CORPORATE RESTRUCTURING
THROUGH TRANSITORY JOINT VENTURES

by

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Abstract

This paper proposes that joint ventures can be used as transitory organizations that aid in the process of corporate restructuring. If the quality of a business is not observable by an outsider, then a firm that is trying to sell the business faces the problem of adverse selection. A game-theoretic model is used to show that this problem can be alleviated if the restructurer converts the business into a transitory joint venture with the potential buyer. Transitory joint venturing is the optimal way to achieve corporate restructuring if joint venture administrative cost is moderately high and if a large proportion of businesses that are up for sale are of low quality. Case studies of corporate restructuring through transitory joint ventures are used to illustrate and extend these arguments.
1. INTRODUCTION

Diversified corporations often restructure their portfolio by selling 'non-core' businesses. Empirical studies have suggested that this process of corporate 'refocusing' has been gathering pace during the 1980s (Williams, Paez, and Sanders, 1988; Markides, 1990; Lichtenberg, 1992). Several firms have divested business units they had aggressively acquired during the late 1960s and early 1970s (Ravenscraft and Scherer, 1987; Kaplan and Weisbach, 1992), and such restructuring has been value-enhancing in general (Lichtenberg, 1992; Markides, 1992).

Value creation through restructuring is feasible if there are other firms that possess resources and 'organizational routines' (Nelson and Winter, 1982) which are complementary to the business the restructurer wants to divest. The complementary resources may be 'tacit' (e.g. technical know-how, market knowledge: see Polanyi, 1967); the routines may manifest themselves in untradeable organizational characteristics such as management style and operational philosophy. If these resources and routines were to be applied to the business, its profitability would rise. We call these resources and 'routines' collectively as competencies. These competencies can be so inalienably intertwined with the rest of the organization that it is impossible to disentangle them in order to replicate or transfer them as discrete assets.

In analyzing this problem of collocating a business with complementary competencies that are non-marketable as discrete assets, we make the reasonable assumption that it is uneconomic for the entire firm owning the business to merge with the entire firm owning complementary competencies. The firms may be involved in several unrelated businesses; their administrative mechanisms and corporate cultures may be very different, leading to diseconomies if the two firms were to merge. Frequently, therefore, the only way for a business to collocate with its complementary competencies in such a circumstance would be for the firm that owns the business to sell it to the firm that owns the competencies.

Such restructuring transactions often confront the problem of adverse selection. Typically, a significant fraction of the value of the business that is being sold comprises externally non-monitorable competencies, e.g. a research staff's technical knowledge, manufacturing systems for ensuring production quality, worker morale, etc. In this case, it is impossible for the business's "quality" to be observed by an outsider. This leads to all types of restructurers projecting their businesses as being of high quality, irrespective of the reality, causing the familiar 'lemons' problem (Akerlof, 1970): if direct sale is the only option and most businesses are of low quality, then owners of high quality businesses are shut out of the market. In this paper, we show how and when joint ventures can offer firms a way out of this restructuring impasse.

At first blush, joint ventures seem to be singularly unsuited organizational arrangements for accomplishing efficient outcomes. Organization theorists (e.g. Hart and Moore, 1990) have reasoned that joint ventures are sub-optimal organizations, since achieving decisions that satisfy multiple owners is costly. In this paper, we argue that, precisely because joint venturing is a costly organizational arrangement, a restructurer can credibly demonstrate the quality of its business to a potential buyer by converting it into a joint venture. Further, because joint venturing is costly, once the business and the complementary competencies are collocated and the quality of the business is unveiled to the partner, it is optimal for both parties that the joint venture be unwound. The incoming party buys out the restructurer's share in the joint venture. Hence, through use of
transitory joint ventures, firms can effectively accomplish value-enhancing corporate restructuring which would otherwise have been thwarted by adverse selection.

Take the example of the Dutch electronics multinational, Philips. When Philips sought to reorganize its diverse portfolio in the late-1980s, it identified the $1.55 billion major domestic appliances division as "non-core." The division had a history of poor financial performance, needed a huge capital injection to update its manufacturing facilities, and was operating with 14,000 employees, many of whom were protected by European legislation on job security. Despite the obvious problems that the appliances division faced, Philips management knew that it had valuable assets: pockets of underutilized manufacturing skills within its patchy string of 10 plants spread across five countries, as well as a portfolio of some of Europe's best-known brands, design expertise, and a pan-European dealer network that together placed it number two in market share behind Electrolux.

Whirlpool of U.S. was an obvious potential buyer. Whirlpool management were looking to expand overseas. They appreciated the benefits of inheriting a major European position in an industry that was rapidly becoming global. They also sensed that if they introduced practices such as global components sourcing, transferred advanced manufacturing processes, and introduced their state-of-the-art designs, then they could radically alter the profitability of the business. However, unsure about the potential of the appliances business, they valued it about 25% less than what Philips's management were willing to accept.

A joint venture provided the solution to this deadlock. In 1989, Philips sold 53% share of its appliances SBU to Whirlpool, allowing the business to access Whirlpool's complementary competencies. Simultaneously, Whirlpool was able to assess the true value of Philips' customer franchise and manufacturing facilities as an "insider."

From the outset, both partners regarded the joint venture as transitory: Whirlpool had the option to buy out Philips' 47% stake within three years of entering the joint venture. In fact, Whirlpool did exercise this option in 1991, and Philips exited the business on substantially more favorable terms – the uplift was estimated at $270 million – than if it had simply sold the business three years before.

Novel though the arrangement was, it wasn't unique. Although joint ventures have traditionally been viewed purely as an option for expanding into new businesses, today corporations are increasingly using joint ventures as restructuring tools. This paper identifies the circumstances in which instances such as the above – firms employing joint ventures to restructure their operations – offer a value-creating mechanism. The rest of the paper is organized as follows.

Section II describes the model's technological and contractual assumptions. Joint venturing is offered as an alternate mechanism to direct sale for bringing together a business owned by one party with complementary competencies owned by another party.

Section III solves the model described in section II. It shows why restructuring joint ventures that are transitory by design can act as efficient organizational mechanisms for signaling business quality. If joint venture administrative cost is moderately high and a large proportion of existing businesses are of low quality, then the owner of a high quality business converts it into a joint
venture with the potential buyer, whereas the owner of a low quality business directly sells its business.

Section IV discusses the special case in which complementary competencies can increase the profitability of a low quality business much more than they increase the profitability of a high quality business. In such a case, joint venturing is used to signal low quality: if the additional administrative cost of joint venturing is not very high, the low quality business is joint ventured whereas the high quality business is directly sold.

Section V discusses how our model is consistent with the elements of an apparent paradox uncovered by empirical research into joint ventures: they are costly, transitory, and yet pervasive. Large sample empirical studies confirm that a significant fraction of joint ventures are terminated with acquisition by one of the partners. Case studies illustrate firms entering joint ventures that are transitory by design in order to achieve corporate restructuring. The case studies also suggest that the restructuring process is complex and involves not only revelation of the business's quality (as modelled in this paper) but also transfer of 'tacit' knowledge from the restructurer to the potential buyer. The model is also applied to explain the life cycle of international joint ventures.

Section VI discusses places the arguments presented in this paper in the context of related literature, discusses limitations and possible extensions of the model, explores analogous social phenomena, and offers concluding remarks.
II. THE MODEL

A. Technological Assumptions

Consider a two-stage game with no discounting.¹ In each period, a business is transacted and gross profit $\pi$ is realized.

There are two risk-neutral parties – A and B – whose utilities equal their net profits, respectively. We do not consider reputation effects: assume that neither party has a reputation or an incentive to establish one.

At time 0, A owns and operates the business. However, B possesses a non-tradeable competence, available at 0 cost,² that is complementary to the business – the business generates greater profit if it has access to B’s resource than if it does not.

The business can be of high quality or low quality: the high quality business generates greater gross profit than the low quality business.

$\pi_j^i$ represents the per-period profit generated by the business.³ $i$ refers to the business type: high quality ($i=H$) or low quality ($i=L$); $j$ indicates whether the business has access to the complementary competence ($j=B$) or not ($j=A$). Hence, $\pi_H^B > \pi_H^A$; $j=A,B$ and $\pi_B^H > \pi_A^H$; $i=H,L$.⁴

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¹Whether the second period is discounted or not does not materially influence our argument.

²The assumption of 0 cost is not critical to the model: it goes through if the outside option of applying the competence to another use is less than the profit improvement it brings to A’s business.

³The assumption that the business generates equal profit in the two periods if it is owned by the same party is not critical to the model.

⁴The model assumes that a business is high quality irrespective of whether it has access to the complementary competence or not, i.e. $\pi_H^B > \pi_L^A = \pi_B^H > \pi_B^A$. Section IV discusses the case when this assumption does not hold.
A knows the type of business, but B cannot observe it. Both A and B have "common knowledge" that the fraction of the total population of businesses that is high quality (or equivalently, the probability that a business is high quality) is \( \lambda \in [0, 1] \).

At the end of the second period, the business is closed for a terminal value of 0.6

B. Contractual Assumptions

Value can be created by bringing B's resource and A's business operations together. The resource cannot be contracted on due to market failure, but ownership of the business can be contracted on.

At time 0, A can make one of two offers to B:

a. an offer to sell the business for a price, or
b. an offer to convert the business to a joint-venture with B.

If A makes neither of the two offers, then the game moves on to period 1.

In case A makes either of the two offers, B can either negotiate with A or reject A's offer. If B rejects A's offer, the game moves on to period 1 with the business still owned by A. If B negotiates with A, then a bargain is struck, and suitable ownership and management change takes place against payment from B to A, before moving on to period 1. A and B's relative bargaining power at time 0 is indexed by \( \theta \), which represents A's share of the surplus arising from a bargain struck at that time. Hence, \( \theta \in [0, 1] \).

During period 1, the business operates and gross profit \( \pi \) is realized. If B is a full-owner (through sale) or joint-owner (through joint-venture), then the business immediately reaps the benefit of B's complementary competence, i.e. the business generates gross profit \( \pi_B \) during period 1 (recall that \( \pi_B > \pi_A \)), and B also observes the quality of the business during period 1.

The joint venture is a costly organizational arrangement, compared to single-ownership. There is an additional per-period administrative cost \( c_J \geq 0 \) of operating the business as a joint-venture.

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5The model equates quality with profitability and assumes that it is unobservable to an outsider: accounting figures may not reflect economic profits; besides, cross-subsidization through inter-divisional transfers and allocation of corporate overheads can make the profitability of a firm's constituent SBU unobservable to an outsider.

6This assumption is not critical to the model: we could have chosen any arbitrary number.

7If a significant adjustment cost is incurred during the 'learning process' when the business integrates with the complementary competence, then integration becomes less attractive. As adjustment cost increases, the problem of 'lemons' encountered in directly selling the business is exacerbated, and the effectiveness of joint venturing in overcoming this problem is also diluted.
At the end of period 1, if the business is a joint venture, the incoming partner can offer to buy out the restrucuter. If party A accepts, then the entire ownership of the business passes on to party B against a consideration. If the two parties don’t agree to a buy-out, then the business continues operating as a joint venture.

During period 2, the business operates and gross profit $\pi$ is realized. At the end of period 2, the business is closed for a terminal value of 0.

All transactions – sale, entering the joint venture, and exiting the joint venture – are costless.

A’s and B’s utilities at the end of the game are given by $(V_A, V_B)$, the net profits realized by A and B respectively.

The structure of the game in its extensive form is given in Figure 2.
III. MODEL SOLUTION

This section discusses the equilibria of the game depicted in Figure 2 above. As in other signalling games, it uses the concept of Pure Strategy Perfect Bayesian Equilibrium (Selten, 1975; Kreps and Wilson, 1982) and employs the Cho and Kreps (1987) criterion to refine the equilibria.

Appendix I calculates the payoffs of the various branches of the game.

<table>
<thead>
<tr>
<th>Transactions</th>
<th>$V_A^X (X = H, L)$</th>
<th>$EV_B^9$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No deal (ND)</td>
<td>$2\pi_A^X$</td>
<td>$0$</td>
</tr>
<tr>
<td>2. Sale (S)</td>
<td>$2E\pi_A \cdot 2\theta (E\pi_B - E\pi_A)$</td>
<td>$2(1 - \theta)(E\pi_B - E\pi_A)$</td>
</tr>
<tr>
<td>3a. Joint Venture</td>
<td>$2E\pi_A \cdot 2\theta (\pi_B^L - E\pi_A - c_J)$</td>
<td>$2(1 - \theta)(E\pi_B - E\pi_A - c_J)$</td>
</tr>
<tr>
<td>3b. Joint Venture followed by a buy-out (JV)</td>
<td>$2E\pi_A \cdot 2\theta (\pi_B^L - E\pi_A - \frac{c_J}{2})$</td>
<td>$2(1 - \theta)(E\pi_B - E\pi_A - \frac{c_J}{2})$</td>
</tr>
</tbody>
</table>

The potential buyer always prefers a purchase to no deal. Joint venturing followed by purchase is acceptable to the buyer if the joint venture administrative cost is sufficiently low.

The strategy of no deal is dominated by the sale strategy for the owner of a low-quality business. The owner of a low quality business always prefers selling his business to not dealing, irrespective of the buyer's expectation of the business's quality.

Further, if A and B joint venture, then the buy-out strategy dominates the no buy-out strategy: both partners benefit by B's buying A out at the end of period 1. Once the business and its complementary competence have been brought together, single ownership of the business saves the joint venture administrative cost. Therefore, a restructuring joint venture is a transitory organizational form that is liquidated once the purpose of its existence, viz. collocation of the business with its complementary competence, has been accomplished.

In a joint venture followed by a buy-out, the consideration that the incoming party gives to the restructurer at time 0 for entering the joint venture takes into account how much it expects to pay after period 1 to buy the restructurer out. At time 0, both parties foresee and adjust for what their relative bargaining power is going to be after period 1. Hence, time 0 is the only relevant point of time at which the relative bargaining power of the two parties affects their ultimate payoffs.

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8 This analysis holds if $\pi_A^L$ and/or $\theta$ are sufficiently small: $\pi_A^L > \theta \pi_B^L \cdot (1 - \theta) \pi_A^L$. Section IV discusses how the equilibria alter if this condition is not satisfied.

9 In this table, the expectation operator refers to updated Bayesian expectation. Please refer Appendix I for details.
The structure of the game is as follows.

![Diagram of game structure](image)

Figure 3

Consider first the baseline case in which joint-venturing is not an option. The equilibria of the model (derived in Appendix II), are shown in Figure 4 below.

![Diagram showing equilibria](image)

Figure 4

If a large proportion of businesses is of low quality ($\lambda > \lambda^*$), then owners of the high quality business are shut out of the market owing to the "lemons" problem.
Appendix II also derives the equilibria if joint venturing is an option. Figure 5 identifies the perfect bayesian equilibria.

Separating equilibrium in which high quality businesses are joint ventured

If $c_J$ — the joint venture administrative cost — is moderately high, and $\lambda$ — the proportion of businesses that are of high quality — is small, then the owner of a high quality business is prepared to bear the cost of joint venturing to signal the quality of its business. The owner of a low quality business is not prepared to incur the joint venture cost, and then have the business discovered to be of low quality during the joint venture. This leads to a separating equilibrium in which willingness to joint venture, rather than directly sell, signals business quality. The possibility of such an equilibrium alleviates the "lemons" problem — for moderately high joint venture administrative cost, owner of a high quality business who would otherwise have been unable to sell the business is able to do so through joint venturing.

Interestingly, the separating equilibrium exists if the joint venture administrative cost is moderately high, rather than when it is low, and when a high proportion of existing businesses are of low quality. The first condition ensures that owner of a low quality business rules joint venturing
out since it is an expensive proposition. The second condition ensures that a high quality business is sufficiently different from an average business for the owner of a high quality business to be motivated to signal the quality of his business.

Other equilibria that involve joint ventures

There are two other cases in which the parties rely on joint venturing. In case the joint venture administrative cost is very low and the proportion of businesses that are of high quality is high, both high and low quality businesses are joint ventured. Since the joint venture administrative cost is low, owner of the high quality business prefers to joint venture rather than sell the business if selling does not signal high quality as powerfully as joint venturing does.\(^\text{10}\) The owner of a low quality business mimics the strategy of the owner of a high quality business, in order to disguise its business type. The high quality business owner does not mind such mimicking, since in a pooling equilibrium, the potential buyer assumes that the business being joint ventured is of relatively high quality. This leads to the equilibrium in which both high and low quality businesses are joint ventured.

If the joint venture administrative cost is low and the proportion of businesses that are of high quality is also low, a Pure Strategy Bayesian Equilibrium does not exist: low quality business owners try to blend with the high quality business owners, whereas high quality business owners try to differentiate themselves from low quality business owners. Whatever strategy (sale or joint venturing) the owner of a low quality business chooses, the owner of a high quality business prefers to signal his quality by choosing the other strategy. On the other hand, the owner of a low quality business prefers to choose a strategy identical to that of the owner of a high quality business in order to disguise his business type. In such a circumstance, a hybrid equilibrium exists – the owner of a high quality business enters a joint venture, whereas the owner of a low quality business randomizes between directly selling the business and joint venturing. Joint venturing is still a signal of superior quality, albeit not as strong as in case of the separating equilibrium discussed above. The buyer's updated belief about the quality of a business that has been offered for joint venture is high enough to be acceptable to the owner of a high quality business.

Hence, joint venturing is a signal of quality when joint venture administrative cost is moderately high and the proportion of businesses that are of high quality is low – either a separating equilibrium is achieved such that all high quality businesses are joint ventured and all low quality businesses are sold, or the hybrid equilibrium tends towards it.

\(^\text{10}\)Technically, if belief off the equilibrium path is that the expected quality of a business that is sold is relatively low, then a high quality business is joint ventured.
Effect of change in relative bargaining power on the equilibria

Figure 6 and Figure 7 sketch how the equilibria would change if A's bargaining power were to change.

The lower A's bargaining power is, the more acute the problem of 'lemons' is, and hence, the more useful joint venturing is in assuaging this problem.
IV. EXTENSIONS

The above discussion assumes that the complementary competence raises the profitability of the business in a 'well-behaved' manner: if a business is high quality for A, it is also high quality for B, i.e. if $\pi_A^H > \pi_B^H$, then $\pi_B^H > \pi_B^L$ also. The first part of this section discusses how the equilibria change if the complementary competence flips the quality of the business. If the complementary competence is much more effective in raising the profitability of the low quality business than of the high quality business, then the owner of a low quality business uses joint venturing to distinguish the business from a high quality business.

The second part of this section discusses a scenario in which direct sale of a business is not possible. In such a case, firms may prefer to indefinitely joint venture if the administrative cost of joint venturing is low enough.

A. Complementary competence flips business 'quality'

The complementary competence can offer greater improvement for the less profitable business than for the more profitable business. A business may have a proven new technology or a unique service concept, but may lack the resources to commercialize this potential in the market; a business may have an excellent distribution and service network supporting obsolete products; a less profitable business may have more available capacity, newer machines, greater pent-up enthusiasm, that may yield greater profit increase than the less profitable business, once the complementary competence of dynamic management or new technology is brought to bear on it.

Appendix III calculates how the equilibria change if the complementary competence is more effective for the low quality business than for the high quality business.

<table>
<thead>
<tr>
<th>$\pi_B^L$ vs. $\pi_B^H$</th>
<th>Other condition(s)</th>
<th>Baseline equilibria</th>
<th>Equilibria if JV is an option</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\pi_B^L &lt; \pi_B^H$</td>
<td>$\pi_B^L - \pi_A^L &lt; \pi_B^H - \pi_A^H$</td>
<td>The 'well-behaved' case discussed in section III</td>
<td>No change from the 'well-behaved' case</td>
</tr>
<tr>
<td></td>
<td>$\pi_B^L - \pi_A^L &gt; \pi_B^H - \pi_A^H$</td>
<td>No pure strategy equilibrium</td>
<td></td>
</tr>
<tr>
<td>$\pi_B^L &gt; \pi_B^H$</td>
<td>$\pi_A^H &gt; \theta \pi_B^L - (1 - \theta) \pi_A^L$</td>
<td>'Lemons' problem if most businesses are of high quality ((\lambda) is high)</td>
<td>Joint venturing is not used for signalling business quality</td>
</tr>
<tr>
<td></td>
<td>$\pi_B^L &lt; \theta \pi_B^L - (1 - \theta) \pi_A^L$</td>
<td>No pure strategy equilibrium</td>
<td></td>
</tr>
<tr>
<td></td>
<td>but $\pi_B^L - \pi_B^H &lt; \pi_B^L - \pi_A^H$</td>
<td>Joint venturing is used for signalling high potential by owner of the poorly performing business</td>
<td></td>
</tr>
<tr>
<td></td>
<td>$\pi_B^L - \pi_B^H &gt; \pi_B^H - \pi_A^H$</td>
<td>No 'lemons' problem: both types of business are sold</td>
<td></td>
</tr>
</tbody>
</table>

If the complementary competence increases the profitability of the low quality business more than it raises the profitability of the high quality business ($\pi_B^L - \pi_A^L > \pi_B^H - \pi_A^H$), but the low quality
business remains less profitable than the high quality business even after collocation with the asset \((\pi'_{A} < \pi'_{B})\), then the nature of the equilibria does not change: signalling high quality of a business through joint venturing is still beneficial.

Consider the case in which the difference between the profitability increases of low quality business and of high quality business is intermediate. If the low quality business becomes more profitable than the high quality business after restructuring \((\pi'_{B} > \pi'_{A})\), but it is not 'too' high compared to profitability of the high quality business before restructuring \([\theta \pi'_{B} < (1 - \theta) \pi'_{A}]\), then the equilibria change. An interesting "tipping" phenomenon (Schelling, 1978) occurs in the baseline case, such that there may be too many high quality businesses for their own good: they end up not entering the market.\(^{11}\) Even if joint venturing is considered as an option, neither type of business uses it as a signalling mechanism.

If the difference between the profitability increase of the low quality business and the profitability increase of the high quality business is high \((\pi'_{B} - \pi'_{A} > (1 - \theta) \pi'_{A})\), then the equilibria change again. In the baseline case, there is no problem of 'lemons.' The owner of a low quality business prefers sale to no deal. The owner of a high quality business also does not mind a potential buyer misclassifying his business as being of low quality, since the potential buyer then hopes to bring about large gains by applying the complementary competence to the business. Consequently, businesses of both types are sold.

If joint venturing is considered as an option, then the signalling argument works in reverse: if joint venture administrative cost is low, then joint venturing provides a mechanism for the owner of a low quality business to distinguish it from a high quality business. It is precisely the poorly performing, but high potential, businesses that become the most attractive candidates from the buyers' perspective for transitory joint ventures.

B. Selling is Not an Option

In certain circumstances, it may be institutionally infeasible for a restructure to transfer complete ownership of the business to the owner of the complementary competence. Such a situation frequently exists in international joint ventures in industries that the host country government deems to be 'core.' An LDC government may also restrict foreign ownership of local business in order to encourage progressive 'indigenization.'\(^{12}\) It can be shown that if joint venture administrative cost is low, then it is in the interest of both high and low quality businesses that they be joint ventured; if the administrative cost is moderately high, only one type of business is joint ventured; if it is high, neither type of business is joint ventured.

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\(^{11}\)Appendix VI also discusses a degenerate intermediate case: \(\pi''_{B} < \theta \pi''_{B} - (1 - \theta) \pi''_{A}\) but \(\pi''_{B} - \pi''_{A} < \pi''_{A} - \pi''_{A}\). The parameter values do not permit any pure strategy equilibrium in the baseline case.

\(^{12}\)During the 1960s and 1970s, the U.S. Department of Commerce identified 20 "restrictive" countries that discouraged 100 percent foreign ownership (Gomes-Casseres, 1988).
V. EMPIRICAL EVIDENCE

Corporate restructuring is only one among the several possible motivations for joint venturing. However, our model of how restructuring joint ventures work helps explain an apparent conundrum identified by researchers who have studied joint ventures: joint ventures are costly, they tend to be transitory, and yet, they are ubiquitous.

Joint ventures are costly

Several empirical researchers and practitioners have found that joint ventures are costly to administer, compared to wholly owned business units. Stopford and Wells (1972) pointed out that joint ventures are costlier organizational arrangements compared to wholly-owned units. Harrigan (1986, p.31) recognized that they are "inevitably complicated arrangements." Porter (1990, p. 613) remarked, "Alliances always involve significant costs in terms of coordination, reconciling goals with an independent entity, creating a competitor, and giving up profits." Balakrishnan and Koza (1993, p.104) commented, "Because of shared control and the lack of 'unity of command,' the administrative costs of managing and controlling the joint-venture will be more than the corresponding costs for a hierarchy." Richard Dulude, Group President, Corning Incorporated, said, "[A joint venture] takes twice the management effort as compared to a wholly owned subsidiary..." Executives in the airline construction business use an explicit formula to estimate the administrative cost of joint venturing as a multiple of the administrative cost of a wholly owned unit.  

Joint ventures tend to be transitory

Joint ventures are notoriously unstable organizational forms. Harrigan (1988) found that 55% of a sample of joint ventures involving U.S. companies had been unwound within a 10-year period ending 1985. Savona (1992) found that 70% of all joint ventures break up within 3.5 years. Bleeke and Ernst (1995) reported that joint ventures have a median life span of 7 years.

A popular explanation for the high mortality rate among joint ventures is that they suffer a high incidence of governance problems that lead not only to higher administrative cost but also to a greater hazard of their breaking up, compared to single ownership. Porter (1990), for instance, follows his comments on the costs of joint venturing with the remark, "These costs make many alliances temporary and destined to fail." Several management experts [Harrigan (1985, 1986) and Lewis (1990), for example] highlighted ways in which joint venture governance problems should be managed. Notwithstanding such useful advice, the rational expectations argument implies that, going into a joint venture, a firm's management would expect them to have a shorter life, compared to single ownership.

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13In 1986 alone, three sets of authors – Porter and Fuller, Harrigan (p. 16), and Contractor – specified four, fourteen, and seven kinds of benefits, respectively, from joint venturing.

14The multiple used is $1.2^{n-1}$ where $n$ is the number of partners in the joint venture (Enright, M.J., 1995, personal communication).
Joint ventures are ubiquitous

Despite the problems listed above, firms have been entering joint ventures in significant numbers! *Fortune* magazine reported that, from 1980 to 1988, over 2,000 major joint venture alliances were formed between U.S. and European companies alone (Kraar, 1989). By the late 1980s, it was estimated that joint ventures accounted for one-fifth of all international non-banking enterprises in the U.S., Canada, France, Germany, and the U.K. (Christelow, 1987).¹⁵

What benefits do firms achieve from joint venturing that they would not achieve otherwise? Our model suggests one possible answer: a transitory joint venture can help in the process of transferring ownership of a business from one firm to another. Large sample empirical studies into joint venture lifecycles have found that several joint ventures conclude with acquisition by one of the partners.

In a survey of 148 joint ventures, Kogut (1988) found that 68 (or 46%) of the sample were terminated. 30 of the "terminated" joint ventures were concluded because full ownership was transferred to one of the original partners. Through a careful case-study of the life cycle of one of these – a Honeywell-Ericsson joint venture – Kogut concluded that buy-out by one party can reflect the successful completion of a joint venture, rather than the unravelling of cooperation.

Gomes-Casseres (1987) made a similar observation on the basis of a study of 2,378 U.S. multinational joint ventures set up between 1900 and 1975. Of these, 18% had reverted to single ownership by one of the original partners, compared with only 2% that were dissolved, and a further 11% that were sold to an outside buyer. He noted that "one might well consider this self-liquidating feature of joint ventures a somewhat paradoxical sign of success."

Both studies found that about one-fifth of all joint ventures conclude through acquisition by one of the partners, which is consistent with our model. In order to further tease out joint ventures that were terminated through acquisition because corporate restructuring had been achieved, we

¹⁵Although researchers differ over whether joint venture frequency has increased over time, they generally concur that joint ventures constitute a significant fraction of the universe of existing organizational arrangements.
must examine joint ventures in greater detail than is possible through large scale empirical work. Case studies provide such an opportunity.

Our model suggests some indicators for identifying cases of restructuring joint ventures. We would expect these to occur in situations in which a large corporation is disposing off business units that are no longer 'core' to the corporation. Another firm possesses competencies that are complementary to one of these businesses, but it is not feasible to sell these competencies. Most of the value of the business unit resides in 'intangibles' that are difficult to monitor externally. Our model suggests that such a business unit would be converted into a joint venture. After a period of joint ownership, the incoming partner would buy out the restructurer's share in the joint venture. Several such instances of restructuring joint ventures are detailed in the table below.

<table>
<thead>
<tr>
<th>Restructurer (A)</th>
<th>Incoming partner (B)</th>
<th>Business</th>
<th>JV start</th>
<th>Partner shares (A-B)</th>
<th>JV termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coming</td>
<td>Ciba Geigy</td>
<td>Medical diagnostics</td>
<td>1985</td>
<td>50-50</td>
<td>1989</td>
</tr>
<tr>
<td>Honeywell</td>
<td>Bull &amp; NEC</td>
<td>Mainframe computers</td>
<td>1987</td>
<td>42.5-42.5-15</td>
<td>1991</td>
</tr>
<tr>
<td>Dresser</td>
<td>Komatsu</td>
<td>Construction equipment</td>
<td>1988</td>
<td>50-50</td>
<td>1994</td>
</tr>
<tr>
<td>TRW</td>
<td>Fujitsu</td>
<td>POS computer systems</td>
<td>1980</td>
<td>49-51</td>
<td>1983</td>
</tr>
<tr>
<td>IBM</td>
<td>Siemens</td>
<td>Marketing, distribution, and service of PBX systems</td>
<td>1989</td>
<td>50-50</td>
<td>1992</td>
</tr>
</tbody>
</table>

**Restructuring Joint Ventures**

Besides providing fine-grained support for our model, these case studies can help in another way. Our model explicates one of the several possible reasons for why firms may enter into transitory joint ventures. The case studies can help understand the power and limitations of applying our model to real life situations. They can help discern whether signalling was indeed a key reason for entering a restructuring joint venture, suggest possible extensions that would encompass other features of restructuring joint ventures not explicitly modelled in our paper, and explore whether there were other reasons that can be modelled differently.

The Philips-Whirlpool joint venture was discussed in section I. Details about the other restructuring joint ventures and some of their implications are discussed below.

**Ciba-Corning**

In the mid-1970s, Corning developed the technology for making porous glass on which chemicals could be affixed for laboratory diagnosis. This breakthrough enabled the company to build its medical diagnostics division into a $150 million business by 1985. Corning's strength was in equipments, but increasingly, the industry turned on reagents. In 1985, Corning was looking to exit from the medical diagnostics business. Meanwhile, Ciba Geigy, the Swiss pharmaceutical
giant, was looking for an opportunity to enter the U.S. industry. Corning approached Ciba Geigy with the proposal to mesh Corning's manufacturing and marketing operations with Ciba Geigy's research competency. In order to assuage any of Ciba Geigy's concerns regarding Corning's business, Coming management offered to first convert its division into a joint venture. In 1985, Ciba Geigy paid $75 million for a 50% share in Corning's medical diagnostics business.

Over the next 3 years, the two companies' competencies were brought together and Ciba Geigy was reassured about the quality of the business. In 1989, Ciba Geigy bought out Corning's share in the joint venture for $150 million. Richard Dulude, group president at Corning, reflected upon the termination of the joint venture, "I think both the partners would say that was a successful relationship. It allowed us both to do things we wanted to do. It strengthened [Ciba Corning] significantly – it ended up in the Ciba Geigy fold, and it will be much stronger because of that."

**Honeywell-Bull-NEC**

Honeywell's share of the U.S. mainframe computer market had fallen to 2.6% by 1986 and the business was barely profitable. Honeywell management was anxious to exit the business and focus on its global electronic controls operations. Meanwhile, Groupe Bull and NEC were looking to develop global presence in computers beyond their home bases. In 1987, Honeywell backed its computer operations into a joint venture in which Honeywell and Groupe Bull each took a 42.5% stake, while Japan's NEC purchased the remaining 15% share. As part of the original agreement, Bull had the option to buy a further 27% of shares from Honeywell after one year, which it exercised in 1988. Two subsequent recapitalizations culminated in Honeywell exiting the business completely in May 1991, leaving Bull and NEC with 85% and 15% stakes respectively. The joint venture served the objectives of all three companies – Honeywell was able to exit the business, Bull was able to enter the U.S., and NEC was able to get an entree into the U.S. and European markets.

This is a case of a restructuring joint venture among three partners. Our model is restricted to joint ventures between two partners. Indeed, the vast majority of alliances are between two parties. A study of collaborative agreements reported in *The Economist* and *Financial Times* over the period 1975-86, for instance, discovered that as many as 81% of the agreements were between two firms (Hergert and Morris, 1988, p. 104). If more than two parties were to come together in a consortium under circumstances of impacted information, explicit analysis would become considerably more complex. However, we believe that the phenomenon of transitory joint venturing being used for corporate restructuring would still hold. The Honeywell-Bull-NEC joint venture points in that direction.

All three of the above joint ventures – Philips-Whirlpool, Ciba-Corning, and Honeywell-Bull-NEC – illustrate the use of transitory joint ventures to collocate businesses with their complementary competencies. Our model assumes that this collocation is automatically achieved. But, as the next case instance illustrates, it is a complex and difficult process on which the success of the entire restructuring may delicately hinge.

**Komatsu-Dresser**

Dresser, a diversified conglomerate with 1985 sales in excess of $4 billion, embarked on a strategy of sharpening the company's focus and divested more than a dozen "non-core"
businesses over the next few years. However, it faced a major challenge in disposing of its International Harvester subsidiary. Although it possessed a widely recognized brand name and a strong distribution network, the division had come to be identified with "a neglected product line, lagging quality, and out-of-date plants," and had turned in a run of dismal results.

In 1988, Dresser converted the construction equipment business into Komatsu Dresser Company (KDC), a 50-50 joint venture with Japan's Komatsu Ltd. Compared to Dresser, Komatsu had a much larger global market share and spent 10 times more on R&D. Komatsu was looking to strengthen its presence in the U.S. in order to more effectively compete with Caterpillar, the global leader, on its own home turf.

Haruhiko Umdea, KDC's first Chief Operating Officer, was convinced of the sound strategic logic for forming the $1 billion joint venture. "Takara-no-yama," he remarked, "The venture is a mountain of treasure." The KDC joint venture would help Komatsu use Dresser's manufacturing facilities and dealer network in the U.S. Dresser's construction equipment business would gain access to Komatsu's total quality systems and lean manufacturing know-how, essential ingredients for restoring its quality standards and improving its efficiency.

However, cultural differences between Dresser and Komatsu executives and soon hardened into deep animosity. Former Dresser executives complained that managers from Komatsu were making crucial decisions during Friday evening bull sessions conducted in Japanese. Executives from Komatsu felt that former Dresser executives were interacting with them in a spirit of competitiveness, not cooperation.

KDC was forced to explicitly address this issue by starting classes and organizing trips to develop cross-cultural sensitivity among its employees, expending management energy and losing valuable time in the process. Even as Dresser and Komatsu dealership networks were being merged, and the joint venture executives were being sent on cultural training programs, in 1991 the construction industry entered its most severe downturn since the contraction of 1944. Finally in 1992, unable to staunch losses in KDC, Dresser spun off its shareholding in the joint venture to a separate company, Indresco. John Murphy, Dresser's chairman, remarked on the occasion, "This is the culmination of a program that has been underway for several years to concentrate Dresser's focus....Since 1986, we have disposed of businesses that are not related to the oil, gas, and chemical industries we choose to serve." It took Indresco another two years to sell its stakes in the joint venture to Komatsu at book value. Dresser, and subsequently Indresco, had waited fruitlessly in the hope that operational improvements in KDC and better market conditions would increase the valuation of their shares in the business.

Our model is silent as to the process of integration of the business with its complementary competencies. The KDC case study suggests that the process involves adjustment cost that depends on how "culturally similar" the two parent organizations are and on how benevolent market conditions are. If the adjustment cost is too high, the joint venture may not yield any net benefit. On the other hand, if the "cultures" of the parent organizations are too similar, they may not face the problem of unobservability, and hence, direct sale of the business may be the preferred transaction. Lending credence to this view was a study of stock market reactions to 64 joint venture announcements (Balakrishnan and Koza, 1993). The stock market considered joint ventures to be more beneficial the more dissimilar the primary businesses of the parent companies were.

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Hence, there may be a curvilinear relationship between appropriateness of a transitory joint venture and the "cultural distance" between the joint venture partners. If they are too similar, direct sale would dominate joint venturing. If they are too dissimilar, the collocation process is too costly to be useful. However, joint venturing may be the appropriate organizational arrangement for intermediate "cultural distance."

TRW-Fujitsu

Even if the joint venture fails to reveal hidden potential, it may have been a better option for the buyer compared to direct purchase. Once a buyer has been sold a lemon, it has no recourse. In a joint venture, the buyer can adjust downward the buy-out price at the end of the joint venture to reflect the fact that the business has not done as well as initially expected.

The TRW-Fujitsu joint venture illustrates this benefit of a joint venture. In May 1980, Japan's largest computer maker Fujitsu entered a 51-49 joint venture with TRW, a diversified automobile parts and electronics equipment manufacturer to manufacture and distribute retail Point-of-Sale (POS) computer systems. While Fujitsu was responsible for product development, TRW executives managed the firm and handled distribution. The blend of Japanese hardware with U.S. distribution and software knowhow was hailed by J. Sidney Webb, TRW-Fujitsu's president, as "the best fit I can imagine." However, the company was unable to effectively communicate U.S. customers' needs to its product developers in Japan. The joint venture failed to produce a profit, and both Fujitsu and TRW admitted that it was not working. "It's better to have a one-sided business decision process, especially in such a fast-moving market," remarked Fujitsu president Takuma Yamamoto. In March 1983, Fujitsu bought out TRW's share in the joint venture at a considerable discount, industry experts claimed, to what it would have paid in 1980 had it purchased the entire business as a total outsider. Even though the joint venture had "failed," it had effectively helped Fujitsu realize the true "potential" (or in this case the lack of it) of the POS business it was acquiring from TRW part-way through the deal and accordingly reduce the price it paid for the business. Renamed Fujitsu Systems of America, the business eventually became one of the leading U.S. suppliers of retail POS systems.

IBM-Siemens

The joint venturing solution is preferable to immediate sale when the most important assets in the business being restructured are intangibles, like consumer franchise and distribution relationships, because such assets are difficult for potential buyers to properly value as outsiders. This distinction is aptly illustrated in the restructuring of IBM's subsidiary Rolm, in partnership with Siemens of Germany. IBM wanted to exit the thin-margin price-competitive PBX market, whereas Siemens was looking to strengthen its presence in the U.S. telecommunications market. The two companies chose to transfer the Rolm business from IBM to Siemens. For those parts of the Rolm business in which the assets were primarily tangible, as in manufacturing, they chose a straightforward sale from IBM to Siemens. In the downstream customer-related activities, where most of the potential value was locked up in intangibles, transfer through a joint venture was the preferred solution. So, in a concurrent deal, IBM and Siemens formed a 50-50 joint venture to handle marketing, distribution, and service for the Rolm product line.
Three years after setting up the joint venture, having gauged the worth of Rolm's brand franchise and customer relationships and having integrated the downstream business with its competencies, Siemens bought out IBM's interest in the joint venture in 1988. Peter Pribilla, president of Siemens’s Rolm subsidiary, remarked on the occasion, "The new structure of one organization, one management, and one vision at the top should help efficiency." In other words, the additional administrative burden of the joint venture was removed.

Hence, the above case studies suggest the following:

- Firms actively use joint ventures to collocate businesses with complementary competencies.
- Such joint ventures are transitory by design. They are terminated once collocation has been achieved in order to save on administrative cost.
- Even if nature reveals ex-post that the collocation was not value enhancing, joint venturing insures the potential buyer that it will not suffer the entire burden of failure. Instead, the buyer shares the cost of "bad news" with the restructurer.
- In the restructuring process, a firm may sell those assets of the business it wishes to dispose of that do not confront the information asymmetry problem, and enter joint ownership for only those assets that do face adverse selection.
- The process of achieving collocation is complex and costly. Case study evidence suggests that there may be a curvilinear relation between the attractiveness of joint venturing and the "cultural difference" between the restructurer and the buyer, with joint venturing being most appropriate in circumstances in which the two firms' cultures are moderately different.

The above case studies also suggest that joint venturing performs another function in restructuring besides revealing the quality of the business being restructured, viz. it helps the process of transfer of 'tacit' knowledge from the restructurer to the ultimate buyer.

Transfer of 'tacit' knowledge

Our model is silent about the role of the restructurer during the joint venture phase. We observed in the case studies that successful restructuring joint ventures were typically about three years long (Philips Whirlpool, Ciba Coming, IBM-Rolm-Siemens), during which time the restructurer transferred its managerial and technical expertise to the potential buyer. Much of this knowledge is closer to art than science: it cannot be specified in detail or transmitted by prescription. The restructurer's corporate staff was actively involved in the business, especially interacting intensively with the incoming partner's corporate team. During this time, the incoming partners did two things: get to understand the potential of the business, and learn from the restructurer how to effectively run the business. Our model addresses only the first of these two activities. Joint ventures may be superior to direct sale in performing the second activity as well. Once these two objectives were achieved in about three years, even if no purchase option was written in the original contract, the partners would jointly decide that the business could be run more efficiently under sole ownership of the incoming partner and agree to liquidate the joint venture.

Consistent with the assumption that joint ventures perform the second activity, we found among the case studies several instances of buyout payments that was powerfully influenced by how the joint ventures had performed. Such a structure presumably provides a powerful incentive to the restructurer to quickly and effectively transfer its tacit knowledge to the incoming partner.
Hence, in the Ciba Corning joint venture, Ciba Geigy paid Corning a front-end payment of $75 million in 1985 for 50% share of its medical diagnostics business, and a back-end payment of $150 million for the remaining 50% share in 1989. In 1989, Whirlpool made a front-end payment to Philips for 53% share of its domestic appliances business, and a back-end payment of $610 million for the remaining 47% share in 1992. If, on the other hand, the joint venture did not yield expected returns, the restructurer could be left with a much lower payout than it would have expected going into the joint venture. In the Komatsu Dresser joint venture, for instance, when Indresco ultimately liquidated its share in the joint venture, all it received in consideration from Komatsu was the approximate pro-rata book value of the shares.

International joint ventures

We believe that our model is also applicable in understanding international joint ventures set up by multinational corporations with their local partners in order to enter new international markets. Researchers have long commented on the relation between a firm's understanding of a foreign market and the organizational form it chooses for its presence there. Our model suggests that if there is a foreign company looking to enter a country and a domestic company looking the industry, then they may first convert the domestic company's business into a joint venture, followed by the foreign company buying out the domestic company.

Several studies of international expansion have indeed identified this phenomenon. Franko (1971) established a connection between an MNC's increased organizational sophistication with dissolution of its international joint ventures. Davidson (1980) found evidence for a pattern of internationalization whereby firms move from exporting to partial equity investments to wholly owned operations. Contractor and Lorange (1988, p. 15) observed that firms lacking international experience tend to initially expand overseas through joint ventures.

Our case studies of Philips-Whirlpool, Ciba-Corning, and KDC also bear witness to this phenomenon. Besides, there are several other cases in international business that followed the same trajectory. Following are only a small sample of such cases.

<table>
<thead>
<tr>
<th>Business (Territory)</th>
<th>Domestic company (A)</th>
<th>Incoming MNC (B)</th>
<th>JV initiation</th>
<th>Partner shares (A-B)</th>
<th>JV termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital switching systems (Europe)</td>
<td>Philips</td>
<td>ATT</td>
<td>1984</td>
<td>50-50</td>
<td>1990</td>
</tr>
<tr>
<td>Consumer packaged goods (Japan)</td>
<td>Nippon Sunhome</td>
<td>Procter &amp; Gamble</td>
<td>1972</td>
<td>50-50</td>
<td>1977</td>
</tr>
<tr>
<td>Software (Japan)</td>
<td>Ascii</td>
<td>Microsoft</td>
<td>1978</td>
<td>50-50</td>
<td>1986</td>
</tr>
<tr>
<td>Soft drinks (India)</td>
<td>Voltas</td>
<td>Pepsico</td>
<td>1988</td>
<td>40-44</td>
<td>1993</td>
</tr>
</tbody>
</table>
VI. RELATED LITERATURE, LIMITATIONS, AND CONCLUDING REMARKS

In this section, we discuss how our paper relates to existing research, identify the limitations of our model, and explore possible extensions. We also look at situations analogous to restructuring through transitory joint ventures in non-economic spheres of human activity. Finally, we offer some concluding remarks.

Related literature

Most research on corporate restructuring has narrowly focused on transfer of businesses and assets through direct sale. (Please refer the Summer 1993 special issue of Strategic Management Journal on corporate restructuring, for example.) Our paper introduces the idea that firms may also restructure by means of transitory joint ventures. Further, researchers often distinguish between corporate restructuring that involves sale of businesses as operating entities as opposed to restructuring that involves closure of a business and sale of its assets. Our model holds for both kinds of restructuring: so long as a firm is trying to sell a productive asset or set of assets whose value is not externally observable, transitory joint ownership of the asset(s) can overcome the adverse selection problem.

Our model of signalling by an informed principal is similar in spirit to models of principals signalling quality by incurring a costly expenditure: introductory prices for new products, "wasteful expenditures" (Nelson, 1974), advertising (Kihlstrom and Riordan, 1984), limit pricing (Milgrom and Roberts, 1986), predation (Scharfstein, 1984), etc.

Like several other pieces of research on joint ventures, our paper addresses the question: what benefits do firms achieve from entering this costly and often transitory organizational arrangement that they would not achieve otherwise? The arguments for the superiority of joint ventures over other organizational forms essentially turn on transaction costs economizing, given market imperfections (Coase, 1937; Williamson, 1985).

Some of the conceptual research in understanding joint ventures has taken the Grossman-Hart-Moore approach (Grossman and Hart, 1986; Hart and Moore, 1990), and addressed the problem of making specific investments when contracts are incomplete while maintaining that the parties are symmetrically informed. Thus, Hennart (1988) proposed joint ventures as organizational mechanisms used to "link" complementary assets that are "tacit" (and, hence, presumably, untradeable) and belong to different organizations. Kogut (1991) suggested that firms create joint ventures as a way of buying the "real" analog of a financial option (when no suitable financial substitute is available) in order both to exploit and buffer against future uncertainty. Halonen (1994) proposed that the threat of severe punishment upon deviation by one of the partners from an agreed-upon investment strategy makes joint ownership optimal in case of repeated transactions.

Unlike the Grossman-Hart-Moore approach, Hamel, Doz, and Prahalad (1989) make no explicit investment assumptions, and instead, ascribe hidden motives to one of the partners in the joint venture. Tracking the inner workings of 15 strategic alliances over five years, they reported that some of the participants considered learning from partners to be of paramount importance. Discussions of such "learning-oriented" joint ventures seldom mention transactions costs explicitly. But "learning through joint venturing" is the use of a joint venture as a controlled environment, in
which a partner's tacit resources are internalized, and then used ("leveraged") to increase profitability of operations. Typically, Japanese partners have been portrayed as possessing this hidden motive to learn from (and sometimes, at the expense of) their joint venture partners. (For examples, please see Hamel, Doz, and Prahalad, 1989, and *The Economist*, 11/19/1988, and 09/19/1992.)

Our paper takes a different tack from the above approaches in three important ways. First, unlike the Grossman-Hart-Moore or the Hamel-Doz-Prahalad view, we consider situations in which the parties are asymmetrically informed, but are not concerned about specific investments or hidden motives. Second, most researchers have taken the view that firms use joint ventures to expand or enter new businesses. We contend that firms may use joint ventures to exit from existing businesses in a graduated fashion. Third, unlike most research into joint ventures, we explicitly account for short-lived joint ventures. Given the administrative cost penalty of joint ventures relative to single ownership, it may be efficient for a restructuring joint venture to be terminated once value has been generated by combining the business with its complementary competencies.

**Limitations and extensions**

While the paper refers only to joint ventures, it addresses all possible contractual forms embodying formal alliances that fall short of mergers. The model is not limited to only joint ventures. It applies equally for any alliance form of organization that involves sharing of profits and incurs a cost-penalty compared to single ownership.

Our model considers a situation in which one set of competencies suffers complete market failure and the other set of competencies embodied in the business suffers information asymmetry. An alternate model could consider bilateral asymmetric information as two firms bring complementary competencies together. Since the problem of information asymmetry would be even more severe, joint venturing (as a mechanism to alleviate the problem) would be resorted to even more frequently than predicted by this paper, with either partner eventually emerging as the eventual owner of both sets of competencies.

Our model presents a single-shot analysis. A repeat-game scenario would introduce other possible equilibria that such a supergame structure allows. For instance, a firm may wish to be perceived as reliable and long-term relationship oriented. Such a concern can lead firms to engage in joint ventures longer than may be justified if the ventures are seen as one-shot deals. Similarly, the owner of an enterprise that is being restructured may have an agenda of disposing of several businesses, and may be concerned about the reputational impact of the early sales on quality impressions among potential buyers of businesses that are sold later. We do not model such reputational concerns.

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*Mariti and Smiley (1983) reported that joint ventures accounted for only 55% of all the explicit long-term agreements reported in the European financial press during 1980. Ghemawat, Porter and Rawlinson (1988) found that joint ventures constituted only 41% of the 1,144 "coalition" announcements that appeared in *The Wall Street Journal* during 1970-82.*
Analogous situations

Even as we move away from the corporate field and look at social phenomena at large, we see dynamics similar to the ones studied in this paper. The analogs are not perfect — the circumstances quoted do not tightly fit the model assumptions. However, in the spirit of Becker (1976), we feel that there are sufficient similarities to highlight various aspects of the phenomenon described in the model.

Classroom education can be looked upon as a transitory joint venture. Consider a "wise" person who has some externally non-observable knowledge, and a "smart" person who possesses non-tradeable native intellect. The knowledge and the intellect are complementary: if they could be collocated, they could used gainfully, however one defines "gain." The wise person could write the knowledge down on paper and "sell" it to the smart person, but the market for such knowledge would suffer from adverse selection. One way to overcome this problem is for the two persons to engage in a costly process of getting together in a classroom: only a wise person who has high "quality" knowledge would be prepared to incur the extra cost of coming to class. Not surprisingly, a mark of the success of this joint venture is its termination, when the "smart" person graduates.

Most societies have an engagement period before marriage. In a patriarchal society with joint families, the bride-to-be will be entering the groom's family. The betrothal can be seen as a transitory period, which is relatively costly (in psychic, and often, economic terms as well) during which the husband's family learns about characteristics of the bride that are difficult for an outsider to observe, such as her temperament, before the more irreversible step of marriage ("collocation" of complementary assets). Equivalently, in some matriarchal societies, it is customary for the groom-to-be to spend a certain period of time with the bride's family, perhaps to demonstrate to them some of his hard-to-observe traits, such as work ethic. In such a society, people's willingness to enter an engagement signals their confidence in their own "quality," whatever the appropriate dimensions on which quality is assessed may be. An engagement followed by an estrangement can be considered to be a failed joint venture, whereas an engagement that terminates in a marriage can be considered a successful joint venture.

In the criminal justice system, offenders who are returning to society after long incarcerations are often placed temporarily in half-way houses. These institutions act as controlled environments in which the individual adjusts to society, and vice-versa. Again, the success of such an enterprise rests in its transitory nature, and again, the willingness of a person to enter such a facility can signal his ability and desire to integrate into society.

Conclusion

Overall, this paper highlights the following seemingly counter-intuitive observations which suggest a broader role for joint ventures than has hitherto been acknowledged.

- The traditional perspective on joint ventures has been to treat them as vehicles to expand operations or enter new businesses. This paper shows that joint ventures can also be used to exit existing businesses in a graduated fashion.
- Observers have associated longevity of a joint venture with success and termination with failure. In this paper, we have demonstrated that this presumption is far from universally
true. A restructuring joint venture is transitory by design. Hence, claims about instability of joint ventures as an organizational form need to be interpreted with care: the disappearance of a joint venture may be a reflection of the joint venture's role in bringing complementary competencies together in the face of market failure, rather than because of governance failure.

Researchers have cautioned joint venture partners that they should try not get into a situation of having no outside options and becoming too dependent on their partner during the life of the joint venture. We argue that the only time at which the relative bargaining power of the restructurer and the potential buyer affect their ultimate payoffs is when they enter the joint venture. If they are sufficiently foresighted, the two parties can take in account the possibility of future lock-in while entering the joint venture, and can enter into suitable arrangements at that stage to neutralize the effect of future a lock-in.

The paper shows that joint venturing is a powerful signal of the quality of a business if:

- joint venture administrative cost is moderately high, and
- a large fraction of existing businesses are of low quality.
APPENDIX I - PAYOFFS

Assume that B and A's common knowledge about the probability of a business being of high quality is $\delta$.

1. **No deal (ND)** A operates the business through the 2 periods and realizes profits.
   \[(V_A^X, V_B) - (2\pi_A^X, 0) ; \quad X = H, L\]

2. **Sale (S)** A realizes sale price $P$. B realizes the two period gross profit, net of $P$.
   \[(V_A^X, V_B) - (P, 2\pi_B^X - P) ; \quad X = H, L\]
   Since A gets 6-share of the gains from trade, $P$ is given by
   \[P = 2\pi_A + 2\theta(\pi_B - \pi_A)\]
   where $\pi_i = \delta \eta_i^H \cdot (1 - \delta) \eta_i^L$, $i = A, B$.

3. **Joint Venture**

   3a. **Joint venture followed by no buy-out**
   Once the joint venture begins, A and B become joint-owners and the business gains access to B's complementary competence. If B were aware of $X$, A would get 6-share of the surplus from the trade, which is $2(\pi_A^X - \pi_A^L) - 2c_j$. Of course, B doesn't know ex-ante what $X$ is. Hence
   \[(V_A^X, V_B) - (2\pi_A + 2\theta(\pi_B^X - \pi_A^X - c_j), 2(1 - \theta)(\pi_B^X - \pi_A^X - c_j))\]

   3b. **Joint venture followed by a buy-out**
   When B buys A out at the end of period 1, $A^X (X = L, H)$ gets a compensation $R^X$ in return. B gets the entire second period profit and does not incur the joint venture administrative cost in the second period. The consideration $T$ that B pays to A at time 0 for entering the joint venture accounts for the payment $R^X$ that B will be making to A at time 1. $T$ and $R^X$ are so adjusted that B expects to get a $(1 - \theta)$-share of the gain from trade, $2(\pi_B^X - \pi_A^X) - c_j$. Hence
   \[(V_A^X, V_B) - (2\pi_A + 2\theta(\pi_B^X - \pi_A^X - c_j/2), 2(1 - \theta)(\pi_B^X - \pi_A^X - c_j/2))\]
APPENDIX II – MODEL EQUILIBRIA

This section derives the pure strategy perfect bayesian equilibria of the game depicted in Figure 2. In order to characterize an equilibrium, we need to specify both strategies and beliefs. The strategy set is given by \((s^L, s^H)\), \(s \in \{ND, S, JV\}\) and beliefs are given by \((\delta_{ND}, \delta_{B}, \delta_{JV})\), where (ND=no deal, S=sale, JV=joint venture). The strategy set characterizes the strategic choices of low and high quality business owners. The belief set characterizes common knowledge about the proportion of restructurers choosing a particular strategy who own high quality businesses. For example, \((JV^L, ND^H)\) and \((1, 0.5, 0)\) characterizes a potential equilibrium in which owner of a low quality business offers to joint venture the business, owner of a high quality business does not enter any deal, and, off the equilibrium path, if a business is offered for sale, common knowledge about the probability that it is of high quality is 0.5.

A. Baseline

If joint-venturing is not an option, then there are only two options (sell or not sell) for the two types of businesses (high and low quality). If the owner of the complementary competence is offered the business, the strategy of buying the business dominates the strategy of not buying the business. Since not selling the business is a dominated strategy for owner of low quality business, only two equilibria need to be considered.

a. Pooling equilibrium: \((s^L, s^H) - (S, S), (\delta_{ND}, \delta_{B}) - (\delta, \lambda)\)

A sells the business, irrespective of its quality. Therefore, belief \(\delta_{B}=\lambda\). Incentive compatibility requires that sale be a superior option to no deal for either type of business, i.e.

\[
2(1-\theta)\pi_A + 2\theta \pi_B > 2\pi_A^X, \quad X = L, H
\]

where \(\pi_Z = \lambda \pi_Z^H + (1-\lambda)\pi_Z^L, Z = A, B\)

This condition is always satisfied for a low-quality business. Hence, the operative condition for the pooling equilibrium is

\[
2(1-\theta)\pi_A + 2\theta \pi_B > 2\pi_A^H \tag{B.1}
\]

b. Separating equilibrium: \((s^L, s^H) - (S, ND), (\delta_{ND}, \delta_{B}) - (1, 0)\)

\(A^L\) sells the business, whereas \(A^H\) is shut out of the market. Incentive compatibility implies:

\[
2\pi_A^H > 2\theta \pi_B^L \cdot 2(1-\theta)\pi_A^L \tag{B.2}
\]

The separating equilibrium may or may not exist, irrespective of the value of \(\lambda\). The pooling equilibrium exists if

\[
\lambda > \lambda^* = \frac{(\pi_A^L - \pi_A^H) \cdot \theta (\pi_B^L - \pi_B^H)}{(\pi_A^L - \pi_A^H) \cdot \theta (\pi_B^H - \pi_B^L) - \theta (\pi_B^L - \pi_B^H)}
\]

The separating and pooling equilibria overlap if \(\pi_B^L\) is small and \(\lambda > \lambda^*\). In the overlap region, given that the low quality business is always sold, the owner of the high quality business prefers to sell the business rather than not deal [equation (B.1) above]. Hence, by the Cho-Kreps criterion,
the pooling equilibrium dominates the separating equilibrium in the region of overlap. Figure 4 sketches the equilibria.

B. Allowing joint venturing as an option

There are 2 types of businesses (high and low quality), and 3 options (sell, not sell, or joint venture). There are $3^2 = 9$ potential equilibria. However, since not selling the business is a dominated strategy for low quality business, only six equilibria need to be considered:

**Pooling equilibria**
- Sale by $A^l$ and $A^h$ (a)
- Joint venture by $A^l$ and $A^h$, followed by buy-out (b)

**Separating equilibria**
- Sale by $A^l$, joint venture followed by buy-out by $A^h$ (c)
- Sale by $A^h$, joint venture followed by buy-out by $A^l$ (d)
- Sale by $A^l$, no deal by $A^h$ (e)
- Joint venture followed by buy-out by $A^l$, no deal by $A^h$ (f)

**Equilibrium (a)**
- **Sale by $A^l$ and $A^h$:**
  - $(s^l, s^H)$ - $(S, S)$, $(\delta_{ND}, \delta_S, \delta_{JV})$ - $(\delta, \lambda, \delta_1)$

Given that owner of the low quality business is selling, owner of the high quality business prefers selling to joint venturing if

$$\Theta c_J > 2(1 - \Theta)(E\pi_A - \pi_A) - 2\Theta(\pi_B - \pi_B^l) \tag{a.1}$$

$A^h$ prefers selling to not dealing if

$$\pi_A - \pi_B > 2\pi_B^l \tag{B.1}$$

Similarly, given that the owner of high quality business is selling, when does the owner of low quality business prefer to sell it? We know that the owner of a low quality business always prefers selling to not selling. $A^l$ prefers selling to joint venturing if its payoff from selling is greater than from joint venturing, i.e.

$$\Theta c_J > 2(1 - \Theta)(E\pi_A - \pi_A) - 2\Theta(\pi_B - \pi_B^l) \tag{a.2}$$

Condition (a.1) implies condition (a.2). Hence, if conditions (a.1) and (B.1) are satisfied then (a) is a perfect bayesian equilibrium.

**Equilibrium (b)**
- **Joint venture by $A^l$ and $A^h$, followed by buy-out:**
  - $(s^l, s^H)$ - $(JV, JV)$, $(\delta_{ND}, \delta_S, \delta_{JV})$ - $(\delta, \delta_2, \lambda)$

Given that the high quality business is being joint ventured, owner of the low quality business prefers joint venture over direct sale if

$$\Theta c_J < 2(1 - \Theta)(E\pi_A - \pi_A) - 2\Theta(\pi_B - \pi_B^l) \tag{b.1}$$

and over no deal if

$$\Theta c_J < 2\Theta(\pi_B^l - \pi_A^l) \cdot 2(1 - \Theta)(\pi_A - \pi_A^l) \tag{b.4}$$
Similarly, given that the low quality business is being joint ventured, the owner of the high quality business prefers joint venturing to no deal if
\[ \theta c_j < 2\theta (\pi^H_B - \pi^H_A) - 2(1 - \theta)(\pi^H_A - \pi^H_B) \]  
(b.2)

and to direct sale if
\[ \theta c_j < 2\theta (\pi^H_B - \pi^H_A) - 2(1 - \theta)(\pi^H_A - \pi_A) \]  
(b.5)

B prefers joint venture to no deal if
\[ c_j < 2(\pi^H_B - \pi^H_A) \]  
(b.3)

Note that if condition (b.1) is satisfied, then (b.4) and (b.5) are also satisfied. Hence, if conditions (b.1), (b.2), and (b.3) are satisfied, then (b) is a perfect bayesian equilibrium.

**Equilibrium (c) – Sale by A^L, joint venture followed by buy-out by A^H:**
\[ (s^L, s^H) - (S, JV), (\delta_{ND}, \delta_s, \delta_{JV}) - (\delta, 0, 1) \]

The low quality business owner prefers selling the business to joint venturing if
\[ \theta c_j > 2(1 - \theta)(\pi^H_A - \pi^H_B) \]  
(c.1)

A^H prefers joint venturing to no deal if
\[ c_j < 2(\pi^H_A - \pi^H_B) \]  
(c.2)

and to direct sale if
\[ \theta c_j < 2(1 - \theta)(\pi^H_A - \pi^H_B) - 2\theta(\pi^H_B - \pi_B) \]  
(c.3)

B prefers joint venturing with A^H to no deal if \[ c_j < 2(\pi^H_A - \pi^H_B) \] which is the same condition as (c.2). Further, if condition (B.2) is satisfied \[ 2\pi^H_A > 2\theta \pi^H_B \cdot 2(1 - \theta)\pi^H_A \], then condition (c.2) implies (c.3). Hence, if \[ \pi^H_B \] is sufficiently small and conditions (c.1) and (c.2) are satisfied, then (c) is a perfect bayesian equilibrium.

**Equilibrium (d) – Sale by A^H, joint venture followed by sale by A^L:**
\[ (s^L, s^H) - (JV, S), (\delta_{ND}, \delta_s, \delta_{JV}) - (\delta, 1, 0) \]

A^L prefers joint venture to sale if \[ \theta c_j < 2\theta (\pi^H_B - \pi^H_A) - 2(1 - \theta)(\pi^H_A - \pi^H_B) \], which is not possible.

Given that the high quality business owner is selling, the low quality business owner prefers selling over joint venturing since he can disguise his business type by selling without having to incur the joint venture administrative cost. Hence, (d) is never a perfect bayesian equilibrium.

**Equilibrium (e) – Sale by A^L, no deal by A^H:**
\[ (s^L, s^H) - (S, ND), (\delta_{ND}, \delta_s, \delta_{JV}) - (1, 0, \delta_3) \]

A^L prefers sale to joint venture if
\[ \theta c_j > 2(1 - \theta)(\pi^H_A - \pi^H_B) \]  
(e.1)

A^H prefers no deal to sale if
\[ 2\pi^H_A > 2\theta \pi^H_B \cdot 2(1 - \theta)\pi^H_A \]  
(B.2)
and to joint venture if
\[ \theta c_j > 2\theta (\pi^H_B - \pi^H_A) - 2(1 - \theta)(\pi^H_B - E\pi_A) \]  
(e.2)

If conditions (e.1) and (e.2) are satisfied, and \( \pi^B \) is sufficiently small (condition (B.2)), then (e) is a perfect bayesian equilibrium.

Equilibrium (f) – Joint venture by A^L, no deal by A^H:
\[ (s^L, s^H) = (JV, ND), \quad (\delta_{ND}, \delta_{s}, \delta_{JV}) = (1, 0, 0) \]

A^L prefers joint venture to sale if \( \theta c_j < 2\theta (\pi^H_B - E\pi_B) + 2(1 - \theta)(\pi^H_A - E\pi_A) \), which is never true. The low quality business owner does not gain by joint venturing rather than selling. Thus, (f) is never a perfect bayesian equilibrium.

Figure 11 charts the feasible regions for the various perfect bayesian equilibria in \( c_j - \lambda \) space [assuming \( \pi^B \) and \( \theta \) are sufficiently small: \( \pi^H_A > \theta \pi_B(1 - \theta) \pi^H_A \)].

Several of these equilibria overlap, and Cho-Kreps criterion can be employed to refine the equilibrium concept. In the overlap of equilibria (a) and (e), (a) dominates; (c) dominates when (c) and (e) overlap. If (a) and (c) overlap, (a) dominates if \( \theta c_j > 2(1 - \lambda)(\pi^H_B - \pi^H_A)(1 - \theta) \pi^H_A \). The resultant distribution of perfect bayesian equilibria in \( c_j - \lambda \) space is as shown in Figure 5.
We retain the assumption that $\pi_A < \pi_A^H$, but relax the constraints $\pi_B^H < \pi_B^H$ and $\pi_A^H > \theta \pi_B^H (1 - \theta) \pi_A^H$.

a. $\pi_B^H - \pi_A^H > \pi_B^H - \pi_A^H$ but $\pi_B^H < \pi_B^H$.

The complementary competence raises profitability of the low quality business more than the high quality business. However, the low quality business continues to generate less profit than the high quality business. There are two cases possible within this broad scenario:

i. $\pi_A^H > \theta \pi_B^H (1 - \theta) \pi_A^H$

The results of the model do not change, since none of the conditions discussed in Appendix II changes.

ii. $\pi_A^H < \theta \pi_B^H (1 - \theta) \pi_A^H$

Only the pooling equilibrium exists in the baseline case. If joint venturing is considered as an option, the results of the main model remain unchanged, except that the separating equilibrium of sale of low quality businesses and no deal by high quality businesses no longer exists. (Please refer Figure 12 below.)
b. \[ \pi_A^L > \pi_A^H \]

The complementary competence increases the profitability of the low quality business to a level even higher than the improved profitability of the high quality business.

i. \[ \pi_A^H' > \theta \pi_A^L - (1 - \theta) \pi_A^L \]

The profitability of the low quality business after restructuring (\( \pi_A^L' \)) is small, compared to the profitability of the high quality business before restructuring (\( \pi_A^H \)).

Since there is greater gain from bringing the complementary competence together with the low quality business now, the baseline equilibria of the main model flip: if there is too high a proportion of high quality businesses, then a potential buyer assumes that the resource will bring only a small increase in profitability. If the proportion of high quality businesses is high, a separating equilibrium emerges in which a high quality business owner prefers to stay out of the market. (See Figure 13.)

Joint venturing could be a strategic option if the joint venture administrative cost is low. However, the benefit-cost difference from joint venturing is not asymmetric enough for only one of the two types of businesses to resort to it. (Please refer Figure 14 which charts the equilibria.)

Baseline
Figure 13

Joint Venturing Allowed
Figure 14
The complementary competence improves the profitability of the low quality business significantly more than it improves the profitability of the high quality business. Note that the above condition implies $\pi^L_B > \pi^H_B$ and $\pi^H_A > \theta \pi^L_B - (1 - \theta) \pi^L_A$.

In the baseline case, only the pooling equilibrium holds. If allowed, joint venturing becomes a mechanism for the owner of a low quality business to distinguish it from a high quality business. Now, a separating equilibrium is feasible if the joint venture administrative cost is low enough, such that the low quality business is joint ventured and the high quality business is directly sold. Figure 15 charts the equilibria that exist in this case.

iii. $\pi^H_A - \pi^L_A > \pi^L_B - \pi^H_B$ and $\pi^H_A < \theta \pi^L_B - (1 - \theta) \pi^L_A$:

The complementary competence increases the profitability of the low quality business to a level higher than the improved profitability of the high quality business. However, the profitability of the low quality business after collocation with the complementary competence ($\pi^L_B$) is intermediately high.

This is a degenerate case, in which the parameter values are deleterious to pure strategy equilibria. In the baseline case, neither of the two potential equilibria exist. If joint venturing is allowed, the only pure strategy bayesian equilibrium possible is one in which business of either type is joint ventured. (Refer Figure 16.)

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**Figure 15**

*Separating equilibrium*  
*Pooling equilibrium*  
*Hybrid equilibrium: no JV, JV(1)*

$\pi^L_B - \pi^H_B > \pi^H_A - \pi^L_A$

**Figure 16**

*Degenerate case*  
*JV(1), JV(2): Pooling equilibrium*  
*Hybrid equilibria*
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