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A RESOURCE-BASED VIEW OF THE FIRM

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FOR DISCUSSION PURPOSES ONLY

A RESOURCE-BASED VIEW OF THE FIRM

by

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The paper explores the usefulness of analyzing firms from the resource side rather than from the product side. In analogy to entry barriers and growth-share matrices, the concepts of resource position barrier and resource-product matrices are suggested. These tools are then used to highlight the new strategic options which naturally emerge from the resource perspective.

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1. INTRODUCTION

For the firm, resources and products are two sides of the same coin. Most products require the services of several resources and most resources can be used in several products. By specifying the size of the firm's activity in different product markets, it is possible to infer the minimum necessary resource commitments. Conversely, by specifying a resource profile for a firm, it is possible to find the optimal product-market activities.

Both perspectives on the firm are reflected in the literature on strategic management. The traditional concept of strategy (Andrews, 1971) is phrased in terms of the resource position (strengths and weaknesses) of the firm, whereas most of our formal economic tools operate on the product-market side. While these two perspectives should ultimately yield the same insights, one might expect these insights to come with differing ease, depending on the perspective taken. The purpose of this paper is to develop some simple economic tools for analyzing a firm's resource position and to look at some strategic options suggested by this analysis. In particular, we will look at the optimal use and growth of a given set of resources as well as ways to select and develop new ones.

Looking at economic units in terms of their resource endowments has a long tradition in economics. The analysis is typically confined, however, to categories like labor, capital, and perhaps land. The idea of looking at firms as broader sets of resources goes back to the seminal work of Penrose (1959), but, apart from Rubin (1973), has received relatively little formal attention. The reason, no doubt, is the unpleasant properties (for modelling purposes) of some key examples of resources, such as technological skills. The mathematics used by economists typically require that resources obey the law of conservation and exhibit declining returns to scale, as in the

traditional theory of factor demand. By virtue of analyzing this type of resource, the economic theory of factor demand becomes a special case of the theory put forward in this paper. By dealing with the financial resources of the firm, the product portfolio theories become another special case of the theory discussed below.

It turns out that the resource perspective provides a basis for addressing some key issues in the formulation of strategy for diversified firms, such as:

- which of the firm's current resources should diversification be based on?
- which resources should be developed through diversification?
- in what sequence and into what markets should diversification take place?
- what types of firms will it be desirable for this particular firm to acquire?

Specifically, we shall argue the following propositions:

1. Looking at firms in terms of their resources leads to different immediate insights than the traditional product perspective. In particular, diversified firms are seen in a new light.
2. One can identify types of resources which can lead to quasi rents. In analogy to entry barriers, these are associated with what we will call resource position barriers.
3. Strategy for a bigger firm involves striking a balance between the exploitation of existing resources and the development of new ones. In analogy to the growth-share matrix, this can be visualized in what we will call a resource-product matrix.

4. An acquisition can be seen as a purchase of a bundle of resources in a highly imperfect market. By basing the purchase on a rare resource, one can maximize this imperfection and one's chances of buying cheap and getting good returns.

In Sections 2 and 3, we will examine the simple economics of different types of resources, looking first at the optimal decisions for each firm and then at the competitive outcomes. In Section 4 we will try to apply the theory to a particular type of resource and develop some generic growth strategies.

2. RESOURCES

By a firm's resources at a given point in time, we mean those (tangible and intangible) assets which are tied semipermanently to the firm. The intent is to capture the intuition behind the "strengths" concept (see also Caves, 1980). Examples of resources are: brand names, in-house knowledge of technology, employment of skilled personnel, trade contacts, machinery, efficient procedures, capital, etc.

For reasons of logical consistency, the assumption is made that each resource has a finite number of applications, in each of which marginal returns are zero above a given "capacity limit." The capacity limit of some resources may change with time; for example, the maximum number of machines which can supply a given market. In other cases, the limit may be only a hypothetical construct which is unlikely ever to be reached in practice; for example, the maximum level of technical sophistication which can be used in the computer industry. We also assume that it is possible to measure amounts of both intangible and tangible resources on a continuous scale.

2.1 Classifications

Resources can be classified according to several criteria. The first we will consider here is (1) whether or not they obey the law of conservation (e.g., machinery vs. brand names.) While this example seems reasonable on first sight, there is a good deal of evidence to suggest that stretching a brand name too far will diminish its effectiveness; in other words, it does in some sense obey the law of conservation. It is alleged, for example, that Scotch paper fell into this "line-extension trap" (Ries, Cappiello, Colwell, 1978), and lost market share as a result. Also, a resource such as "in-house knowledge of laser technology" is in some sense subject to the law of

conservation, since the (finite) number of people who embody the resource can be in only one place at a time. In order to simplify the analysis, however, we will consider the above as a two-way classification rather than a continuum. For purposes of illustration we think of "in-house knowledge of laser technology" as a noncon- servative resource, whereas "skilled assembly labor" will be a conservative resource. This division is clearly judgmental and based on some idea about the likelihood of the capacity constraint being binding. The reader can substitute personal judgment if desired; all that matters for the following is that we will limit our attention to a discrete rather than a continuous classification.

Resources can also be classified according to (2) whether or not they can be bought unbundled in perfect markets (e.g., unskilled labor vs. a good organization). By a perfect market we mean one in which a buyer can get as much as he (for practical purposes) would want, without delay, at a given price. In imperfect markets, then, bigger volumes can be bought only after search over a period of time and/or at higher prices. The raison d'etre for the unbundled condition is that mergers and acquisitions, which constitute an important vehicle for resource procurement, can be seen as purchases of resources in bundles. Again here, we can be accused of forcing a judgmental two-way classification on something which is truly a multidimensional continuum.

A third method of classification is (3) how they are produced; that is,

- jointly with products (learning by doing of productions),
- from themselves (managers training other managers), or
- from other resources (development of own machinery).

Here again, it would be difficult to find a resource which falls squarely in any one category. Analysis in terms of these categories can, however,

highlight the effect of different phenomena in relation to the relative importance of the three production modes.

The final method of classification considered here is (4) whether conservative resources have strictly increasing or strictly decreasing returns to scale in all uses. Again, we simplify by assuming that returns to scale are either:

- strictly increasing from zero to the capacity limit in all uses, or
- strictly decreasing from zero to the capacity limit in all uses.

Intermediate or mixed cases must again be handled by inference from the properties of the polar situations studied here.

2.2 Exploitation of Existing Resources

Let us look first at what essentially amounts to a static, monopolistic situation in which the firm faces given marginal returns in each application of each resource and has the sole objective of maximizing profits from those. For simplicity we will assume that the marginal returns for each resource in each application are independent of the allocation of the other resources.

For conservative resources with declining returns to scale, the optimal allocation is clearly one which equalizes marginal returns among all applications at the point where the entire stock is used. This simple case is the one

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Figure 1
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treated in the economics literature. It is hard to think of examples where it applies, but the allocation of supervisory labor might be one such case.

Conservative resources with increasing returns to scale are significantly more tricky to deal with. It is not even clear that you want to put as much as possible into the application with the highest maximum payoff, since other applications might have higher payoff at the level you can attain

by focusing your resources there. In general, one has to search over several configurations to find the optimal one; however, this will always have the property that at most one application is nonexhausted but utilized. The case with increasing returns to scale thus entails a much more focused use of resources. Because this case is so prevalent in practice, focusing of resources has become almost a general law in business strategy.

Nonconservative resources are not used to varying degrees, but are either used or not used in any given application. Since use in a particular application doesn't affect our ability to use them in other applications, we should use them in all cases where the return, given the amount of the resource we have, is positive. Technological skills are primary examples of this type of resource.

2.3 Acquisition of Resources in Perfect Markets

For conservative resources with decreasing returns to scale, one should clearly buy until the marginal return equals the unit cost.

Figure 2

Conservative resources with increasing returns to scale are again more tricky. One should clearly buy enough to exhaust the most attractive applications and continue buying until one reaches applications which even at their full use can't justify the cost of the resource. The rareness of perfect markets and the workings of competitive pressures to depress the returns in cases like this (see below) explain why this pattern is only rarely, if ever, executed.

Nonconservative resources should also be bought and used in the most attractive applications until one reaches those which cannot justify the resource cost.

2.4 Acquisition of Resources in Imperfect Markets

We earlier defined imperfect markets by the characteristic that bigger volumes could be bought only after search over a period of time and/or at higher prices. This means that total marginal costs (of resources and search) will increase as more resources are sought in any given time interval.

For conservative resources with declining returns to scale, the presence of an imperfect market does not complicate the analysis significantly. The optimal decision is still to buy resources until the marginal revenue equals marginal costs.

Figure 3

For conservative resources with increasing returns to scale, however, the analysis is a little different. Instead of having all applications either fully used or not used at all, we might here have a situation in which one application is only partially exhausted. The reason is that the marginal cost curve might be steeper than the marginal return curve for that application, so that it could be too expensive to buy more. If the relative steepness of the slopes changes, finding the optimal degree to which applications should be exhausted is even more difficult.

Nonconservative resources should also here be bought and applied to the most attractive applications, until one hits one which does not justify the resource cost.

2.5 Production of Resources

Production of resources is sometimes an alternative to purchase, and sometimes the only way one can get a resource. There are four logical possibilities:

- resources which by nature can only be purchased (labor contracts with unskilled labor),
- resources which by nature can only be produced (brand names),
- resources which are purchased for economic reasons (machinery), and
- resources which are produced for economic reasons (vertical integration)

The choice between institutional frameworks for the two last types is clearly that modelled by the institutional economics (Williamson, 1975). We classified resource production into three types, according to whether they are produced:

- jointly with products,
- from themselves, or
- from other resources.

All three production modes clearly involve time and costs. Where the production processes have declining returns to scale, the optimal production level can be found in analogy to the imperfect market situation above.

In the case of increasing returns to scale in the production process, a new set of complications appears. The reason is that the marginal cost curve of the output resource declines in such a way that it may intersect the marginal revenue curve in several places. Fortunately, increasing returns in resource production seem rare in practice.

Figure 4

2.6 Acquisition of Resources in Bundles

Mergers and acquisition provide an opportunity to trade otherwise non-marketable resources and to buy or sell resources in bundles. Through this

vehicle one can, for example, sell an image or buy a combination of technological capability and contacts in a given set of markets. As is well known, this is a very imperfect market with few buyers and targets, and yet with a low degree of transparency due to the heterogeneity of both buyers and targets. A key implication of the latter is that a given target will have different values for different buyers, with particularly big variance among those who can obtain some sort of fit (synergy) between their resources and those of the target.

Because of the extreme difficulties of investigating (often discreetly):

- what resources a given target has,
- which of those the firm can effectively take advantage of,
- what the cost of doing so will be, and
- what the firm could pay for them,

prospective buyers often limit their search to targets which satisfy certain simple criteria. A resource-based set of acquisition strategies (Salter and Weinhold, 1980) is:

- related supplementary (get more of those resources you already have), and
- related complementary (get resources which combine effectively with those you already have).

Other acquisition strategies are more product-oriented and tend to focus on the firm's ability to enter (and dominate) attractive markets.

Let us here focus on the purchase of resource bundles, taking the profitability of using different combinations for given. In this perspective, one's chance of "beating the market" and getting a cheap buy would be greatest if one tried to build on one's most unusual resource or resource position. Doing so should make it possible to get into buying situations with

relatively little competition. Anticipating the arguments presented below, it is also likely that one will meet relatively little competition in the market for products which use the services of rare resources. All of these tendencies are, of course, subject to a ceteris paribus condition.

3. COMPETITION

So far, we have been thinking solely in terms of an individual firm with a given marginal revenue curve for different resources. Let us here bring competitors into the analysis and ask the question: "Under which circumstances can a firm reap quasi rents over longer periods of time?"

For purposes of analysis, we will use Porter's five competitive forces (Porter, 1980), although these were originally intended as tools for analysis of products only.

3.1 General Effects

Under this heading, we will look at the bargaining power of suppliers and buyers as well as the threat posed by substitute resources.

If the production of a resource itself or of one of its critical inputs is controlled by a monopolistic group, it will, ceteris paribus, diminish the quasi rent available to the users of the resource. A patent holder, for example, appropriates part of the profits of his license holders. On a smaller scale, a good advertising agency will be able to take a share of the image builders' (customers') profit.

An equally bad situation can occur on the output side if the products resulting from use of the resource can be sold only in monopsonistic markets. If a subcontractor develops a machine which is fully idiosyncratic to one customer, he will stand to gain less than if the machine has more buyers.

Finally, the availability of substitute resources will tend to depress returns to the holders of a given resource. A recent example is provided by the way electronic and hydraulic skills have eroded the payoffs to electrical and mechanical skills.

3.2 First Mover Advantages--Resource Position Barriers

In some cases, a holder of a resource is able to maintain his relative position vis-à-vis other holders and third persons, as long as these act rationally. In these situations the holder can be said to enjoy the protection of a resource position barrier. Resource position barriers are thus only partially analogous to entry barriers, since they also contain the mechanisms which make an advantage over another resource holder defensible. (Entry barriers in the traditional market context deal only with the situation between incumbents and potential entrants, not with the situation among the incumbents.)

Before we discuss this concept further, it might be useful to look at a few examples of resource position barriers, going from the more to the less traditional:

1. Having (relative to world demand) a big capacity in a process with increasing returns to scale
2. Having a generic brand name (e.g., BIC)
3. Having low costs in a process subject to experience effects
4. Having a technological lead in a big field (e.g., IBM)
5. Having distributor loyalty and other resources to keep it

Resource positions tend to increase over time since such resources as technological capabilities and resource position barriers are essentially dynamic mechanisms which allow the firm to keep a relative lead rather than an absolute position. A good analogy is trees in a forest: although they all grow, the bigger ones tend to stay bigger, since their very bigness guarantees them the most sun.

Note that this (resource-based) concept in some sense supersedes the traditional (product-based) entry barrier concept but in another sense does not:

(a) If a firm has entry barriers towards newcomers in market A, which shares the use of a resource with market B, then another firm which is strong in B might get a cost advantage there and enter A that way.

(b) If the firm has a resource position barrier in resource α, which is used in market A, it might still survive the collapse of A if it could use α somewhere else.

On the other hand, for a resource position barrier to be valuable, it should translate into an entry barrier in at least one market.

So an entry barrier without a resource position barrier leaves the firm vulnerable to diversifying entrants, whereas a resource position barrier without an entry barrier leaves the firm unable to exploit the barrier. There is thus a nice duality between the two concepts, corresponding to the duality between products and resources.

3.3 Quasi-rent-Paying Resources

Let me here try to identify classes of resources for which resource position barriers can be built up. By their nature, first mover advantages are associated with these barriers; that is, a firm which as of a given point in time finds itself in some sense ahead of others may use these barriers to cement that lead. I shall here argue that it is the properties of the resources and their mode of acquisition which allow this to be done. What a firm wants is to create a situation where its own resource position directly or indirectly makes it more difficult for others to catch up. The mechanisms

through which this can be achieved depend on the way in which others acquire (and use) the resource.

Let us now consider the possibilities. The descriptions in (1) through (5) below correspond to the examples in the above section.

1. Resources bought in perfect markets

It is well known that conservative resources with decreasing returns to scale cannot yield quasi rents in this setting. On the other hand, economies of scale in the use of conservative resources are the prime example of product entry barriers (Spence, 1977). In resource space, the product entry barrier translates into a resource position barrier, since it will be irrational for entrants to buy the resource necessary to compete in the market. Nonconservative resources can here be looked upon as having extreme scale advantages, but it seems difficult to come up with solid examples (of nonconservative resources bought in perfect markets).

2. Resources bought in imperfect markets

Apart from the increasing returns to scale effect from above, the imperfection of the market generates a new option. In some cases, later buyers can be forced to, or will always have to, pay higher prices than earlier buyers. Prime examples are the first mover advantages in brand positioning, government contacts, access to raw materials, etc. The other side of the coin--constituted by cases where later buyers can only receive lower returns--is covered by the increasing returns to scale effect mentioned above. In a sense, we are talking about imperfections of the resource and product markets, respectively.

3. Resources produced jointly with products

This is the celebrated experience effect, whereby later resource producers have to get their experience in an uphill battle with earlier producers who have lower costs. As is well known, if experience leaks from the early movers to later movers, the effect is to reduce the costs of the latter, so that we might approach the case of an unpatented idea for which no sustainable first mover advantage exists. This is the case, for example, with many production systems and procedures.

4. Resources produced from themselves

This is the situation with a lot of technological capabilities. Here again, two counteracting effects are at work. On the one hand, a technological lead will allow the firm to keep better people in a more stimulating setting so that the organization can develop and calibrate more advanced ideas than followers. The followers, on the other hand, will often find the reinvention of your ideas easier than you found the original invention. There is again a leakage effect which counterbalances a scale advantage type of effect.

5. Resources produced from other resources

In this case you need a defensible position in one of the input resources, such that you can also keep a lead in the resource in question. This form is in a sense a more complex derivative of (1) through (4) rather than a basic case. Because of the complexity of real-life situations, however, it may often be easier to look at this type of resource. Apart from the distributor loyalty example, one could mention a lead in a multitechnology application such as fiber optics. If a firm enjoys the protection of a resource position

barrier in one of the component technologies (and no other technology is similarly blocked by others), it should be able to develop strength in the entire technology complex.

In general, one should keep in mind that most resources can be used in several products. As a result, a given resource position barrier will often correspond to several products, each yielding part of the quasi rent.

4. GENERIC GROWTH STRATEGIES-- RESOURCES PRODUCED JOINTLY WITH PRODUCTS

In the previous section, we looked at several situations in which firms could get quasi rents from individual resources. In general, a first mover advantage in a quasi-rent-paying resource should yield quasi rents in the markets where the resource in question is dominating. Let us now try to apply the theory to a particular type of resource--those produced jointly with products--and look at some generic ways in which a firm can increase its pool of such resources.

4.1 Single Business

This is the case most commonly considered in the literature, and the optimal approach consists of obtaining a defensible lead in the price/performance game (Hall, 1980, and Porter, 1980). This is often done by single resource deepening as in, e.g., strategies based on experience curves, buyer loyalty, or economies of scale. Growth of the resource will often take place along the path of most rapid approach (Spence, 1979), although cash constraints sometimes limit growth (Wernerfelt, 1982).

4.2 Multibusiness-Single Resource

This is the diversification pattern most often considered in business policy (Andrews, 1971). A typical example is provided by BIC's (BIC, 1974) use of their mass marketing skills, which proved critical in pens, lighters, and razors but insufficient in pantyhose. Attempts to base firms on a single strong technology also fall into this category. Several consulting firms market concepts which exploit this growth pattern (e.g., the "shared experience" of the Boston Consulting Group and the "activity analysis" of Braxton Associates).

Although the general idea here is to expand your position in a single resource, it is not always optimal to go full force in several markets simultaneously. Quite often, it is better to develop the resource in one market and then to enter other markets from a position of strength. An example is BIC, which entered the markets for pens, lighters, and razors sequentially. This sequential entry strategy, an idea going back to John Stuart Mill, is also often followed by firms when they go international.

Let us now look at the simplest possible model of this phenomenon. (A more elaborate formalization can be found in Bardhan [1971].) A firm can operate in two markets, A and B, which use processes I and II in proportions a_I and b_I, b_{II}, respectively. I will assume process II skills to be available in a perfect market, whereas process I skills can be developed via experience curve processes. So skills in process I are the quasi-rent-paying resource. We will look at the firm as having a two-period time horizon and consider the wisdom of developing process I skills in market A before market B is entered.

In the following, all parameters are assumed positive and subscripts A, B, I, II, 1, 2, refer to the markets, processes, and periods so named.

The demand curves are assumed to be linear so that the quantity sold is a linear function of the price charged:

$$A_1 = \theta_{A1} - P_{A1}\phi_{A1}$$

$$A_2 = \theta_{A2} - P_{A2}\phi_{A2}$$

$$B_1 = \theta_{B1} - P_{B1}\phi_{B1}$$

$$B_2 = \theta_{B2} - P_{B2}\phi_{B2}$$

Variable costs are assumed to be zero and fixed costs, c, of selling above zero outputs are

$$C_{A1} = \gamma_{AI} \quad , \text{ if } A_1 > 0$$

$$C_{A2} = \gamma_{AI} - \eta_{AI}(a_I A_1 + b_I B_1) \quad , \text{ if } A_2 > 0$$

$$C_{B1} = \gamma_{BI} + \gamma_{BII} \quad , \text{ if } B_1 > 0$$

$$C_{B2} = \gamma_{BI} - \eta_{BI}(a_I A_1 + b_I B_1) + \gamma_{BII} \quad , \text{ if } B_2 > 0.$$

The idea is here that first period experience lowers process I costs in the second period. The simple linear version of the experience curve is chosen for analytical convenience and is in no way crucial to the qualitative results below.

If the firm tries to maximize the total profit over the two periods, the objective is to maximize:

$$(P_{A1}A_1 - C_{A1}) + (P_{A2}A_2 - C_{A2}) + (P_{B1}B_1 - C_{B1}) + (P_{B2}B_2 - C_{B2})$$

By inserting the above equations, differentiating with respect to P_{A1}, P_{A2}, P_{B1}, P_{B2}, and using the first order conditions, we find that, if all outputs are positive, the optimal levels are

$$A_1^* \ (P_{A1}^*) = 1/2[\theta_{A1} + \phi_{A1}a_I(\eta_{AI} + \eta_{BI})], \text{ where } \eta_{BI} = 0 \text{ if } B_2 = 0$$

$$A_2^* \ (P_{A2}^*) = 1/2 \ \theta_{A2}$$

$$B_1^* \ (P_{B1}^*) = 1/2[\theta_{B1} + \phi_{B1}b_I(\eta_{AI} + \eta_{BI})]$$

$$B_2^* \ (P_{B2}^*) = 1/2 \ \theta_{B2}.$$

If we insert $(A_1^*, A_2^*, B_1^*, B_2^*)$, $(A_1^*, A_2^*, 0, B_2^*)$, and $(A_1^*, A_2^*, 0, 0)$ in the maximant, we can find the conditions under which it is optimal to enter market B only in the second period. These conditions are:

$$\theta_{B1}b_I(\eta_{AI} + \eta_{BI}) + 1/4[\theta_{B1}\phi_{B1}^{-1} - b_I(\eta_{AI} + \eta_{BI})]^2 \ \phi_{B1} < \gamma_{BI} + \gamma_{BII}$$

$$< 1/4 \ \theta_{B2}^2 \ \phi_{B2}^{-1} + 1/2 \ \theta_{A1}\eta_{BI}a_I + 1/2 \ \phi_{A1}a_I^2 \ \eta_{BI} \ (\eta_{AI} + 1/2 \ \eta_{BI}).$$

So sequential entry tends to be better when

- market A is big relative to market B (θ_A is large, θ_B is small)
- the loss of late entry in market B is small ($\theta_{B2}^2 \ \phi_{B1}^{-1} - \theta_{B1}^2 \ \phi_{B1}^{-1}$ is large)
- product B generates only little learning (b_I is small)
- product A generates a lot of learning (a_I is large)

While the effect here is generated through an experience curve type of argument, a little reflection will reveal that other instances of resources produced jointly with products can also have the same effect. An example of this is brand loyalty in connection with economies of scale in process I, which will mean that a big A_1 guarantees sales and thus low costs of process I in period 2.

4.3 Multibusiness-Multiple Resources

A special example of this case is captured by the product portfolio theory (Henderson, 1979), where strong businesses in a firm's growth-share matrix supply weak ones with cash. In general, one would expect businesses to be resource-related in much stronger ways than just financially.

If we changed the above model, such that skills in process II were also developed by experience, we could interpret the sequential entry pattern as a process in which the strong resource (I) in period 2 supports the weak one (II). So in analogy to products, which subsidize each other through cash flows, we may look at resources as subsidizing each other through joint cost effects. Note that this captures the interrelationships between multiple businesses in a much more general framework than the financial interrelationships which drive the growth-share matrix.

In analogy to the growth-share matrix, a simple tool for analysis of resource portfolios could be a resource-product matrix such as that illustrated in Figure 5, where the entries represent the relative importance of a resource in a product or a product in a resource.

Figure 5

In the management of such a portfolio, candidates for product or resource diversification must be evaluated in terms of their short-term balance effects (as in the product portfolio) and also in terms of their long-term capacity to function as stepping stones to further expansion. In Figure 5, Product E is a better candidate than product F for two reasons: it uses more of the firm's strong resources and it develops a new one (VI), which can be used for further growth (G). An example of such a stepping stone sequence is provided by the Japanese strategy of competing in the computer market with skills developed in semiconductors (Business Week, 1981).

In the framework above, the optimal growth of the firm involves a balance between exploitation of existing resources and development of new ones (Penrose, 1959; Rubin, 1973; Wernerfelt, 1977). Even in an uncertain setting, this does not necessarily make versatile (multibusiness) resources more attractive than more specialized resources. The reason is that although versatile resources give more options, one would expect more and bigger competition in those.

5. CONCLUSION

This paper has attempted to look at firms in terms of their resources rather than in terms of their products. It was conjectured that this perspective would throw a different light on strategic options, especially those open to diversified firms.

After looking at the basic economics of different types of resources, we defined resource position barriers as partially analogous to entry barriers. On the basis of this definition we began to sketch a picture of firms as trying to develop such barriers, perhaps through products in which already strong resources support less strong ones. This mechanism is again exploited in the resource-product matrix, which is somewhat analogous to the growth-share matrix and allows us to consider different growth paths. It should be kept in mind that the theory in Section 4 considered only resources of the type which are produced jointly with products. Growth strategies for other types of resources have yet to be developed. The only general statement made about growth strategy is that in some sense it involves striking a balance between the exploitation of existing resources and the development of new ones.

The paper is meant only as a first cut at a huge can of worms. Apart from the obvious need to look at growth strategies for other types of resources, much more research needs to be done on the actual process of managing a multiresource firm. We know nothing, for example, about multiple point competition, about how one can combine capabilities across operating divisions, about how one can use a broad resource portfolio to hedge against technological uncertainty, or about how one can set up a structure and systems which can help a firm execute these strategies.

The new focus on technology in strategy, the increasing tendency for firms to define themselves in terms of technologies, and the setting up of cross-divisional strategic organization (Texas Instruments, 1971), technology groups, and arenas (General Electric, 1981) seem to indicate that objectives like the above are strived for, although perhaps implicitly, in several firms.

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FIGURE 1

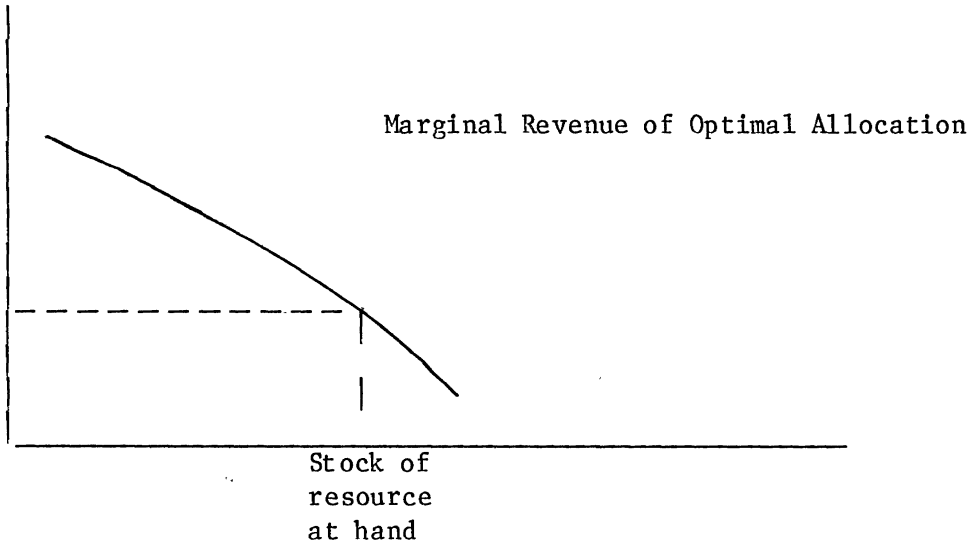
Marginal Revenue of Optimal Allocation
Stock of resource at hand

FIGURE 2

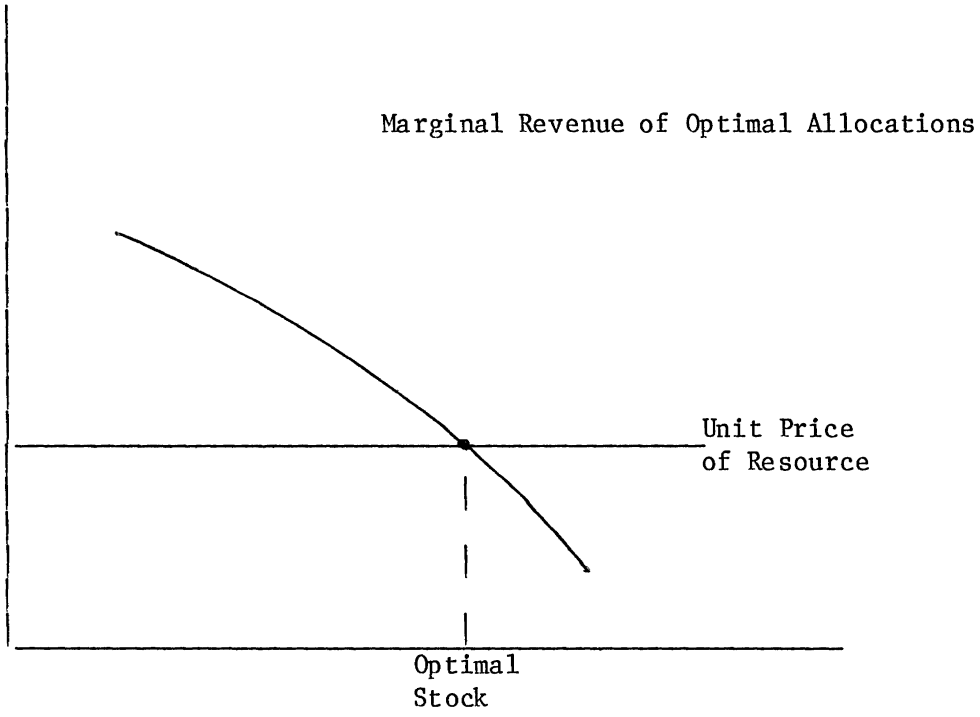
Marginal Revenue of Optimal Allocations
Unit Price
of Resource
Optimal
Stock

FIGURE 3

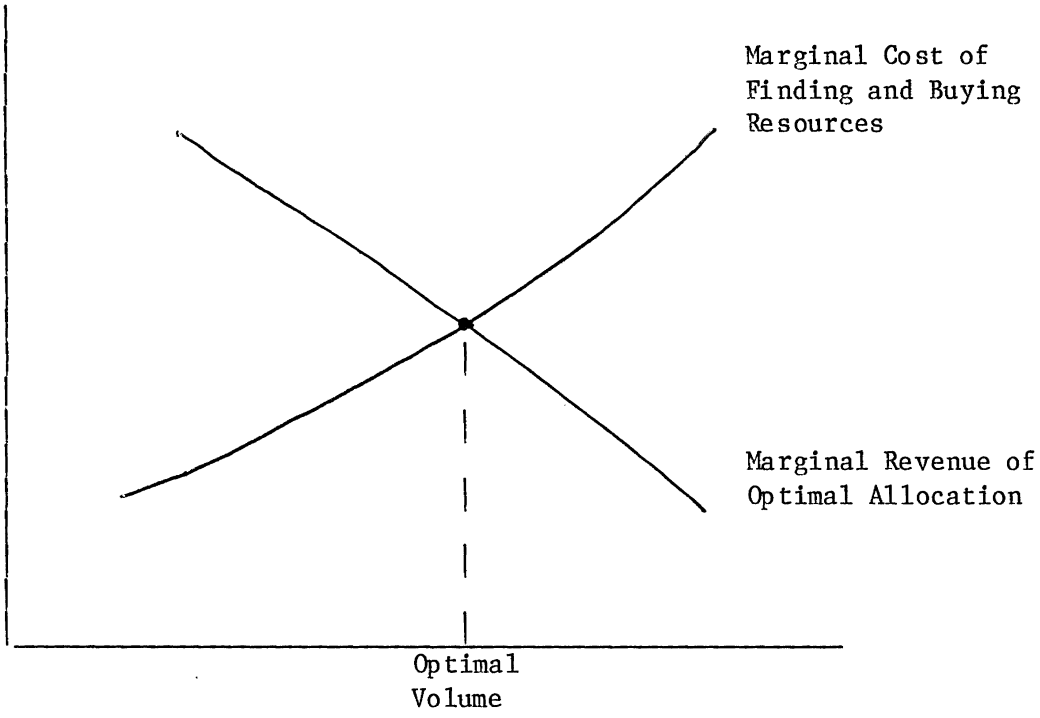
Marginal Cost of
Finding and Buying
Resources
Marginal Revenue of
Optimal Allocation
Optimal
Volume

FIGURE 4

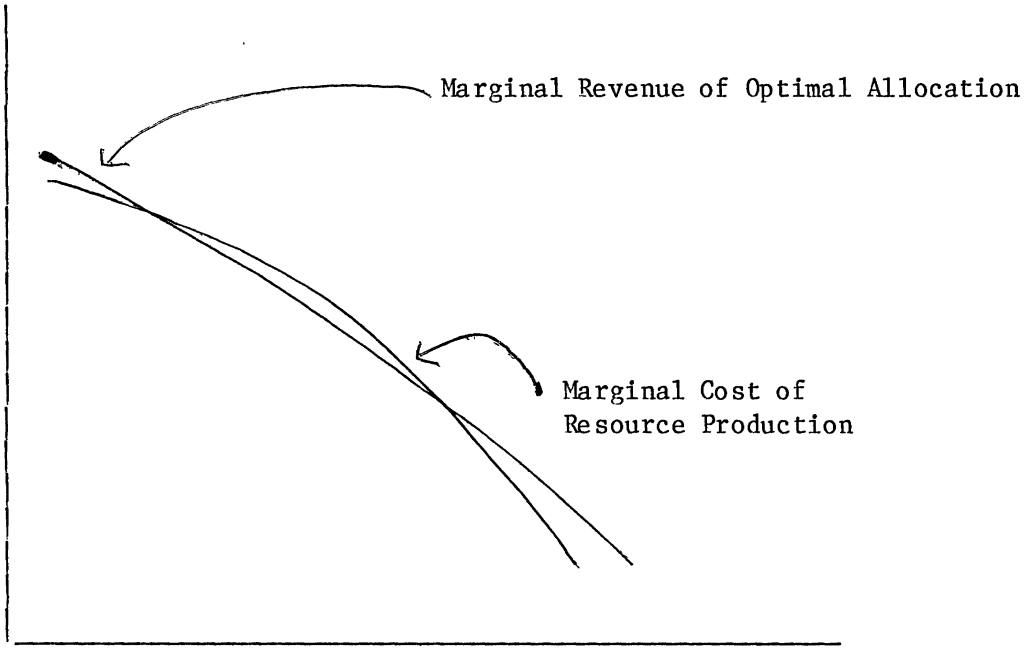
Marginal Revenue of Optimal Allocation
Marginal Cost of
Resource Production

FIGURE 5

A Resource-Product Matrix

Technology Resource Skill / Product	I	II	III	IV	V	VI	Relative Market Position
A	A_I, I_A		A_{III}, III_A				Dominant
B	B_I, I_B	B_{II}, II_B					Strong
C			C_{III}, III_C				Weak
D		D_{II}, II_D	D_{III}, III_D				Weak
E	E_I, I_E			E_{IV}, IV_E		E_{VI}, VI_E	-
F		F_{II}, II_F			F_V, V_F		-
G						G_{VI}, VI_G	
Relative Resource Position	Dominant	Weak	Strong	Strong	-	-	