

**"INFORMATION ASYMMETRY MARKET
FAILURE AND JOINT-VENTURES: THEORY
AND EVIDENCE"**

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INFORMATION ASYMMETRY, MARKET FAILURE AND JOINT-VENTURES

Theory and Evidence

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ABSTRACT

We propose that joint-ventures are superior to markets and hierarchies as means of pooling complementary assets when the costs of valuing these assets are non-trivial. By allowing piecemeal transactions under shared ownership and control, joint-ventures could reduce these costs significantly. Our theory is supported by the results of a cross-sectional analysis of the abnormal returns to the parent firms in 64 joint-venture announcements.

In recent years there has been a significant increase in the incidence of various forms of strategic alliances between firms.¹ Joint-venture has been an important form of such alliances. Between 1966 and 1979, more than 2400 joint-ventures were registered with the Federal Trade Commission. Nearly 2000 joint-ventures were reported in the quarterly roster of joint-ventures published by *the Mergers & Acquisitions* between 1972 and 1983. More than a fourth of these were between U.S. companies. These numbers are indicative the growing importance of joint-ventures in industrial organization.

The literature on joint-ventures is extensive and spans several disciplines including finance, industrial organization, organization theory, and strategic management. Previous studies may be classified into three broad groups: (i) empirical studies which identify the motives for joint-ventures as market power, resource dependence, synergy or risk-sharing (Berg and Friedman, 1980; Boyle, 1968; Duncan, 1982; Kogut, 1988; Mead, 1967; Fuschfeld, 1958; Pfeffer and Nowak, 1976; Harrigan, 1985; McConnell and Nantell, 1985) (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), and (iii) in-depth field studies which have led to guidelines for better management of joint-ventures (Harrigan, 1986; Killing, 1986). A consensus that emerges from these studies is that joint-ventures between firms are desirable when they own complementary assets and there are potential gains in efficiency from coordinating their deployment and usage.²

A theoretical issue that has not been addressed adequately in the literature on joint-ventures is the relative efficiency of joint-ventures and other forms of alliances such as contracts and hierarchies.³ In this paper, we present a comparative analysis of joint-ventures, market mediated contracts and hierarchical governance based on the trade-offs between (i) the transaction costs in the intermediate product market, (ii) the costs of administering hierarchies and joint-ventures, and (iii) the costs of transferring or reassigning ownership rights over assets. The focus of our theory is on the market for acquisitions. We argue that the costs of acquiring or transferring ownership of assets in the market for acquisitions are non-trivial. A significant part of these costs is attributable to the buyer's lack of information about the quality or the value of the target assets. This creates an "adverse selection" or a "lemon" type of problem (Akerlof, 1970), and the sale may fail to take place. We propose that a joint-venture is a mechanism for getting around this problem. Joint-ventures avoid terminal sale and allow periodic reassessment of the individual contributions to the venture.

An testable implication of our theory is that the shareholders of the parent companies will be less favorably disposed towards joint-ventures when the parents are well informed about each other's business. With lesser chance of the 'lemon' problem in this case, acquisition will be more efficient. We tested our theory with a sample of 64 domestic joint-ventures, using the event study method. The results, based on a cross-sectional analysis of the abnormal returns during the announcement period of these joint-ventures, support our hypothesis.

JOINT-VENTURES: BETWEEN MARKETS AND HIERARCHIES

Most modern businesses require a variety of productive assets and functional capabilities. A firm at its inception is rarely self-sufficient in all the assets and capabilities required for its business. Access to laterally or vertically complementary assets, owned by other firms will be necessary to produce and deliver a marketable product. In classical economics, it is usually assumed that transactions between firms can be carried out costlessly. Coase (1937) was one of the few mainstream economists to challenge the assumption of costless transactions. The idea was developed further by Williamson (1975, 1987) who compared two alternative mechanisms by which firms may access complementary assets: (i) market mediated contract and (ii) hierarchy. A firm may choose to buy the relevant intermediate products under a spot or long-term contract negotiated on an arm's length basis. According to Williamson, insufficient information, uncertainty and bounded rationality may prevent managers from writing complete contracts which specify all future contingencies leaving scope for opportunistic behavior and bargaining over changes. Self-manufacturing in hierarchically controlled internal feeder divisions eliminates these problems.

Joint-ventures constitute a third alternative for gaining access to complementary assets. By most definitions, joint-ventures imply equity and profit sharing by the parent firms. Unlike a hierarchy, there is no ultimate "unit of command" in a joint-venture and control is shared.⁴ A collateral contract usually specifies and limits the rights and obligations of the parent firms. Why do firms form joint-ventures? When there is no government insistence (as in many international joint-ventures), and the joint-venture is voluntary, the literature suggests three motives:

(i) Joint-ventures may be formed to realize synergies and manage inter-organizational resource dependence (McConnell and Nantell, 1985; Ordover and Willig, 1985; Pfeffer and Nowak 1976). Resource dependence and synergies between firms are necessary

but not sufficient conditions for a joint-venture, because contracts and acquisitions also enable firms to access and control external resources.

(ii) The second explanation is that joint-ventures are instruments for gaining market power and extracting monopoly profits (Vickers, 1985). The empirical evidence for this explanation is mixed (Berg and Friedman, 1980; Pfeffer and Nowak, 1976). Notwithstanding the inconclusiveness of the evidence, the market power argument also does not explain why a joint-venture is preferred when a contract or a merger of the parent firms could have accomplished the same results. In fact, with the exception of the joint R&D ventures, the anti-trust policies of the Justice Department and the Federal Trade Commission have treated mergers and joint-ventures equivalently (Brodley, 1976).

(iii) Finally, some practitioners (see for e.g. Cozzolino, 1981; Gullander, 1976) have argued that joint-ventures are formed to share the risk of uncertain prospects for the venture. Implicit in this argument is the failure of the financial markets to allocate risk efficiently. With efficient financial markets, firms do not gain much by privately allocating risk between them and risk sharing as a motive for joint-ventures loses its significance. Empirical evidence also does not substantiate risk-sharing as a significant motive for joint-ventures (Pfeffer and Nowak, 1976).

Thus, the joint-venture literature does not suggest any persuasive arguments that favor one form of alliance over others. The transaction costs framework describes the conditions when ownership and hierarchical governance will be preferred to a contract. The unique features of a joint-venture are shared ownership and control. It is a "half-way house" between markets and a hierarchies. Why do firms choose to joint-venture when the target assets could be acquired to form a hierarchy? One explanation is that the inalienability of certain assets from the parent firms preclude their acquisition. This explanation becomes somewhat dubious when we recognize that the joint-venture is also a separate legal and accounting entity. Merger of the parent firms is at least as theoretically possible as a joint-venture when the assets are inalienable. For the parents to settle for the shared ownership and control in a joint-ventures, there ought to be significant diseconomies associated with acquisitions or mergers (Kogut, 1988). We offer a theory below, which explains what these diseconomies are and when they will be more than the diseconomies of joint-ventures.

INFORMATION ASYMMETRY, ADVERSE SELECTION AND THE JOINT- VENTURE

The Valuation Problem

When considerations of intermediate market failure leads a firm to laterally or vertically integrate, a number of non-trivial costs are incurred (Balakrishnan, 1986). Costly and time-consuming R&D is necessary if proprietary technologies are involved. The search for reliable suppliers and the selection of specialized plant and equipment with compatible technical standards is also a complex task which may require specialized knowledge. Technicians, engineers and managers for the new venture need to be screened for their skills, recruited and trained to adapt to the new equipment. Many teething problems will have to be overcome before the new production lines can be brought up to capacity. Knowledge and organizational limitations may constrain the speed and efficiency with 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. The firm may, therefore, decide to acquire part or all of an extant firm which already has the technology and other assets. Acquisition considerably shortens the internalization process and saves valuable time.

It is reasonable, however, to expect that the target firm will not sell unless it receives a bid which is at least equal to the net present value of its assets. If there are no competitive markets in which identical assets are traded, information on their prices will be either costly to obtain or unavailable. A self-interested target firm will exploit this situation and opportunistically misrepresent the value of its assets. Two recent incidents in the takeover market illustrate the problems and the pitfalls that a prospective buyer faces. After acquiring Collins & Aikman, a carpet manufacturing firm, Wickes Inc., discovered that the company had defaulted on certain federal flammability standards concerning carpets it had supplied to schools. To meet the potential product liabilities, Wickes had to set aside roughly \$300 million which was 20 % of the purchase price of Collins & Aikman. In another instance CPC, a food processor and corn milling company had acquired Mueller, a large pasta business, from McKesson, a San Francisco based company for \$ 125 million in 1983. In 1985, CPC filed a \$ 76 million suit against McKesson and Morgan Stanley, the investment bankers for the acquisition, charging that it was induced to make the acquisition by fictitious projections of Mueller's near-term and future performance. Ravenscraft and Scherer (1987) describes several other instances in which both apparent and latent problems

with the target firms fail to surface, even when pre-merger inspections are undertaken.

The target firm obviously has better information about the true value of its assets because of prior ownership and use. It may, however, choose to withhold information about quality or organizational problems and inflate output and other positive aspects. As Ravenscraft and Scherer (1987) put it, "...Would-be sellers naturally present their best face." 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, even if it were inclined to do so. The transfer of ownership of the complementary assets is thus impacted by the "adverse selection" problem described by Akerlof (1970). The acquiring firm, recognizing the adverse selection problem and anticipating opportunistic misrepresentation by the target will discount the price offered accordingly. Although the acquiring firm may sweeten its offer, the negotiation process can become lengthy and costly. The process may be terminated without a sale if the final offer falls short of what the target firm knows to be the true value of the assets. There is evidence of such failures of the market for acquisition from the finance literature. 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 tender offers were unsuccessful. The number of failures can be more if merger and sell-off attempts are also included. While not all of these unsuccessful acquisition attempts are due to the adverse selection problem, they are indicative of the significant costs in transferring or reassigning ownership rights.

It may be useful at this point to distinguish between risk arising from uncertain prospects for a venture and the adverse selection due to asymmetric information. Let us suppose that the buyer has all the information that the seller has about the target assets. There will still be residual uncertainty about the venture (uncertainty about demand for its products, for e.g.) which will be common to both the buyer and the seller. The buyer can efficiently share this residual risk of the new venture by selling the risky claims in the capital market. The price offered and accepted for the target assets will be discounted to reflect the premium charged for this risk. A rational seller should accept this offer because it is the true (risk-adjusted) value of his assets. If in addition, there is an asymmetry between the buyer's and seller's information about the assets, the price offered for the assets will be further discounted to reflect this asymmetry. The seller will refuse to sell in this case because the price will be inadequate.

The Joint-Venture Solution

When the market for acquisitions fails, firms can form joint-ventures for combining complementary assets. Transactions governed by a joint-venture will be efficient for the following reasons:

- First, a joint-venture allows the partners to rescind the relationship at a relatively low cost. It can be structured as a mechanism which allows piece-meal transactions and renegotiation of compensation for individual contributions. Unlike a terminal sale and transfer of ownership rights, the possibility of repeated contracting and termination of the relationship under a joint-venture can induce information revelation and mitigate the adverse selection problem. There may be short-term gains from misrepresentations, but the threat of liquidation of the joint-venture because of the resulting downstream inefficiencies and losses will offset these gains and reduce the incentives to misrepresent.
- Second, the joint-venture, by way of shared ownership, introduces for each parent limited and *imperfect* property rights and obligations. The members of the board of directors of a joint venture, who are usually drawn from the parent companies, collectively decide the strategies and policies of the joint-venture. They may also have limited rights to formally or informally audit and verify the claims and actions of the parents by monitoring the use of the assets of both their own parent companies, and those of its partner. These features of a joint-venture, unavailable in a pure contract, help to reduce the incentives for opportunistic behavior in the joint-venture.
- Finally, the joint-venture affords opportunities for learning and gathering new information about the value of the partner's assets. Monitoring and auditing the partner's asset use facilitate the learning process and eventually, the pricing of those assets.

The joint-venture, however, is not a costless mechanism for combining assets. Because of the absence of "unity of command", costly disputes over sharing the gains from the venture are still a possibility. Quite conceivably the administrative costs of managing the joint-venture will be more than the corresponding costs for a hierarchy. If the savings in adverse selection costs more than offset this increase in administrative costs, the joint-venture will become the preferred form of alliance.

Empirical Implications

Summing up the arguments thus far, we note that strategic considerations and the failure of the markets for intermediate products provide the incentives for firms to seek lateral and vertical acquisitions. On the other hand, the lack of complete information about the target assets may cause markets for acquisition and transfer of ownership and control to fail also. The less informed the partners to a transaction are about each other's businesses and the higher the perceived variance in their valuation of the assets, the greater is the likelihood of the failure of the market for acquisitions. Under these conditions, the joint-venture will emerge as a superior substitute for both market and hierarchy. A testable implication is that, *ceteris paribus*, the shareholders of the parent firms should expect greater gains from joint ventures, net of all costs. This is because when the parents' primary business operations are dissimilar, they have little information or expertise to appraise the value of each other's technology and assets. Our main testable hypothesis is therefore:

Hypotheses 1 *Shareholder reactions to the announcement of joint-ventures will be positively correlated with the extent to which the primary business operations of the parent companies are dissimilar.*

Hypothesis (1) calls for careful interpretation. The investors will respond less favorably to joint-ventures between parents in similar businesses, because the joint-venture is not the minimum cost mechanism for accommodating resource dependence or realizing synergies. The appropriate mechanism in this case is acquisition of the target assets. The failure of the parent firms' management to do this may also be a signal to the market about either the inefficiency of the management or the presence of self-seeking managerial motives behind the decision. It must also be noted that Hypothesis (1) is independent of the magnitude of synergistic value created by the joint-ventures. The degree of synergy or the extent of resource dependence between the parents is not pertinent to the arguments about the relative efficiency of the different forms of alliances. In fact we expect value to be created in all forms of alliances including joint-ventures. To expect otherwise is to deny the very purpose of an alliance, which leads us to our second hypothesis:

Hypotheses 2 *On an average, investors in parent firms, anticipating significant gains from combining their complementary assets, will react favorably to joint-venture announcements.*

Our third hypothesis follows from our discussions on collusion and monopoly gains as motives of joint-ventures. While theoretically plausible, our assessment of the empirical evidence for collusion as a motive for joint-ventures is that it is mixed. *Ceteris paribus*, collusion and monopoly gains are most likely when the parent firms are in the same industry.

Hypotheses 3 *Shareholder reactions to joint-ventures between parent companies whose principal businesses are in the same industry will be more favorable than their reactions to other joint-ventures.*

Hypothesis (3) is empirically the opposite of our Hypothesis (1). Its rejection will therefore strengthen the support for our theory. To assess shareholder reactions to joint-venture announcements and test our various hypotheses, we will use the standard event study method (Fama *et al*, 1969) which has been widely used to evaluate corporate mergers and acquisitions.

METHODOLOGY

Evaluation of Investor Reactions

The event study method involves estimating the excess returns, if any, to the parent company's common stock holders when the stock price has adjusted to the new information revealed by the announcement. In the standard event study method, the market model is first used to predict the normal return to the common stock of a firm:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

where,

- R_{it} = the return of firm i in period t
- R_{mt} = the return on value/ equally weighted market portfolio of securities in period t
- α_i and β_i = firm specific parameters
- ϵ_{it} = random error $\sim N(0, \sigma_i)$

The model parameters are estimated using the monthly or daily firm and market returns for an estimation period preceding some discrete, unanticipated events (e.g., announcement of mergers, joint-ventures etc.). The deviations of the actual returns

from the predicted returns on the relevant securities - the abnormal returns - for a conventionally chosen event period around the event date but falling outside the estimation period, are then computed from:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$

where, $\hat{\alpha}$ and $\hat{\beta}$ are the ordinary least squares estimates of the parameters of the market model. These abnormal returns are then averaged over a large sample of firms affected by similar events to cancel out the effect of extraneous noise:

$$\overline{AR}_t = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

where N is the number of parent firms in the sample. The cumulative abnormal return (CAR) over any interval $[t_1, t_2]$ is obtained from.

$$CAR[t_1, t_2] = \sum_{t_1}^{t_2} \overline{AR}_t$$

where, t_1 and t_2 are the beginning and ending month of the period over which the cross-sectional average returns are cumulated. \overline{AR}_t and $CAR[t_1, t_2]$ form the basic statistics for evaluating the investor reactions to the event. A statistically significant positive average return or CAR indicates that the event has a positive impact on the return on the stocks of the firms affected by the event. Event studies assume that the capital market is informationally efficient. In its weak form, this means that the market adjusts instantaneously to publicly available information. The event study method is simple to use and has proved to be quite powerful and robust in evaluating discrete events affecting firms. Even though the joint-venture formation may extend over a long time — it often does — the event study method is appropriate if the pre-announcement negotiation is not public information. ⁵

Sample

To evaluate investor reactions to the announcement of joint-ventures, we constructed a sample of joint-ventures from the quarterly joint-venture roster published in *Mergers and Acquisitions* during the four year period 1974 – 1977. The period was chosen to take advantage of industry data from the *FTC Line of Business Reports, 1974-77*, which the authors are using in other concurrent research projects on joint-ventures. The following criteria were used to select the sample:

1. The joint-venture should be entirely U.S. based. Both parents should be incorporated in the U.S. and the joint-venture should also have its operations mainly in the U.S.
2. The joint-ventures selected should not involve more than two parent companies. This criterion was adopted to avoid the messy issues in measuring the similarity among three or more parents.
3. The joint-venture should have been reported in the Wall Street Journal or in any of the trade journals covered by the F&S Index of Corporate Changes during the same month as indicated in the effective date of the joint-venture reported by the *Mergers and Acquisition* roster.
4. Both the parent companies should be listed in the Million Dollar Directory of American Businesses, along with the SIC (Standard Industry Classification) codes for their primary businesses.
5. At least one of the parent's stock returns should be available from the monthly returns file of the Center for Research in Security Prices (CRISP) at the University of Chicago, for a period covering 72 months before and 12 months after the announcement of the joint-venture.

Our final sample consisted of 64 joint-ventures and 85 parent companies which satisfied these criteria. Table 1 lists the number of joint-ventures and parent companies in the sample for each year. For each of the 85 parent companies in our sample of joint-venture announcements, we first estimated the market model using the monthly returns from the CRISP files, for the period t_{-72} to t_{-13} , with t_0 being the announcement month referring to the month of the joint-venture announcement. The abnormal returns and the CAR's for each parent were computed for 25 months including the announcement month, t_{-12} to t_{+12} . The estimation and announcement periods chosen were comparable to previous event studies using monthly returns (see for e.g. Asquith and Kim, 1982; Dodd and Ruback, 1977; Malatesta, 1983).

— insert Table 1 about here —

RESULTS AND DISCUSSION

Table 2 shows the average and cumulative abnormal returns, and the cross-sectional variances for t_{-12} to t_{+12} , for all the parent firms in the sample. The table

reveals that the stockholders of the parent companies obtained an abnormal return of 1.19 % during the month of the announcement of the joint-ventures. The Z-statistic for this return was significant @.01 level and therefore the null hypothesis of no significant gains from combining the complementary assets of the parent companies in a joint-venture can be rejected.³

— insert Table 2 about here —

— insert Fig.1 about here —

Fig.1 is a plot of the cumulative abnormal returns for the period. The cumulative abnormal returns increases 3.9% from t_{-12} to t_0 . The increases in abnormal returns over several other intervals or holding periods were also statistically significant . These results broadly support Hypothesis (2). Shareholder realize significant gains from joint-ventures, a result which is consistent with previous results obtained by McConnell and Nantell (1985). The CAR increases 3.8% during the post announcement period of t_1 to t_{12} . Unlike in McConnell and Nantell, this increase in the post-announcement CAR was statistically significant @.01 level. Thus there seems to be a systematic valuation effect after the announcement. A closer examination of the CAR plot indicates that much of this increase — approximately 3.2% — was realized in the first three months following the announcement. As we will see below, this pattern is repeated for the sub-samples also. We suspect that this increase may be due to the gradual leakage of information pertaining to the terms of the joint-venture agreement, which are not usually revealed at the time of the announcement of the joint-venture. Another possible cause of the increase may be the information about FTC’s approval of the joint-venture.

Of primary interest to us is whether the investors react less favorably to joint-ventures between parents operating in similar businesses. To investigate the relationship between joint-venture efficiency and parent similarity and test Hypothesis 2, we constructed a simple measure of the similarity between the primary businesses of the parent companies. The measure was based on the “distance” between the 3-digit SIC’s of the parent firms of the j th joint-venture, normalized over the maximum possible distance:

$$D_{j1,j2} = | SIC_{j1} - SIC_{j2} | / 899$$

The more dissimilar the businesses, the greater is the distance between them, $D_{j1,j2}$.⁶We expect the abnormal returns obtained by investors from joint-venture announcements

to increase with the distance between the parent companies. If we regressed the abnormal return for the event month for each parent company on the corresponding distance the slope should be positive. To correct for possible heteroscedasticity, we first standardized the abnormal return for each parent company i :

$$SR_{it} = AR_{it}/\sigma_i$$

where,

$$\sigma_i = \sqrt{\left(\sum_{t=-72}^{t=-13} (AR_{it} - \overline{AR}_i)^2 / 60 \right)},$$

$$\overline{AR}_i = \frac{1}{60} \sum_{t=-72}^{t=-13} AR_{it}$$

The standardized abnormal return for the announcement month for each parent company in the sample was then regressed on the corresponding distance between its primary business and the primary business of its partner in the joint-venture. We also repeated the regression with a rank transformation of the distance as the independent variable. The results of these regressions are summarized in Table 3. The coefficient for the distance as well as its rank transformation was positive and significant @.007 and @.018 respectively. These results seem to strongly confirm that stockholders react more favorably to the announcements of joint-ventures between parents in dissimilar businesses.

Much as we would like to consider this evidence as conclusive support for our theory, the shortcomings in our measure of similarity of businesses require us to interpret these results with caution. We have noted earlier that the distance measure based on SIC captures only the information content of production technologies. This is an obvious limitation. To the extent that the distance measure is inversely correlated with relatedness, our results at first glance seem to be counter-intuitive. Joint-ventures between related parents are less favorably received than those between unrelated parents. The interpretation that favors our theory is that the market response is poor because the wrong form of alliance has been chosen. Acquisition is the least cost strategy for realizing synergies when parents are in similar or related businesses. An alternative interpretation is that when the parents' businesses are less related, there is less likelihood of future strategic conflicts. The cost of administering the joint-venture and ensuring its success and stability will be correspondingly less. This may indeed be so

and it tempers our enthusiasm about the results. Further research is required before we can reject one of these rival interpretations.

— insert Table 3 about here —

To test the third hypothesis that joint-ventures facilitate collusion and result in significant gains in monopoly power for the parents, we divided the 64 joint-ventures into two portfolios based on the parents' primary businesses: (i) the monopoly portfolio of 11 joint-ventures in which the parent firms' businesses were within the same or 4 or 3 digit SIC and (ii) the remaining 53 joint-ventures which we call the non-monopoly portfolio.⁴ The average abnormal returns, CAR's and the cross-sectional variances for the two portfolios are reported in Table 4. The average abnormal return for the announcement month for the monopoly portfolio was positive but insignificant. For the non-monopoly portfolio of joint-ventures the average abnormal return to the parents was positive and significant @.01 level. The *t*-statistic for the difference between the two averages was positive in favor of the non-monopoly portfolio and significant @.01 level. The Wilcoxon-Mann-Whitney rank test statistic for the difference between the two sub-samples was also positive but not significant. Over longer intervals, however, the cumulative average returns for the two portfolios did not to show any significant differences.

— insert Table 4 about here —

— insert Fig.2 about here —

The CAR's are plotted in Fig.2. The CAR's for both the groups increase from t_{-12} to t_0 , the announcement month. The CAR's for the monopoly portfolio are generally lower than those for the non-monopoly portfolio during the period t_{-12} to t_{12} . Taken together, these results seem to reject collusion as the primary motive for joint-ventures. We may also infer that the parent companies in the monopoly group would have been better off with the outright purchase and acquisition of the complementary assets than organizing them in a joint-venture. An atypical feature of the monopoly CAR plot is the significant drop between the fourth and the sixth month following the announcement of the joint-venture. A plausible explanation is that these joint-ventures between parent firms in the same industries faced formidable challenges from the FTC or the Justice Department on anti-trust grounds during this period, which were subsequently overcome. It could also be a small sample problem.

given that there were only 11 joint-ventures in this portfolio. Further investigation is necessary before a satisfactory explanation can be offered.

Noting that the distance between the parent companies in the monopoly joint-ventures is zero, and that this may be a potential source of distortion in the regressions for testing Hypothesis (1), we replicated these regressions after excluding these joint-ventures from the sample. Table 3 reports the results of the regressions for this truncated sample along with those for the full sample. For the truncated sample, the coefficients of the distance and its rank transformation were both positive and significant @.004 and .002 levels, respectively. Again, the evidence strongly supports our hypothesis that joint-ventures will be preferred when the parents are primarily engaged in dissimilar businesses.

CONCLUSION

Earlier studies of joint-ventures have likened them to mergers and acquisitions, as a mechanism for managing resource dependence, for realizing synergies, collusion or risk-sharing. In this paper we have presented a comparative analysis of alternative mechanisms for achieving these very ends. The key question which we have addressed is when a joint-ventures creates value at a lower cost than acquisition. From the transaction cost perspective shared ownership and control will be less efficient. Why settle for it when acquisition of the complementary assets is feasible? Our theory is that joint-ventures represent a combination of complementary assets without a terminal sale of ownership and control rights over these assets. Such non-terminal strategies are efficient when the market for acquisition fails due to the asymmetry between the seller's and buyer's information about the value of target assets. This is most likely when the parents are less informed about each other's businesses.

Our theory is supported by evidence based on investors' reactions to joint-venture announcements. In an event study of 64 joint-venture announcements, we observed that the shareholders of the parent companies involved in these joint-ventures obtained significantly larger abnormal returns when these companies were engaged in businesses which were further apart in a technological and managerial sense. Although value is created in all joint-ventures, the shareholders seem to favor joint-ventures between parents engaged in dissimilar businesses. We interpret these results to mean that while both joint-ventures and acquisitions may result in wealth gains to shareholders, there are non-trivial differences between the two mechanisms. Under specific condition

one may be superior to the other. Besides the obvious implications for management's choice between acquisition and joint-venture, the theory and empirical results should also be of interest to policy makers in the areas of anti-trust and inter-firm cooperation.

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NOTES

1. The term strategic alliance has been used in the literature to refer to various forms of relationships between separate firms, including joint ventures, licensing agreements, and long-term contracts. In this paper, however, we have used the term more broadly to include all forms of pooling complementary assets, including merger of separate firms.
2. Following Richardson (1972), we define assets or the functions embodied in them as complementary, "when they represent different phases of a process of production and require in some way or another to be coordinated." 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.
3. Bruce Kogut in a recent paper (1988), has offered an interesting theoretical perspective on the relative merits of joint-ventures. His focus of comparison is, however, on the long-term contract. Acquisition which is the focus of our analysis, is ruled out by him as inefficient for unspecified diseconomies.
4. Joint-ventures set-up as limited partnerships are an exception. The 'sleeping' partners in a limited partnership joint-venture has no say in policy making or control.
5. A number of studies in finance, strategy and other areas have employed the event study method to evaluate investor reactions merger announcements (see Jensen and Ruback, 1983 and Weston and Chung, 1983, for a review of several event studies of acquisitions). Protracted negotiations and anticipation is a problem in all these studies but not a serious one provided appropriate precautions are undertaken. Also, see Brown and Warner (1980;1985) for an assessment of the statistical power of the event study method and the associated tests in successfully detecting abnormal returns from unanticipated events.
6. The appropriate test-statistic for the abnormal return is given by

$$Z = \frac{\overline{AR}_t}{\sigma_t}$$

where σ is given by,

$$\sigma_t = \sqrt{\left(\sum_{t=-72}^{t=-13} (\overline{AR}_t - \overline{AR})^2 / 60 \right)}$$

$$\overline{AR} = \frac{1}{60} \sum_{t=-72}^{t=-13} \overline{AR}_t$$

Z is distributed *Student - t* and for large samples, is approximately unit normal (Brown and Warner, 1985).

7. We realize the limitations in using the Standard Industrial Classification, which is based primarily on production technologies, for measuring similarity of businesses. Yet we opted for this approach in the interest of consistency, given that the study is otherwise based strictly on secondary data.
8. See Caves *et al* (1980:199-200) for a measure of "distance" between businesses based on their SIC's which takes a value of zero if the 4-digit SIC's of the two parent were within the same 3-digit SIC, a value of one if they were in different 3-digit SIC's but the same 2-digit SIC's, and a value of two if they were in different two digit SIC's. In our sample there was just one joint-venture for which this distance had a value of 1, that is, the parent companies primary businesses were in different 3-digit SIC's but the same 2-digit SIC. This rather small sample problem forced us to form two portfolios instead of three, if we had followed the Caves *et al* measure strictly.

References

- [1] Akerlof, G.A. "The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism," *Quarterly Journal of Economics*, 84, 1970, pp.488-500.
- [2] Alchian, A.A. and Demsetz, H. "Production, Information Costs and Economic Organization," *American Economic Review*, 62, 1972, pp.777-795.
- [3] Asquith, P. and E.Han Kim. "The Impact of Merger Bids on the Participating Firms' Security Returns," *Journal of Finance*, December, 1982, pp.1209-1228.
- [4] Balakrishnan, S. "The Prognostics of Diversifying Acquisitions," *Strategic Management Journal*, 9, 1988, pp.185-96.
- [5] Berg, S. and Friedman, P. "Impacts of Domestic Joint Ventures on Industrial Rates of Return: A Pooled Cross- Section Analysis, 1964-1975". *The Review of Economics and Statistics*, 63, 1981, pp.293-298.
- [6] Boyle, S. "An Estimate of the Number and Size Distribution of Domestic Joint Subsidiaries," *Antitrust Law and Economic Review*, 1, 1968, pp.81-92.
- [7] Bradley, M. "Interfirm Tender Offers and the Market for Corporate Control", *Journal of Business*, 53, 1980, pp.345-376.
- [8] Brodley, J.F. "The Legal Status of Joint Ventures Under the Antitrust Laws: A Summary Assessment," *Antitrust Bulletin*, 21, 1976, pp.453-83.
- [9] Brown S. and Warner, J. "Measuring security price performance", *Journal of Financial Economics*, 8, June, 1980, 205-258.
- [10] —————. "Using daily stock returns: the case of event studies", *Journal of Financial Economics*, 14, March, 1985, 3-31.
- [11] Caves, R.E., Porter, M.E., Spence, A.M. and Scott, J.T. *Competition in the Open Economy*. Cambridge, MA: Harvard University Press, 1980, pp.199-200.
- [12] Coase, R.H. "The Nature of the Firm," *Economica*, 4, 1937, pp.331-351.
- [13] Contractor, F. and Lorange, P. *Cooperative Strategies in International Business*. Lexington, MA: Lexington Books, 1988.

- [14] Cozzolino, J.M. "Joint-Venture Risk: How to Determine Your Share." *Mergers and Acquisitions*, 16(3), 1981, pp.35-39.
- [15] Dodd, P. and Ruback, R. "Tender Offers and Stockholder Returns: An Empirical Analysis", *Journal of Financial Economics*, 5, 1977, pp.351-374.
- [16] Duncan, J.L. "Impacts of New Entry and Horizontal Joint Ventures on Industrial Rates of Return." *Review of Economics and Statistics*, 64, 1982, pp.339-343.
- [17] Fama, E.F., Fisher, L., Jensen, M.C. and Roll, R. "The adjustment of stock prices to new information", *International Economic Review*, 1, 1969, pp.1-21.
- [18] Franko, L.G. *Joint Venture Survival in Multinational Corporations*, New York: Praeger Publishers, 1971.
- [19] Friedman, W. and Kalmanoff, G. *Joint International Business Ventures*, New York: Columbia University Press, 1961.
- [20] Fusfeld, D.R. "Joint Subsidiaries in the Iron and Steel Industry," *American Economic Review*, 48, 1958, pp.578-587.
- [21] Harrigan, K.R. *Strategies for Joint Ventures*, Lexington, MA: Lexington Books, 1985.
- [22] Harrigan, K.R. *Managing for Joint Venture Success*, Lexington, MA: Lexington Books, 1986.
- [23] Jensen, M.C. and Ruback, R. "The market for corporate control", *Journal of Financial Economics*, 11, 1983, pp.5-50.
- [24] Killing, J.P. *Strategies for Joint Venture Success*, New York: Praeger, 1983.
- [25] Kogut, B. "Joint ventures: theoretical and empirical perspectives", *Strategic Management Journal*, 9, 1988, pp.319-22.
- [26] Malatesta, P.H. "The wealth effect of merger activity and the objective functions of merging firms", *Journal of Financial Economics*, 11, 1983, pp. 155-181.
- [27] McConnell, J.J. and Nantell, T.J. "Corporate Combinations and Common Stock Returns: The Case of Joint Ventures." *Journal of Finance*, 2, 1985, pp.519-536.

- [28] Mead, W.J. "The Competitive Significance of Joint Ventures," *Antitrust Bulletin*, 12, 1967, pp.819-849.
- [29] Ordover, J.A. and Willig, R.D. "Anti-trust for high- technology industries: assessing research joint-ventures and mergers", *Journal of Law and Economics*, 28, 1985, pp.311-43.
- [30] Pfeffer, J. and Nowak, P. "Joint Ventures and Inter-organizational Interdependence", *Administrative Science Quarterly*, 21, 1976, pp.398-418.
- [31] Vickers, J. "Pre-emptive patenting, joint-ventures, and the persistence of oligopoly", *International Journal of Industrial Organization*, 3, 1985, pp.261-73.
- [32] Weston, J.F. and Chung, S. "Some aspects of merger theory," *Journal of Midwest Finance Association*, 12, 1983, pp.1-33.
- [33] Williamson, Oliver E. *Markets and Hierarchies*, New York: Free Press, 1975.
- [34] ————. "Transaction-Cost Economics: The Governance of Contractual Relations", *Journal of Law and Economics*, 22, 1979, pp.233-261.

Table 1
Sample

Year	Number of Joint-ventures	Number of Parent Firms
1974	8	10
1975	16	22
1976	22	30
1977	18	23
Total	64	85

Table 2
Abnormal Returns: Full Sample

All joint-ventures: $N = 85$			
Relative Month	Abnormal Return	CAR	Cross- sectional Variance
-12	-0.0039	-0.0039	0.0061
-11	0.0191	0.0152	0.0094
-10	0.0042	0.0194	0.0069
-9	-0.0036	0.0157	0.0075
-8	0.0071	0.0228	0.0059
-7	0.0071	0.0299	0.0067
-6	-0.0171	0.0128	0.0093
-5	-0.004	0.0088	0.009
-4	0.0013	0.0101	0.0111
-3	-0.0027	0.0075	0.006
-2	0.01	0.0175	0.0063
-1	0.0097	0.0272	0.0063
0	0.0119	0.039	0.0055
1	0.0052	0.0442	0.0039
2	0.0018	0.046	0.0045
3	0.025	0.071	0.0083
4	-0.0009	0.0701	0.006
5	-0.0019	0.0682	0.0047
6	0.0016	0.0697	0.0048
7	-0.0082	0.0616	0.0034
8	0.0082	0.0697	0.0084
9	-0.0041	0.0656	0.0067
10	0.0067	0.0724	0.0058
11	0.0152	0.0875	0.0047
12	-0.0101	0.0774	0.0041

Table 3
Regression Results

	All Joint-ventures		Truncated Sample	
	Distance	Rank	Distance	Rank
Constant	-0.0485	-0.1607	-0.163	-0.629
X Coefficient	0.9399	0.0076	1.5924	0.0155
t-statistic	2.469 ^a	2.092 ^b	2.617 ^c	2.856 ^d
R Squared	0.068	0.05	0.094	0.11
No. of Observations	85	85	68	68

^asignificant @.007

^bsignificant @.018

^csignificant @.004

^dsignificant @.002

Table 4
Abnormal Returns: Monopoly &
Non-Monopoly

Relative Month	Monopoly Portfolio: $N = 17$			Non-Monopoly Portfolio: $N = 68$		
	Abnormal Return	CAR	Cross-sectional Variance	Abnormal Return	CAR	Cross-sectional Variance
-12	0.0049	0.0049	0.0040	-0.0061	-0.0061	0.0066
-11	-0.0064	-0.0015	0.0043	0.0255	0.0194	0.0105
-10	-0.0006	-0.0021	0.0022	0.0054	0.0248	0.0081
-9	0.0049	0.0028	0.0024	-0.0058	0.0190	0.0088
-8	-0.0141	-0.0113	0.0015	0.0123	0.0313	0.0069
-7	-0.0089	-0.0202	0.0024	0.0111	0.0424	0.0076
-6	0.0068	-0.0133	0.0061	-0.0231	0.0194	0.0099
-5	-0.0006	-0.014	0.0038	-0.0049	0.0145	0.0103
-4	0.0110	-0.0029	0.0032	-0.0011	0.0134	0.0130
-3	-0.0166	-0.0195	0.0065	0.0008	0.0142	0.0058
-2	0.0198	0.0002	0.0038	0.0076	0.0218	0.0069
-1	0.0132	0.0134	0.0029	0.0088	0.0306	0.0061
0	0.0027	0.0161	0.0029	0.0142	0.0448	0.0071
1	0.0050	0.0211	0.0014	0.0052	0.0499	0.0046
2	0.0223	0.0435	0.0010	-0.0034	0.0466	0.0052
3	0.0023	0.0457	0.0040	0.0307	0.0773	0.0092
4	-0.0108	0.0349	0.00069	0.0016	0.0789	0.0073
5	0.0018	0.0367	0.0036	-0.0029	0.0761	0.005
6	-0.0374	-0.0007	0.0027	0.0113	0.0873	0.0049
7	0.0149	0.0143	0.0023	-0.0139	0.0734	0.0035
8	0.0143	0.0285	0.0025	0.0066	0.0800	0.0099
9	0.015	0.0435	0.0067	-0.0089	0.0711	0.0066
10	-0.0077	0.0359	0.0038	0.0103	0.0815	0.0062
11	0.0282	0.0641	0.005	0.0119	0.0934	0.0046
12	0.0001	0.0642	0.002	-0.0127	0.0807	0.0046

Figure 1
CAR: Full Sample

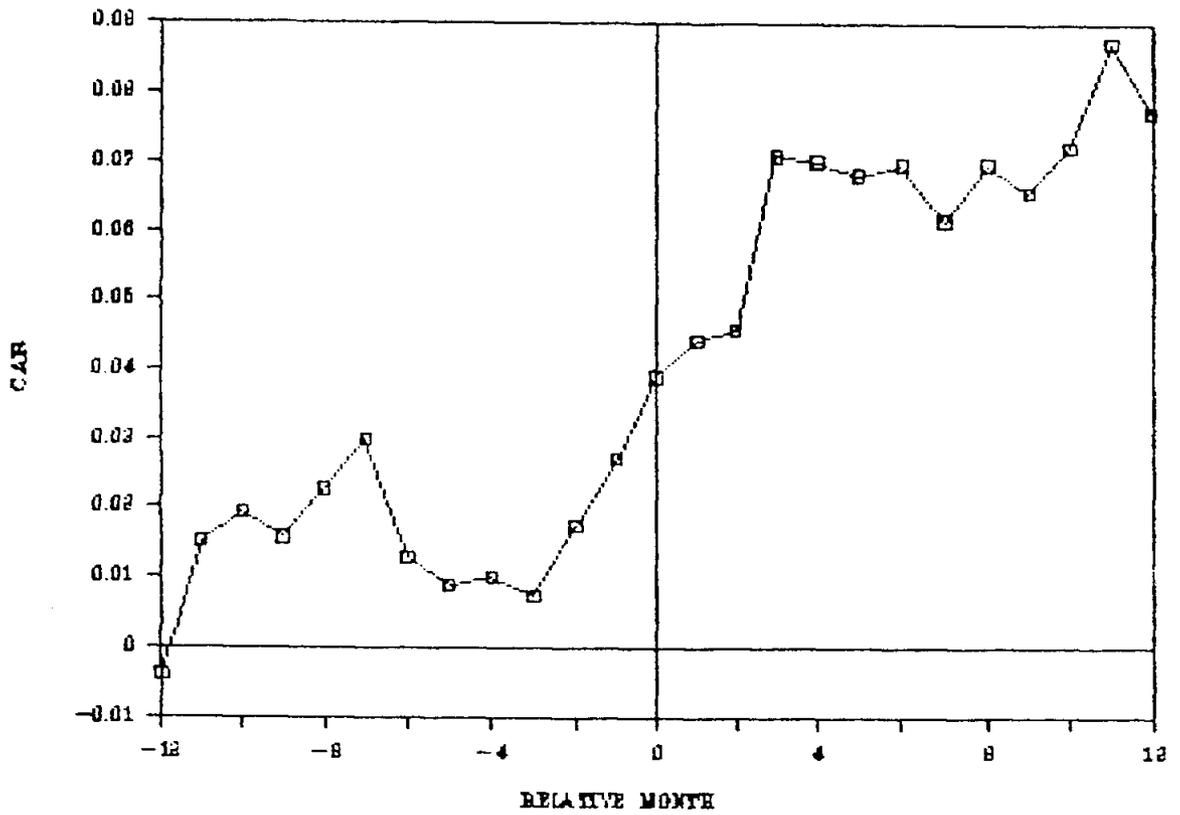
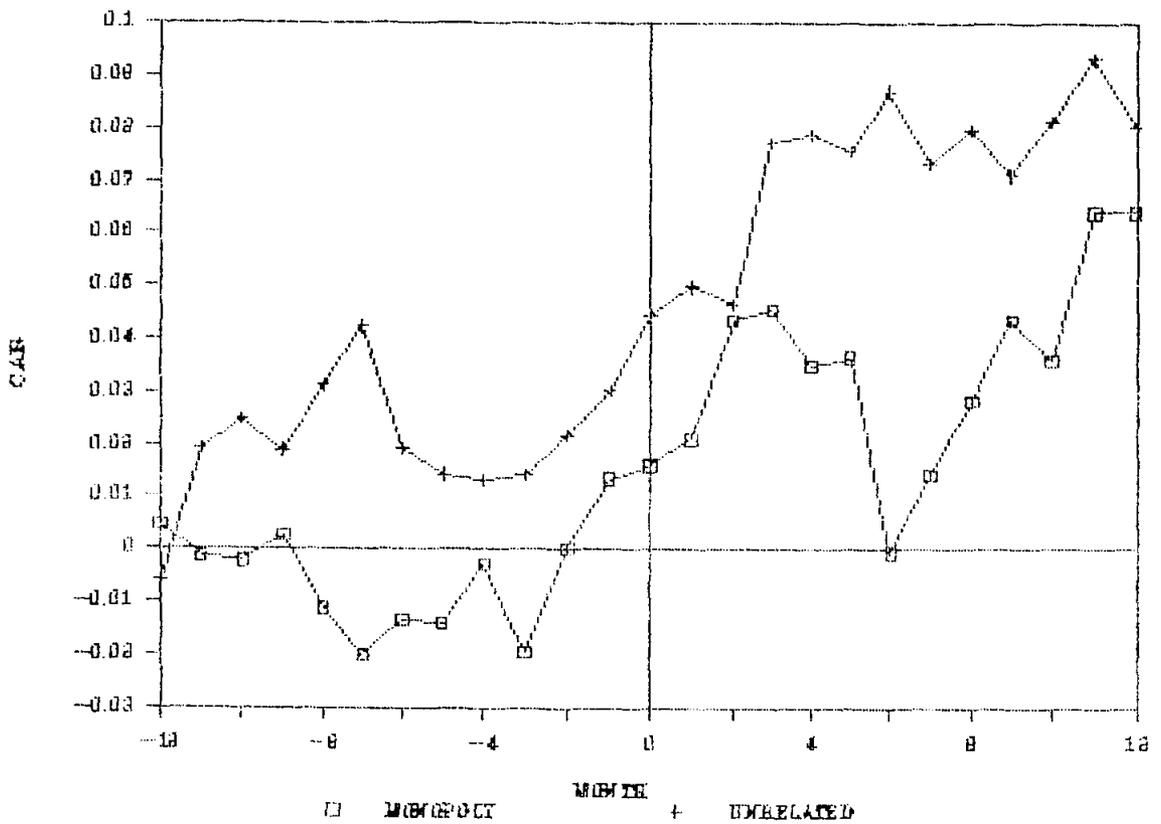


Figure 2
 CAR: Monopoly and Non-Monopoly Portfolios



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