THE CORNERSTONES OF COMPETITIVE ADVANTAGE: A RESOURCE-BASED VIEW

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This paper elucidates the underlying economics of the resource-based view of competitive advantage and integrates existing perspectives into a parsimonious model of resources and firm performance. The essence of this model is that four conditions underlie sustained competitive advantage, all of which must be met. These include superior resources (heterogeneity within an industry), ex post limits to competition, imperfect resource mobility, and ex ante limits to competition. In the concluding sections, applications of the model for both single business strategy and corporate strategy are discussed.

INTRODUCTION

In recent years, a model of how firms compete, which is unique to the field of strategic management, has begun to emerge. Known as the 'Resource-Based View', it is regarded by some as having momentous potential as a paradigm for our field. Others wonder whether this emergent model provides much additional insight over traditional understandings. Admittedly, resource-based work is consistent with and rooted squarely in the policy research tradition. The notion that firms are fundamentally hetero-geneous, in terms of their resources and internal capabilities, has long been at the heart of the field of strategic management. The classic approach to strategy formulation, for example, begins with an appraisal of organizational com-petencies and resources (Andrews, 1971). Those which are distinctive or superior relative to those of rivals, may become the basis for competitive advantage if they are matched appropriately to environmental opportunities (Andrews, 1971; Thompson and Strickland, 1990).

Those ideas may be thought of as the basic principles upon which resource-based research continues to build. While the model is still in the developmental stage, it has deepened our understanding regarding such topics as how resources are applied and combined, what makes competitive advantage sustainable, the nature of rents, and the origins of heterogeneity.[1] The work of Penrose (1959) is considered a very influential force. Other notable contributions include Lippman and Rumelt (1982), Teece (1980, 1982), Nelson and Winter (1982), Rumelt (1984, 1987), Wernerfelt (1984), Barney (1986, 1991), Dierickx and Cool (1989), Castanias and Helfat (1991), Conner (1991), and Mahoney and Pandian (1992). This research stream is an impressive one. And while many agree that there is a need for greater rigor and richness of detail, the work that has been done provides a strong foundation and an inspiration for work to come.

In reviewing this work, one encounters numer-

Key words: Resources, rents, competitive advantage, single-business strategy, corporate strategy

[1] This is not meant to suggest that the contributions of resource-based work have been limited to these topics.

ous strands of research on a series of closely related topics. While each paper offers a distinct contribution, there is also considerable overlap of ideas. To the uninitiated this may be confusing. In part, this is because subtle variations in terminology across papers have made communication more difficult. But in addition, the underlying model seems somewhat disjoint, as if the ideas of these disparate authors have not fully coalesced into an integrated whole. While there is general agreement as to the basic insights of the model, there are small disagreements over minor points.

The purpose of this paper is to develop a general model of resources and firm performance which at once integrates the various strands of research and provides a common ground from which further work can proceed. My aim is to build consensus for a parsimonious model, clarify basic issues, suggest possible implications, and, in so doing, facilitate the continuing dialogue among scholars.

In the first section, a resource-based model of the theoretical conditions which underlie competitive advantage is presented. There are four such conditions, all of which must be met. The first of these is *resource heterogeneity*, from which come Ricardian or monopoly rents. *Ex post limits to competition* are necessary to sustain the rents. *Imperfect resource mobility* ensures that the rents are bound to the firm and shared by it. *Ex ante limits to competition* prevent costs from offsetting the rents. Each of these conditions is described in turn.

The model is intended to aid our theoretical understanding of superior firm performance as well as to inform management practice.

In the final section, some applications and implications of the model are described. In particular, the application of resource-based work to single-business strategy, as well as to multibusiness corporate strategy, in all of its forms, is discussed.

A MODEL OF COMPETITIVE ADVANTAGE

Heterogeneity

A basic assumption of resource-based work is that the resource bundles and capabilities underlying production are heterogeneous across firms (Barney, 1991).[2] One might describe productive factors in use as having intrinsically differential levels of 'efficiency.' Some are superior to others. Firms endowed with such resources are able to produce more economically and/or better satisfy customer wants.

Heterogeneity implies that firms of varying capabilities are able to compete in the marketplace and, at least, breakeven. Firms with marginal resources can only expect to breakeven.[3] Firms with superior resources will earn rents.[4]

Ricardian rents

Heterogeneity in an industry may reflect the presence of superior productive factors which are in limited supply. They may be fixed factors which cannot be expanded. More often, they are quasi-fixed, in the sense that their supply cannot be expanded rapidly. They are scarce in the sense that they are insufficient to satisfy demand for their services. Thus, inferior resources are brought into production as well.

This is the familiar Ricardian argument.[5] It may be understood most clearly by assuming that firms with superior resources have lower average costs than other firms.[6] (See Figure 1.) These low cost firms have somewhat inelastic supply curves, in that they cannot expand output rapidly, regardless of how high the price may be. High prices, however, do induce other less efficient firms to enter the industry. Such firms will enter and produce so long as price exceeds their marginal cost (MC). In equilibrium, industry demand and supply are in balance, high-cost firms breakeven ($P = AC$), and low-cost firms earn supranormal profits in the form of rents to their scarce resources ($P > AC$).

Note that this model is consistent with competitive behavior in the product market. Firms are price takers and produce at the point where

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[2] See Nelson (1991) and Williams (1992) for discussions on why firms are different.

[3] In equilibrium, industry demand and supply conditions determine the minimum efficiency level required to breakeven.

[4] Earnings in excess of breakeven are called rents, rather than profits, if their existence does not induce new competition.

[5] See Ricardo (1817) and Rumelt (1987).

[6] Note, however, that superior resources do not necessarily lead to a low cost position. This is simply the most tractable example.
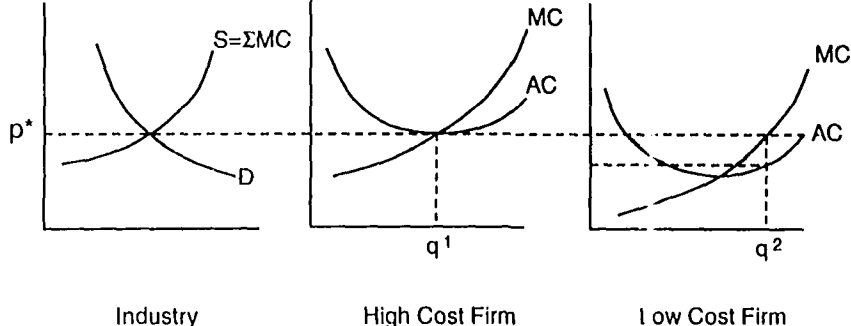
Figure 1. Scarcity rents with heterogeneous factors
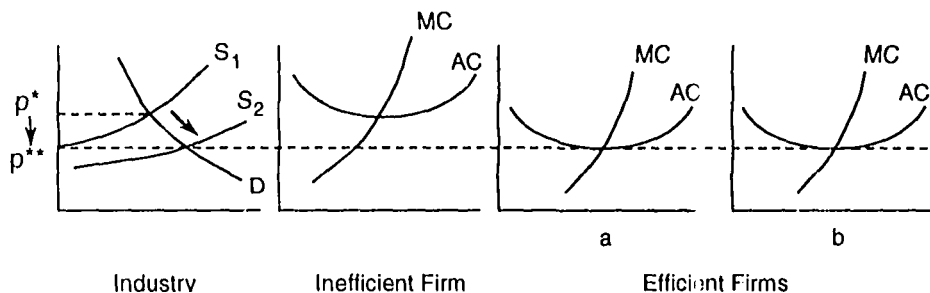Key: P* = Equilibrium Price, [] = Rents to Efficient Producer

Figure 2. Imitation (expansion) of low cost firms causes rents to disipate and high-cost firms to exit
Key: P** = New Equilibrium Price

price equals marginal cost. The high returns of efficient firms cannot be attributed to an artificial restriction of output or to market power. Neither do they depend upon uniqueness or even rarity in the absolute sense. It is theoretically possible for rents to be earned by a number of equally efficient producers, so long as an efficiency differential remains between them and other producers. What is *key* is that the superior resources remain *limited* in supply. Thus, efficient firms can sustain this type of competitive advantage only if their resources cannot be expanded freely or imitated by other firms.

Consider what happens if this is not so. (See Figure 2.) Increased production by additional efficient producers will shift the supply curve out. This will drive down the equilibrium price, forcing marginal firms to leave the market. Remaining firms will produce at the point where

price equals both marginal cost and average cost. As a result, rents will be dissipated and only normal returns will be earned by efficient (now homogeneous) producers.

The Ricardian model is often thought of with respect to resources which are strictly fixed in supply. But it may be applied as well to quasi-fixed resources, which are of much greater importance. These are resources which, while limited in the short run, may be renewed and expanded incrementally within the firm that utilizes them.[7] Utilization of such resources may in fact augment them.

Prahalad and Hamel (1990) describe how core competencies, particularly those which involve collective learning and are knowledge-based, are

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[7] See Nelson and Winter (1982) and Wernerfelt (1989).

enhanced as they are applied. Such resources may provide both the basis and the direction for the growth of the firm itself. For example, there may be a natural trajectory embedded in a firm's knowledge base.[8] Current capabilities may both impel and constrain future learning and investment activity.[9] Incremental growth and renewal of such limited resources, however, is not inconsistent with a Ricardian view of rent and competitive advantage.

Monopoly rents

The condition of heterogeneity is equally consistent with models of market power and monopoly rents as it is with the Ricardian story. What distinguishes monopoly profits from Ricardian rents is that monopoly profits result from a deliberate restriction of output rather than an inherent scarcity of resource supply.

In monopoly models, heterogeneity may result from spatial competition or product differentiation.[10] It may reflect uniqueness and localized monopoly. It may be due to the presence of intra-industry mobility barriers which differentiate groups of firms from one another (Caves and Porter, 1977.) It may entail size advantages and irreversible commitments or other first mover advantages.[11] There are numerous such models. What they all have in common is the supposition that firms in favorable positions face downward sloping demand curves. These firms then maximize profits by consciously restricting their output relative to competitive levels. These are models of market power. Unlike Ricardian models, many are 'strategic' in that firms take into account the behavior and relative position of their rivals.

Apparently homogeneous firms may also earn monopoly rents. Cournot behavior exhibited by identical rivals, for example, may yield prices in excess of marginal costs. So may collusive behavior, tacit or otherwise. But these kinds of behaviors are facilitated by fewness of numbers and therefore depend on barriers to entry. Asymmetries must exist between incumbent firms and potential entrants. In this case, the heterogeneity occurs across these two groups of firms.

Ex post limits to competition

Regardless of the nature of the rents, sustained competitive advantage requires that the condition of heterogeneity be preserved. If the heterogeneity is a short-lived phenomenon, the rents will likewise be fleeting. Since strategists are primarily concerned with rents over a longer term, the condition of heterogeneity must be relatively durable to add value. This will be the case only if there are in place *ex post* limits to competition as well. By this I mean that *subsequent* to a firm's gaining a superior position and earning rents, there must be forces which limit competition for those rents. Competition may dissipate rents by increasing the supply of scarce resources. Alternatively, it might undermine a monopolist's (or oligopolists') attempts to restrict output. Figure 2 illustrates how *ex post* competition makes the industry supply curve more elastic and erodes Ricardian rents. *Ex post* competition erodes monopoly rents as well, by increasing output or by making individual demand curves more elastic.

Resource-based work has focused on two critical factors which limit *ex post* competition: imperfect imitability and imperfect substitutability.[12] Substitutes reduce rents by making the demand curves of monopolists or oligopolists more elastic. This is one of Porter's (1980) classic 'five forces.' Much greater attention, however, has been given to the condition of imperfect imitability.

Rumelt (1984) coined the term 'isolating mechanisms' to refer to phenomena which protect individual firms from imitation and preserve their rent streams. These include property rights to scarce resources and various quasi-rights in the form of lags, information asymmetries, and frictions which impede imitative competition (Rumelt, 1987). Of particular interest is the notion of causal ambiguity (Lippman and Rumelt, 1982). This refers to uncertainty regarding the causes of efficiency differences among firms. Causal ambiguity prevents would-be-imitators

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[8] This is a notion attributable to organizational economics. See Teece (1990).
[9] See Dosi, Teece, and Winter's (1990) discussion of core capabilities, path dependencies and learning.
[10] See Schmalensee (1978).
[11] See Ghemawat (1986) and Lieberman and Montgomery (1988). Consider also models of dominant firm behavior.

[12] See Barney (1991) and Dierickx and Cool (1989).

from knowing exactly what to imitate or how to go about it. Coupled with nonrecoverable costs, such uncertainty may limit imitative activity, thus preserving the condition of heterogeneity.

Other isolating mechanisms include producer learning, buyer switching costs, reputation, buyer search costs, channel crowding, and economies of scale when specialized assets are required (Rumelt, 1987).[13]

Rumelt (1984) describes isolating mechanisms as an analog of Caves and Porter's (1977) mobility barriers, which are themselves an extension of Bain's (1956) concept of entry barriers.[14] Mobility barriers, however, serve to isolate groups of similar firms in a heterogeneous industry, while entry barriers isolate industry participants from potential entrants.

Yao (1988) has distilled a set of factors more basic than the list of entry barriers suggested by Porter (1980) and Bain (1956). He contends that failures of the competitive market are due more fundamentally to production economies and sunk costs, transaction costs, and imperfect information.

Ghemawat (1986) suggests a different categorization, with more of a firm than a market orientation. He argues that inimitable positions derive from size advantages, preferred access to either resources or customers, and/or restrictions on competitors' options.

Dierickx and Cool (1989) offer a unique perspective on the topic of limits to imitation. They focus on factors which prevent the imitation of valuable but nontradeable asset stocks. They maintain that how imitable an asset is depends upon the nature of the process by which it was accumulated. They identify the following characteristics as serving to impede imitation: time compression diseconomies, asset mass efficiencies, interconnectedness of asset stocks, asset erosion, and causal ambiguity.

Dierickx and Cool's (1989) paper is a particularly important piece of work because it focuses precisely on those kinds of resources and capabilities which are of central concern to resource-based theory: nontradeable assets which develop and accumulate within the firm. Such assets tend to defy imitation because they have a strong

tacit dimension and are socially complex. They are born of organizational skill and corporate learning. Their development is 'path dependent' in the sense that it is contingent upon preceding levels of learning, investment, asset stocks, and development activity.[15] For such assets, history matters. Would-be-imitators are thwarted by the difficulty of discovering and repeating the developmental process and by the considerable lag involved. Importantly, assets of this nature are also immobile and thus bound to the firm. Factor immobility, or imperfect mobility is another key requirement for sustainable advantage.

Imperfect mobility

Resources are perfectly immobile if they cannot be traded. Dierickx and Cool (1989) discuss several examples of this sort. Resources for which property rights are not well defined or with 'bookkeeping feasibility' problems fall into this category (Dierickx and Cool, 1989; Meade, 1952; Bator, 1958). So do resources which are idiosyncratic to the extent that they have no other use outside the firm. (See Williamson, 1979).

Other kinds of resources may be described as imperfectly mobile. These are resources which are tradeable but more valuable within the firm that currently employs them than they would be in other employ. Resources are imperfectly mobile when they are somewhat specialized to firm-specific needs.[16]

Montgomery and Wernerfelt (1988) use the concept of switching costs to discuss how firm-specific investments may cement the trading relationship between a firm and the owners of factors employed by the firm. These investments by the resource owners may be regarded as a sunk cost (nonrecoverable cost) which may inhibit the factor's exit from a firm. These costs give the firm a greater claim on the resource in question.

Cospecialized assets may be another case in point (Teece, 1986). These are assets which must be used in conjunction with one another or which have higher economic value when

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[13] These topics and other related ones have received much attention in modern industrial organization literature as well.
[14] For further discussion, see Mahoney and Pandian (1992).

[15] See, Barney (1991) and Dosi, Teece, and Winter (1990).
[16] Williamson (1985) discusses such assets and their implications for efficient firm boundaries extensively.

employed together. To the extent that they have no other equivalent uses (they are transaction specific) and to the extent that at least one of the assets is firm-specific, their mobility is limited.

Other resources may be imperfectly mobile simply because the transactions costs associated with their transfer are exceedingly high (Williamson, 1975; Rumelt, 1987.)

Because immobile or imperfectly mobile resources are nontradeable or less valuable to other users, they cannot be bid away readily from their employer. They remain bound to the firm and available for use over the long run. Thus, they can be a source of sustained advantage.[17] Furthermore, the opportunity cost of their use is significantly less than their value to the present employer. This is an important point and one which will be developed further in the next section. It implies that any Ricardian or monopoly rents generated by the asset will not be offset entirely by accounting for the asset's opportunity cost.

I use opportunity cost, here, in a sense slightly different from the conventional use of the term. Conventionally, it refers to the value of a resource in its next best use. Here, I mean it to refer to the value of the resource to its second-highest valuing potential-user. (See Klein, Crawford, and Alchian, 1978.) The use to which the potential user may wish to put it may be exactly the same.

This difference between the value of a resource to a firm and its opportunity cost is also a form of rent. Pareto rents, also called quasi-rents, are the excess of an asset's value over its salvage value or its value in its next best *use*. Following Klein et al. (1978), I use the term 'appropriable quasi-rents' or 'A-Q rents' to refer to the excess of an asset's value over its value to the second-highest valuing potential user or bidder for the resouce. Klein et al. (1978) demonstrate that it is entirely possible for a resource to generate A-Q rents in the absence of either Ricardian or monopoly rents. Resources need not be rare or inimitable for them to be differentially valuable to possible users. Thus the presence of A-Q

rents is not a sufficient indicator of competitive advantage. There must be monopoly or Ricardian rents generated as well.

A-Q rents are appropriable in the sense that they need not be paid out to the resource for the user to retain its services (Klein et al., 1978). Were the user to appropriate the whole of the A-Q rents, the resource could earn no more elsewhere.[18]

It may be more accurate, however, to recognize that the rents will be shared between the factor owners and the firm employing them. First, one might as easily view the firm as tied to the use of specialized factors, since it cannot substitute generic factors at equal cost. This implies that the situation might be characterized best as a bilateral monopoly, in which the distribution of rents is indeterminate. Secondly, it should be recognized that the rents are in fact *jointly* produced and are as much due to the firm as to the factor. A specialized factor cannot be so productive apart from the firm. Therefore, its super-productivity is attributable as much to the context and other elements of the firm as to the factor itself. The firm and the factor are, in essence, a team. Caves (1980) states that rents are not entirely passed on to factors which are not traded on the open market. In a similar vein, Rumelt (1987) has argued that 'the rent on (specialized) factor(s) is not logically or operationally separable from the profits of the firm' (p. 143).

These two facts—that imperfectly mobile resources will remain available to the firm and that the rents will be shared by the firm—are the key features of imperfect factor mobility (see Wernerfelt, 1989). They, in turn, make imperfect factor mobility a necessary condition for sustainable competitive advantage. In addition, imperfect factor mobility is a particularly important component of the model because such resources are less likely to be imitable than other kinds.[19] Furthermore, the opportunity cost of such assets, as defined above, does not offset the rents. But even together with heterogeneity

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[17] On the other hand, such assets may make a firm less responsive and flexible in the face of environmental or technological changes which upset a previously held advantage. Specialization is a two-edged sword.

[18] Note that, in a multiperiod model, human resources would be reluctant to invest in firm-specific attributes if they expected the firm to appropriate the rents generated.

[19] Dierickx and Cool (1989) contend that nontradeability is required to ensure that an asset remains fixed in supply.

and *ex post* limits to competition, imperfect factor mobility is not yet sufficient for sustained competitive advantage.

Ex ante limits to competition

One last condition must be met for a firm to have competitive advantage. There must be *ex ante* limits to competition as well. By this I mean that, prior to any firm's establishing a superior resource position, there must be limited competition for that position. This may be best explained by illustration. Suppose it is perceived, *a priori*, by equally endowed firms that by occupying certain choice locations they can gain an inimitable resource position over their rivals. What will ensue is fierce competition for those locations to the point that the anticipated returns are, in essence, competed away. A superior location could only be a source of above normal returns if some firm had the foresight or good fortune to acquire it in the absence of competition. This is the point brought out by Barney (1986) in arguing that the economic performance of firms depends not only on the returns from their strategies but also on the cost of implementing those strategies. Without imperfections in strategic factor markets, where the resources necessary to implement strategies are acquired, firms can only hope for normal returns. Rumelt (1987) makes a similar point in noting that unless there is a difference between the *ex post* value of a venture and the *ex ante* cost of acquiring the necessary resources, the entrepreneurial rents are zero. Profits come from *ex ante* uncertainty.

While only tradeable resources can be acquired in strategic factor markets, the argument can be extended to immobile and imperfectly mobile resources as well, as both Dierickx and Cool (1989) and Barney (1989) have noted. *Ex ante* competition to develop imperfectly mobile resources, such as the good will of clients, can also dissipate expected returns. While it is less likely that the full value of such resources will be anticipated or that firms will be equally efficient in accumulating such resources, it is important to recognize that imperfect resource mobility is not sufficient unto itself. There must be limits to *ex ante* competition as well.

The cornerstones of competitive advantage

In sum, four conditions must be met for a firm to enjoy sustained above-normal returns. Resource heterogeneity creates Ricardian or monopoly rents. *Ex post* limits to competition prevent the rents from being competed away. Imperfect factor mobility ensures that valuable factors remain with the firm and that the rents are shared. *Ex ante* limits to competition keep costs from offsetting the rents. The model is summarized in Figure 3.

This model is intended to highlight the importance of each of these conditions, as distinct from one another, and to explicate the particular role that each plays in creating and sustaining rents. It is not meant to imply, however, that these four conditions are entirely independent of one another. They are, in fact, related conditions.

Heterogeneity is the most basic condition. It is the sine-qua-non of competitive advantage and has long been a fundamental concept of strategic management. For these reasons it deserves special emphasis. The model tells us that heterogeneity is necessary for sustainable advantage, but not sufficient. For rents to be sustained, we required *ex post* limits to competition *as well*. One can imagine heterogeneity without *ex post* limits to competition. Firms may have short-lived and unsustainable readily-imitated differences. It takes a greater stretch of the imagination to conceive of *ex post* limits to competition without heterogeneity. (Perhaps a regulator enforcing a pricing cartel among numerous homogeneous trucking firms.) For the most part, *ex post* limits to competition imply heterogeneity, although heterogeneity does not imply *ex post* limits to competition.

Heterogeneity underlies the condition of imperfect mobility as well. Again heterogeneous resources need not be imperfectly mobile. But it is hard to imagine any imperfectly mobile resources which are not also heterogeneous in nature. Resources which are immobile because of their idiosyncratic or firm-specific nature are certainly heterogeneous. Resources which are immobile due to ill-defined property rights or the lack of a market might possibly be homogeneous (pollution rights, for example?) Once again, however, imperfect mobility, for the most part, implies heterogeneity as well.

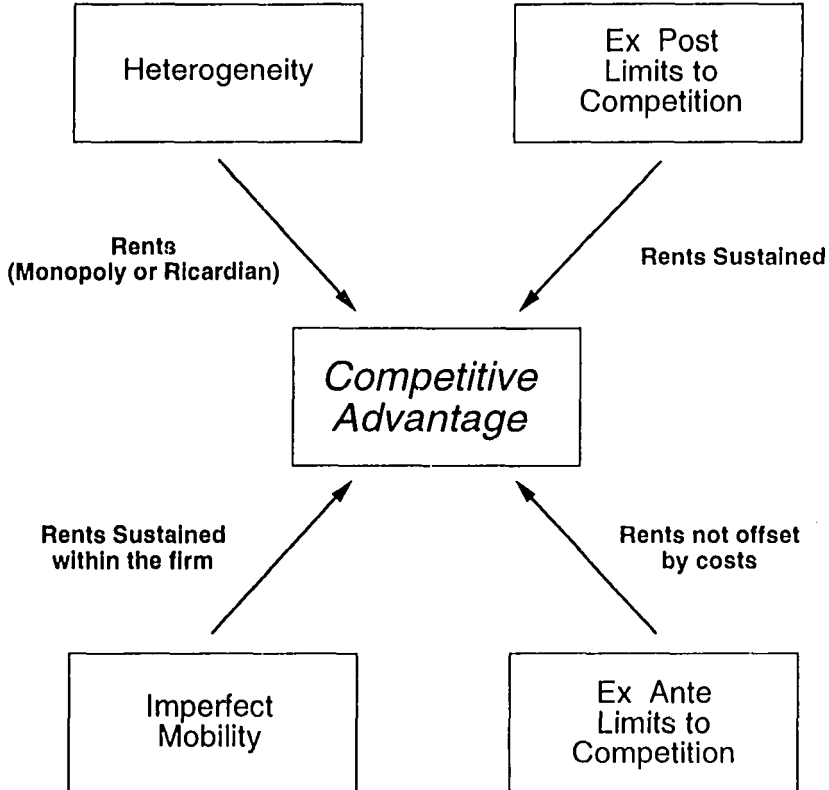Finally, it is important to recognize that the

Figure 3. The cornerstones of competitive advantage

productivity of superior resources depends upon the nature of their employment and the skill with which a strategy based on resource superiority is implemented.

APPLICATIONS OF THE RESOURCE-BASED MODEL

A major contribution of the resource-based model is that it explains long-lived differences in firm profitability that cannot be attributed to differences in industry conditions. Indeed, there is considerable evidence to show that such differences are not well explained by industry participation (Schmalensee, 1985; Mueller, 1986; Wernerfelt and Montgomery, 1988; Hansen and Wernerfelt, 1989; Rumelt, 1991). There is less

agreement on the relative magnitude of firm effects, but several studies have indicated that these effects are substantial (Mueller, 1986; Hansen and Wernerfelt, 1989; Rumelt, 1991). The resource-based model is a theoretical complement to this work.

On the practical side, the model may prove useful to managers seeking to understand, preserve, or extend their competitive advantage. While the model itself is freely available to all, its strategic implications depend on a firm's specific resource endowment. Barney (1986) argues that a firm may gain expectational advantages by analyzing information about the assets it already controls. So long as its assets are imperfectly mobile; inimitable, and nonsubstitutable, other firms will not be able to mimic its strategy. Thus, application of the model will not

increase competition for available rents. It will only ensure that each firm optimizes the use of its own specialized resources.

Because of its focus on imperfectly mobile resources, for which the transactions cost of market exchange are high, resource-based theory has important implications for corporate strategy and issues regarding the scope of the firm as well as single business strategy. Some applications in each of these areas are discussed in turn.

Single business strategy

At the single business level, the model may help managers differentiate between resources which might support a competitive advantage from other less valuable resources (Barney, 1991). For example, a brilliant, Nobel prize winning scientist may be a unique resource, but unless he has firm-specific ties, his perfect mobility makes him an unlikely source of sustainable advantage. Managers should ask themselves if his productivity has to do, in part, with the specific team of researchers of which he is a part. Does it depend on his relationship with talented managers who are exceptionally adept at managing creativity? Does it depend on the spirit of the workers or the unique culture of the firm?

A resource-based perspective may also help a firm in deciding whether to license a new technology or whether to develop it internally. If the technology is imperfectly mobile in the sense that its potential value cannot be well communicated to others because of the risk of revealing proprietary information, it might best be developed internally. Alternatively, its marketability might depend upon cospecialized assets such as long established relationships with vendors who are reluctant to switch to other suppliers. If the cospecialized assets are held by the firm and are themselves immobile, internal development may still make sense. If the innovation is perfectly mobile, the innovators could do no better than to license the technology.

Decision-making would also be enhanced by considering how imitable the innovation is. If the innovation is no more than a clever and complex assembly of relatively available technologies, then no wall of patents could keep opponents out. Recognizing this vulnerability, a manager might want to think more carefully about the length of the expected entry lag and whether or not there may be some advantage possible due to firm-specific learning or asset mass efficiencies. He might consider trying to use his head start to build other cospecialized resources that are less available (say a reputation for service on the new technology). This might be possible if the secondary resource is time path dependent or if his expectational advantage inhibits competition from developing the secondary resource.

The general point is that by analyzing his resource position, a manager would have a clearer understanding of whether his situation meets necessary conditions for a sustainable advantage. Fewer strategic mistakes would be made. But in addition, it might help him to utilize his expectational advantage in looking ahead.

Amit and Schoemaker (1993) draw upon resource-based theory in developing a behavioral view of strategic assets and offer some prescriptive advice on how to target, develop and deploy them. Wernerfelt (1989) proposes some guidelines to help managers identify their critical resources and decide how to apply them.

In some cases causal ambiguity may make it impossible for a firm to evaluate its resources or even to identify them. (See Lippman and Rumelt, 1982). While such resources may be the basis for competitive advantage, the causal ambiguity involved leaves little room for strategy. Firms owning the resources have no informational advantage over other firms and little ability to leverage these resources further since there is uncertainty regarding their dimensions and/or their value.

Other resources can more easily be identified as value-creating resources, but their reproduction may be highly uncertain. Resources which are strongly time-path dependent or which are socially complex fit this category. (See Barney, 1991.) While these resources may be *difficult* to reproduce or extend, the firm owning the assets is likely to have a strong advantage in extending them over other firms. In part, this advantage is informational, based on complex and tacit understandings, not easily accessible to outsiders. But also it's because the production of a socially complex resource is likely to require firm specific cospecialized assets which cannot be duplicated in other settings. The resource-based view would help managers to understand that such resources

can be an important basis for competitive advantage. And, by highlighting the value of these resources, it might help managers see that, despite the difficulty, they should consider leveraging these resources further.

Corporate strategy

The resource-based model is fundamentally concerned with the internal accumulation of assets, with asset specificity, and, less directly, with transactions costs. Thus it lends itself naturally to the consideration of questions regarding boundaries of the firm. A number of researchers have utilized a resource-based view to analyze issues regarding the scope of the firm.

Barney (1988), for example, has addressed the issue of whether bidding firms may realize abnormal returns from strategically related acquisitions. His resource-based framework provides the answer that it depends upon how rare and inimitable is the resulting combination of resources.

Montgomery and Hariharan (1991), have shown that firms with broad resource bases tend to pursue diversification. (See Penrose, 1959, as well). In doing so, firms tend to enter markets where the resource requirements match their resource capabilities.

More generally, the prevailing theory of diversification can be characterized as resource-based. (See, for example, Teece, 1982; Wernerfelt, 1984; Williamson, 1985; Wernerfelt and Montogmery, 1986; Montgomery and Wernerfelt, 1988). This theory characterizes the kinds of resources which support diversification as quasi-fixed, yet inherently fungible: that is, they can support a variety of products. Other resources may possess a property of public goods, in that their use in one application does not diminish their availability for other uses. A brand name, for example, may be used without being 'used up' in the process. The crux of the theory is that diversification is the result of excess capacity in resources which have multiple uses and for which there is market failure.[20] Without market failure, due to high transactions costs or imperfect mobility, the firm could simply sell the services of their redundant resources. In that case, single business firms could operate more efficiently than a diversified firm, even if there are economies of scope (Teece, 1980, 1982).

One issue, which has been inadequately addressed, is the paradox of how 'excess capacity' in resources may lead to 'scarcity rents' for resource holders. Certainly, these notions are incompatible if the resource has but a single use, since inferior resources would be driven from the market[21] (see Figure 2). Recall, however, that the price of a resource is determined by the condition of supply and demand in the factor market. Factor demand, in turn, is derived from the demands of *all* products which it can be used to produce. If, at the equilibrium price, heterogeneous factors are employed across the markets, then superior factors will earn rents, regardless of whether their availability surpasses the needs of a single-product market. They are still scarce relative to total demand for their usage. In this way, excess capacity of a resource in a single-product market is compatible with its ability to command scarcity rents. Similarly, resources with public good characteristics may earn rents, despite their availability for multiple employment. Since, after some point, there are limits to the expansion of these resources, perhaps because of a fixed supply of cospecialized assets within the firm, such resources may still be scarce relative to total demand for their services.

Eastman Kodak is an example of a firm that has diversified on the basis of excess capacity in its core capability in photographic technology. Its ability to expand in certain markets was limited by its high market share and antitrust considerations. In the mid-70s, its market share for film was estimated at 90 percent; it was estimated at 85 percent for cameras.[22] In order to more fully utilize its prodigious R&D capabilities Kodak had to seek opportunities outside its original markets. This was possible because the potential for photographic technology applications was quite broad, encompassing movie films and equipment, medical and industrial X-ray films and equipment, audiovisual products, microfilm, etc. In 1975, Kodak had a market

[20] For some empirical evidence on this point, see Chatterjee and Wernerfelt (1991).

[21] In this country, antitrust constraints typically limit market share. For this reason, inferior resources may well remain in the market despite excess capacity in single-use superior resources.

[22] See 'Polaroid-Kodak,' HBS case # 376–266.

share of just 38 percent of the total U.S market for amateur photographic products. In this sense, its resources were 'scarce' relative to total demand for their use over all applications, despite excess capacity relative to particular markets.

A second issue which needs further attention is the question of why firms do not expand more fully in initial markets before they enter additional ones. It may be that the competitive model is inadequate to characterize product markets. Or it may be that, in general, both resources and market conditions may be better represented in a dynamic model, changing incrementally over time (Montgomery and Hariharan, 1991).

Montgomery and Wernerfelt (1989), employ a framework which characterizes resources by their 'specificity' or range of application. Diversification is viewed as a result of matching a firm's resources to the set of market opportunities. These two conditions together determine both the range of strategic options and the profitability of a firm. For example, the high specificity of expertise in glass technology would constrain a firm from diversifying far afield on the basis of this resource. And, since specialized resources also tend to be relatively scarce, the model would predict higher rents for narrow diversifiers.

In contrast, firms with generalizable resources may face a much wider opportunity set. So, for example, a firm with expertise in cost cutting, embodied in a team of managers and firm-specific routines, might diversify quite widely. Lower rents would be expected, however, since these skills might be in greater supply. This does not imply that there is no scarcity value to such resources, but simply that they are relatively less scarce than more specialized resources. What is important is that heterogeneous managerial resources are heterogeneous and superior managers are less than perfectly mobile.

Although the authors do not say so, the model also implies an optimal extent of diversification. Since the returns in each added market diminish due to resource efficiency loss, diversification will cease when rents in the final added market are zero. See Figure 4.

Dosi, Teece, and Winter (1990) address the issue of the degree of relatedness among a firm's products—what they term 'coherence' in its business activities. The authors draw on concepts from organizational economics to explain the connection between a firm's core competencies
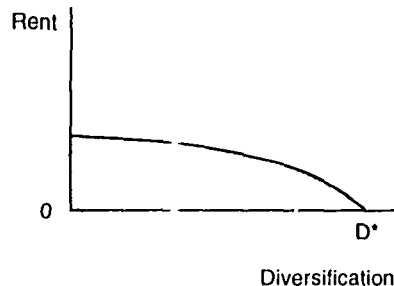

Figure 4. The determination of the extent of diversification Key: D^* = Extent of Diversification, ▱ = Accumulated Rents

and the degree of coherence among its parts. According to this theory, variations in the speed of learning, the breadth of the path dependencies, the degree of asset specialization and the nature of the selection environment explain the nature and extent of the scope of the firm. This work, although it is preliminary, appears to make a very fruitful start. In addition, it highlights the rich use that may be made of evolutionary economics, in particular, toward explaining phenomena of central interest to researchers taking a resource-based view of strategy.

As these examples demonstrate, resource-based theory, clearly, has power and implications for many important questions regarding corporate scope. It is a unifying theory which allows us to view both related and unrelated diversification through a common lens. It addresses diversification extent as well as type. It goes further than competing theories in simultaneously explaining the differences in profitability which are observed across firms, while also offering an explanation about why all firms do not and cannot pursue strategies which in the aggregate offer the highest returns. Instead, firms are seen as adopting strategies which their resources can support. Just as all resources supporting single business strategies do not have equal profit generating potential, neither do the resources supporting various diversification strategies. For an individual firm, whether it is a single-line business or widely diversified, the critical task is to use its available resources to the greatest end they can support.

In sum, this emerging theory may prove to be a paradigm capable of elucidating and integrating

research in all areas of strategy. Despite the need for further work, it has already shown itself to be a robust and integrative tool. It has strong implications for single-business strategy, for corporate strategy, for theorists and practitioners alike. Importantly, it is the only theory of corporate scope which is capable of explaining the range of diversification, in all its richness, from related constrained to the conglomerate form. This is the crucial mark of a robust theory of diversification (Teece, 1982). It is an area ripe for research, which has already demonstrated its fruitfulness and deserves the concentrated efforts of this community of scholars.

ACKNOWLEDGEMENTS

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