

The Firm

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The resources of which the firm is composed determine the range of activities undertaken by the firm. For example, the firm's plant and equipment determine the technology it employs, the commodities it produces and the inputs required to produce them. Since plant and equipment require to be operated by labour, the resources of the firm must include workers with skills and even temperaments which are appropriate to the utilization of that plant and equipment. Inputs to the production processes operated by the firm must be purchased, and the outputs from those processes must be sold; therefore the firm will require personnel to arrange its transactions in both input and output markets. Individuals who are responsible for the firm's purchasing and marketing activities will require to know the volume of inputs which will be required in production and the volume of outputs which will be available for sale.

Those who are responsible for the day-to-day operation of the plant and equipment will require to know the volume of throughput which available supplies can support and the volume of finished commodities which can be sold. Thus, the firm must have some means of accommodating flows of information, and these means will be embodied in physical resources (for example, telephones, typewriters, forms, computers and other data-processing machines) and in human resources (for example, the initiators of information flows, the recipients of information, telephonists, typists, computer operators and programmers). Moreover, the continuation of supplies of inputs and payments of wages and salaries will be jeopardized unless bills are paid by the firm, and the bills cannot be paid unless there are incoming funds from sales or borrowings. Evidently, some of the resources comprising the firm must yield services which ensure that the scale of financial needs are known and met. In short, the plant and equipment determine what the firm can produce and also what range of ancillary services must be provided within the firm. Certainly, production, purchasing, marketing and financing are closely interrelated activities, requiring more or less specialized resources enabling them to be undertaken in a co-ordinated fashion.

As a matter of practice, the various resources comprising

2.1 THE FIRM: WHAT IS IT?

Everyone can recognize a firm. Marks and Spencer is a firm; Woolworth's is a firm; so, too, are ICI, Ford and the corner tobacconist. If it is so obvious what a firm is, why bother to define it? One reason is that the theory developed here is largely about firms and the determinants of their growth and development. The way in which we define the firm will itself affect the analysis we adopt. A second reason is that the definition of the firm will provide one of the conditions of application of the economic theory of business strategy.

For the purposes of the present theory, the firm is defined as a collection of productive resources with organizational structure.

There are two classes of productive resources: physical and human. Penrose (1959, pp. 24-5) defines physical resources as

tangible things — plant, equipment, land and natural resources, raw materials, semi-finished goods, waste products and by-products, and even unsold stocks of finished goods [which] the firm buys, leases, or produces, part and parcel of a firm's operations and with the uses and properties of which the firm is more or less familiar.

Human resources of the firm are

unskilled and skilled labour, clerical, administrative, financial, legal, technical and managerial staff.

the firm cannot be co-ordinated without an organizational structure delineating responsibilities for particular kinds of decisions and the nature and directions of various information flows. As a matter of logic, there is nothing to distinguish the boundaries of the firm — the specific collection of resources comprising one firm, but not its suppliers or customers — except an organizational structure. Thus, for both practical and logical reasons, we require to specify the organizational structure as a distinct part of the definition of the firm, for the organizational structure is not itself a resource but rather derives from the services which are rendered by the human and physical resources of the firm.

2.2 THE ROLE AND EFFECT OF MANAGERIAL RESOURCES

In chapter 1, I suggested that, unlike neo-classical theories of the firm, the theory of business strategy explains the nature of economic forces which lead to the definition and adoption of particular business activities and the technological relationships upon which they are based. In the preceding section of this chapter, the firm was defined in part as a collection of productive resources which determine the technological relationships underlying all of the activities of the firm. Evidently, any change in the scale or scope of these activities will require corresponding changes in the scale and technological characteristics of the resources comprising the firm. It follows that any theory of business strategy which rests on the definition of the firm adopted in this book is equivalently a theory of the forces leading to particular changes in the firm's resources.

In other words, because the purpose of the theory of business strategy is to explain the direction of changes in the scale and scope of the activities of the firm, it is also a theory of the changes in the scale and scope of the resources comprising the firm. Having identified this relationship between resources and activities, we might just as well define a business strategy as a set of desired characteristics of resources which it is intended that the firm shall acquire.

Now, a strategy does not define actions in detail. It defines only some of the characteristics of intended or desired actions which have been given high priority. Thus, a business strategy gives some characteristics of investment projects high priority without necessarily defining all of the characteristics of any project. The determination of these characteristics will occupy much of the rest of this book.

One question arises immediately in this context: who assigns priorities to the characteristics of investment projects? The answer to this question and its principal implications for the theory of business strategy is to be found in the theory of the firm developed by Andrews (1949) and Penrose (1959) and is implicit in the historical studies by Chandler (1962, 1977).

These analysts have argued that the managerial resources of the firm provide both the central impetus to changes in resources and the principal impediment to such changes. The managerial resources are a sub-class of the firm's human resources and they are embodied in the firm's management team. This management team comprises the individuals who hold collective responsibility for co-ordinating the activities of the firm and for taking strategic decisions with regard to both investment strategies and competitive strategies.

Penrose argues that different members of the management team will typically have different areas of expertise, depending upon their respective educational backgrounds and previous career profiles. Those who have risen through the ranks of the firm will know and understand the informal interactions of personnel and the aspects of operating plant and equipment which cannot be expressed in job descriptions, technical manuals and organization charts. Some managers will have had considerable experience in specific business activities. A marketing director, for example, will have general knowledge of marketing techniques and, by virtue of having been involved in selling particular commodities, will have specialized knowledge of some individual markets as well as the sort of understanding of the operation of those markets which comes only with experience. In short, every manager will know some general things about management, some more specific things about the firm — the technology

it employs, the markets in which it sells — and will have experience (defined by Penrose as 'unteachable knowledge') which makes him or her unique (Penrose, 1959, pp. 44-9).

By definition, the management team must include those managerial staff who take responsibility for approving and effecting investment projects which expand production capacity and for introducing new lines, changing the technology employed by the firm, penetrating new markets and arranging finance. In general, the management team is responsible for the activities which together comprise growth, diversification and innovation as endogenous activities within the firm.

In small firms it is possible that one person will be the management 'team'. In larger firms management is specialized. To undertake large investment projects will require the services of more than one manager. In manufacturing industry such a project will require the services of individuals with knowledge and experience of technology, marketing, purchasing, finance and industrial relations. The individuals involved in effecting the investment project will require to work together so that the various aspects of the project will be mutually consistent and will come to fruition as and when they are needed. Furthermore, the choice of the investment project will depend on the knowledge and experience of the management team. To seek to enter markets which are unknown with a technology which is untried and requires as inputs commodities with sources and characteristics of which the firm has had no experience will leave much to chance and the vagaries of fortune. The more the firm's managers know of the relevant production processes and markets, the less uncertain they will feel in undertaking an investment project.

It is by no means impossible that a management team will wish to undertake investments which require expertise not already available within the team. Provided that the expertise will be required over a long period of time and so cannot be provided more economically by hiring a management consultant, a management team might well wish to add new members, either by promoting from within the firm or by hiring from outside. In either case, the new

members must be integrated into the team, a process which takes time. The incumbent members of the team will need to determine the extent to which they can rely on the new members' judgement and the range of their expertise. The new members will themselves require to form working relationships with the incumbents. The process of, in effect, becoming acquainted involves the new and incumbent members of the team in working together for some time, so that, in general, it will not be desirable to add to the team and immediately to rely on the new members to implement large-scale investment projects.

Since the range of expertise available to any management team is limited and cannot be increased immediately and indefinitely, and since the time available to any individual or group restricts the amount of co-ordination which can be undertaken at any moment, it follows that the managerial limitation is an impediment to the growth and diversification of the firm in the short run. That is to say, the managerial resources of the firm impose one limit on the rate at which the resources of the firm can be altered.

2.3 MANAGERIAL RESOURCES AND ORGANIZATIONAL STRUCTURE

While the managerial limit imposes an internal restriction on the rate of growth of firms, it is doubtful that it imposes an internal restriction on the size of the firm in the long run.

This doubt is not one which is widely shared by professional economists, largely, I suspect, because it conflicts with the assumptions of the neo-classical theory of the firm. For a competitive firm, as defined by that theory, would grow immediately to infinite size if it were not to encounter a range of diminishing returns to scale in the long run. Indeed, in his textbook on price theory, Milton Friedman (1962, p. 112) argues that firms must have U-shaped average cost curves, hence ultimately diminishing returns to scale, because otherwise they would be infinitely large. Since we know they are not infinitely large, they must produce subject to

diminishing returns to scale! I know of no better example of the fallacy of misplaced concreteness.

More formally, if firms are producing subject to increasing returns to scale, the solution to the constrained maximization problem of the neo-classical theory of the firm would yield maximum loss rather than maximum profit.

Since none of these problems affects the present theory, there is no reason to avoid a reasoned consideration of the likelihood of some limit to the size of the firm in the long run. Economists broadly agree that there is no technological reason to anticipate long-run diminishing returns to the scale of the firm. If the capacity of one plant is exhausted in the short run, that plant can be replicated in the long run. The long-run limitation on the size of the firm — apart from external, market considerations — results from organizational limitations.

The problem here is principally one of the flow of information and the ability of managers to get subordinates to conform to the goals of the management team. The case for this sort of limitation to the size of the firm has been put succinctly by Boulding (cited in Williamson, 1967):

There is a great deal of evidence that almost all organizational structures tend to produce false images in the decision-maker, and that the larger and more authoritarian the organization, the better the chance that its top decision-makers will be operating in purely imaginary worlds. This is perhaps the most fundamental reason for supposing that there are ultimately diminishing returns to scale.

Against this view is the proposition that organizational structures and techniques of management evolve in response to the needs of business. The changes in organizational structure and management technique have typically involved the processing of ever greater volumes of information by the firm and the delegation of authority, so that top managers evaluate the performances of their subordinates and do not attempt to monitor routine decisions before they are implemented. As a result, operating personnel may have the best information about market results and trends that is available and can reach decisions on production throughputs on the

basis of that information, while top managers are given information only on the cash-flow position resulting from the decisions taken by operating personnel. The financial information passed on to the top managers allows them to evaluate the effectiveness of decisions taken by the operating personnel in the various parts of the organization without having to consider the decisions themselves.

The extent to which such delegation takes place will increase as the scale and diversity of the firm's operations increase. On the basis of extensive business historical studies of large, successful American firms, Alfred Chandler (1962, pp. 383-96) has identified four broad phases in the interaction between the activities and organizational structures of firms. The first phase involved the acquisition by captains of industry of a large collection of productive resources. This was followed by a phase of consolidation, in which

the executives responsible for the destiny of the enterprise began to pay increasing attention to using [the resources of the firm] more rationally and efficiently. Among other things, this called for the formation of an administrative structure to mobilize systematically the resources within each functional activity. . . . (p. 385)

That is, in the first phase administration of rapidly growing and successful businesses developed in a haphazard fashion, reflecting the pattern of growth of the various activities of the individual firms. When they grew by backward integration (to secure their supplies) or by forward integration (to secure their markets) the administrative structures of the taken-over firms were left more or less intact. In the consolidating phase the functional form of organization was imposed on the entire firm, so that there arose a single purchasing, marketing or sales department, a single department arranging finance and so on. Broadly speaking, the development of the functional form of corporate organization was undertaken to achieve large-scale economies in purchasing and sales as well as production and to achieve better financial control. The intent, and often the achievement, was a reduction in unit costs of goods sold by virtue of administrative reorganization. In other words, administrative reorganizations

were undertaken to achieve long-run economies of large-scale production and were often successful in so doing.

The third phase defined by Chandler was one of diversification. (The particular factors which lead firms to diversify will be considered in the following sections. For the present, it is simply noted that firms typically diversify in order to fill out product lines using existing technology, or they develop new technologies and end-products in order to utilize by-products from existing production processes.) Growth by diversification led either to increased flows of information or to a dearth of information necessary for the efficient operation of multi-product firms. The allocation of resources to the various activities of the firm became more difficult once managers were required to consider trends in a variety of markets, a much wider range of supply influences and throughputs in a range of production processes which were often geographically dispersed, and, at the same time, to allocate financial resources among the myriad activities of the firm.

There was a further problem. The management team of a functionally organized firm typically comprises the managers of the functional departments. As firms become larger and more diversified, the time required to manage their respective departments increases, so that the functional managers have limited time or energy available to take a broad view of the prospects of the whole firm. This problem is one which, in discussion, businessmen often recognize as relevant to the medium-sized, functionally organized firm. A further problem, which has been analysed in some theoretical depth by Williamson (1971), is that functional managers may identify with the interests of their own departments rather than with the interests of the firm. In other words, each manager may be an 'empire builder'. The allocation of resources within the firm and plans for the growth of the firm in such circumstances will be the outcome of bargaining processes which have as their primary requirement the maintenance of departmental interests rather than the interests of the firm. In particular, profits could become a secondary goal of the firm, while the growth of its constituent departments becomes the primary goal. It

is in this way, according to Williamson, that the objective of firms becomes growth maximization rather than profit maximization.

The fourth phase in the organizational history of large firms arose from the incompatibility of the functional form of corporate organization with the production of a wide variety of products, the utilization of different technologies and/or selling to spatially dispersed markets. In this final phase the divisional form of corporate organization was developed.

The divisionally organized firm has an operating division for each of the markets in which the firm sells. The definition of such a market is necessarily arbitrary and could correspond to a geographical region, a type of commodity or a type of buyer. The precise meaning of 'the market' will be discussed below. However the market is defined by the individual firm, each division will normally sell a full range of complementary products in its market. Moreover, each division will be responsible for its own purchasing, production and marketing policies. Every division will report certain key indicators of its performance to a central office. The central office allocates financial resources among the divisions, provides them with 'troubleshooting' services and uses the indicators reported by the divisions to ensure that an adequate standard of operations is maintained. By allocating financial resources, the central office effectively controls the rate and direction of growth of each of the divisions and, hence, the firm. By receiving indicators of the performance of each division, the central office can act to eliminate unprofitable lines of activity or incompetent divisional managers.

One effect of the divisional form of corporate organization has been to render nugatory the managerial limitation to the sizes of individual firms. There are two reasons for this. One is that the managers at central office are able to keep tabs on the profitability of the firm as the firm increases the scale and scope of its activities. The second reason is that the management team at the central office has as one of its roles the consideration of proposals for investment in either existing lines of activity or new lines. While proposals for investment projects might originate either in the respective

divisions or in the research and development department of the central office, the finance for the projects is always provided by the central office managers. These managers also supervise projects until they are successfully implemented, at which time the operation of the new or expanded activity reverts to the supervision of divisional managers. The management team at the central office is thus freed to define the business strategy of the firm and to implement new investment projects while, at the same time, being able to keep an eye on the profitability of the divisions operating previously implemented projects by means of the divisional performance indicators.

In summary, as firms expand, their respective administrative structures may become increasingly inappropriate to the scale and diversity of the resources of which the firms are composed. In the largest and most diversified firms the administrative structures become increasingly incapable of transmitting the intelligible information flows required of them, and the individuals within each firm who are expected to act on whatever information they do receive become increasingly incapable of so doing for one of two reasons: either the information becomes distorted, as suggested by Boulding in the passage quoted above (p. 22), or they are receiving too much information to be able to make sense of it. The resulting managerial inefficiency — the inability to take decisions based on the best information and the most confidently expected results — leads to a search for new ways of limiting the information which must be processed by individual managers. Typically, new organizational forms are devised which impart to the managers information about limited aspects of the firm's activities and require fewer decisions from each manager, although each such decision may affect the acquisition and mobilization of more resources of greater value than before reorganization.

While it appears to be true that any particular organizational structure imposes a limit on the size of any particular firm, the historical fact is that when such limitations become binding they give rise to organizational innovation. That is not to suggest that every firm that reaches the limit of the

scale and scope of its activities which can be supported by its organizational structure simply invents a more appropriate structure. The process documented by Chandler is one of innovation by leading firms and imitation by other firms. The limits of any organizational structure will be reached first by the largest and most successful firms — the firms which have the resources and the will to grow and diversify but lack the organizational structure to support growth and diversification. Innovation in organizational structures by the leading firms reviewed by Chandler was achieved by trial and error and by overcoming the conservatism of an older generation of managers, who resisted the creative onslaught of a new generation of managers either rising within the ranks of the firm or bringing fresh insights from other areas of endeavour. Once the innovations were worked out and made operational, the new organizational principles were available for other firms to adopt and to modify to meet their own particular needs. In this way, one obstacle to the growth and diversification of all firms was eliminated, and the rate of growth of output in the economy could significantly exceed the rate of growth of the number of firms producing that output.

Evidently, the effect of organizational innovation was to push back the managerial limit to the size of the firm. Each successive phase of organizational innovation freed the management teams of large firms from routine administration and inefficient supervision of a congeries of activities within the firm, so that they could concentrate on the further growth and diversification of the productive activities of the firm. The functional form of corporate organization clarified the lines of authority and responsibility, so that, with no increase in managerial time and effort, the members of the management team could achieve economies of large-scale acquisition and use of productive resources while, at the same time, being able to give some attention to the development of new products, processes and markets. The divisional form of corporate organization reduced the increasing burden of supervision by members of the management team of the existing activities of the firm — a burden which became increasingly onerous as functionally organized

firms increased the range of the products that they produced and the markets in which they sold. In short, organizational innovations have historically had the aim and effect of releasing managerial resources for devising and implementing the business strategies which have created the large, diversified firms which dominate the modern capitalist economy.

2.4 MANAGERIAL MOTIVATION

Only growing and diversifying firms are likely to come up against their organizational limits and, therefore, to require organizational change in order to grow and diversify further. Clearly, no firm is likely to reach this position unless its management team either seeks growth and diversification as a primary goal or accepts it in pursuit of some other goal or goals.

Many economists postulate a universal goal for managers. According to the textbook neo-classical theory, all managers or entrepreneurs are assumed to seek maximum profits. The behavioural theorists of the firm, such as Cyert and March (1963), assume that the managers of any firm will form a view of an acceptable level of profits – a view which can and usually will be revised in the light of experience. Their goal will then be this ‘satisficing’ level of profits, which is unlikely to be the maximum level of profits, since it is extremely costly to acquire sufficient information to determine what level of profits is the maximum. William Baumol (1959) argued that managers seek to maximize sales revenue subject to some minimum profit constraint. Marris (1964) argued, in an equally influential book, that managers seek to maximize the growth rate of their firm’s assets subject to a constraint on share values which would lead to a forcible take-over as shareholders sold their equities to another firm. These are the assumptions of managerial motivation which have attracted the most attention among economists who study the firm, the market and the industry.

All of these motivational assumptions have been adopted to generate conceptually simple models of the behaviour of firms. The cost of this simplicity is the heroic assumption

that a single assumption can describe the hopes, desires and ambitions of individuals in a wide variety of circumstances. Surely there is a case for making a much weaker assumption which is not in conflict with the various particular assumptions of the neo-classicals, the behaviouralists, Baumol, Marris or, indeed, any other motivation which might characterize particular entrepreneurs?

Such an assumption is that the first goal of the management team of any firm is the survival of that firm. (I am assuming that management teams have lexicographic preference orderings.) Provided that the firm survives, the managers could seek maximum profits, satisfactory profits, maximum sales revenue or maximum growth. Unless the firm survives, none of these goals can be achieved. While this assumption will appear self-evident to many, it does not always figure in economic analysis. In neo-classical theory in particular, firms are assumed to enter an industry whenever profits are above some ‘normal’ level and to exit without a whimper when profits fall below that level. There is nothing in the neo-classical theory of the firm that reflects anxiety on the part of the entrepreneur that his firm should survive a day longer than its capacity to earn at least normal profits. But then the neo-classical theory of the firm is not about the firm.

The proposition that the self-employed and the managers of corporations are concerned first with the survival of their enterprises follows from the observation that such individuals typically depend upon their employment (or self-employment) for a considerable part of their incomes and, perhaps, their wealth. The failure of the firm of such a manager would necessarily interrupt his employment income. If, when a manager’s firm failed, he were able to move on to another firm as manager, the loss of income might be small. However, to run a string of firms into bankruptcy would hardly be a recommendation to the management teams of other firms or to the prospective creditors of a would-be self-employed manager. Past success in business is always taken to be the most reliable predictor of future success in business, and both income and career prospects are diminished when the firm one manages fails to survive. It seems likely that the cost

to its managers of the failure of a firm increases as the number of firm failures credited to them increases.

The strong assumptions of managerial motivation usually adopted in theories of the firm lead to predictions of firm behaviour. The weak assumption employed here leads to a correspondingly weaker, but equally clear, prediction of firm behaviour. The prediction is this: given the ultimate goal of any management team, be it profit maximization, growth maximization, satisficing, sales-revenue maximization or whatever, that team will choose the path to that goal which entails the greatest net cash flow whenever the choice is unambiguous.

This weak prediction will come as no surprise to any businessman. It follows from the fact that the *sine qua non* of firm survival is that the firm must be able to purchase inputs to its production processes and to the supportive activities of the firm which do not directly yield saleable outputs, and that the firm must be able to hire labour. If the firm does not acquire goods and services for cash, it must do so on credit. To continue to purchase goods and services on credit, the firm must pay its bills. In order to meet its bills, the sources of cash for the firm must exceed its uses of cash — its net cash flow must be positive. Moreover, the greater the net cash flow arising from any one activity, the smaller the effect on the firm's ability to meet its bills will be any failure resulting in a negative net cash flow arising from other activities of the firm. In effect, by choosing the greatest net cash flow consistent with the higher objectives of the management team, the managers of the firm are providing themselves with some insurance against unexpected future disasters and against the possibility that risky investment projects will fail to provide the hoped-for contribution to the profits and cash flow of the firm.

To say that a management team will choose that course of action leading to a particular goal which entails the largest net cash flow whenever that choice is unambiguous is not to say very much. For the uncertainty of future events makes it unlikely that the choice will be unambiguous. Nonetheless, it is equally likely that managers will be able to form

a view that there are two classes of course of action available to them, and that the courses of action in one class will yield higher cash flows than the courses of action in the other. They might not be able to draw a clear boundary separating the two classes, but that will not prevent the managers from believing that the two classes exist and that some courses of action clearly fall into the high-cash-flow class and others into the low-cash-flow class. This is a rather stronger assumption but one which, in an uncertain world, also has stronger justification.

2.5 UNCERTAINTY

Uncertainty is a lack of confidence in one's own judgements of the likely consequences of commitments undertaken in the present. Such uncertainty in business reduces the scale and scope of investment projects which managers are willing to undertake. As we shall see, uncertainty avoidance — or better, perhaps, uncertainty reduction — is one reason for, and a result of, the adoption of business strategies which rely as extensively as possible on resources and activities with which the firm is familiar.

This sort of notion is hardly novel. Keynes, for example, argued that increased uncertainty lowers the marginal efficiency of capital schedule relating expected future yields from investments to the cost of investments which will be undertaken. As he wrote (1936):

The schedule of the marginal efficiency of capital is of fundamental importance because it is mainly through this factor . . . that the expectation of the future influences the present. (p. 145)

The considerations upon which expectations of future yields are based are partly existing facts which we can assume to be known more or less for certain, and partly future events which can be forecasted with more or less confidence. . . . We may sum up the state of psychological expectation which covers the latter as being the *state of long-term expectation* which depends on the confidence with which we make this forecast — on how highly we rate the likelihood of our best forecast turning out quite wrong. If we expect large changes but are very uncertain as to what form these changes will take, then our confidence will be weak. (pp. 147-8)

In a similar vein, although in a different theoretical context, Penrose (1959) has argued:

Subjective uncertainty about the future and, in particular, about the weight to be given to various possible outcomes, can be traced to two sources: 'temperament' (for example, self-confidence), and an awareness on the part of the entrepreneur that he possesses insufficient information about the factors which might be expected to determine the future course of events. Uncertainty resulting from the feeling that one has too little information leads to a lack of confidence in the soundness of judgements that lie behind any given plan of action. (pp. 58-9)

Keynes was concerned with the volume of investment, Penrose with the direction of investment. Both took the view that uncertainty is partly subjective — what Penrose called 'temperament' and Keynes called 'animal spirits' (1936, p. 164) — and partly objective, in the sense that we are objectively ignorant of the future. Lack of information about the present increases one's feelings of ignorance about the future and one's 'temperament', or 'animal spirits', or nervous energy will determine the extent to which such ignorance predisposes one to inaction.

That Keynes and Penrose believed these things does not mean they are true — although it would be hard to find keener observers of business and businessmen. Nonetheless, the proposition that lack of information leads to uncertainty and uncertainty to inaction is a fruitful hypothesis in that it enables us to explain both observed investment behaviour and observed competitive behaviour.

2.6 FINANCIAL IMPLICATIONS OF THE WEAK MOTIVATIONAL ASSUMPTION

The requirement for the survival of the firm that its net cash flow be positive on average over time imposes a limit on the scale of investment projects undertaken by a firm at any moment. For the uses of funds for investment cannot remain forever greater than the sources of funds, although over short periods of time the firm can deplete its financial

reserves to cover excesses of uses over sources of cash. Over substantial periods of time, however, the need to maintain positive average cash flows will impose a limit on the growth of the firm if the management team's collective desire for growth does not.

So much is a clear implication of the weak assumption of managerial motivation. But it is not the only implication. A second implication, which will be of some importance when we turn to issues connected with price determination in chapter 8, is that management teams will prefer to finance investment internally rather than externally.

The sources of funds for a firm during any period of time are its gross trading profits, *plus* any non-trading income from, for example, holdings of financial assets, *plus* net increases in borrowings by the firm and new issues of equity shares. The uses of funds are investment expenditures *plus* acquisitions of liquid and illiquid financial assets. Since, in the nature of double-entry book-keeping, sources and uses of funds are equal, we can write

$$P + \Delta B - T \equiv I + \Delta F + \Delta L \quad (2.1)$$

where P is gross profits and non-trading income (including additions to depreciation and contingency reserves), ΔB is new issues of the firm's own shares and debt instruments net of any debt repayments and T is all transfer payments by the firm including taxes, interest and dividends. Thus, the left side of identity (2.1) represents the sources of funds to the firm. The right side gives the uses of funds: I , which is gross investment expenditures, ΔF which is net acquisitions of illiquid financial assets and ΔL which is net acquisitions of liquid financial assets (that is, 'cash'). By simple rearrangement of identity (2.1), we have

$$\Delta L \equiv \underbrace{(P - T)}_{\text{internal finance}} + \underbrace{(\Delta B - \Delta F)}_{\text{external finance}} - \underbrace{I}_{\text{gross investment}} \quad (2.2)$$

As indicated in expression (2.2), the net cash flow of a firm (that is, increases in its stock of liquid financial assets) is the excess of internal *plus* external finance over gross investment. Internal finance is defined as trading profits and non-trading income net of taxes, interest and dividends and external

finance is the excess of increases in debt and equity issues over sales of illiquid financial assets. Gross investment, of course, is all expenditures on the purchase of plant and equipment plus the cost of any increases in stocks of direct inputs and semi-finished and finished goods.

In the analysis of business strategy, issues involving short-term finance are obviously far less important than those involving long-term finance except in so far as they affect the long-run cash-flow position of firms. The effect here is through the generation of internal finance in the long run, for short-term financial operations are undertaken principally to provide for working capital during seasons when production costs are not covered by sales revenues. If firms maintain a constant throughput in order to avoid inefficient operation of plant and equipment and shut-down and start-up costs while sales fluctuate about some anticipated norm, revenues will exceed costs during the busy seasons, and costs will exceed revenues during the slack seasons. The financial managers of the firm will borrow short-term when costs are running ahead of revenues and will buy short-term financial assets when overdrafts are repaid and revenues continue to run ahead of costs. The short-term borrowing to finance stocks of finished but unsold outputs reduces direct costs of production and so increases gross trading profits by more than the interest payments on the overdrafts. The short-term lending generates interest receipts which are an element in non-trading income. Both short-term borrowing and lending, therefore, increase average flows of internal finance ($P - T$).

In the long run, management teams which conform to the weak assumption of managerial motivation will favour internal rather than external finance of investment. The argument in support of this proposition has been developed extensively by Marris (1964), Eichner (1976) and Wood (1975). What follows is a summary of that argument.

Public companies with shares quoted on the stock exchanges are vulnerable to being taken over by any other firm or any person who can purchase a controlling block of shares on the market. Any such purchaser — or take-over raider — must clearly have considerable finance available to

succeed in purchasing a controlling share interest in a firm of any size. Indeed, one characteristic of a firm which renders it resistant to take-over threats is large size (Singh, 1971).

To be successful, a take-over raider must be willing to pay a price for shares which is higher than the price that anyone else in the market will pay. In effect, the take-over raider must value those shares more highly than 'the market'. Now, a take-over raid is not simply a financial strategem. It is staged in order to gain control of the real assets of the firm, since in a purely financial operation the raider could spread his risk over a large number of firms' shares and other assets. A take-over raid, however, always raises the prices of the shares of the raided firm.

What would induce a firm or financier to stage a take-over raid? Clearly, a raider will expect to generate a higher return with the productive resources of which the raided firm is composed than is currently being generated. The raider might hold the view that the firm is using its existing resources inefficiently or that it has been following business strategies for which its resources are ill-suited. Neither of these views is exactly redolent with confidence in the incumbent management team, since both amount to a belief that the firm is badly managed. If the take-over raid were successful, the incumbent management team could expect the sack. Since the weak assumption of managerial motivation derives from the prior assumption that individual managers are concerned to remain in employment, we might expect that managers will seek to avoid take-over raids for the same reasons that they will seek to avoid the outright liquidation of their firms.

One way to avoid take-over raids is to minimize issues of equity shares. For one thing, closely held companies cannot be taken over in impersonal stock-exchange transactions. The owners of the firm must agree to the sale, and, to the extent that these owners also manage the firm or are closely related to the managers (as is usual in such cases), forcible take-overs are not practicable. But the more widely dispersed the shareholdings and the more impersonal the relationships between the members of the management team and the owners of the majority of voting shares, the

more vulnerable will the firm be to a take-over raid. Moreover, the issue of new shares typically reduces the prices on the stock exchange, since supplies are increased relative to demands. By reducing share prices and, therefore, the cost a take-over raider must incur in order to gain control of the firm, new share issues add to the firm's vulnerability.

A further effect of share issues is that they increase the size of dividend payments by the firm. This is not a legal obligation, but it is a matter of prudence. For small dividends or missed dividends reduce share prices, thereby increasing vulnerability to take-over raids without further share issues. For this reason, share issues reduce the internal finance available to the firm by raising transfer payments — T in expressions (2.1) and (2.2) — relative to gross earnings (P). That is, by resorting to share issues to finance current investment instead of relying on internal finance, the firm not only increases its vulnerability to take-overs, but also reduces the internal finance which will be available in the future.

External finance from bond issues and longer-term bank debt does not open the door to take-over raiders as share issues do. Of course, interest payments are legal obligations which have the same effect on future flows of internal finance as dividend payments. What is more important is that the larger the debts of the firm relative to its assets and particularly its liquid assets, the greater the risk to creditors if the firm should fall on hard times, for the higher the debt-equity ratio of the firm (its financial leverage), the smaller the proportion of the firm's assets which will be available to repay long-term debts in the event of liquidation. Moreover, the greater the financial leverage of the firm, the smaller will be the proportion of any return on capital invested which is available to bolster the liquid reserves of the firm and so the smaller will be the value of liquid assets available to creditors in liquidation. In such circumstances, creditors are more likely to call in the Official Receiver to wind up the firm in the face of relatively minor setbacks which the management team has confidence that the firm could survive.

For all of these reasons, management teams will prefer to avoid external finance in so far as that is compatible with

their strategic objectives and, in the short run, they might tailor their investment strategies to the limits of external finance which they and their creditors deem prudent.

It would be wrong to suggest in this context that internal finance has no costs. For internal finance is determined largely by sales and the profit margins on sales. To increase internal finance available for investment will require increased profit margins in the face of inelastic conditions of short-run demand. Increased profit margins, of course, imply higher prices in relation to costs and so expose the firm to competitive pressures which might well reduce sales and internal finance — hence cash flows — in the future. But as long as the cost of internal finance does not exceed the cost of external finance by more than is warranted by the greater risk attaching to the latter, management teams will finance investments internally rather than externally.

I shall take up these points again in some detail in chapter 8. For the present, however, we may note that the costs of both internal and external finance and the restrictions on the availability of each do impose a limit on current investment expenditures and therefore the rate of growth of the assets and other resources of the firm. Indeed, unless the costs of finance are no greater than expected returns on an investment, the investment will not be undertaken and the pace at which the firm moves towards its strategic goals will be limited. Thus, there is a financial limit to the growth of firms which is distinct from the managerial limit; since there is no reason to expect both limits to become binding at the same rate of growth of resources, the growth of firms will be restrained by at most one of these limits. If, however, the management team of a firm is not growth-oriented, then it might well be that neither limit is relevant.

2.7 RESOURCES, GROWTH AND DIVERSIFICATION

By definition, the managerial decision is not a matter of routine. Managerial decisions are taken with respect to unusual problems which arise from the existing activities of

the firm or with respect to possible changes in the scale and scope of the activities of the firm.

Conceptually, problems which arise in the day-to-day operations of the firm, and which cannot be handled within the routine procedures adopted for those operations, can be treated as changes in the constraints under which firms operate in the short run. A change in the conditions of supply of inputs or increasing pressure on existing plant and equipment or on the existing administrative structure of the firm amount to constraint changes. If the conditions of supply change so that the production activities of the firm are limited by the availability of inputs, the constraint is newly binding and imposed by market limitation. Such a change could be sudden and dramatic, as in the case of the withholding of oil supplies by the OPEC countries in the early 1970s. If the administrative structure of the firm is becoming increasingly inappropriate to the scale and scope of activities in which the firm engages, we have a constraint which is internal to the firm and which, although not itself changing, comes to be increasingly binding as other constraints are removed. Alternatively, as the demand for the outputs of a firm increases, some productive resource of the firm might become fully utilized, thereby restricting the outputs which the firm can produce.

In general, I will argue, the role of managerial decision-making is to eliminate or to circumvent constraints on the existing activities or on the expansion of the activities of the firm. The relevant constraints might result from limitations of the firm's resources, from its administrative structure or from market factors. Resource limitations are those which prevent a firm from expanding when there are unsatisfied demands for its outputs or which result in underutilization of resources because other, complementary, resources are fully utilized. Limitations arising from the administrative structure of the firm are those which are manifested by inadequate or incomprehensible information flows. These were discussed above in section 2.3. Market limitations are those which prevent a firm from expanding as quickly as its resources allow because the demands for its outputs are growing too slowly or because it is unable to

acquire the necessary inputs to sustain the existing or growing activities of the firm.

Administrative change and innovation has already been discussed. I argued that it results from proliferation of the resources of the firm and the markets in which the firm buys and sells. In other words, the resources and the nature and diversity of the markets of the firm determine the appropriate administrative structure. If we can ascertain the forces influencing the development of the resources and markets of the firm, the analysis of the administrative structure can be undertaken at a distinct and subsequent stage. As will become apparent, however, resource and market limitations cannot usefully be analysed separately.

A simple, contrived example

In the remainder of this section, a simple example of the definition of a managerial decision and the factors leading to particular decisions will be developed. The example is taken, with modifications, from the classic linear programming text by Dorfman, Samuelson and Solow (1958, pp. 133-8). Relying on this example has the advantages of lending clarity to the exposition and, at the same time, establishing the relationship between the present theory and the constrained maximization procedures upon which the neo-classical theory of the firm and some of the managerial theories (for example, Baumol, 1959; Williamson, 1964) are based.

In this example, we consider a firm which produces cars and lorries. There are four distinct activities making up the production process: metal stamping, engine assembly, car assembly and lorry assembly. Each of these activities is undertaken in a separate department. The stamped metal department makes both car and lorry bodies. The engine assembly department makes both car and lorry engines. The car assembly department puts together the car bodies and engines to complete the cars, and the lorry assembly department puts together the lorry bodies and engines to complete the lorries. The monthly production capacities of the four production departments are given in table 2.1.

Table 2.1
Monthly capacities of car- and lorry-production activities

Department	Commodity	
	Cars	Lorries
Metal stamping	25,000	35,000
Engine assembly	33,333	16,667
Car assembly	22,500	
Lorry assembly		15,000

As in all linear programming problems, it is necessary to assume that, for example, the metal stamping department can produce either 25,000 car bodies or 35,000 lorry bodies or any linear combination of those, such as $(\frac{1}{4}) \times 25,000$ car bodies and $(\frac{3}{4}) \times 35,000$ lorry bodies or $(\frac{3}{4}) \times 25,000$ car bodies and $(\frac{1}{4}) \times 35,000$ lorry bodies and so on. There is a fixed amount of time available in which to use any of these resources, and the way in which that time is divided between alternative activities determines the outputs from each activity. The assumption is reflected in the standard diagram for the graphical solution to linear programming problems reproduced as figure 2.1. In that diagram, the line *CC* gives the maximum capacity of the car assembly department (= 25,000), and *LL* gives the maximum output capacity of the lorry assembly department (= 15,000 lorries). *MM* gives all the possible combinations of car and lorry bodies which the stamped metal department could produce if fully utilized. *MM* is thus a straight line between the point on the car output axis representing 25,000 cars and the point on the lorry output axis representing 35,000 lorries. These points are taken from the data in table 2.1. The line *EE* is determined in the same way to represent the maximum production capacity of the engine assembly department – capacity ranging from 33,333 car engines to 16,667 lorry engines or any linear combination of these outputs.

Suppose, further, that the gross unit profit (price less unit direct costs) is £150 on cars and £65 on lorries. To derive an iso-profit curve, we note that a reduction of one

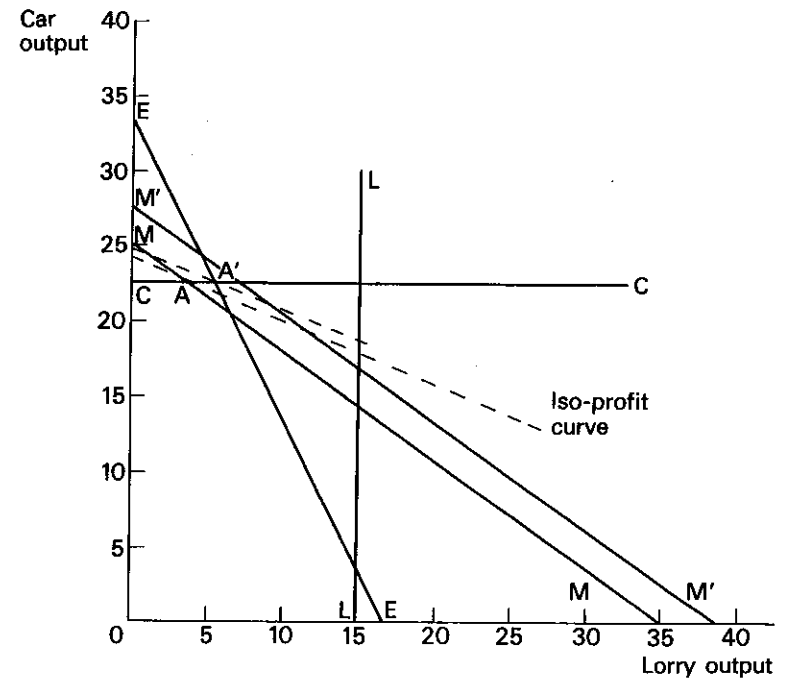


Figure 2.1

Graphical solution to the linear programming problem of optimal car and lorry production

unit of lorry output loses the firm £65 profit. To restore that profit, car output must be increased by $(65/150)$ or 0.43 units. That is, for every reduction by one unit of lorry output the iso-profit curve must rise from right to left by 0.43 on the vertical axis. The absolute value of the slope of the iso-profit curve is 0.43. Such iso-profit curves are shown by the dotted lines in figure 2.1. Obviously, the iso-profit curves which are further from the origin represent higher levels of profits.

With the data given in table 2.1, the graphical solution to the constrained maximizing problem yields point *A* in figure 2.1 as the optimum. Point *A*, being at the intersection of *CC* (maximum car assembly capacity) and *MM* (maximum metal stamping capacity), indicates that the firm should

produce as many cars as possible with its existing plant and equipment and that this will involve full utilization of metal-stamping capacity but under-utilization of engine-assembly and lorry-assembly capacity. This position will maximize the firm's profits with its given resources.

Consider now some of the options open to this firm.

Option 1: To maintain the maximum level of profits with its existing resources and, thereby, to maintain under-utilized engine- and lorry-assembly capacities.

Option 2: To add metal-stamping equipment to its existing complement of resources so that lorry production can be increased. This option involves increased utilization of the existing engine and lorry assembly departments.

Option 3: To seek alternative ways of utilizing the spare engine-assembly capacity by diversifying the product range of the firm.

Option 4: To increase the capacity of the car assembly department so that car output is increased. Since the metal stamping department is already producing at capacity, this will involve a reduction in lorry output.

While not exhaustive, these options will suffice to focus the present discussion.

Option 1 would be adopted if the firm's management team were content with the existing scope and scale of the activities of the firm or if the management team were only just able to cope with the problems which arise at that scope and scale of activity. The remaining options become relevant only if the management team desires or feels impelled to seek growth and diversification.

The effect of Option 2 is depicted in figure 2.1. In that diagram, it is assumed that metal-stamping capacity is increased by 10 per cent. This would be the case if the initial equipment of the metal stamping department consisted of ten presses and the minimum increase in capacity would involve the purchase of an eleventh press. The new capacity of the metal stamping department is represented by $M'M'$ in

figure 2.1. As a result of the increased metal-stamping capacity, the metal stamping activity would cease to impose any constraint on lorry and car production by the firm. Provided that unit gross profits were unchanged, the short-run profit-maximizing position of the firm would be given by point A' , at which car-assembly capacity remains fully utilized and the constraint on lorry output is now imposed by engine-assembly capacity, given by EE . The investment in metal-stamping plant increases the flow of profits by £65 multiplied by the increased lorry output.

A similar graphical analysis of Option 4 can be carried out by raising CC . It will readily be seen that this option involves a movement along MM towards the vertical axis at which lorry production is foregone altogether.

If the management team were to choose between Option 2 and Option 4 alone, the choice would depend upon the team's assessment of the likely future growth of demand in the lorry and car markets respectively. If the demand for cars were expected to be the more buoyant, the management team would do well to increase car-production capacity — Option 4. If the demand for lorries were expected to be the more buoyant, Option 2 — increasing lorry-production capacity — would be the better choice. If, however, the management team were to reckon that the demand for motor vehicles was unlikely to grow and that the firm's share of that market was unlikely to increase, then neither Option 2 nor Option 4 would be a clever choice. But why, then, should they choose Option 3?

The answer to this question is important and complex, and the next chapter is devoted to its answer. Briefly, however, we may note the following points:

1. Excess capacities are likely to attract the attention of managers because they will entail costs with no corresponding revenues. Resources which are not fully utilized must still be maintained and, perhaps, financed. That is, there are likely to be some fixed costs, so that any increase in capacity utilization rates reduces unit costs of production.
2. The cost of implementing any particular investment project

is smaller as the unutilized resources of the firm which enter into that investment project are greater. That is, an investment project which requires an engine-assembly plant will be cheaper for the firm of the present example to implement than it would be for a firm without spare engine-assembly capacity. The firm of this example would not have to purchase that plant and equipment.

3. The information which the firm already has about engine assembly reduces the ignorance of managers with respect to an investment project requiring the use of engine assembly plant and, therefore, the uncertainty of the project.
4. The identification and choice of Option 3 is compatible with what we know of the development of human institutions, science, technology and art.

The first two of these four points imply that Option 3 is more likely to fall into that class of potential courses of action which yield higher net cash flows because it entails a smaller use of cash to implement and because it spreads fixed costs over a larger output. The last two points are in effect statements about human action and human inventiveness. Their validity is not obvious from economic principles and must therefore be demonstrated. Such a demonstration is offered in the following chapter, where its implications for the relationship between the resources of the firm and the nature and direction of the growth of the firm will be analysed in some detail.

Economic Determinants of Investment Strategies

3.1 INVENTION, INNOVATION AND IMITATION

The economic analysis of technical change — that process whereby new production technologies are introduced and new commodities created and sold — was given its orientation by Joseph Schumpeter (1928, 1934, 1939). Schumpeter argued that the process of technical change could be analysed in three distinct phases: invention, innovation and imitation.

Invention is the creation of new objects which are of potential industrial or commercial use. They might be producers' goods which embody new production processes or consumers' goods which satisfy previously unsatisfied desires. Innovation is the introduction of inventions into industrial or commercial use. Imitation is the modification of innovations involving slight changes in the basic design, so that the innovation can be applied to different production activities or to the satisfaction of different consumer desires. Schumpeter argued that these three phases of the process of technical change were distinct because they were undertaken by different individuals.

Invention, according to Schumpeter, is an activity beyond the purview of the economist. Innovation is undertaken by the entrepreneur, who selects inventions to produce for use or sale after considering those inventions which are available as a result of extra-economic activity. The innovating entrepreneur is by definition exceptionally farsighted and imaginative in that he perceives the economic value of particular