation Review Symposium. Compensation Review, 4th Quarter, 1976.

CHAPTER 4: INCENTIVE PLANS

INTRODUCTION

This chapter describes current and proposed incentive plans, concentrating on their drawbacks in preparation for the next chapter which introduces a suggestion for a new type of plan.

The primary purpose of an incentive plan for top management should be to encourage them to pursue vigorously the shareholder interest, or - as was shown in Chapter 2 - to maximize the current market value of the firm. In Chapter 3 doubts were expressed about the motives of management in large companies. This makes it doubly important that incentive plans for management should not make it profitable to pursue managements' interests at the expense of their shareholders.

The organization of this chapter is as follows. Incentive plans are split into two categories: Plans which reward management for performance according to Book Value measures of performance, and plans which use Market Value measures of performance. 'Book Value' plans are examined first.

CHAPTER 4 SECTION A. BOOK VALUE INCENTIVE PLANS

INTRODUCTION

Book Value incentive plans ('BV plans') usually compensate managers for performance measured by one or some of the following ratios derived from the published accounts of the firm:

- Return on Investment or Assets (ROI), usually defined as Net Income divided by the Net Book Value of all Assets including Working Capital.
- Return on Equity or Net Worth (ROE), usually defined as Net Income divided by the Net Book Value of Stockholders Equity.
- Earnings per Share (EPS), usually defined as Net Income divided by Average Shares Outstanding for the year.
- Residual Income, usually defined as Net Income minus a notional return on the Book Value of either Net Assets or Stockholders Equity.

Most plans therefore have some measure of the earnings generated during the year, Net Income, and some measure of the investment base that has been used to generate those earnings - Stockholders Equity or Net Assets. Notable exceptions to this are plans based on EPS, or on growth in EPS. Such plans provide no measure of how efficiently capital is being used.

The rationale behind BV plans is that, given the uncertainty of the market mechanism which places a value on the firms shares, performance measured by one or other of the above ratios represents true performance

in increasing the 'underlying value' of the firm.

There are two main problems with all BV plans. The first is a problem of motivation. BV plans can encourage managers to act against the interest of the shareholders by enabling them to profit from so doing. The second is a problem of interpretation. Since BV plans are based on historical cost information, performance according to the ratios shown above does not always indicate true performance in the economic sense. These two problems will now be examined, followed by a description of BV plans on offer, and concluding comments on BV plans as a whole.

PROBLEMS OF MOTIVATION

Here are some of the reasons for supposing that BV plans may encourage management to act against the shareholders interest:

(1) Management can manipulate BV plans by using 'creative' accounting techniques. Some illustrations of this are as follows:

-EPS can be increased by acquiring companies with a lower price-earnings ratio and issuing shares to pay for them. For example Firm A has 1000 shares values at \$2 each and has earnings of \$100, thus showing EPS of \$0.1 - or 10 cents. Firm B has 1000 shares valued at \$1 each and also has earnings of \$100, and EPS again are 10 cents. Firm A buys Firm B by issuing 500 new shares of Firm A to the owners of Firm B. EPS for the new firm are 13.33 cents, representing an improvement of one third in 'performance' as measured by EPS.

-Profits can be shifted to and from unconsolidated subsidiaries by arbitrary transfer pricing mechanisms.

-Stockholders equity is a balancing item and is therefore affected by manipulation of profits and assets. It can also be manipulated directly by for example declaring 'special dividends' to unconsolidated subsidiaries.

It may appear that such practises would be curtailed by the requirements of consistency and fairness embodied in the Generally Accepted Accounting Principles, but there are plenty of examples of such practises happening. One vivid example of accounting manipulations is shown in Charles Raws' book on Slater Walker.¹

(2) Senior Managers are often near retirement age. If they are on a BV plan they will have a strong incentive to reject good long term projects in favor of anything that has a current impact of Book Value figures. This will be particularly true when managers have pension plans based on their last few years earnings. Any increase in incentive pay at this time could affect their pension earnings for the rest of their lives.

(3) If the firm operates in a cyclical industry, profits and BV plan payouts may fluctuate with successive booms and slumps. Fluctuating pay packets are unsettling for managers, and in a graduated tax system may result in lower after tax earnings. This will give management an incentive to diversify their operations whether or not such diversification is in the interest of the shareholders. Shareholders can, after all, diversify their shareholdings without paying someone else to do it for them.

(4) BV plans will encourage management to invest in any project which

will have a favorable effect on Book Value performance, even if the shareholders could use the money more profitably for the same risk elsewhere.

PROBLEMS OF INTERPRETATION

As mentioned previously most BV plans use Net Income as a measure of earnings and Net Assets or Stockholders Equity as a measure of the investment base. Assuming that Net Assets are defined to include working capital the only difference between Net Assets and Stockholders Equity is the Book Value of Long Term Debt. To illustrate the problems of interpreting Book Value figures it will be assumed that it is only necessary to describe problems with Net Income as a measure of earnings, problems with Net Assets as a measure of investment, and the compounded problems which ensue when Net Income is divided by Net Assets to get an accounting rate of return. The illustration of these problems will show the kinds of interpretation difficulty which apply to all Book Value measurements. A short discussion of the impact of inflation accounting proposals is also included.

Problems with Net Income as a Measure of Earnings

Net Income as reported provides no measure of increased growth opportunities generated during the year. An adaptation of Hicks' definition of personal income might say that earnings for the firm should show the amount of money that could be distributed to the shareholders while leaving the firm in a position no better or worse than at the beginning of the year. Net Income does not show such earnings, and this is the main problem. However there are significant accounting problems with Net Income which

also affect its usefulness as a measure of earnings:

-All other things being equal different depreciation rules will show different patterns of profit over time. Straight line depreciation will show a steady flow of profits, while accelerated depreciation will show increasing profits over time. For example assume Company A has one five year asset costing \$1000, which generates \$500 per annum in cash for each of the five years. (In this example cash flow minus depreciation equals profit):

YEAR	CASH FLOW	DEPRECIATION			PROFIT		
		SL	SYD	DDB	SL	SYD	DDB
1	500	200	333.3	400	300	166.7	100
2	500	200	266.7	240	300	233.3	260
3	500	200	200.0	144	300	300	356
4	500	200	133.3	86.4	300	366.7	413.6
5	500	200	66.7	129.6	300	433.3	370.4
TOTAL	2500	1000	1000	1000	1500	1500	1500

SL = Straight Line. SYD = Sum-of-the-years-digits. DDB = Double declining balance.

-All other things being equal different capitalization policies will substantially affect the time flow of profits (Net Income). A growing firm will always show higher profits if Research and Development or Oil Exploration costs are capitalized than if they are expensed.

-Price increases will impact profits more quickly if LIFO valuation of inventory is used, than if FIFO or average costing are used.

-Under inflation Net Income will usually grow faster in money terms than in real terms, (although taxation usually increases also). If taxation rates remain the same in money terms then more tax may be paid by the corporation each year even if the earnings remain the

same.

- Depreciation can be regarded as the amount of money a firm should deduct from earnings to show what is required to maintain the capital stock in real terms. If this is accepted then Net Income will again be overstated in an inflationary era, since depreciation does not show the extra money cost of replacing worn out assets, provided there are no technological advances in the production of the replacement assets. (This will not apply with fixed assets such as land.)
- Inflation will affect the value of items such as long term debt and land in a way that will not be reflected in profits until these items are realized.

Problems with BV Net Assets as a Measure of Investment

The same problems that can be seen with the use of Net Income as a measure of earnings can be observed with the use of Net Assets as a measure of investment. The Book Value of Net Assets is affected by accounting rules and by inflation, and is at present based solely on historical costs. However the sum of reported profits accruing to an investment is unaffected in total by accounting rules, although the value of those profits in today's money will of course be affected by when the profits appear in time. The sum of reported Net Asset Values over time is affected by accounting rules. Examples of the accounting problems which affect Net Assets are as follows:

- Different depreciation methods will give different total amounts of Net Assets reported on the balance sheet over the life of each project, depending on the degree of acceleration of the method of depreciation chosen. For example assume that Company A has one asset which

cost \$1000 and is depreciated to zero over five years using the three common forms of depreciation - straight line (SL), sum-of-the-years-digits (SYD) and double declining balance. The following table shows the substantial difference in Net Book Value of the Asset shown over its lifetime.

YEAR	DEPRECIATION			NET BV OF ASSET		
	SL	SYD	DDB	SL	SYD	DDB
0				1000	1000	1000
1	200	333.3	400	800	666.6	600
2	200	266.7	240	600	400	360
3	200	200	144	400	200	216
4	200	133.3	86.4	200	66.7	129.6
5	200	66.7	129.6	0	0	0

Sum of reported BV over life: 3000 2333.3 2305.6

-Different methods of capitalization will also affect Net Book Value of Assets - not only over time, but also in the absolute amount of Net Book Value reported over the Asset life. The greater is the fraction of an investment that is expensed, the lower will be the sum of the Book Values of Net Assets reported.

-Different methods of valuing inventory will also affect Net Book Value of Assets. A price increase in raw material for example will increase the value of inventory for a longer period of time under FIFO inventory valuation than under LIFO and this effect could last for ever if the firm never runs its inventory down below a certain point.

-Under inflation Assets measured in money terms will be shown at less

than the cost of replacing them, assuming replacement technology is unchanged.

-The gap between current value, as measured by Replacement Cost, and Historic cost will tend to increase with the age of the Asset under inflation.

All these effects of accounting rules and inflation are compounded when Net Income is divided by Net Book Value of Assets to form an Accounting Rate of Return.

The Biases in Accounting Rates of Return

The biases in accounting rates of return are complicated by all the interactions of the biases in net income as a measure of earnings and net Book Value of Assets as a measure of investment. ROI (defined above) purports to measure the true economic rate of return to an investment, although it does not take into account the time value of money and values all cash flows equally whenever they appear.

Solomon and Laya² used a simple model to measure the quantitative distortion of ROI as a measure of true economic return. Here are some of their findings:

Assume a zero growth firm, with no inflation or taxation. The firm invests \$1000 per annum in identical projects which yield a true economic rate of return of 10% per annum each year for six years in the form of a level payment of \$229.61 per annum.

-Using straight line depreciation the accounting ROI stabilizes at 10.79% compared with the true yield of 10%. (This is due to the difference between economic depreciation, where the assets depreciate to reflect the present value of future cash flows remaining,

and straight line depreciation.

-Again using straight line depreciation Book ROI increases with the percentage of the cost of an investment which is expensed. Typical results are as follows:

% OF INVESTMENT COST EXPENSED	BOOK ROI%
50	21.58
20	13.49
0	10.79

-For the same level of true return Book ROI varies directly with the length of any lag between investment outlay and cash inflows. Book ROI also varies directly with the length of the investment outlay period, and if cash inflows increase over time (for example with inflation) this will also increase the Book ROI over the true return.

-Any growth in the firm, or inflation, will often cause complicated divergences of Book ROI from true return.

There are thus significant problems with using Book Value measures of performance as a measure of true management performance which will complicate all Book Value based incentive plans.

There are those who believe that inflation accounting could act as the cure all to the problems that have been discussed.

The Impact of Inflation Accounting on the Problems with ROI, Net Income and the Net Book Value of Assets

The four main inflation accounting models under consideration are as follows: (source: Fabricant³).

-The FASB 1974 proposal for expressing assets and liabilities in terms

of dollars of constant purchasing power.

- The SEC 1975 proposal for valuing inventories, cost of goods sold and plant and equipment at current replacement costs.
- The Australian proposal for valuing assets at 'exit prices' - which are the prices for which the assets could be sold, less selling costs.
- Four models being tested by the AICPA, which are mainly variations of the FASB and SEC proposals.

In addition there are countless other views held by academics and practitioners around the world. Two of particular interest are:

-Anthony's view.⁴ Anthony assumes that in practise many firms set their prices to cover historic costs. He thus concludes that historic costing accurately measures the performance of a firm towards its objectives, which are to get a certain return on historic costs. This argument assumes that firms have a market for their products at historic cost plus the cost of capital and that the time value of money is not important. Anthony would thus leave things as they are.

-Vancil's view.⁵ Vancil has suggested 'specific and general price level accounting' which basically measures profit after depreciation sufficient to maintain the real capital stock, in units of constant dollars. It is thus an amalgamation of the FASB and SEC proposals.

What would these inflation accounting schemes do for the problems with Book Value figures notes above? None of them will attack the problems caused by different expensing, depreciation policies when comparing one firm with another. Some form of Vancil type proposal probably comes

nearest to eliminating many of the other problems. No Book Value measurement, however, will ever be able to show how good performance has been compared with what the market expects.

A DESCRIPTION OF BV PLANS PROPOSED OR AVAILABLE

The incentive plans which will be examined are as follows: (Sources ⁶)

- Traditional profit sharing plans.
- Wulfsberg's adjusted profit sharing plan
- Performance shares
- Participating, or performance, units.
- Book Value stock plans.
- Profit related stock options.

All these plans are based on Book Value performance indicators, and thus suffer from some or all of the objections to Book Value measurements discussed above.

Traditional Profit Sharing Plans

Profit sharing plans are based on the assumption that employees should participate with shareholders in any return the firm generates in the year over and above a fair return to shareholders for the use of their funds. The fair return to shareholders is often defined as some low notional rate of interest (the risk free rate?) applied to the Book Value of stock holders equity. Of course shareholders may have paid many times Book Value for their investments, and they may well expect a higher return than this notional return for taking the risk of investing in the firm rather than in treasury bills.

An example profit sharing plan would set a percentage of Net Income

that could be distributed to employees, say 10%, after deducting from Net Income a figure of say 5% of stockholders equity. The resulting available pool would then be distributed to key employees according to their predetermined share of the pool. The share that key employees have would often be determined by their base salary level.

Apart from not necessarily being fair to shareholders this type of profit sharing plan encourages short term decision making in that it encourages managers to go for profits today at the expense of longer term opportunities.

Wulfsberg's 'Growth Oriented Incentive Compensation System'

This is basically a traditional profit sharing plan but, in order to reduce the emphasis on current earnings that such plans encourage, the payment to the employee in a particular year is based on the estimated ratio of the effect of his current efforts on all future years earnings divided by the effect of his current efforts on current years earnings. This ratio is called the 'K ratio'. Based on his salary each employee is awarded a share of the total profit sharing fund each year. For example he might get 0.1% of the fund for every \$1000 of base salary that he earns, (although the allocation to new employees would have to be reduced periodically to ensure that more than 100% of the pool is never allocated).

Assume that the employees K ratio is one, which means that half his efforts impact future years earnings and half impact the current year. Under Wulfsberg's system instead of being paid .1% of this years fund for each \$1000 of salary he would get .05% of this years fund, .025% of next years fund, .0125% of the following years fund and so on. There would

need to be an adjustment to round up the sum of all percentages to 0.1% after a certain period of time - say five years.

Since the employee would after five years be getting 0.1% of each years fund by definition, then after five years Wulfsberg's system is the same as a traditional profit sharing plan except that the manager always knows that he has the right to a share of the next five years profit sharing pool even if he leaves or retires.

The time pattern of the employees payments for the first few years is shown in the following table for each \$1000 dollars of his base salary:

% of fund paid in year per \$1000 salary

	1	2	3	4	5	6	7
<u>%</u>	.05	.025	.0125	.00625	.00625	0	0
<u>earned</u>		.05	.025	.0125	.00625	.00625	0
<u>in year</u>			.05	.025	.0125	.00625	.00625
<u>per</u>				.05	.025	.0125	.00625
<u>\$1000</u>					.05	.025	.0125
<u>salary</u>						.05	.025
							.05
	.05	.075	.0875	.09375	.1	.1	.1

When the manager leaves or retires he will get .5% of the next years fund, .25% of the following years fund and so on.

This is quite a complicated system and a similar result could be achieved with more simplicity by waiting before putting an employee into the profit sharing scheme and then allowing him to remain in it for a few years after he leaves or retires, although Wulfsberg's system does try to match the method of payment to the long term emphasis of the mana-

ger's job. The only time Wulfsberg's system really differs from a traditional profit sharing scheme is at the beginning of the managers career and when he is contemplating leaving or retiring. It does not of course address any of the other problems with profit sharing plans.

Performance Shares

Performance shares became popular around the early 1970's and were hailed by some as 'revitalizing executive stock plans'.

The idea behind performance shares is that key executives can earn shares in the company by meeting a target defined in book value terms within a specified period of time. The time period is usually linked to the time taken in the company for decisions to impact net income and the target is based on something like cumulative growth in earnings per share. If performance meets target then participants in the scheme are paid their specified number of shares, or they are sometimes paid half in cash and half in shares. Often employees forfeit their right to their shares if they leave before they have been awarded, thus managers contemplating leaving have little incentive to fulfil the target requirements. There is also often a maximum limit on the value of the shares awarded not exceeding 100% of salary after four years or 150% after six years.

Performance share plans do not at present require stockholder approval, although many firms still seek such approval. However the performance goals are often not stated, or if they are they are broad goals such as x% cumulative growth in EPS. As noted before EPS provide no measure of how efficiently capital is being used within the organization.

Participating or performance units

Participating units are like performance shares, except that payment is made in cash and may be based on a 'incremental value only' or on a 'initial value plus' relative to the price of the firms shares when the units are issued. The performance criteria are usually set in the same way as for performance shares.

Book Value Stock plans

Book Value Stock plans have become popular in recent years when the stock market has been declining. They have been introduced by firms such as Citicorp, Corning Glass and Johnson & Johnson. According to Cook, Book Value Stock 'enables employees to be rewarded over their entire careers in direct proportion to the results they achieve for their companies stockholders as measured by growth in the underlying value of the stock'.

Book Value Stock plans are based on the Book Value of stockholders Equity per common share. Plans can allow employees to purchase Book Value shares with full dividend and voting rights (e.g. Corning Glass); plans can allow employees to buy options on Book Value Shares (e.g. Citicorp); plans can provide Book Value Stock units, which are 'notional' shares which pay dividends and sometimes pay full value after a few years.

It should be noted with Book Value Share schemes that unless the firm makes losses Book Value Shares will always increase in value irrespective of whether performance is terrible in terms of profitability or return to shareholders.

Profit Related Stock Options

Profit related stock options are an idea from Nwokobia of Allied

Chemical Corporation. The idea is to offer ordinary shares to executives with a guaranteed resale price provision. The resale price is called the 'earned net value' and is equal to the option price plus some percentage of the company's cumulative EPS during the life of the option. If the market price of the shares is high the executive can sell his stock on the open market. If the market price is low the plan behaves just like a Book Value Stock option plan. Nwokobia says "Shareholder objections to the approach advocated here seem improbable because dividends also depend on corporate profitability and not on the stock market." In fact shareholder approach towards this approach could legitimately be extremely hostile. The management is saying that they will accept the market evaluation of their performance if it gives them more money than their own Book Value Evaluation, but that if the market evaluates their performance in a lower way because for example management has been running down the business for short term profit impact they will elect to be paid on a Book Value basis. This example of 'having your cake and eating it' is illustrated again in the proposal for a new five year performance unit-stock option plan at General Electric. Their management wishes to have a stock option plan (these will be described later) and a performance unit plan, with executives being paid whichever offers the highest reward. In addition to this the management of G.E. already has a profit sharing plan which pays out up to 10% of Net Income each year.

CONCLUSION ON BOOK VALUE PLANS

The first parts of this section on Book Value incentive plans pointed out the incentives Book Value measurements could give management to act

against the interests of their shareholders, and the serious methodological problems involved in using Book Value measures as a measurement of performance. A brief description of current Book Value incentive plans revealed no way of getting around these problems. The conclusion of this section is that BV plans leave a lot to be desired.

CHAPTER 4: SECTION B MARKET VALUE INCENTIVE PLANS

INTRODUCTION

Market value incentive plans ('MV plans') are plans which use the performance of the firm as measured by the capital markets as a basis for the incentive compensation of management. The rationale for such systems is that if managements compensation is linked to the shareholders objective, the maximization of current market value, then there will be some congruence of interest.

There are three main problems with MV plans:

- In valuing the firm the market takes into account many external factors which are beyond the control of management and which affect all investments. Some of these factors are not factors for which management can reasonably be held responsible, although they are responsible for managing the firms policies in relation to these factors.
- The market for shares is very volatile, with a standard deviation from year to year of more than forty percent for the market as a whole. Shareholders are essentially gamblers who take risks in return for higher expectations of return. Managers on the other hand are not gamblers in the same sense, although they are of course expected to take risks. They are not necessarily expected to take the same risks with their incentive compensation as shareholders take with their investment, since shareholders can diversify away a considerable portion of their risk while management cannot diversify their jobs.

- MV plans can give management a lot of money when the market as a whole does well even when management has performed poorly. Likewise if the market is in recession even a super successful management may fail to get rewarded. There is thus no necessary link between pay and performance, except that when the shareholders do well management does well and when the shareholders do badly so does management. There is no guarantee that the shareholders get value for money from their investment in these incentive schemes, and management has no guarantee of being treated fairly.

A DESCRIPTION OF MV PLANS PROPOSED OR AVAILABLE

The incentive plans which will be examined are as follows: (sources⁶)

Stock options - Qualified plans

Non qualified plans

Tandem plans

Employee stock purchase plans

Stock units - Appreciation right plans

Phantom stock plans.

Stock Options

A stock option is a piece of paper which entitles its owner to buy a share of a certain stock at a defined price within a specified period of time. The value of a stock option lies in the hope that some time during the specified period the stock will be traded at a price higher than the option 'exercise' price so that the owner of the option can buy the share at below market value and either 'hold' the share or sell it

for an immediate profit. The value of a stock option will increase with the length of time of the specified period and the volatility of the underlying stock, as well as being inversely proportional to the exercise price. Executive Compensation figures reported by publicly traded firms do not usually include a value for stock options granted, since they are generally regarded as unvaluable. However it is possible to value stock options using the Black-Scholes model developed at MIT, which produces values of traded options very close to the prices at which they are actually traded and which can be used for valuing untraded options.

Stock options are very popular with management during buoyant market conditions because it is not necessary to pay out any money until a gain has already been made if options are granted for nothing.

- Qualified Stock Options

Qualified stock option plans are plans which qualify for capital gains tax treatment on the gain between the option price and the gain realized on exercising the option. Under the Tax Reform Act of 1976 no new qualified stock option plans may be started, and options outstanding from previous plans must expire or be exercised by May 21, 1981.

There were certain restrictions imposed before a qualified plan could be classed as qualified. Plans required stockholder approval; no employee could hold more than 5% of the voting power of the stock and be eligible for options; options had to be issued at 100% of fair market value, and their life was restricted to five years or less; shares which were bought by exercising options had to be held for three years or more; options had to be exercised in the same order as they were issued.

Qualified stock options were expensive for the firm, and therefore

for the shareholders since no part of the gain to the executive was deductible to the firm as an expense. Thus on a qualified stock option gain of \$20 the executive in a 50% tax bracket saved \$3 by being taxed at the lower capital gains tax rate of 35%. However the firm lost \$10 of tax shield that would have been gained had the option failed to qualify and the gain counted as income.

- Non Qualified Stock Options

Any gain resulting from holding nonqualified stock options is taxed as income to the executive. However non qualified stock options suffer from none of the restrictions on qualified stock options except that their issue requires stockholders approval, and their diluting effect on earnings per share must be shown on the Balance Sheet as if they had all been exercised.

Non qualified options can be granted at any price, but if their value at the time of grant is 'readily ascertainable' then income tax at the appropriate rate is payable at that time on the difference between grant price and readily ascertainable value. Congress has directed the IRS to develop regulations for the valuation of non qualified options at the time of grant.

- 'Tandem' Plans

Tandem plans were simply mixtures between qualified and non qualified options.

- Employee Stock Purchase Plans

Employees can benefit from favorable tax treatment by purchasing options subject to the following restrictions. Options must be offered to all employees except those holding more than 5% of the outstanding

stock, although no employee may receive more than \$25,000 per year in value of the stock. The grant price may be 85% of the lower of fair market value at time of grant or at time of exercise, and there are no restrictions on which options may be exercised first. The options must be held for two years minimum from the date of grant, including six months from the date of exercise. Ordinary income tax is due on the discount from 100% of fair market value at the time of grant when the stock is sold (or if less, on the excess of proceeds over option price) and the remaining gain is regarded as a capital gain.

Stock Unit Plans

Stock unit plans do not involve the issue of real shares. Employees are given cash or shares at the end of a period based on the gain they would have made if they had owned shares, or on the total value they would have if they had owned shares. No stockholder approval is required for such plans, and there is no diluting effect on earnings per share on the balance sheet. Full income tax is paid on any payment to employees.

- Stock Appreciation Rights

Appreciation rights entitle employees to a payment determined by the stock price increase in the firms shares. Appreciation rights are sometimes granted with options which means that the company will pay employees not to exercise their options, thus saving the employee the necessity of raising the money to exercise his option.

- Phantom Stock Plans

Phantom stock plans entitle employees to the total value of a number of shares that they would have owned had they been given to them at a

certain time. Again such plans involve no outlay by the employee.

CONCLUSION ON MARKET VALUE PLANS

Market value plans do have the advantage of linking the fortunes of management with those of their shareholders. However the problems mentioned in the introduction are serious, and none of the plans described overcomes them. Many of the plans described appear to have been constructed more with the tax laws in mind than to induce motivation, but to quote Keynes ' the only intellectual pursuit that carries any reward is the avoidance of taxation.'

The conclusion of this section, as with the section on Book Value plans, is that market value plans also leave a lot to be desired.

FOOTNOTES

1. C. Raw. Slater Walker. 1977.
2. Solomon and Laya. 'Measurement of Company profitability: Some systematic errors in the accounting rate of return.' Financial Research and Management Decisions ed Robichek 1967.
3. S. Fabricant. 'Accounting for business income under inflation.' Unpublished. N.Y. University 1978.
4. R. Anthony. 'In defense of historical costing.' Harvard Business Review. November/December 1976.
5. R. Vancil. 'Inflation accounting - the great controversy.' Harvard Business Review. May/June 1976.
6. Sources for the material on MV and BV plans were as follows:
 - F. Nwokobia. 'Profit related stock options: immunizing grants against the market.' Compensation Review. 3rd Quarter 1975.
 - A.H. Wulfsberg. 'A growth oriented compensation system.' Personal Journal. October 1971.
 - G.H. Foote. 'Performance shares revitalize Executive Stock plans.' Harvard Business Review. November/December 1973.
 - F.W. Cook. 'Book Value stock as an employer stock ownership and incentive device.' Compensation Review. 3rd Quarter 1977.
 - 'New Substitute for options?' Duns Review. December 1974.
 - 'A Sure Thing.' Duns Review. March 1975
 - 'Top men demand new kinds of pay.' Business Week. January 23, 1971
 - 'Rescuing the drowning executive stock option.' Conference board Record. February 1975.

'So when major companies draw up new pay packages these days, they are designing flexible all purpose plans in the hope that the beneficiaries will come out ahead no matter what happens.'

Duns Review. September 1976.

'Successors to the qualified stock option.' Harvard Business Review
January/February 1978.

CHAPTER 5: A PROPOSED METHOD FOR INCENTIVE COMPENSATION

INTRODUCTION

So far it has been shown that managerial compensation bears little relationship in practise to anything other than the size of the firm. It has also been shown that existing incentive plans which purport to link compensation to performance leave much to be desired, whether they are based on market value or book value performance.

It is now time to develop a plan which will overcome the obstacles within existing plans, and which will link managements compensation to the achievement of shareholders' objectives.

PROPOSED PLAN

Shareholders invest in a firm because they think they can get at least as good a return in terms of dividends and capital gains from holding the firms shares as from holding any other investment possessing the same degree of risk. However shareholders can diversify away much of the risk associated with holding the firms shares, although with any risky investment there is always an irreducible element of non diversifiable risk which affects them all. If a shareholder invests his money in all available risky shares in proportion to their market values the only risk he will bear will be the risk of the market as a whole. Such an investment strategy can be approximated by investing in an 'index fund', such as for example a fund which is based on market value weighted holdings of the Standard and Poors '500' index. In the modern theory of capital markets it is assumed that shareholders will not expect to be

rewarded for taking any more risk than the irreducible, non diversifiable element associated with each firms shares, which is measured by the amount of movement in the firms share price that can be expected to result from a movement in the price of a 'market portfolio' constructed from all risky shares. In other words this risk, or 'Beta', measures the effect that could be expected on the price of a firms shares from, say, a 10% drop or rise in the Standard and Poors '500' index. The firms Beta is calculated from the past covariance between movements in its share price and movements in the market index. Figures for this 'Beta' are published by institutions such as Merrill Lynch, Pierce Fenner and Smith, and Value Line.

Sharpes 'Capital Asset pricing model' can be used to predict the return that shareholders expect from investing in a firm in terms of dividends and capital gains. This requires a knowledge of the rate of interest shareholders can get for no risk, for example the rate being offered on treasury bills, the beta of the firms shares and the expected return above the riskless rate that investors expect for investing in the market portfolio. The model says that the return expected by the investor is equal to the risk free rate of interest, plus the expected return on the market portfolio multiplied by the beta of the stock. This model is not perfect at predicting the differential returns that the market expects for investments of differing risks, but it is simple and is a good approximation to what actually happens in the market.

This model could be used to predict what the firms market value should be at the end of the year, given the riskfree rate of interest for the past year, the performance of the market as a whole for the year and the beta of the firms shares. If this 'predicted market value' were to

be compared with the actual market value of the firm at the end of the year, shareholders could evaluate the performance of the firm relative to the market as a whole and adjusted for the risk of the firm.

It could be argued that the market value of the firms shares at the end of the year reflects the shareholders' view of the next year, and that market value is thus too fickle a measure to use for evaluating the firms performance. However shareholders views about the following year are also embodied in the return on the market portfolio for the year which was used as an input to derive the 'predicted market value', thus the comparison between actual and predicted market value is still valid.

The beta of the firm is affected by changes in the firms financial leverage, and by changes in the nature of the firms business over the year and in theory these should be adjusted for. In practice it is relatively easy to adjust for financial leverage, and unless there are major acquisitions or divestitures during the year the adjustments for changes in the nature of the firms business can probably be ignored.

The only factor that should make predicted market value differ from actual market value at the end of the year would be if the present value of the future earnings of the firm as perceived by shareholders was lower, relative to the market and adjusted for risk, than shareholders could reasonably expect. This does not appear to be an unreasonable measure with which to evaluate and compensate the firms management.

The calculations involved in this method are described in terms of notation at the end of this chapter.

The advantages of this system would be as follows:

- Accounting biases would be removed from performance measurement.

- There would be no incentive to go for current profit against future growth.
- There would be no incentive to diversify unless it was in the shareholders interest.
- There would be a disincentive to investing in projects with lower returns than shareholders could get elsewhere for the same risk.
- Managers would be evaluated on their performance relative to the market as a whole, and thus they could do well even in bad markets, and badly even in good markets.
- Managers would not be expected to bear the risks of the market as a whole in their incentive compensation.
- Shareholders would not have to pay out for incentive plans unless they were getting at least a fair return.
- Managers would find it hard to manipulate the market as a whole in order to get paid more, but even if they succeeded it would benefit their shareholders!

This is not to deny that the system has drawbacks. The main disadvantages to the system are as follows:

- Many managers would be unwilling to submit to the impersonal evaluation of the marketplace. Some might complain that they would be bearing the full impact of the nonsystematic risk which shareholders can diversify. However managers are paid to manage nonsystematic risk, and its impact can work both ways. Also no one is suggesting that managers should have to pay shareholders when they do badly.
- Many managers might complain that the market for their shares is not efficient, and that therefore the capital asset pricing model does

not hold. Most of the empirical evidence would suggest that they would be wrong, but even if they were right it would give them an incentive to make the market more efficient by feeding it sufficient information.

- It is difficult in practice to get meaningful figures for the systematic risk of individual firms, although industry figures could be used as a proxy.
- Some firms would not wish to divulge information about future growth prospects for reasons of commercial secrecy. However managers have an obligation to give shareholders enough information to value their shares fairly.
- The plan as a whole is too theoretical.

Although the type of incentive plan suggested above is put forward as the best plan it would be possible to compromise some of the theoretical correctness to produce more simplistic approaches. One such approach would be to say that incentive compensation should be related to the performance of the firm in terms of dividends and capital gains relative to the performance of other firms in the same industry. This might have a more intuitive appeal, and would retain many of the advantages of the capital asset pricing model approach. Adjustments would still need to be made for differences in financial leverage.

SUMMARY OF PRACTICAL RULES FOR APPLICATION

The proposed plan suggests that managements performance can best be evaluated for compensation using the following procedure:

1. Look up the beta of the firms ordinary shares. Adjust for lever-

age changes, acquisitions and divestitures.

2. Find the riskless lending rate which has been in operation for the past year.
3. Find the total return on holding the market portfolio for the last year.
4. Use the capital asset pricing model to calculate the predicted market value of the firms shares at the end of the year.
5. Compare the predicted market value with the actual market value at the end of the year. Devise a formula for sharing any excess of actual market value over predicted market value between shareholders and management.

Alternatively if this procedure is too theoretical, sacrifice some theoretical correctness and use the following simpler rules:

1. Choose a selection of firms operating in the same industry operating with the same financial structure.
2. Calculate the return a shareholder would have received if he had invested in a portfolio of these firms plus the firm being evaluated, weighted according to the market values of all the firms at the beginning of the year. The more firms that can be chosen for comparison the better so long as their business is similar and their financial structure is the same.
3. Compare the return shareholders in the firm in question received (in terms of capital gains and dividends) with the return on the portfolio constructed above. If the return is higher for the firm multiply the excess return by the market value of the

firm at the beginning of the year and split the resulting sum between shareholders and management.

ATTACHMENT

Proposed method of evaluation and compensation described in notation.

Symbols

\bar{Z}_J = Expected return on shares of firm J for the year.

\bar{Z}_m = Expected return on market portfolio for the year.

Z_m = Actual return on market portfolio for the year.

D = Cash paid by firm J to shareholders during year.

i = One year lending rate on riskless securities at beginning of year.

β = Systematic or market risk of firm J's equity.

MV_t = Market value of firm J equity at beginning of year t.

$E(MV)_t$ = Expected MV_t .

$P(MV)_t$ = 'Predicted' MV_t as described in the paper.

Description

$$\bar{Z}_J \times MV_t = E(MV)_{t+1} + D - MV_t = [i + \beta(\bar{Z}_m - i)]MV_t$$

$$E(MV)_{t+1} = MV_t [i + \beta(\bar{Z}_m - i)] + MV_t - D$$

$$P(MV)_{t+1} = MV_t [i + \beta(Z_m - i)] + MV_t - D$$

Remuneration and evaluation would be based on the following, after adjusting for any change in β during the year:

$$MV_{t+1} - P(MV)_{t+1}$$

CHAPTER 6: EMPIRICAL STUDY

INTRODUCTION

The empirical studies discussed in Chapter 3 to find the determinants of Executive Compensation concentrated on Book Value concepts such as sales, profits and assets, as well as such variables as number of employees, to explain different levels of compensation. This section describes empirical work done for this thesis to attempt to relate executive compensation to variables of primary interest to the stockholders, along with sales which are known to be a significant factor. The variables, apart from sales, used in this study are all variations of the following market value concepts:

- The Market Value of the firms ordinary shares.
- The return to investors, in dividends and capital gains, from the firms stock.
- The return to investors above or below the Predicted Market Value described in the last chapter, as a measure of how well the firm has performed.

The study comprises a number of ordinary least squares regression analyses of the linear relationship between executive compensation, as defined by the pay of the Chief Executive Officer, and sales and the above market value variables. The data for the study was extracted from the published results of the top fifty companies in the 1977 Fortune 500 as displayed in various publications, plus other data relative to the performance of the capital markets between the years 1972-1976. The following appendices are included in this study to describe in more detail the data, calculations

and results of the regression runs:

- Appendix A List of Companies included in the study.
- B Data sources, variable calculation, variable names and units.
- C Results of the regressions.
- D Correlation matrices of the independent variables.

This Chapter will outline the methodology behind the study, the results, the conclusions that can be drawn from the results, and the drawbacks of the study.

METHODOLOGY

Using figures for each company for each year simple and multiple regression analysis was performed to test whether the following relationships were significant:

RELATIONSHIPS

Between	AND
Chief Executive Officers pay.	- Dollar sales of the firm.
	- Market value of the firms shares.
	- Dividend + capital gain dollar return to all stockholders.
	- Dividend + capital gain percent return to all stockholders.
	- Dividend + capital gain dollar return above 'predicted market value' (see last section) to all stockholders.

- Dividend + capital gain percent return above 'predicted Market Value' to all stockholders.

Dollar sales were much more significant and explained much more of the variations in pay than any of the other variables and so the next step was to determine the effect of each of the above variables along with sales on the chief executive officers pay. This was then repeated using the pay of the Chief Executive Officer next year as the variable to be explained, and was repeated again for the pay of the Chief Executive Officer the year after that. Changes in the Chief Executive Officers pay were then related to changes in all the above variables (except Market Value, since change in market value is the same as Dividend plus Capital Gain return except for dividends, which are a policy variable). Finally changes in the Chief Executives pay next year were related to changes in the above variables this year. The change in sales was included in every run involving changes in Chief Executive Officers pay, along with each of the other variables taken one at a time. A constant term was used in every regression. There was thus a total of twenty nine regression runs, which are shown in more detail in Appendix C. Since five years of data were used the runs involving forward lags or changes used fewer observations.

RESULTS

- 1) Current sales were significantly correlated with current pay of the CEO, and explained about 36% of the variations in pay.

- 2) Current sales were significantly correlated with next years pay of the CEO, and explained about 25% of the variations in next years pay.
- 3) Current sales were significantly correlated with the year after next CEO pay, and explained about 21% of the variations.
- 4) Current market value were significantly correlated with this years CEO pay, explaining about 11% of the variations, but this effect became insignificant when sales were also included since sales and market value are highly collinear (collinearity between the two is about 48%).
- 5) None of the other variables were significantly correlated with the Chief Executive Officers pay by themselves, although the dollar return to investors above the 'predicted' return appeared to be negatively correlated with pay when sales were also included. Since the effect of the percentage return to investors above the 'predicted' return was not significant when sales were included this could be some obscure collinearity effect.
- 6) Both the dollar return to investors and the percentage return to investors for investing in the firm for the year were significantly correlated with the next years pay of the CEO when sales were included.
- 7) Changes in the current years pay of the CEO were always significantly correlated with changes in current years sales, and the only other variable that was significantly correlated with changes in pay was the percentage return to investors for the

year.

- 8) Changes in current sales were not always significantly correlated with changes in the next years pay of the CEO, and the sign of the coefficient was always negative. This years percentage and dollar return to investors and this year dollar return above predicted all seemed to have significant correlations with changes in next years pay. These results were obtained using only 141 observations, and the correlation coefficients were never above 13%. Nevertheless they seem odd and may be worthy of further investigation.

CONCLUSIONS

- 1) Of the variables tested only sales consistently showed a significant correlation with the current years pay of the CEO. The dollar return above 'predicted' (ALPHA) appeared to be negatively correlated with pay. If this effect is not due to some obscure collinearity effect it would suggest that Chief Executive Officers have little incentive to act in their shareholders interest and attempt to get a return above the shareholders opportunity cost of investing in the firm. However since the percentage return above predicted (CAPM) was not significant the safest conclusion to draw is that there is no evidence that performance in the shareholders interest has a significant effect on pay.
- 2) There is evidence that the total return to shareholders, in both percentage and dollar terms, has a significant correlation

with the next years pay of the CEO. There is also evidence that the dollar return to shareholders has a significant correlation with the change in the CEO's current pay.

- 3) The effects of the variables tested on the change in next years pay of the CEO appear counterintuitive and explain little of the variations in the change in next years pay. It is probably unsafe to draw conclusions here.

DRAWBACKS OF THE STUDY

- 1) Stock options were not included as part of the CEO's pay.
- 2) The 'betas' used to calculate 'predicted' returns were average betas for the five years ending June 1976. Ideally the beta for each company for each year should be computed, but even then the standard error of the betas thereby computed are very large for individual firms. The effects of changes in financial leverage and changes in the nature of each firms business will not be fully shown in this study.
- 3) The measurement of each of the variables used has significant methodological difficulties - as with all such studies.
- 4) High levels of collinearity between some of the independent variables impedes interpretation of the results.
- 5) Some of the relationships hypothesised as being linear in this study may not in fact be linear.
- 6) No conclusions can be drawn for firms outside the size range chosen in this study.

APPENDIX A

The study used data from the top fifty companies listed in the 1977 Fortune 500 for the years 1972 to 1976 inclusive, with the exception of three companies whose histories were not directly traceable for this period. There were thus forty seven companies with five observations for each. The companies studied were as follows:

- | | |
|-------------------------------|-----------------------------|
| 1) Exxon | 21) Westinghouse |
| 2) General Motors | 22) Goodyear |
| 3) Ford Motor | 23) Phillips Petroleum |
| 4) Texaco | 24) Dow Chemicals |
| 5) Mobil | 25) Occidental Petroleum |
| 6) Standard Oil of California | 26) International Harvester |
| 7) Gulf Oil | 27) Eastman Kodak |
| 8) IBM | 28) Sun Oil |
| 9) General Electric | 29) Union Oil of California |
| 10) Chrysler | 30) RCA |
| 11) ITT | 31) Esmark |
| 12) Standard Oil of Indiana | 32) Bethlehem Steel |
| 13) Shell oil | 33) Rockwell International |
| 14) U.S. Steel | 34) Caterpillar Tractor |
| 15) Atlantic Richfield | 35) Kraftco |
| 16) Du Pont | 36) Beatrice Foods |
| 17) Continental Oil | 37) LTV |
| 18) Procter and Gamble | 38) Xerox |
| 19) Tenneco | 39) RJ Reynolds |
| 20) Union Carbide | 40) Monsanto |

41) Ashland Oil

42) General Foods

43) Firestone

44) Boeing

45) Amerada Hess

46) Greyhound

47) WR Grace

APPENDIX B

Information sources for the data and a description of the calculation of derived data are tabulated below. All dollar units are in current dollars.

DEPENDENT VARIABLES

Description	Name	Units	Source
1. Chief Executive Officers salary, bonus, directors fees, deferred compensation. (Excludes stock options).	CEOPAY	\$	FORBES Annual 'Roster of the U.S.'s biggest corporations'.
2. As above, lagged forward one year.	CELAG1	\$	
3. As above, lagged forward two years.	CELAG2	\$	
4. Change in pay: calculated as CELAG1 minus CEOPAY	DCEO1	\$	
5. Change in pay: calculated as CELAG2 minus CELAG1.	DCEO2	\$	

INDEPENDENT VARIABLES

Description	Name	Units	Source
1. Sales - For detailed definition see Fortune, May 1977 p. 386	SALES	'000 \$	FORTUNE. Annual '500 largest industries.'
2. As sales - lagged forward one year	SALES1	'000 \$	

INDEPENDENT VARIABLES (CON'T)

Description	Name	Units	Source
3. Change in sales, calculated as SALES1 minus SALES	DSALES		
4. Value weighted return from investing in the New York Stock Exchange index. Dividends reinvested, tax exemption, cash to portfolio.	ZM	%	'A half century of returns on stocks and bonds.' L. Fisher, J. Lorie. Chicago. The University of Chicago Graduate School of Business 1977.
5. Return on short term treasury bills. One year to maturity Hold six months. Interest reinvested. Tax exempts.	RF	%	Same as ZM
6. The systematic risk or 'Beta' of the firms ordinary shares, averaged for the previous five years.	BETA	-	Merrill Lynch Pierce Fenner and Smith. 'security risk evaluation' June 1976.
7. Market value of the firms Equity shares (ordinary) at the beginning of the year.	MARVAL	'000 \$	FORBES - As above.
8. Return to investors of holding the firms stock for the year. Dividends and capital gains - see FORTUNE, May 1977 p.386	RETURN	%	FORTUNE - As above.
9. As 8, lagged forward 1 year.	RETUR1	%	

INDEPENDENT VARIABLES (CON'T)

Description	Name	Units	Source
10. Value of return to investors for holding the firms stock for the year, calculated as RETURN multiplied by MARVAL	TOTRET	'000 \$	
11. As 10, lagged forward 1 year.	TOTRE1	'000 \$	
12. Return above or below that expected under the capital asset pricing model, calculated as RETURN minus (RF + BETA(ZM-RF)).	CAPM	%	
13. As 12, lagged forward 1 year.	CAPM1	%	
14. Value of return above or below that expected under the capital asset pricing model, calculated as CAPM multiplied by MARVAL.	ALPHA	'000 \$	
15. As above, lagged forward one year.	ALPHA1	'000 \$	

For more detailed description of the assumptions and methodology behind the source variables consult the original sources.

APPENDIX C

RESULTS

Dependent Variable	Independent Variables-Significant (Coefficient) (Sign)	Independent Variables-Insignificant	Adjusted R ²	# Observations
1. CEOPAY	C(+)	RETURN	-.003	235
2. CEOPAY	C(+)	TOTRET	-.002	235
3. CEOPAY	SALES (+) C(+)		.3629	235
4. CEOPAY	MARVAL (+) C(+)		.1092	235
5. CEOPAY	C(+)	ALPHA	.0017	235
6. CEOPAY	C(+)	CAPM	-.002	235
7. CEOPAY	SALES (+) C(+)	CAPM	.3630	235
8. CEOPAY	SALES (+) C(+)	TOTRET	.3625	235
9. CEOPAY	SALES (+) C(+)	MARVAL	.3631	235
10. CEOPAY	SALES (+) ALPHA(-) C(+)		.3762	235
11. CEOPAY	SALES (+) C(+)	RETURN	.3656	235
12. CELAG1	SALES (+) TOTRET (+) C(+)		.2963	188
13. CELAG1	SALES (+) C(+)	MARVAL	.2816	188
14. CELAG1	SALES (+) C(+)	ALPHA	.2860	188
15. CELAG1	SALES (+) C(+)	CAPM	.2799	188
16. CELAG1	SALES (+) RETURN (+) C(+)		.3006	188
17. DCEO1	DSALES (+)	TOTRE1 C	.1016	188
18. DCEO1	DSALES (+)	ALPHA1 C	.0944	188

APPENDIX C RESULTS (CON'T)

Dependent Variable	Independent Variables-Significant (Coefficient) (Sign)	Independent Variables-Insignificant	Adjusted R ²	# Observations
19. DCEO1	DSALES(+)	CAPM1 C	.0956	188
20. DCEO1	DSALES(+) RETUR1(+)	C	.1181	188
21. CELAG2	SALES(+) C(+)	TOTRET	.2156	141
22. CELAG2	SALES(+) C(+)	MARVAL	.2151	141
23. CELAG2	SALES(+) C(+)	ALPHA	.2147	141
24. CELAG2	SALES(+) C(+)	CAPM	.2139	141
25. CELAG2	SALES(+) C(+)	RETURN	.2140	141
26. DCEO2	TOTRE1(+) C(+)	DSALES(-)	.0886	141
27. DCEO2	RETUR1(+) C(+)	DSALES(-)	.0766	141
28. DCEO2	DSALES(-) C(+)	CAPM1	.0368	141
29. DCEO2	DSALES(-) ALPHA1(+) C(+)		.1258	141

APPENDIX DCORRELATION MATRICES FOR INDEPENDENT VARIABLES

	SALES	MARVAL	RETURN	TOTRET	CAPM	ALPHA
SALES	1					
MARVAL	.4772	1				
RETURN	.0502	-.1418	1			
TOTRET	.1601	-.0545	.5638	1		
CAPM	.0054	-.1031	.6524	.3049	1	
ALPHA	.0809	-.0923	.4439	.6243	.6106	1

	DSALES	RETUR1	TOTRE1	CAPM1	ALPHA1
DSALES	1				
RETUR1	-.1207	1			
TOTRE1	-.0262	.5741	1		
CAPM1	-.0179	.6407	.3103	1	
ALPHA1	-.0733	.4293	.6074	.6167	1