

**"ORGANISATION COSTS AND A THEORY
OF JOINT VENTURES"**

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ORGANIZATIONAL COSTS AND A THEORY OF JOINT VENTURES

ABSTRACT

In this paper we argue that joint ventures are superior to contracts and internalization as means for firms diversifying into new lines of business when transaction costs and the costs of valuing and acquiring complementary assets are both significant. A joint venture is likely to be chosen over an acquisition under these circumstances because it 1) produces incentives for honesty between the transacting partners, 2) affords opportunities for iterative contracting, and 3) facilitates organizational learning.

I. INTRODUCTION

Joint ventures are a common form of inter-organizational relationship. More than 2000 joint ventures were reported in the quarterly roster of joint ventures published by the Mergers and Acquisitions Journal between 1972 and 1983. About a third of these were between domestic firms based in the United States.

A joint venture is a mechanism for pooling complementary assets owned by separate firms.¹ In most joint ventures the parent firms combine a part or all of their assets into a legally separate unit and share the profits from the venture. Like the more typical common stock company, this unit is usually free to raise additional capital, enter into contracts, buy and sell goods and services, hire employees, and the like. In matters of policy making and control, however, the joint venture is more like a partnership. A typical common stock company is governed by a Board, which acts as the fiduciary agent of the stockholders who are mostly investors with little or no interest in policy or control. In a joint venture, the ownership is shared by the parents in a more active sense. The parent firms through their representatives have a direct interest in the policy decisions and the control of the operations of the "child". Often, a collateral contract or agreement stipulating the mutual rights and obligations of the parent firms accompanies the formation of a joint venture.

The literature on joint venture spans several disciplines such as organization theory, strategic management, international business, finance, economics and sociology. Earlier explanations

for joint ventures include (i) government policy in the case of international joint ventures, (ii) risk sharing, (iii) market power or competitive strategy, and (iv) synergy or resource dependence. While these explanations are useful for understanding what the joint venture aims to accomplish, they do not explain why a joint venture will be preferred when alternative mechanisms are available for achieving the same objectives.

More recently, the "organizational failure framework" developed by Williamson (1975) has received considerable attention as a predictive theory in comparative analysis of alternative methods of organizing transactions between organizations. The framework has been used primarily for predicting whether the institution of market or hierarchical organization will be used under specified conditions. The basic argument is that inter-dependent organizations will internalize transactions in a hierarchy or carry them out through market, depending on the relative transaction costs which arise from the self-serving, opportunistic behavior of the transacting parties. Several notable attempts have been made recently to extend this approach to elaborate the conditions under which intermediate organizational forms such as a joint venture will be selected against market contracts. These extensions, however, have been incomplete with respect to the hierarchical alternative ---- either joint venture parent acquiring the relevant complementary assets owned by the other parent.

This paper presents a theory which fully describes the choice between markets, joint ventures, and hierarchies, when there are no confounding demands by governments or similar exogenous influences. The theory offers a rationale for preferring shared ownership and control in joint venture to unitary ownership and control. Our focus is on the market for acquisition of the complementary assets. In addition to the usual conditions for preferring hierarchy to market mediated contracts, we stipulate two additional conditions for the choice of a joint venture (i) non-trivial costs and strategic considerations rule out internal development of these assets and (ii) non-trivial costs of obtaining information on the quality and price of similar assets owned by another firm. Given these two conditions, a joint venture will be preferred to both the market and hierarchy solutions because of its following advantages: (i) it produces incentives for honesty, 2) creates remedies for opportunism, and 3) facilitates organizational learning.

II. OBJECTIVES OF JOINT-VENTURES

The literature on joint ventures and other related phenomena is diverse and cross-disciplinary. The following is a rough taxonomy of this literature: (i) frameworks which can be used to describe inter-organizational relationships as a class of phenomenon (Astley, 1984; Astley and Fombrun, 1983; Benson, 1975; Bresser and Harl, 1986; DiMaggio and Powell, 1983; Evan, 1966; Fombrun and Astley, 1983; Hall et al., 1977; Herbert, 1984;

Koza, 1988; Levine and White, 1961; Litwak and Hoylton, 1962; Litwak and Rothman, 1970; Pfeffer, 1972), (ii) studies of international joint-ventures many of which view them as multinationals' responses to host-government demands (Beamish, 1984; Contractor and Lorange, 1988; Franko, 1971; Friedman and Kalmanoff, 1961), (iii) in-depth field studies which have led to normative interpretations of joint-ventures (Harrigan, 1985, 1986; Killing, 1986), (iv) empirical studies which identify the determinants of joint-ventures as market power, resource dependence, synergy or risk-sharing (Berg and Friedman, 1980; Boyle, 1968; Duncan, 1982; Mead, 1967; Fusfeld, 1958; Pfeffer and Nowak, 1976; Harrigan, 1985; McConnell and Nantell, 1985), and finally (v) recent literature on comparative analysis of joint ventures, hierarchies, and market contracts using the transaction costs framework (Buckley and Casson, 1988; Hennart, 1988; Kogut, 1988).

A review of the first four groups of these studies suggest three different motives for joint-ventures:²

(i) Risk Sharing

First, firms may enter into joint ventures to share the risk arising from the uncertainty about the return on investment from a new business venture. By hedging investments, the number of new ventures into which a firm may enter increases, and consequently the probability that some lines of business will turn a profit also increases. There are several problems with

the risk sharing explanation for joint ventures. Pfeffer and Nowak (1976), in an analysis of 166 domestic joint ventures, for example, reject the risk sharing hypothesis, finding that, typically, the size of the parents is sufficiently large for them to absorb the risk. However, Pfeffer and Nowak acknowledge that, in principle, even large firms may face resource scarcity when the equity required to start the joint venture is sufficiently large. This may be especially true in certain hi-cost, hi-risk ventures such as large syndicated loans to developing countries, oil exploration, and major R&D ventures such as design and development of new commercial aircraft.

Modern finance theory suggests a stronger critique of the risk sharing hypothesis. The risk of a new business will be reflected in the price of the capital required to enter that business. Firms' desiring entry into new businesses will find competitively priced capital available from the financial markets. Because individual investors can diversify their risk more efficiently, no advantage from private risk sharing should accrue to firms entering into joint ventures. Thus, as purely risk sharing arrangements, firms should reject joint ventures. Instead, the relevant complementary assets should be purchased with capital raised in competitive financial markets.

Besides capital market efficiency which is only a matter of faith to many scholars, there are two other central issues related to risk. One is the relevance of total risk to parent firms. Total risk will be relevant when bankruptcy costs are

significant or when agency related issues such as the value that a manager places on his/her current job are considered. The second is the relative efficiency of private placement of risk in joint ownership as opposed to the public placement in unitary ownership. When is the private placement of risk with the joint-venture partner more efficient than public placement? The answer to this question depends on the information structure that spans the parent firms and the financial markets. We will return to this subject shortly when we elaborate our theory.

(ii) Collusion and Market Power

The second explanation is that joint ventures are pursued because they are means for gaining market power. Joint ventures, by increasing the possibilities for collusion, may reduce potential or actual competition. When the parent firms are in closely related businesses, the joint venture can be used for facilitating coordinated price fixing, entry deterrence and other anti-competitive strategies. Such strategic considerations may weigh heavily in the formation of vertically related joint ventures as well as in research joint ventures (Kogut, 1988; Vickers, 1985). Even when the parents as well as the joint venture are in unrelated businesses, as it may be in the case of pure risk-sharing arrangements, the joint venture may help to avoid potential competition between the parents.

The empirical literature evaluating the anti-competitive effects of joint ventures is mixed (Fusfield, 1958; Pate, 1969;

Boyle, 1968; Mead, 1967; Berg and Friedman, 1980). Reviewing these studies, Pfeffer and Nowak (1976:402) conclude: "The few empirical investigations of joint venture activity are consistent with the argument that joint ventures are used to organize groups of organizations, and tend to occur among either competitors or organizations which are in a buyer-seller relationship". This may be interpreted as an indication of possible collusion motives but we are less sanguine about this finding. Apart from the statistical weakness of the results of these studies, we also note that many of these studies are industry level studies at the 2-digit SIC level. The problems in drawing reliable conclusions about relationships between firms from such aggregated data are well known. For instance, estimation of market shares which is critical to the assessment of market power tend to become rather arbitrary even at 4-digit SIC level. There is also some evidence to indicate that in recent years, more joint-ventures today are between laterally or horizontally related parents than in the 1950s and 1960s (Harrigan, 1988). Beside these limitations and inconclusiveness of the evidence, the market power argument also fails to explain the choice of joint venture form when a contract or a merger of the parent firms could also have accomplished market power objectives. In fact, with the recent exception of joint research and development ventures, the anti-trust policies of the Justice Department and the Federal Trade Commission have treated mergers and joint-ventures equivalently (Brodley, 1976).

(iii) Resource Dependence and Transaction Costs

The third explanation for joint ventures is that they are the means for gaining control over firms' environment. Joint ventures, in this view, are undertaken by firms seeking to manage inter-organizational resource interdependence (Pfeffer and Nowak, 1976). Firms are not entirely self-sufficient and essential inputs to the production process --- materials, technology, distribution channels, marketing instruments, etc. --- are often owned by other firms. Successful management of the dependence on suppliers and buyers is certainly a key factor in the profitability of a business. Closely related to the resource dependence explanation of joint ventures is the argument that gains from synergy is the driving force behind joint ventures (Contractor and Lorange, 1988). Assets are synergistic if, in combination, they can generate more output at the same unit cost or they can generate the same output at a lower cost. Joint ventures are formed to exploit these "economies of scope" (Panzar and Willig, 1981) available from pooling synergistic assets.

Managing resource dependence, whether vertical or lateral, is another term for managing transaction costs. If the relevant markets prices contain all the information required for transacting and these prices can be obtained costlessly, there is nothing left to manage. A contract can be written specifying all the terms and obligations including future contingencies. However, a costless market is an economic fiction (Coase, 1937; Williamson, 1975, 1985). Bounded rationality and unanticipated

future contingencies combined with imperfect competition among few firms produce prices that are costly or impossible to obtain. Contracts in turn are incomplete which breeds opportunism. When market transaction costs are non-trivial, traders seek alternative mechanisms which can be operated at a lesser cost. Instead of buying (selling) the intermediate output, the firm may choose to vertically or laterally integrate. Under unitary ownership and hierarchical control, policy decisions can be made and executed more efficiently.

Recently, these arguments have been extended to include joint ventures in the class of mechanisms superior to markets (Buckley and Casson, 1988; Hennart, 1988; Kogut, 1988). In this view, joint ventures are devised for managing resource dependence and for reducing transaction costs. Joint ventures are characterized by shared ownership and therefore, there is potential for opportunism and disputes. However, "by mutual hostage positions through joint commitment of financial or real assets superior alignment of incentives is achieved, and the agreement on the division of profits or costs is stabilized" (Kogut, 1988:321). Although joint ownership may have some redeeming features that separate ownership does not have, it is obvious that the joint venture is second best to the unitary firm. To reject the first best, there must be more than off-setting diseconomies in acquiring and internalizing the complementary assets into a unitary or hierarchical firm.

To sum up, risk sharing, market power, and resource

dependence constitute the necessary conditions for joint ventures. Unless the redeployment of the parent firms' assets in a joint venture results in creating more value in one way or another, the joint venture is redundant. This is almost a tautological statement. Why reorganize the assets and change current ownership and control structure if it does not yield increased benefits? What needs to be explained is the rationale for the distinctive, shared ownership structure of the joint venture when other alternatives are available. Recent extensions of the transaction costs framework explain why joint ventures will be preferred to market mediated contracts. Joint ventures, however, are only second best to hierarchies in economizing on transaction costs. Why be stuck-in-between when one can go all the way? The transaction costs framework is incomplete unless we specify the diseconomies which apply to hierarchies but not joint ventures.

III. JOINT VENTURES: BETWEEN MARKETS AND HIERARCHIES

Growth of Firms

We begin with a scenario which describes events which may lead to the "discovery" of the need for reorganizing the assets of the parent firms. The post-war U.S. industrial scene has been dominated by large corporations (Berle and Means, 1968; Scherer, 1980; Shepherd, 1971); most are integrated and diversified into a variety of businesses (Chandler, 1962; Gort, 1962; Rumelt, 1974; Williamson, 1980; 1986). Exploiting scale economies and syner-

gies are the rationale for this growth and diversification. Chandler's (1977) historical study of American businesses indicated that almost all of these corporations had started as single businesses. They evolved into large diversified corporation only gradually. If so, scale economies and synergies must also have evolved through some dynamic process.

Product innovations through R&D (Chandler's citation of Du Pont's Nylon, for e.g.) are obviously important in this process. Process innovations generating scale economies in some sharable or quasi-public resources may also create opportunities for expansion and diversification (Panzar and Willig, 1981). Penrose (1959) argues that the firm at its inception may not recognize the production possibilities of its assets fully.³ Instead, it uncovers them over time through man-machine interaction and learning by doing. Rumelt (1974) suggests a similar process in the concentric and linked diversification of the initially single business firms. Organizational learning and innovations could help to reduce inefficiencies, enabling managers to expand the firm beyond its original size and scope (Williamson, 1975). Changes in government policies such as entry regulation and barriers to capital movements across national borders may also create opportunities for more profitable use of the firm's assets.

Sometimes a firm is self-sufficient in exploiting its newly "discovered" assets. More commonly, it will be necessary to combine them with other complementary assets, not owned by the

firm. When transaction costs diminish the desirability of contracting for the outputs of these firm in the intermediate markets, the firm has two alternatives:

(i) Founding a New Business Unit: Organization Costs

One alternative is to purchase the assets --- technology, patents, plant and equipment, etc., --- separately in the capital goods markets and organize them into a feeder division to produce the components and other materials which go into the finished product. Non-trivial costs are usually incurred in purchasing these assets (Balakrishnan, 1988). When the required assets are specialized and technologically intensive, the search for suppliers and the selection of plant and equipment will be a complex task which often requires specialized knowledge. There is also the possibility of small numbers bargaining and opportunistic misrepresentation of the quality and the capabilities of these equipment. The economic literature, by assuming homogeneous capital and competitive capital goods markets, often obscures these costs.

There are several other tasks involved in starting a new internal division besides purchasing the plant and equipment. Costly and time-consuming R\&D may be necessary if proprietary technologies are involved and licensing is not feasible. New employees need to be screened for their skills, recruited, trained, and adequately compensated to retain them. Teething problems will have to be overcome while commissioning the new

production lines. Several trial production runs may be required before a plant can reach its capacity. Knowledge and organizational limitations will constrain the efficiency at which the firm can carry out these tasks. On the other hand, strategic considerations such as first-mover advantages may warrant the speedy completion of these tasks.

(ii) The Acquisition Alternative

Given the firm's lack of knowledge about the complementary assets, and the consequent costs and strategic limitations in founding a new feeder division, the firm may decide to acquire a vertically or laterally complementary firm which owns the required assets. The entry process will then be shortened, saving time and effort. It may also be possible to transfer the accumulated knowledge about the capabilities and idiosyncrasies of the members of the target team - organization capital - to the acquirer, facilitating the coordination and metering of the performance of the new business (Prescott and Vischer, 1980). Besides these efficiency improvement considerations, other strategic motives such as eliminating a potential competitor may also play a role in favoring the acquisition strategy.

It is reasonable to expect that the target firm will demand and be paid a price for these organizational functions which have already been carried out by its founders and managers, in addition to the price of the assets themselves. In this scenario, the acquirer will gain very little by adopting the

acquisition in favor of starting a new division de novo. Whether these costs are incurred by way of the efforts and time spent in starting a new feeder division or the premium paid in the acquisition of an extant firm is not relevant. As long as they are equal, the acquisition strategy is logically and economically equivalent to the de novo strategy. It follows that in a comparative analysis we will be indifferent between the two alternatives.

To sum up, when starting a new business venture, a firm may require access to complementary assets and technology. Lack of knowledge, organizational constraints and strategic considerations may limit the ability and desirability of starting a new internal division and the firm may prefer to acquire an extant firm that already owns the complementary assets. Acquisition is weakly preferred to internal development when the target price correctly incorporates the value consequences of these considerations. In either case the firm acquires full ownership rights over the complementary assets granting it unitary powers to formulate and execute policies governing the use and disposition of these assets. The joint venture on the other hand implies sharing these rights with the owner of the complementary assets. What are the diseconomies in acquisition which leads the firm to prefer shared ownership?

Uncertainty, Risk and Ignorance

Uncertainty about the prospects for the venture is an issue

of concern for the acquiring firm. The acquiring firm will have to pay for the complementary assets now and recoup the investment from the uncertain future earnings of the venture. Uncertainty arises from incomplete understanding of the laws of nature and, in this context, the laws of economics and human behavior. Controlling for the prior knowledge of these laws, this uncertainty is common across the transacting agents. To illustrate, if a diversification venture incorporates new technology or is in an emerging industry, there will be uncertainty about the demand for the product which is common for all the players. This uncertainty is about future demand. Short of perfect knowledge and foresight, the information required for its resolution is simply not available.

Uncertainty is pure risk which is shared by the acquirer and target if they decide to form a joint venture. Whether this private sharing of the risk is efficient is an issue we discussed briefly, earlier. Barring the agency related problems, the only reason why this private sharing may be more efficient than sharing the risk in the financial markets, is the possibility of parents' superior information about the venture prospects. Whether this is sufficient to offset the costs of inefficient diversification of the risk is debatable. It is impossible to sort out in this paper, all the theoretical and empirical questions surrounding these issues. Our main purpose in raising the risk sharing motive in joint ventures again is to caution against hasty conclusions. We leave open the possibility of risk

sharing as an alternative explanation for at least some joint ventures.

Mutual ignorance about the complementary assets, however, is conceptually and substantively different from those surrounding uncertainty. Ignorance arises from the imperfect distribution of available information whereas risk and uncertainty relate to unavailable information. Modern finance theory may or may not be correct in arguing that the capital markets are the most efficient means for sharing the risk arising from uncertainty, but the problem arising from private information and ignorance is one of adverse selection (Akerlof, 1970), and not risk. Adverse selection, as we will see below, calls for organizational and not financial remedies.

Adverse Selection and the Valuation Problem

When acquiring the assets owned by another company (target), it is reasonable to expect that the target firm will not sell unless it receives a bid price which is at least equal to the net present value of its assets. If the target assets are specialized and there are no competitive markets in which identical assets are traded, information on their prices will be either impossible or costly to obtain. The target firm obviously has better information about the quality and capabilities of its assets because of prior ownership and use. It may, however, choose to withhold information about problems and inflate output and other positive attributes. Even if it were not so inclined,

the target firm cannot credibly assure the acquiring firm that it will disclose all the information that it has and negotiate the sale in good faith. The situation is identical to adverse selection in the market for used cars (Akerlof, 1970). The acquiring firm, unable to distinguish between good and bad assets and anticipating opportunistic misrepresentation by the target, will discount the price offered accordingly. The offer price may then fall short of the true value of the assets known only to the target. While the acquiring firm may sweeten its offer, the negotiation process could become lengthy and costly, and may be terminated without a sale.

This adverse selection and valuation problem is by no means contrived. Scherer and Ravenscraft (1987) in their recent study of mergers and sell-offs cites several instances in which the acquiring firm was ignorant or had poor information about the assets acquired. There is also evidence that acquisition attempts may fail because of inadequate bid price. Bradley (1980) reports that 97 tender offers in his sample of 258 were unsuccessful. In Dodd and Ruback's (1977) study, 48 out of a total of 172 were unsuccessful. These numbers illustrate only the incidence of unsuccessful tender offers. They do not, however, give the complete picture. If the failed attempts to merge firms or acquire target divisions of extant firms were to be included, the significance of the valuation problem would become even more apparent.

Iterative Contracting and Honesty

The solutions for adverse selection and valuation problem in the market for acquisitions are organizational. Appropriate incentive schemes need to be devised to induce signalling and sharing private information in a credible manner. The literature on social choice is almost entirely devoted to constructing such schemes (see for e.g. Sen, 1970; Green and Laffont, 1979). Several models of commitment and reputation have been developed recently to resolve the adverse selection problem (Klein and Leffler, 1982; Liebeskind and Rumelt, 1988). The organization theory literature also offers several designs for improving communication and reducing information asymmetry between transacting agents. Almost all of these solutions rely on repeated transactions between the same buyers and sellers. The same buyers and sellers in the market for acquisitions rarely transact more than once. A one-time, terminal sale and transfer of assets does not allow reciprocity or reputation effects to build and affect the transaction context. Leasing the assets or licensing the relevant technology converts the terminal transaction into iterative contracting, which induces honesty in deals.

An interesting analogy from the biological world illustrates our argument. The black hamlet, a hermaphroditic fish in the western tropical Atlantic, can be simultaneously male and female (Fischer, 1980). However, fertilization in this species is external. During mating and fertilization, each partner alternates

their sex roles, giving eggs to be fertilized in exchange for the opportunity to fertilize those of the partner. Fischer calls this egg-trading (Fischer, 1980:630). There is, however, a "reproductive advantage" to cheating in lumpsum egg-trading. It will always pay a fish, which has no eggs, to fertilize those offered by another. Even if a fish has eggs, it will still pay not to reciprocate the partner's offer. The eggs held back could later be traded with another fish. The cheating fish will then come out ahead in reproduction. The modified egg-trading mechanism the black hamlets use to solve this problem is to parcel the egg clutch. On average, a parceller will give up only 20-25 per cent of its eggs to a mate in each spawning bout. In case a fish encounters a cheater who fails to reciprocate, parcelling helps to cut its potential losses. Because the cost of searching and finding a new mate could be high relative to the partial clutch of eggs, cheating will not be evolutionarily efficient.

Arguing analogically, leasing the assets from the target firm will be the most flexible strategy. The lessor retains the general property rights over the leased assets and grants specific rights to the lessee. The lessee may terminate the deal if there has been misrepresentation and the assets turn out to be "lemons". The leasing alternative, however, suffers from similar problems as contracting for the output of the target firm in the intermediate markets. A complete contract specifying the rights are transferred to the lessor and retained with the lessee, and the contingency terms, may be too costly or impossible to write.

Enforcement of an incomplete contract is beset with opportunistic behavior. Loopholes in the contract may lead to opportunistic behavior of the lessee such as insufficient maintenance, bleeding the assets etc.

IV. JOINT VENTURES: A GOLDEN COMPROMISE?

How does a joint-venture differ from a leasing contract and why is it preferable? The joint venture combines the features of a hierarchy and a pure contract, mitigating both the problems of adverse selection encountered in an acquisition and the post-contractual opportunism inherent in contracts. Appropriately structured, the joint-venture produces (i) incentives for honesty (ii) remedies for opportunism and (iii) organizational learning.

(i) Incentives for Honesty

The joint venture produces incentives for the parent firms to honestly reveal the value of their respective assets. Shared ownership and liability in a joint-venture imposes a penalty on opportunistic misrepresentation of the quality and capabilities of the individual asset contributions to the venture. There may be short-term gains for one or a subset of joint venture parents from such misrepresentation. However, the consequent downstream inefficiencies may threaten the viability of the joint venture. The threat of termination of the joint-venture and resulting losses could more than offset the short term gains and reduce the incentives to misrepresent. This would be true if the value of

the joint venture is sufficiently larger than the payoff from cheating. Besides the economic incentives for honesty, when joint ventures are set up as partnerships, the parent firms are legally bound to be fiduciarly responsible to one another in matters of their joint venture business.

(ii) Remedies for Opportunism

The problem with a contractual arrangement such as leasing is that it is affected by post-contractual opportunism. A joint venture which provides for the sharing of residuals or profits, reduces the incentives for opportunistic behavior such as bleeding the assets. By vesting the complementary assets in a joint venture, a parent engaged in bleeding any complementary assets will be, in effect, reducing its own value. The joint ownership rights also allows for mutual monitoring and control, helping to steer the management of the joint-venture away from such opportunistic policies.

(iii) Organizational Learning

The joint venture, by way of shared ownership, introduces for each parent "imperfect property rights" over the other's assets. These imperfect property rights, in turn, allow some scope for formal or informal observation and monitoring of the use of the partner's assets. For example, members of the board of directors of a joint venture could have the right to monitor the

use of the assets of both their own parent company as well as those of its partner. Monitoring the use of the partner's assets help determine of their quality and capabilities, facilitating valuation. In this respect, a joint venture may be viewed as a joint experiment to learn about the quality and capabilities of each other's assets.

The joint venture, however, is not costless. It must be noted that the joint venture does not eliminate the need for valuation of the assets contributed by the parents but replaces it with flexible valuation. Similarly, the administrative costs of managing internal transactions in a joint venture are less than the transaction costs in a leasing contract but will be more than the corresponding costs for a unitary firm. If the prior mutual ignorance level is high, then the expected value of learning and new information from joint-venturing will also be high. Under these conditions, it may be worthwhile to incur the incremental cost of administering a joint venture for a while before precise estimations of the value of the assets can be obtained.

V. IMPLICATIONS

There are four principal implications to our argument. First, we expect that the concentrations of joint ventures will be nonrandomly distributed across industries. We expect to find joint ventures concentrated in industries in which the mutual

ignorance of the business partners is likely to be high. We may therefore observe more joint ventures in emerging industries, which are at the early stages of the industry or product life cycle.

Second, joint ventures will occur more frequently between parents who are in industries that are relatively unrelated to one another. Firms that are in unrelated industries are not likely to have sufficient knowledge to evaluate co-specialized assets. In some sense, we have an ordering of the organizational alternatives, tied to the information structure. Firms which have substantial prior knowledge about the technology of the complementary assets will prefer internal development. As the complementary assets diverges away from the firm's core knowledge, the firm will shift to acquisition, joint ventures and contracts, in that order.

Third, we expect joint ventures to be relatively short lived strategies. Learning is an outcome of joint ventures. When learning is complete, and ignorance about the partner's assets is reduced, joint ventures cease to offer any organizational advantage over acquisition. Dissolved joint ventures may terminate as merger with one of the partners, or dissolution sale to outside parties, due to exit by the parents from the focal business. Thus, joint ventures may be viewed as a transitional strategy for firms seeking entry into new businesses.

Finally, our argument has implications for anti-trust policy. Presently, anti-trust legislation limits cooperation

among firms. The rationale for anti-trust policy is that cooperation between firms may lead to collusion and concentration of market power in the hands of a small number of firms. Typically, opposition to anti-trust policy has been based on claims that cooperation between firms does not lead to anti-competitive behavior. We are agnostic about the market power hypothesis. There is some evidence indicating at least some anti-competitive outcomes from cooperation among firms. However, the possible effects of anti-competitive behavior should be balanced against efficiencies gained through cooperation among firms. Everyone may gain from industry specific policies governing cooperative behavior. Our theory suggests a basis for identifying the industries in which cooperation will be efficient.

VI. CONCLUSION

Joint ventures are efficient strategies when the market for acquisition and the intermediate market both fail. The market for acquisition fails when a significant fraction of the organization costs are due to problems in valuing of co-specialized assets. Lack of a reliable market price can lead to opportunistic misrepresentation of the capabilities and value of the assets, resulting in an unsuccessful attempt to acquire them. The joint venture offers the flexibility to terminate the relationship at a low cost while reducing the possibility of opportunistic behavior.

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FOOTNOTES

1. The assets are defined as complementary, ``when they represent different phases of a process of production and require in some way or another to be coordinated.'' (Richardson, 1972:). Although much of what we say pertain to complementary assets, the underlying logic our theory applies to a joint venture which combines identical or supplementary assets as well.

2. Here and in the discussion to follow, we exclude international joint ventures created to comply with host government policy on local participation in the equity of the venture and by implication shared ownership and control. The scope of the theory is limited to those joint venture decisions which are made voluntarily without government intervention, both the restrictive and facilitative types.

3. By assets here and elsewhere in the paper, we mean physical assets, tangible and intangible, which are alienable and for which property rights are well-defined. Human assets are excluded entirely from this analysis. This does not mean that human assets are unimportant, but because our paper focusses on the ownership aspects of joint ventures and the choice of ownership of humans is legally infeasible, human assets are not relevant to our analysis. Following Grossman and Hart (1985) we implicitly define a firm to consist those assets which it owns or over which it has control.

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