PART TWO

Microtheory of Accounting and Control
Contracting for Managerial Skills

Managers play the most prominent and visible role in designing, implementing, and enforcing the contracts of a firm. They contribute a variety of managerial skills. Let us look at the relationship between managers and other agents. What are the special characteristics of managers as economic agents? How do these features affect the managers’ role in the firm and in its accounting and control?

Characteristics of Managers

The characteristics of managers are the basis for understanding their role in accounting and control. First, managers’ wealth takes the form of human capital, and their services for the firm stream out of this capital stock. Second, the quality and quantity of the flow of managers’ services are difficult to measure, and this difficulty becomes acute at the higher levels of the managerial hierarchy. Third, managers are continually in contact with other agents, and they are not permitted to work simultaneously for two or more competing firms or organizations in a managerial capacity.

Human Capital

Human capital is inalienable. It is physically impossible to detach the stock of human capital from its holder, so there can be no market for such a resource in its capitalized form. Long-term contracts for the flows of human capital are legally unenforceable by the buyer in most societies. Such contracts must be designed to be self-enforcing. Defined in Chapter 2, self-enforcing contracts are such that agents find it in their own best interests to do what others expect them to do.
Managerial capital is used on the job, but it does not get used up. On the contrary, much of it is acquired as a byproduct of doing the job. No more than a small part of this capital can be acquired off-the-job, for example, by getting a degree in management. Senior managers, with their large stock of human capital, get paid a great deal more than new entrants—the difference between new MBA and new undergraduate salaries is small in comparison.

Managers receive from firms not only the salary, bonus, fringe benefits, and perquisites, but also the work experience. Experience adds to their human capital and to their future earning power. Accretion of human capital is especially important to younger managers. The accounting and control is relevant to the determination of both the components. Accounting data are an important part of managers' track records and reputations.

The supply of managerial capital is inelastic in the short run because it must be accumulated through on-the-job experience. The supply of senior managers who need more experience is more inelastic. This inelasticity allows managers (as a class) to extract rents from favorable changes in the firm's legal and accounting environment. It also encourages managers to work for favorable changes.

Managerial human capital cannot readily be converted into cash, property, or some other form of human capital. For example, a manager cannot exchange marketing skills for violin playing skills. This barrier to exit from the managerial market makes managers vulnerable to expropriation of their wealth by a firm's legal and accounting environmental changes that are unfavorable to managers as a class. It also induces them to resist such changes. For example, in the mid-nineties, managers in the United States were virtually unanimous in their opposition to recognizing the economic value of stock options as compensation expense, as we will discuss later.

Since precommitment of human services is legally unenforceable by the buyer, it is not feasible to write employment contracts in which the job slot can be explicitly sold by the holder to another person. The absence of direct transactions in managerial positions weakens the market for such skills. Transactions in managerial skills, both inter- and intrafirm, rely largely on the reputations of individuals from their past performance. Accounting provides performance data through cost allocations, transfer prices, cost and profit centers, budgets, and rates of return in the intrafirm market and through financial statements, market surveys, and industry compilations in the interfirm market.¹

Finally, a large proportion of the total wealth of professional managers is tied up in their managerial skills. The human capital part of their portfolio cannot be diversified. The market price of their services is determined by past performance data because others cannot directly observe their skills. Due to this lack of diversification and observability, managers' welfare is highly sensitive to small changes in current performance data. These data tend to be extrapolated by others to evaluate the current value of their future services. Managers, therefore, try to smooth their performance data.
Measuring Managerial Contribution

Managerial contribution is different from other skills or contributions. Parts assembled, sales made, and touchdowns scored can all be measured, but there is no direct way of measuring management. The higher you go in the managerial hierarchy, the less observable the contribution becomes. The number of hours spent in the office may be devoted to making work rather than doing it, while hours spent away may bring valuable business to the firm. A folder full of carefully drafted memoranda may not be worth more than an idea scribbled on the back of an envelope. Personal rapport with colleagues and subordinates may be worth more in employee morale than many meetings and company picnics. The extreme difficulty in directly observing managerial contribution to the firm renders it difficult to define the manager’s contract. How should the manager be rewarded so as to be motivated to contribute the time, attention, and skills expected by other agents? This problem is solved by designing the managerial contracts in terms of observable outputs of their domain of control, a topic to which we shall return later in this chapter.

No matter how the managerial contract is defined, we can expect rational managers to choose their actions to increase their welfare under the contract. Individual rationality need not be myopic. If optimum behavior relative to a contractual form leads to collapse of the firm, and the manager has a stake in the firm’s survival, that stake must be explicitly included in defining managerial rationality. If the firm still collapses, the contractual form is unstable. We should not expect to observe such contractual forms in practice frequently.

Self-enforcing contracts try to minimize the shortfall created when an imperfect surrogate is substituted for unobservable managerial input. Accounting and control plays a major role in such contracts.

Contact with Other Agents

Managers work with other agents to plan, coordinate, renegotiate, implement, and readjust plans when surprises occur. Acts of nature and the unanticipated behavior of agents (e.g., suppliers of raw materials, government, labor, or other managers) are the two sources of surprises. As a class, managers work in direct contact with more people than any other class of agents. Most other agents deal directly with the managers and not with other classes of agents. Neither labor nor customers nor vendors of a firm have contact with the shareholders. Because of their coordinating role, the managers occupy the hub in the procedural scheme of the firm (see Figure 3.1).

Occupying a central position in the operating scheme of the firm is not the same as occupying a central position in the economic scheme of the firm (shown in Figure 2.1). By its definition, neither the managers nor any other agents occupy a central position in the contract model of the firm used here. The firm is merely a set of contracts among rational vendors of various factors of production. Man-
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Figure 3.1 Procedural Scheme of the Firm

Managers occupy the hub in the operating chart of the firm, but not in the economic chart. The functioning of factor markets rearranges the lines from the procedural to the economic chart.

Procedurally, managers negotiate the purchases and labor contracts and write out the checks to pay employees and vendors. Economically, however, they negotiate with each agent on behalf of all the rest and not on their own. The economic burden of payments to each agent falls not on the manager alone, but on all remaining agents. In the Alchian and Demsetz' model of a classical owner-managed firm, the entrepreneur is placed at both the procedural and the economic hub. Our discussion, however, is directed to the accounting and control of larger, publicly held firms.

The managers' position at the procedural hub of the firm gives them privileged access to information about the contractual obligations and rights of various agents, actual and expected levels of fulfillment of these rights and obligations, future demand for factor inputs provided by each agent, and future changes in their entitlements. This access to inside information, often in the form of accounting reports, creates the problems of adverse selection and moral hazard on the part of managers.
The problem of adverse selection arises because managers know things about the work environment that others, especially the shareholders, do not know. Adverse selection is the opportunity managers have to use this information for their personal advantage. The problem of moral hazard arises because other agents cannot see most of what managers do. Moral hazard allows managers to shirk their responsibilities.

In addition to adverse selection and moral hazard, managers could sell such inside information to competing firms for personal gain. Therefore, managers are prohibited from sharing their services among competing firms. A factory manager may preside over the neighborhood club, but is not allowed to manage the factory of a competitor. The former problem of self-dealing on the part of the manager is handled by the design of an accounting system with a built-in hierarchy of internal controls, supplemented by an external audit by independent agents and public disclosure of financial reports.

**Forms of Contracts for Managers**

The nature of managers' work, human capital, and intimate involvement in the contracts of other agents renders external enforcement of the manager's contract difficult. External enforcement of contracts through the legal system is possible when shared information about agents' contributions, entitlements, and contract fulfillment is available. Legal disputes are resolved on the basis of shipping documents, invoices, written contracts, and so on. This is easy to do for vendors, customers, and, to some degree, for nonmanagerial employees. Little hard evidence is available about managers' contributions to the firm. How can the managerial contracts be made to be self-enforcing?

A flat salary contract is simple. It does not depend on either the efforts or the results of the manager's effort. It is utilized, as we argue in Chapter 13, in compensating managers in public-good organizations when even the outputs of managerial effort are not easy to measure.

Such a contract is a poor motivational instrument, however, because it does not link pay to performance. Most private-good organizations can improve a flat wage contract by making at least a part of the compensation contingent on some measure of results produced by the manager.

How can the results be measured? No single measure of results is perfect. No production statistics (e.g., stock price, earnings per share, return on investment, product market share, cash flow, growth in sales, or cost reduction) measure managerial effort perfectly. They all depend, at least in part, on factors well outside the control of specific managers. A second and equally significant problem is that the relationship between the managerial efforts and the measured results is at least partially controlled by the managers, and is therefore subject to manipulation. Inclusion of results or output in compensation functions does not always serve as an effective motivating device for managers.
The formal part of managerial contracts does not state conditions under which a manager is terminated. Being fired is accompanied by the loss of compensation, fringe benefits, perquisites, and possibly reputation, which means reduced earning power. Managerial jobs rarely carry the security of tenure, severance pay for most managers is not large, and the notice period frequently is no longer than a few days. Even the "golden parachutes" that came into vogue during the 1980s do not provide tenure to senior executives. Large severance benefits promised under such managerial contracts are a device to induce top managers to behave in a desirable manner when the firm is a target for acquisition and their job is in imminent danger. Continuing to perform their duties in the firm under such uncertain circumstances is the first of these desirable behaviors. Giving up their job in exchange for the golden parachute, rather than use their privileged access to inside information to wage a scorched-earth battle against the outsiders in order to hang on to the job, is the second. How effective this innovation is in attaining its purported objective is an open question.

Other agents in the firm have the power to unilaterally terminate a manager's contractual relationship with the firm without giving reason. This power is known and accepted by managers, and helps balance the power managers have through their access to virtually all the information in the firm.

Accounting plays an important part in such contracts. Many of the planning, coordinating, and control tasks of managers are carried out through accounting procedures (e.g., budgeting). In addition, the accounting system determines their resource entitlement and thus affects their welfare. The following analysis of the role of accounting in contracts for managers provides a basis for understanding how managers choose accounting systems.

Managers' Preferences

Managers' preferences include pecuniary variables (such as salary, bonus, benefits, and options) as well as nonpecuniary variables (such as status, opportunities for growth, job flexibility, risk, and challenge). Some of the nonpecuniary variables determine future pecuniary compensation.

Salary is the part of compensation that is contingent only on continuation of the employment relationship. It is a rare managerial contract in which salary does not account for a significant part of pecuniary compensation. A Towers-Perrin survey revealed that, on average, salary accounts for about half of the total pecuniary compensation of the chief executive officers of large firms in the United States.3

The salary component in managers' compensation attests to the difficulty of measuring their contribution. The benefit component, on the other hand, is driven by the consideration of tax law and by the complex interaction of human preferences for goods and services versus money. This interaction is not well understood. The proportion of total pecuniary compensation represented by fringe benefits has grown considerably during the post-World-War-II period, largely due to the favorable provisions of the federal income tax law. Some other benefits (e.g.,
financial planning for managers) can be understood in terms of search costs and economies of scale associated with the purchase of services whose quality is difficult to ascertain. Yet a third class of benefits (e.g., country club membership) may be desirable not so much for their direct pecuniary worth, but as a signal of how valuable top managers think one’s services are to the company and what kinds of promotions and assignments one might expect in the future.

Even though the cost of benefits is not difficult to determine, not all benefits are valued for pecuniary reasons. Interactions among human preferences for money, goods, and services are not clearly understood, and the behavior of the economic person in corporate managers is occasionally intruded upon by emotions, a sense of self-worth, and other variables not easily incorporated into economic analysis. Few college professors would be both willing to pay an extra $50 a month for a larger office and willing to accept an extra $50 a month in exchange for moving to a smaller one. Ketsch, Thaler, and Kahneman give some interesting examples of such variables.⁶

For chief executives of the firms listed on the New York Stock Exchange, the American Stock Exchange, and the NASDAQ National Market System, the median total compensation in 1992–93 was $520,000. The median salary, bonus, and stock options were $280,000, $63,000, and $13,000 respectively. Ninety-one percent of these firms had stock option plans for chief executives. In 1995, the chief executive officer of US West, Inc. received $760,000 in salary, $450,000 in bonus or short-term incentive compensation (based on net income, cash flow, operating income, strategic accomplishments, and qualitative measures), restricted stock worth $2,083,292 with a two-year restriction, and 140,000 at-money stock options with a ten-year term.⁷ Holthausen found that bonus formulas are often truncated by a maximum and a minimum and do not usually make explicit references (with the exception of GAAP) to accounting methods used to compute the accounting numbers used in the compensation plan.⁸

The distinction between salary and bonus is not quite as clear-cut as it might first appear to be. In the sense that managers with unsatisfactory performance get fired from their jobs, salary itself can be thought of as a performance-based reward. In addition, even in the absence of a bonus, improved performance can carry the promise of a higher salary and promotion to a more responsible position. However, neither the loss of a job nor promotion and higher salary is specified as an explicit function of some performance variable known to the manager. Thus, the difference between salary and bonus is a matter of degree to which the link between compensation and performance is explicitly specified by a function that may be common knowledge among the managers. Bonus functions popularly used are piece-wise linear in performance measures.

Managers’ bonuses depend on performance and environmental variables. The value of a variable for this purpose depends on how much information it has about the unobserved effort of managers. Generally speaking, variables that are affected by such effort are the best. Such variables can be said to be controlled by managers. For example, sales volume carries information about the efforts of the mar-
marketing manager. However, the growth in GNP, which is not controlled by the marketing manager, also carries information about the manager’s effort when evaluated in conjunction with the sales volume. If a marketing manager holds the decline in sales to 10 percent during a recession when industry sales decline by 20 percent, one may justifiably reach a favorable conclusion about the unobservable effort of that manager. Thus, for the purpose of determining the bonus, uncontrolled variables such as GNP and competition can be labeled as environmental variables.

The amount of information a performance variable carries about the managerial effort can be assessed by the correlation between effort and results when the environmental variables are held constant. The informational value of an environmental variable, on the other hand, can be assessed by the change in this correlation when the value of the environmental variable is changed.

Environmental variables are not used to evaluate managers as frequently as they could be. However, development of portfolio theory has introduced new environmental variables (e.g., market performance, market risk of the portfolio) to the process of evaluating the performance of portfolio managers. The effect of this change has been a revolution in the way mutual funds are run, because fund managers are now evaluated not on the basis of their total return but on the basis of how this return compares with the return on other portfolios of comparable risk.

This development notwithstanding, however, there has been little progress in statistically evaluating the usefulness of various variables in assessing managerial performance. Most schemes for evaluating managers are developed by intuition and judgment. Frequently used accounting variables include sales, production, cost, profit, rates of return, earnings per share, market share, and the rates of change in these variables. Stock price and the change in stock price are the popularly used market-based variables.

Although “bonuses” are rarely negative, managers do share an element of the risk associated with the operations of the firm through variability of bonuses. Participation in a stock option plan has a similar effect. Risk sharing with managers might have only a negligible effect on the risk borne by the shareholders, but the motivational effects of risk sharing on managerial behavior are substantial. Risk-sharing features of managerial contracts are driven not so much by the shareholders’ desires to reduce their own risk as by the need to elicit creative effort from managers.

There is a limit, however, to which giving ownership rights to managers helps align their motivations with the shareholders’ motivations. A large undiversifiable and illiquid shareholding in the hands of managers may deter them from taking risks that are acceptable to the shareholders. This problem can be mitigated by giving out-of-money stock options to managers. If the stock price exceeds the specified price, managers can reap the benefits by exercising their options without having to bear the losses associated with price declines on shares of stock held outright.
In addition to the explicit components (e.g., salary, bonus, and benefits), managerial employment contracts may include implicit elements that can be just as important to managers. First, the conditions of termination are rarely specified. Second, the opportunity for personal growth and advancement means higher compensation and benefits in the future. These are as important as the current compensation to far-sighted managers, and therefore affect the choice among alternative contracts. Challenging assignments and the opportunity to exercise discretion and creativity provide managers with the chance to build their reputations. Reputation is the currency of internal and external managerial markets. Jobs that help develop transferrable skills are attractive because they make it easier to find another job. Power—the opportunity to direct the actions of others—may also attract some to a job. However, in business firms, compensation and power are so closely related that it is difficult to determine which is the principal, and which is the surrogate, variable.

Some aspects of managerial contracts are driven by tax laws, not incentives. Through careful tailoring of compensation plans, a firm can effectively transfer to the government a part of the burden of paying the managers. Nonqualified stock options, restricted stock, phantom stock, stock appreciation rights, or a performance-related bonus have received favorable tax treatment under the federal income tax laws at various times. Firms have tax reasons to use such plans, even if they provide no assistance in motivating and evaluating managers.

On the other hand, firms have no economic reason to use most insurance plans that are tax neutral and deferred wage/salary payment plans that are tax disadvantageous unless they are justified by incentive consequences. Therefore, one can assume that certain compensation schemes have been chosen for their incentive considerations only if they do not offer tax advantages.

**Contracts of Top, Middle, and Lower-Level Managers**

Just as a firm can be seen as a set of contracts, each subsidiary, division, or plant of a firm can also be seen as a smaller set of contracts or a subfirm. The position of the head of a subfirm is structurally similar to the position of the CEO of the firm. While the equity capital of the firm is supplied by a diffuse body of shareholders, the position of the supplier of capital, usually all capital, in the subfirm is occupied by the immediate superior of the head of the subfirm. A subsidiary of a publicly held corporation is like a privately held firm in its own right. The superior of the subsidiary's manager occupies the position of the controlling shareholders and the bankers of this subfirm. The entire firm can be thought of as a nested set of hierarchies, each being parallel to, and included in, the managerial hierarchy of the firm (see Figure 3.2).

The subfirm (the domain of responsibility of the lower-level managers) draws many of its resources directly from outside markets, and the cost of these resources is readily determinable. Labor wages, utility rates, and materials prices are examples of these costs. Some outputs of the subfirm may also go directly to ex-
ternal markets, where market prices are available to assess their value. When there are transfers of resources among the subfirms, their value must be assessed either in terms of physical measures, such as sales or production units, or by internally generated pseudo-prices.

The problem of poor observability of managerial contributions is present at the subfirm level also. Assessment of the performance of these managers also requires specification of a measurable variable or variables that can be used as a surrogate for managerial effort. A large part of the managerial accounting system is designed to meet this goal. Product costing, transfer pricing, and budgeting are some aspects of accounting used to measure the performance of managers of the subfirms. Let us illustrate with a few examples.

Consider the head of Division 1 in Figure 3.2. Suppose this division buys labor and materials to produce auto parts and ships these parts to Division 2. To examine the system of control for the managers of Divisions 1 and 2, we must first address the question of why these two divisions are not run as independent, freestanding firms. We can analyze the control system only in the context of a valid answer to that question.

First, suppose that the parts manufactured by Division 1 are traded in a perfectly competitive market. Following Coase’s explanation for the nature of the firm, there is no economic reason for the two divisions to be included within a single firm under these circumstances, because no market transaction costs are saved and eliminated through replacement of market exchange by administrative
action. Indeed, Hirschleifer proposed market price as a solution to the problem of determining the transfer price (price at which the product is sold by Division 1 to Division 2). This solution is applicable only in circumstances when the problem is economically trivial.

Second, suppose that the market for parts manufactured by Division 1 has significant imperfections and incompleteness. If the cost of engaging in market exchanges for these parts (e.g., selling, advertising, negotiation, purchasing, credit investigation) can be reduced by replacing the market transaction by administrative action, we would have an economic rationale for integrating the two organizations into divisions of a single organization. Of course, the cost of administration won't be zero. Instead of incurring costs of market exchange, the firm will now incur the costs of central administration and the collection of information from divisions and communicating to them. The firm must pay the cost of devising and administering a system of control for the managers who run the two divisions. Most important, division managers will use information they have to their own advantage, and it is not possible to guarantee that they will always make decisions in the best interests of the firm as a whole, inflicting the cost of suboptimality on the firm. There is an economic rationale for combining the two divisions into a single firm when the sum of all these costs is exceeded by the savings in the cost of market exchanges brought about by internalization of the two divisions.

The transfer pricing problem is often stated in a manner that ignores the circumstances that give rise to the problem in the first place. Why let the two divisions act independently in a decentralized setting if it has already been determined that it is not the most economical mode of operation for them? Integration of the two divisions into a single firm is predicated on the cost of market exchanges between them: being greater than the administrative and agency costs. After integrating two divisions under this rationale, one cannot then turn around and wish the administrative and agency costs away through an appeal to a costless but nonexistent system of market exchanges.

Managerial accounting systems generate pseudo-prices for the purpose of tracking resource flows to and from the domain of control of various managers. Attaching prices to resource flows makes it possible to aggregate heterogeneous resources to construct performance measures of the individual managers.

The dependence of performance measures of individual managers on pseudo-prices (rather than market prices) varies. The construction and use of pseudo-prices in managerial control is a practical solution for the problem of imperfection and incompleteness in the relevant factor markets when using the price system is costly. The major subjective factor in evaluation of these managers is the extent to which their production or results are attributable to factors beyond their control.

Formal analyses of simple one-period agency models reveal situations in which it is Pareto superior (better for some but worse for none) to include uncontrolled variables in determining a manager's rewards when such variables contain information about the local environment faced by the managers. Such results have
be used to criticize controllability as a valid criterion for selecting managerial compensation function. They have also been criticized for generalization to complex situations not covered by the simple agency. There is some truth to both arguments. One rarely encounters managerial compensation functions based solely on individual performance. Even a super-efficient foundry manager of a sinking firm is unlikely to receive a generous bonus. On the other hand, textbook arguments for controllability have to be viewed as arguments for greater emphasis on controllability, and not as arguments for complete elimination of uncontrolled variables from the compensation function.

Because the products or services of the firm are sold in external markets, the value of the production of the domain controlled by the top managers is readily determined from the transaction data. However, it is difficult to separate the contribution of the top managers to this production from the contribution of their subordinates. This difficulty in evaluating the individual performance of top managers is met by making them completely responsible for the hiring, firing, promotion, and evaluation of their subordinate managers and by evaluating the top managers on the basis of such gross measures of production as sales, profit and, to a degree, the share price. Their discretionary control over the accounting system that measures sales and profit, and so on, is limited by the outside independent audit.

Evaluation of the middle managers is most difficult because neither the resources that enter into their domain of responsibility (from the lower-level managers) nor the resources that leave this domain (that they provide to the top managers) are usually measured through external markets. The effect of the effort of an individual manager on the total income and share price of the firm is small, and incentives based on such measures alone induce a free-rider problem. It is a challenge to design a self-enforcing environment for such managers. Transfer pricing and divisional performance evaluation schemes, such as return on invested capital, are designed to seek this end by providing accounting substitutes for the missing market variables.

Summary

Managers occupy a special position in contracts. As agents, they have important characteristics. The difficulty of measuring their contribution and the direct contact they have with all other classes of agents lead to distinct contractual forms for managers. The internal control system of the firm is driven by the need to design implementable contracts for each manager in the hierarchy.

In the following chapter we examine the role of managers in making accounting decisions. Measurement of income and its relationship to managerial contracts is discussed in Chapter 5.
Notes

5The term “agency costs” refers to the costs incurred by agents (such as managers) in providing services to principals (such as shareholders). These costs arise from the principal-agent relationship and include monitoring, enforcement, and information asymmetry.

Additional Reading


CHAPTER 3  Contracting for Managerial Skills


