

# **The 3 Rs of Strategic Alliance Formation: Resources, Rents, and (Property) Rights**

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## **The 3 Rs of Strategic Alliance Formation: Resources, Rents, and (Property) Rights**

This paper examines the formation and governance of strategic alliances. In particular, the problem is defined for the development of alliances in agriculture, where new organizational forms are arising rapidly for horizontal and vertical coordination of the production-marketing chain. As the title of this research conference implies, these organizational forms offer opportunities within the portfolio of strategies facing agricultural producers for reconfiguring their marketing and managing risks by joint/collective action.

The basis for the paper is the resource-based theory (RBT) of firm strategy, which has developed over the past ten years as a way to build positive and normative models of strategic decisions. The RBT draws from industrial organization economics and organizational economics (often called neoinstitutional economics) as a way to model the sources and robustness of sustainable competitive advantage. This paper extends to RBT to the joint strategies of firms engaged in strategic alliances.

Additionally, the analysis turns on the manner by which economic rents are earned in a strategic alliance and how they are shared by alliance partners. What rights do alliance partners have to jointly earned returns in the alliance, given its organizational form (statutory structure and governance structure), the sources of economic rents, risks associated with the rent streams, and the often intangible resources (assets) that drive the performance of the joint assets in the alliance?

This discussion paper presents a brief review of the RBT model, followed by a discussion of the sources of, and durability of, economic rents that accrue to firm resources. These sections are essentially résumés of the current literature on RBT. The third section departs from the literature in explicitly considering a model of strategic

alliance formation as the development of a portfolio of jointly held alliance resources that are linked to the resource portfolios of the individual alliance partners. The fourth section presents further extensions of RBT to examine the problems of *ex ante* and *ex post* division of alliance rents. One extension is the exploitation of the property rights theory of economic behavior (cf. Barzel, 1989) to explain how the economic rent streams from the resource portfolio should be shared among alliance partners, including participating financial institutions.

### **A Brief Review of the Resource-based Theory of Strategy**

The central construct in the model is firm resources.<sup>1</sup> The bulk of the literature on RBT treats three categories of resources in the portfolio: physical capital, human capital, and organizational capital. The physical and human capital resources are the same assets that are the basis for traditional economic models. In addition, the portfolio of firm resources contains intellectual property including patents, specialized knowledge, information, and intangible assets like brand names. These resources clearly allow the firm to provide perceived product value to customers. There are other, less visible resources that provide value, much as Porter's secondary activities in the Value Chain (1985). These include decision-making processes, coordinating systems, human resources development (i.e. training), and the established patterns of work that organizational scientists call routines. The umbrella term for these resources is organizational capital (Tomer 1987). The resources engendered in organizational capital represent the interpersonal relations that are directly and indirectly associated with the production and delivery of the firm's products and services.

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<sup>1</sup> This section follows from the detailed descriptions of Barney (1991) and Mahoney and Pandian (1992).

The explicit inclusion of decision and control processes presents something of a challenge in analyzing a resource portfolio: where are the boundaries among human, physical and organizational capital? In traditional economic models, it wasn't difficult to separate assets into physical and human; it is hard to confuse a human and a machine. Or is it? Consider a shift from a production technology using lathes and lathe operators making machine parts to a technology with computer-aided flexible milling machines. The difficulty in separating machine productivity from human productivity in the former is ascribing some quality dimension to lathe operators. This could be done by using years of experience as a proxy for operator quality. But how much of the increased productivity from moving to the advanced technology arises from the complex machinery and software, from the programmer, and from the operator? How much of the competitive advantage from this technology adoption is a result of the asset purchase, the human capital of the operator and programmer, the training process that upgrades this human capital, the maintenance contract with the manufacturer of the milling machine, the flexible manufacturing processes (including design, switch-over, and materials management) that permit capture of the full value of the machine's physical characteristics?

In the food industries we are confronted with analogous Gordian knots of human, physical, and organizational capital. An example is a total quality management (TQM) system. If the implementation of TQM is successful, it requires an investment in human resources (hired or upgraded) at nearly all points in the production process, an investment in software (manuals, computer programs), and the development of decentralized decision processes, control processes, and new working relationships with input suppliers.

Successful strategies are not often based simply on individual specialized assets, but on a multiplicity of specialized assets. Mahoney (1995) calls these co-specialized assets and notes the intractability of trying to untie the Gordian knot.

We include a fourth category of firm resources not considered by Barney and others: financial capital. That is, the portfolio of resources available to the firm to obtain and sustain competitive advantage includes those liquid assets that can be quickly transformed into physical and human capital. There are two reasons for including financial capital. First, financial capital has much to do with the formation of many types of strategic alliances (see Westgren 1994b) and with the motivation for corporate strategy choices such as acquisitions and leveraged buy-outs. In addition, we will consider the dynamics of strategy, wherein the liquidity of financial capital permits firms to alter strategies to sustain competitive advantage by absorbing new physical and human resources. This perspective follows from the literature on organizational slack (Bourgeois 1981, Singh 1986, Sharfman *et al* 1988). Bourgeois defines slack as

"that cushion of actual and potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy as well as to initiate changes in strategy with respect to the external environment "(1981, p. 30).

There are two types of slack: absorbed and potential. Absorbed slack resources are already in place: excess machine capacity, large R&D staffs, flexible manufacturing technologies. Potential slack resources are highly discretionary; they are typically cash and other highly liquid assets. Thus, financial resources are important in the dynamics of strategy change over time. They permit the fastest and most divergent changes from existing strategy. Other resources that exist as absorbed slack permit change, but constrain its speed, direction, and magnitude.

The portfolio of resources employed in the firm defines the strategy chosen by the management. The strategy of the firm provides, at least in the short term, the

opportunity to earn above-normal returns in the market.<sup>2</sup> Customers choose their preferred products and the differential that they pay to the firm for the perceived value represents returns above what would accrue to homogeneous products produced by firms that compete using the same strategies.

### **Rents Paid to Resources and Their Durability**

These market returns are effectively payments to the resources used in the production of the products; i.e. economic rents. There are four types of rent to be considered (cf. Mahoney, 1995). First, some resources earn Ricardian rents due to locational advantages or unique property rights to land, mineral deposits, or other physical resources. One interesting Ricardian rent in agriculture might be the locational advantage to producing where environmental regulations are lax or where right-to-farm legislation doesn't preclude corporate enterprises. Second, there may be quasi-rents that accrue to firm-specific uses of certain physical, human, or organizational resources. Quasi-rents are the appropriable difference between the value of a resource in firm-specific use and its second-best use by other firms in the economy. Third, there may be quasi-rents that arise from co-specialized assets; that is, the **combination** of various resources may be unique even though the individual resources have little or no inherent individual quasi-rents. This is an interesting empirical issue. Does Tyson Foods earn supernormal profits because of a particular resource in the portfolio (e.g. management control processes or brand name) or because of the unique portfolio of relatively common production facilities, production contracts, location, and genetic stock combined in a complex manner within a matrix of corporate culture, management control processes, and other intangibles? The fourth genre of rents to be considered is

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<sup>2</sup> Above-normal returns are defined as compared to the perfect competition model of identical firms producing identical products with identical technologies. In the reality of segmented markets, heterogeneous products, and unequal resource portfolios among firms, **all** market participants can earn returns above the level predicted by perfect competition.

entrepreneurial rents which accrue to risk taking, deft navigation through the "gale of creative destruction", innovation, and chance. My taxonomy of these rents reflects the writings of economists who are associated with them:

- a) Knightian rents – chance and risk-taking,
- b) Schumpeterian rents – innovation, and
- c) Kirznerian rents – alertness to market imperfections.

It is important to note that there may be more than one entrepreneur in any organization or alliance who generates these rents. Kirzner's entrepreneur is the agent in the Austrian economics tradition that finds profit opportunities for arbitraging resource values that are overlooked by others (Kirzner 1979, 1992) This entrepreneur may not have the technical capability for effecting innovation in products and processes, the Schumpeterian progress that generates short- or medium-term economic rents. Both of these rents arise from "first-mover" behavior relative to the ignorance, inertia, or asset fixity of competitors. Finally, there may need to be a party who earns rents from the ability to absorb risk, perhaps a venture capitalist. This Knightian entrepreneur seeks reward for chance-taking, often in concert with one or both of the other types of entrepreneurs.

Entrepreneurial rents are only defined in a dynamic market system, but the resource-based model of strategy celebrates the fact that all types of rents erode over time.

The uniqueness of the portfolio of physical, human, organizational, and financial resources determines the size of these above-normal returns. Not all resources will give rise to these economic rents, especially those that are widely used by competitor firms, but some resources will effectively drive the stream of above-normal earnings by the total resource portfolio. Can these sources of earning-differentials be bid away by the market? Often, yes. The uniqueness can most easily be dissipated for physical and financial capital, and to a lesser degree, for human capital. The source of perceived

value is difficult to bid away if the resource that generates the rent stream is part of the organizational capital, which is less transparent to rivals seeking to emulate a successful strategy. Schumpeterian rents are eventually bid away by competitor reactions and are sustainable only to the extent that the first-mover continues to seek innovation or protects its innovation rents by "riding down" the experience curve ahead of rivals or uses some other non-static strategy.

Barney (1991) shows that sustained competitive advantage (the ultimate goal of strategic management) requires that resources must be heterogeneous among firms and that there must be immobility of resources between firms. First-mover advantages are not sustainable if the relevant resources are available to all firms or are easily bid away from the first-mover. Barney writes that this is the significant omission of the value chain analysis, which is based on Porter's adaptation of industrial organization economics: it ignores the necessity for heterogeneous resources in the development of sustainable competitive advantage based on configuration of the value chain. New production techniques offer short-term first-mover advantages (Schumpeterian profits) to adopters, but the rapid diffusion of this technology (the resource) results in a dissipation of competitive advantage. One observes this phenomenon in the food processing industries. Advances in quality management, such as using Total Quality Management programs (TQM), Hazard Analysis and Critical Control Point systems (HACCP), or achieving certification for ISO 9000 have provided first-mover advantages for several food firms that are dissipated in three years or less by the rivals imitating the strategy.

What sustains competitive advantage? Barney (1997) shows that there are four characteristics of resources that lead to sustained streams of above-normal returns.

1. The resource must be valuable; that is, it makes a positive contribution to exploiting a position in the market.



2. The resource must be rare; it cannot be widely available to competitors.
3. The resource must be inimitable (or imperfectly imitable) by competitors.
4. There cannot be substitutes easily available for the resource.

Inimitability is a key characteristic of the resources that drive rent-earning. A resource cannot be easily or perfectly replicated by a competitor if it arises from (1) the idiosyncratic history of the firm (path dependence), (2) socially complex phenomena within or between organizations, or (3) causal ambiguity in the strategy process. Path dependence relates to the historical development of a resource that cannot be imitated by rivals whose histories differ. For example, the corporate culture of a firm arises from the shared, learned behavior norms of the persons in the firm. The imbeddedness of the culture is not easily imitated by competitors who have not passed through the same growth states and celebrated the same milestones in cultural development. Socially complex phenomena are inimitable because they arise from personal interrelationships within and between organizations. An example is a situation of mutual trust that exists between a buyer and supplier in a vertical strategic alliance. The trust, built upon a complex social interaction among managers in two companies, allows for effective mutual decision-making and a long-term mutual recognition of joint strategies. This mutuality will be imperfectly inimitable by rivals of both firms: one cannot easily replicate a trust relationship. Causal ambiguity means that there are certain cause-effect relationships between resources and sustained performance that are poorly understood, and hence, difficult to articulate or to imitate. It is unfortunately true that the bounded rationality of managers prevents them from fully understanding how quasi-rents arise from the resources in the firm. A firm may easily impute its competitive advantage to a newly adopted physical technology, when the true source of the quasi-rent stream is a training program for workers that leads to continuous quality improvement. Barney (1991) argues that poor understanding of causal relationships within a firm is a necessary condition for the inimitability of resources by rivals. Causal ambiguity within the firm is sufficient for it to protect the resource from imitation, but not necessary. The

firm may understand the causality internally, but be able to mask the causal relationships from its rivals.

The resource-based model states that resources are the source of sustainable economic rents because of the complex, idiosyncratic way in which they are combined within a firm. This is especially true because organizational capital arises from social processes in the firm that are by nature peculiar, path-dependent, complex, and ambiguous. If one implants physical and human resources within such a complex matrix of organizational capital, the resulting combination (i.e. the strategy) will be difficult to imitate even if many of the individual resources are homogeneous and imitable among firms. This complex matrix also acts as a mobility barrier for resources, by masking their value (causal ambiguity) and by making the process of extrication messy. That is, it is hard to bid away a resource, such as a research scientist, from a rival firm and replicate the unique strategy of the rival firm. The scientist's subsequent research program may be bounded by contractual nondisclosure and by their separation from other human and organizational capital that supported their work in the rival firm.

The most important point to make at this juncture is that the resource-based model requires a dynamic analysis. That is there is no static definition for competitive advantage. Ghemawat (1986) noted in an analysis of sustainable advantage that

"...competitive advantages are insecure, or contestable, because each can be duplicated. (E)xamples show that some success stories do revolve around contestable advantages: all of a company's competitors may be stupid some of the time. But can you count on your competitors to be stupid all of the time?" (1986, pp. 54).

In essence, Ghemawat extols managers to assume that rivals can and will seek to duplicate the sources of competitive advantage, although there may be temporary lapses of this evolutionary imperative.

## The Resource-based Strategy Model Extended to Alliances

An alliance is strategic if and only if there are joint resources held by two or more firms. The joint portfolio can consist of physical capital resources (i.e. specialized assets put in place because of a joint decision by the firms). It may also include human capital resources. An R&D alliance is often built around the specialized human capital of a research organization, such as the scientist's biotechnology firm. As well, the alliance may be based upon shared decision-making or the intangible assets of partner firms.

Consider two firms in a vertical market channel: U is the upstream firm and D is the downstream firm. Prior to the formation of any alliance between them, they each hold a portfolio of resources.

$$U^0 = \{P_u^0, H_u^0, F_u^0, O_u^0\}$$

$$D^0 = \{P_d^0, H_d^0, F_d^0, O_d^0\}$$

where P = physical capital resources,  
 H = human capital resources,  
 F = financial capital resources, and  
 O = organizational capital resources,

all of which are subscripted for the upstream and downstream portfolios. The superscript 0 denotes the period before an alliance is formed. Financial capital is included as an explicit resource because this is important to the development of many types of alliance in the usual taxonomy (joint ventures, long-term contracts, etc), including those which are financed by third-party financial institutions.

During period 0, each of the portfolios earns some quasi-rents:

$R(U^0)$  and  $R(D^0)$ .

Consider a simple strategic alliance, where U and D have a joint strategy that is based on making decisions together in a long-term supplier-buyer arrangement. The arrangement may comprise optimal scheduling of deliveries for the downstream firm and the commitment to make the upstream firm a sole supplier. The joint resource portfolio will consist of organizational capital only and the other resources don't change.

$$\begin{array}{c}
 U^0 = \{P_u^0, H_u^0, F_u^0, O_u^0\} \Rightarrow U^1 \\
 \Downarrow \\
 J^1 = \{O_j^1\} \\
 \Uparrow \\
 D^0 = \{P_d^0, H_d^0, F_d^0, O_d^0\} \Rightarrow D^1
 \end{array}$$

Figure 1. A simple alliance

$J^1$  denotes the joint (alliance) relationship and  $O_j$  is the organizational resources "donated" to the alliance by the partner firms. After the organizational resources are donated to the alliance, the remaining resources in each firm's portfolio become  $U^1$  and  $D^1$ .

Let us conceive of a more complex alliance: an R&D venture where the upstream research firm donates human capital (i.e. scientists and technicians) and organizational capital in the form of joint planning and product development, and the downstream marketing firm donates financial capital to purchase specialized assets for the venture and organizational capital in the form of its marketing network and joint planning and product development.

$$\begin{array}{c}
 U^0 = \{P_u^0, H_u^0, F_u^0, O_u^0\} \Rightarrow U^1 \\
 \Downarrow \quad \Downarrow \\
 J^1 = \{P_j^1, H_j^1, F_j^1, O_j^1\} \\
 \Uparrow \quad \Uparrow \\
 D^0 = \{P_d^0, H_d^0, F_d^0, O_d^0\} \Rightarrow D^1
 \end{array}$$

Figure 2. An R&amp;D alliance

The changes to the portfolios from  $U_0$  to  $U_1$  and  $D_0$  to  $D_1$  are more significant than in the supplier-buyer example above. This type of alliance representation can include many permutations. As a third example, consider a joint venture between a food manufacturing firm operating in the U.S. and a distribution firm in Mexico. Both firms donate financial capital from their portfolios in period 0 to buy the resources necessary to found and operate a marketing venture in Mexico following the signature of NAFTA. The joint venture operates as a separate organization and the only tie to the two parent firms is the repatriation of income (quasi-rents from the joint portfolio).

Figure 3. An equity joint venture

$$\begin{array}{c}
 U^0 = \{P_u^0, H_u^0, F_u^0, O_u^0\} \Rightarrow U^1 \\
 \Downarrow \\
 J^1 = \{P_j^1, H_j^1, F_j^1, O_j^1\} \\
 \Uparrow \\
 D^0 = \{P_d^0, H_d^0, F_d^0, O_d^0\} \Rightarrow D^1
 \end{array}$$

Why do two firms agree to enter into a strategic alliance? The decision rule is actually quite simple. Define  $R(J^1)$  as the rent stream that accrues to the alliance after it is formed and  $\omega^u$  and  $\omega^d$  are the shares of the alliance rents that revert to the upstream and downstream firms, respectively. The strategic alliance will form if and only if

$$R(U^0) \leq R(U^1) + \omega^u R(J^1) \quad \text{and} \quad R(D^0) \leq R(D^1) + \omega^d R(J^1) .$$

That is, the rent streams for both firms in period 1 that arise from their new portfolios plus their share of the alliance rent streams must be at least as great as their rents from their pre-alliance portfolios.<sup>3</sup> The logic of alliance dissolution follows from this. Often one partner will determine that the purchase of the tangible and some intangible resources of the alliance will result in an advantageous portfolio. As an example, many joint ventures are dissolved because one partner wishes to have the sole rights to the rent stream from the joint assets and they bid for the right to absorb the physical assets, management learning, market presence (reputation, brand name, distribution rights), and other resources into their portfolio.

This leads to one of the inescapable empirical questions in the design and study of agricultural alliances. What is the set of boundaries that is drawn around the joint resources of the alliance ( $J^1$ ) and the individual resource portfolios held by the alliance partners ( $U^1$  and  $D^1$ )? Can the alliance governance structure

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<sup>3</sup> To be precise, in economic terms, we would have to label the quasi-rents in period 1 as **expected** quasi-rents since they are *ex ante*. This will be ignored here for ease of exposition. We also collapse rents in all future time periods into the single time period  $t_1$  for the same reason.

effectively segregate the rents that arise from jointly held assets from rents earned external to the alliance resources? This is the essence of the boundary-of-the-firm problem when applied to alliances. The easiest course is to have the equity joint venture, wherein all joint assets exist in a (statutorily) separate entity. For “handshake” alliances, boundary problems may be severe, particularly in the case of business failure – of the alliance or one of its partners.

There are three points to be made about this resource-based model of strategic alliances.

1. If intra-organizational capital resources are more difficult than other types of resources to imitate because they arise from social processes in the firm that are by nature peculiar, path-dependent, complex, and ambiguous; then inter-organizational capital resources should be still more difficult to imitate because of the complexities associated with the interpersonal relationships that exist between firms. Consider the case of the long-term supply relationship discussed above. For that alliance to be imitated, a rival (upstream or downstream) firm must find its own alliance partner with a similar portfolio of physical and human capital resources and be willing and able to create the firm-to-firm business relations that created and sustain the strategy of the first alliance. One can reasonably expect the path-dependent nature of the formation of the first alliance to be extremely difficult to replicate.

2. This model can extend easily to complex strategic alliances between more than two firms. At any vertical interface in the marketing channel, an alliance may form among three upstream firms and one downstream firm, for example. There also need not be symmetry among the "donations" of resources from the three upstream firms. The alliance can be formed by a wide variety of inter-firm resource transactions. The logical extension of this in the agri-food sector is an alliance of many family farms and a single

processor. Some farms may require financial contributions from the processor as "up-front" money for seasonal production. Others may use specialized assets from the alliance (high-tech planting equipment for lettuce production, genetic stock in animal production). Still others may maintain their original portfolio of physical, human, and financial capital resources and only participate in shared organizational capital, such as jointly-defined delivery schedules and production techniques.

3. This model is easily extended to alliances at multiple interfaces along the marketing channel. In the production of high-quality Label Rouge poultry in France, each alliance is formed among farmers, feed mills, hatcheries, and slaughter plants (Westgren 1999). **The more complex the alliance, the more difficult it is to imitate the strategy, and the more sustainable is the competitive advantage.** A well-designed multi-party strategic alliance will generate higher rents which in turn will reduce the likelihood of defection from the alliance by one or more partners.

### **The Agricultural Alliance: Horizontal and Vertical Dimensions**

One interesting characteristic of agricultural alliances is that they typically have a horizontal dimension, as well as a vertical dimension. That is, several agricultural producers will combine around common assets to attempt to mimic scale advantages of large organizations. As an example, consider a common alliance that exists in the swine industry. Six hog finishing operations jointly invest in a two-site farrowing and nursery complex that provides enough feeder pigs to satisfy their combined finishing capacity. The group defines a series of processes such as medicated early weaning, segregation by sex, and other health and feeding regimes that maximize the returns from the jointly-held assets. In addition, they devise a schedule of feeder pig placements from the nursery that



permit all-in-all-out production in the finishing barns, so as to maximize returns from those assets, as well. Ideally, the physical resources (barns and equipment, swine genetics) and the human resources (managers and employees of farrowing and nursery units, managers and employees of finishing farms) are surrounded by the organizational capital (joint decisions, common production processes, optimized schedules, and joint scale) to earn superior rents. What are the sources of these rents? Are they Schumpeterian? Possibly, but only for early adopters in a given region. Continued Schumpeterian rents will require continued investment, probably in organizational slack resources, to permit subsequent innovation. The financial resources available to the joint portfolio are important. Are they from co-specialized assets? Most definitely.

Does a finishing barn earn quasi-rents? No. This is a common asset in the industry and, as such, it does not fit Barney's description of rent-earning resources. A similar argument follows for many of the physical resources held by the finisher-partners. What of the farrowing and nursery buildings? They may have been unique in 1993 in much of the Midwest, but the durability of that uniqueness is questionable. The swine genetics are less a source of rent for top producers as 10 years ago, although many small, traditional farrow-to-finish operations in the US do not use the best genetics available. It is clear from observing the performance of firms in the Midwest hog industry that genetics and new facilities lead to co-specialized quasi-rents when combined with all-in-all-out and early weaning processes, superior herd health systems, feed processing technology. Combined with the scale effects of an alliance, owners of these resources can mimic some of the rent-earning capacities of the mega-operations such as Carroll's and Premium Standard Farms.

A vertical dimension to the alliance may also exist. A feed company or swine genetics company may be an alliance partner; in fact, substantial impetus for alliance formation comes from input suppliers. Many such firms have managers ("godfathers") dedicated to the task of enrolling producers. Downstream from the

hog production, the alliance may be joined by a packing plant. It is easy to see why the vertical partners wish to join a hog production alliance: guaranteed privileged access to the producers as a market for production inputs or a source of quality-controlled slaughter hogs. But the decision rule stated above places an onus on the vertical partners to bring some valuable resources to the alliance, so as to enhance the rent streams of the producers in a horizontal alliance.

Guaranteed market access and lower marketing costs will increase rents as transactions costs are diminished and optimized feeds and genetic stock will enhance grow-out performance in both average performance and in variation. In this hog example, one can observe the same motivations and performance criteria that drove the broiler industry to vertically integrate, with horizontal coordination at the grow-out level.

How does a bank value this alliance when presented with a loan application for the farrowing and nursery facilities? Should the manager(s) of these jointly-owned, but physically distinct facilities be paid a fixed wage for managing the resources under their control or should they participate with the finishers in any quasi-rents? These are not independent questions. The way that rents are shared among the parties to the alliance (especially given the risk associated with the rent streams over time) have an impact on the nature of the financing contract. Property rights theory may elucidate these issues.

### **Property Rights to Rent Streams**

Barzel (1989) develops an economic model of property rights. Among the cases presented are two of interest to the development of the RBT model of alliances. One is the collaborative relation between owners of land and labor; the other is the equity firm. In the former case, Barzel establishes the efficacy of fixed-wage, fixed-rent, and share contracts under different production conditions. Most importantly, the resource (physical or human) that has the greatest impact on

performance should have control of the attributes of all the resources and be a residual claimant. Thus, in the horizontal swine alliance above, the manager of the joint assets (farrowing unit) is the source of greatest output variability: by adhering to optimal routines and controlling hired labor, more pigs are farrowed and saved per litter and there is less shock (low feed efficiency) after transfer from one site to another. If this manager is on a fixed wage contract, there will be no incentive to optimize the use of all the resources in the farrow-nursery operation. The manager should have a share (incentive) contract. Where the horizontal alliance doesn't recognize this and treats the joint resources as a cost center with minimal transfer prices of nursery pigs to finishing operations, expected quasi-rents will be lower and variation will be higher than otherwise. It follows that the repayment of credit for the purchase of the joint assets will be harder to guarantee from the rent-earning power of the farrowing-nursery complex.

Barzel also takes the argument of variability of performance to an interesting conclusion in the equity firm: "the function of ownership is indeed to assume responsibility for variability in order to increase joint income" (1989, p. 58). To paraphrase the logic in terms of alliances, contractual payments to a partner will part of the time exceed the value of the rents earned by the resources owned by that partner and other times be less than the rent stream. Some guarantees must exist within the alliance to finance the differences between rent streams and contractual payments and "equity capital is a factor specializing in guarantees... (t)he guaranteeing function, therefore, determines (at least in part) the optimal level of equity capital" (p. 60). In the case of a horizontal-vertical alliance in agriculture, such as the example of the swine venture which is financed by a combination of debt and equity capital, one must recognize the obligations of the *structure* of the alliance to account for both the incentives for maximizing of joint rent streams and for guaranteeing contractual payments in light of the variability (risk) in joint rent streams.

There has been some work by management scholars in addressing the process issues in the structure and ongoing governance of strategic alliances. One promising framework has been proposed by Zajac and Olsen (1993). They suggest that partners in an alliance do not attempt to minimize the transactions costs between them, but instead seek to maximize (joint) *transaction value*. This thesis is consistent with the model in this paper, wherein the partners seek to increase the rents earned by their individual and joint resource portfolios. The articulation of a joint maximand is an important part of any formal model that captures the essence of the resource-based alliance strategy. Equally important is the articulation of the property rights to the jointly maximized rents, given the existence of contractual obligations, residual claims, and intertemporal variation.

### **Rents, Rights, and Risk**

Several papers have suggested that alliance formation is driven by the goal of managing risk (Knoeber and Thurman 1995, Sporleder 1995). Usually governed by contract payments to growers in a vertical alliance, they provide risk shifting of output price and, sometimes, input prices from the animal production (grow-out) units to an integrator. Some alliances mitigate production risks through systematic use of superior feeding and health regimes. All-in-all-out production is such a regime that permits superior sanitation and disease control. Many alliances are based on providing guaranteed market access with or without accompanying reduction of price risk.

Casual empiricism shows that a multiplicity of contract-based and noncontract-based alliances are forming in agriculture. Some are built around managing common production risk; others seek to protect a partner against the consequences of idiosyncratic risk (to use the nomenclature of Knoeber and Thurman). For others, such as Label Rouge alliances in France, the object is to avoid market and price risk by optimizing quality for a differentiated product and

to pay technical consultants to maintain process control at all points in the production-marketing chain (Westgren 1994).

An informed model of alliance formation must be explicit in describing risk-sharing as well as rent-sharing. An issue is how to translate price, market, and production risks that accrue to the ensemble of resources to variability in rent streams at the level of resources. That is, if RBT is defined by rent-generating individual assets and by co-specialized assets and if RBT recognizes that some resources dominate the portfolio's ability to generate rents, do we allocate price risk proportionately among valuable resources based on rents earned or on asset value? Or, do we seek to define some resources that are associated with price risk and allocate risk in a nonproportional basis?

One issue stands out in this regard. How are the shares of alliance rents (e.g.  $\omega^u$  and  $\omega^d$  in the examples above) that are returned to alliance partners established? As noted above, the equity joint venture easily solves this; shares are computed proportionally to equity capital invested by each party. It doesn't matter which resources are the source of the rent stream; they are effectively bounded by the JV. It doesn't matter if some of the *ex post* rents arise from chance, the vagaries of the market, or entrepreneurial behavior. The rents are allocated in the same proportions as those that are established *ex ante*.

On the face of it, it should be easy in alliances governed by contracts – one residual claimant and n-1 contractual claimants, as suggested by Barzel. The contractual payments are fixed *ex ante* by the contract(s) and the residual claimant benefits from any rents that are earned above contractual payments by his/her skilful management of resources under his/her residual control. Fair enough. But what happens when the contractual claimants feel that resources that they own, but are controlled by the actions of the residual claimant, generate rents that are not allocated by the contract terms? This is the essence of problems that have existed for generations in cooperatives where product

pooling is used and/or where multiple lines of business are pooled for the purposes of establishing residual claims (patronage refunds).

This issue is confounded by the fact that the rent-earning resources in the alliance are not always the same resources donated by the alliance partners. Financial resources are translated into physical and human capital resources. Organizational capital changes over time with organizational learning. Scale resources are defined only jointly.

Thus, the model must be explicit about how risks common to all resources and risks associated with individual resources will be guaranteed by the alliance structure. The model must separate rent streams that are unpredictable *ex ante*, e.g. Schumpeterian and Knightian rents, in a dynamic model and those rents that are Ricardian or Paretian and accrue to identified resources. To date, the literature is silent on these issues.

There is a close parallel between the development of a resource-based model of strategic alliances for our purposes as researchers into marketing and agribusiness management and the development of sound, coherent organizational forms for alliances that are forming around us in the agri-food sector. At some level, we will be forced to build and test theory in the wake of business practice, by observing the experiments that are going on around us and using inductive methods in our research. On the other hand, we know enough about the resource-based theory of strategy and about property rights to go before groups of producers that are contemplating a marketing alliance and pose questions to guide their action. Where are the sources of competitive advantage that you are designing into the alliance? How durable is the advantage (i.e. how long are the projected rent streams insulated from competition)? How does your preferred governance structure (closed cooperative, contracts, LLC) allocate earnings among the alliance partners? If earnings (rents) are volatile, who bears the risk and are they capable of financing consecutive periods of contractual

payments in the face of low market returns? Will banks and other financing entities wish to secure the joint assets of the alliance with assets held in the individual resource portfolios of the partners? Are their alternatives to dissolution in the face of defection or dissension over rent-sharing?

We are in the midst of a fascinating laboratory for learning about individual and collective behavior, and for building better theory about organizational form and function. It is incumbent upon us to adopt the models and methods suited to studying these experiments as they unfold. We cannot wait until the experimentation is finished for the application of postdictive models.

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