VALUE CREATION IN JOINT VENTURE DYADS

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ABSTRACT

In this research, we address the following questions: (1) Do joint ventures (JVs) create value for both parent firms in the dyad? (2) How is the total value created in the venture influenced by resources and capabilities of the two parent firms? In addressing these questions, our objective is to provide added insight into the performance of JVs by shifting the level of analysis to the dyad from the individual parent firm. Our results indicate that a significant proportion of JVs created value for both parents. However, there was also considerable evidence of value destruction with a large proportion of JVs resulting in positive returns to one parent and negative returns to the other. In terms of the second question, we find that the total value created in a JV increases as the value of resources in the dyad increases and decreases with the differential in the value of resources between parents. We argue that the latter effect occurs because when there is a wide differential in capabilities, incentives are shifted away from joint value creation and cooperative behavior toward non-cooperative behavior and appropriating private benefits. Our findings broadly highlight the important role of private benefits in JVs and provide evidence that these benefits significantly influence the performance and dynamics of inter-firm collaboration in various ways.
Over the last two decades, an extensive body of research has demonstrated that joint ventures (JVs) create value for parent firms. Using an event study approach (e.g., Anand & Khanna, 2000; Balakrishnan & Koza, 1993; Chan, Kensinger, Keown, & Martin, 1997; Das, Sen, & Sengupta, 1998; Kale, Dyer, & Singh, 2002; Koh & Venkatraman, 1991; Madhavan & Prescott, 1995; McConnell & Nantell, 1985; Merchant & Schendel, 2000; Woolridge & Snow, 1990), this literature has documented the extent of wealth gains accompanying JV announcements and the relationship between these gains and various characteristics such as firm size, the degree of relatedness of the JV with the parent and the effect of a parent’s JV capabilities. But while this literature has provided important insights, with some exceptions (e.g., Gulati & Wang, 2003; Johnson & Houston, 2000; Kalaignanam, Shankar, & Varadarajan, 2007; Kumar, 2007), it has mainly examined wealth gains accruing to individual partners in a JV. As a result, it does not examine how wealth gains are distributed between partners in the JV dyad, and the factors that impact value creation at the dyadic level.

This constitutes an important gap in the literature for two reasons. First, in order to assess the performance consequences of JVs, it is necessary to gauge not only how individual firms are impacted in terms of value creation, but also how both firms in the dyad are affected. While this approach has been adopted in the mergers and acquisitions literature where research has looked at wealth gains to acquirers and targets, similar studies examining wealth gains to both firms in JV dyads have not been undertaken. Second, since JVs inherently involve the sharing of resources by multiple firms, by focusing on a single firm’s wealth gains and characteristics we may be overlooking some of the important inter-firm dynamics that are likely to have an impact on value creation in this particular organizational form (Dyer & Singh, 1998; Zajac & Olsen, 1993). Hence, it is critical that we shift the level of analysis to the dyadic level (Gulati & Wang, 2003; Kumar, 2007) to gain a better understanding of these inter-firm dynamics and how they are likely to influence performance.

In this research, we address the above gaps in the literature. Our objectives are twofold. The first objective is to take a fresh look at the performance of JVs and provide insight into the following questions: Do JVs create value for both partners? If so, to what extent? Conversely, to what extent do JVs destroy value for both partners? By addressing these questions, our purpose is to highlight that it is necessary to consider wealth gains at the dyadic level when assessing the performance consequences of JVs, apart from the wealth gains of individual parent firms. Building on this point, the second objective of our research is to address the following
questions: How is the total value created in a JV influenced by characteristics of firms in the dyad? Specifically, what types of resources and capabilities do partners need to possess, and how does the distribution of capabilities in the dyad influence total value creation? The aim in addressing these latter questions is to show that value creation in JVs is influenced not only by the resources and capabilities of a focal firm, but also by the partner’s resources. In doing so, we show that apart from synergies and common benefits (Khanna, 1998; Khanna, Gulati, & Nohria, 1998), the potential for non-cooperative behavior (such as learning races) and private benefits that stems from the distribution of capabilities across partners also has an impact on the performance of inter-organizational arrangements.

The chapter proceeds as follows. The next section outlines the broader theoretical considerations underlying value creation at the dyadic level in JVs. Section 2 outlines the methods used to address our research questions. Section 3 presents results pertaining to the patterns of gains in JV dyads and tests how the total value created in a JV is influenced by the resources and capabilities of partner firms. Section 4 concludes with a discussion.

1. THEORETICAL BACKGROUND

JVs facilitate the combination of complementary inputs possessed by two or more parent firms. These complementary inputs may include different types of know how, such as marketing know how and technical know how (Buckley & Casson, 1988; Hennart, 1988). When the transfer of these inputs across market contracts is subject to various frictions, including potential hold up problems and high transfer costs due to tacitness, then JVs become an optimal solution. Further, JVs also offer distinct advantages when compared to acquisitions as a mode of entry. Acquisitions are relatively irreversible and entail a substantial commitment of resources from the outset of entry into a market (Balakrishnan & Koza, 1993). In contrast, JVs provide more flexibility and allow parent firms to gradually increase commitment as they learn from each other and scan the environment (Folta, 1998; Kogut, 1991). Over time if a parent firm feels that the target market is not conducive for further expansion, it can reverse its commitment at relatively low costs by selling its stake to the partner and exiting the target market (Chi, 2000; Kumar, 2005). Thus, compared to acquisitions, JVs act as real options by providing a firm with the flexibility to increase or decrease investment depending on how conditions develop.
But while JVs offer these advantages, they also involve various costs that are unique to them as an organizational form. Partly these costs arise from added coordination difficulties as firms with different cultures and routines attempt to jointly govern activities. Apart from coordination costs, another type of cost that arises is that since JVs involve partial ownership and control, there is a risk that a partner may appropriate the resources and capabilities of a focal firm and exploit these resources outside the JV for its own benefit.

Why are JVs particularly prone to hazards of appropriation? An important reason is because when compared to market contracts and arms length arrangements such as licensing, JVs facilitate closer contact between firms due to their shared ownership structure (Hennart, 1988). The closer contact in turn lowers causal ambiguity and barriers to imitation, which creates opportunities for a partner to appropriate a wide variety of resources including different types of know how and dynamic capabilities (Inkpen, 2005; Oxley & Sampson, 2004). What is noteworthy is that the opportunities for appropriation may extend to domains far beyond the scope of the cooperation as the close contact creates various ‘spillovers’ or unintended transfers of knowledge (Ahuja, 2000; Kale, Singh, & Perlmutter, 2000). The threat of appropriation and spillovers could be minimized if JV contracts could be designed such that they completely specified how a partner utilizes a focal firm’s resources. But as Transaction Costs Economics highlights, such contracts are too costly if not impossible to write in the face of environmental contingencies (Williamson, 1975). The result is an unavoidable threat of appropriation of resources by a partner when a firm enters into a JV.

A critical implication of the risks of appropriation and the presence of spillovers is that a JV may have a differential impact in terms of value creation on the two partners involved. Thus, if a focal firm is likely to be exposed to significant hazards of appropriation by the partner over the course of a cooperation, a JV may create less value for the focal firm and may create relatively greater value for the partner. To formalize this argument further, following Hamel (1991), Khanna (1998), Khanna et al. (1998) and other scholars (e.g. Inkpen & Beamish, 1997), we may partition the benefits from a JV into two components: private benefits and common benefits. As Khanna et al. (1998, p. 195) note: ‘Private benefits are those that a firm can earn unilaterally by picking up skills from its partner and applying them to its own operations in areas unrelated to the alliance activities. Common benefits are those that accrue to each partner in an alliance from the collective application of the learning that both firms go through as
a consequence of being part of the alliance; these are obtained from operations in areas of the firm that are related to the alliance. Previous literature examining wealth gains in JVs has mainly focused on potential synergies and common benefits. As a result, attention has been on the wealth gains of individual firms, and comparatively little research has examined the existence of private benefits and how these benefits drive a wedge between the wealth gains of individual partners. Given these two types of benefits, when a partner has the potential to engage in significant resource appropriation and derive private benefits, it may adversely impact the value of a focal firm. This may occur as the focal firm experiences value attrition due to the accompanying loss in rents and competitive position. In the extreme, this may lead to positive value creation for the partner and negative value creation for the focal firm as the common benefits created through the venture are outweighed by the negative wealth effects of resource appropriation for the firm. Thus, the existence of private benefits implies that there may be significant differentials in wealth gains between partners, and in some instances it may reach a point where value may be created for one parent and destroyed for the other. Hence, from a theoretical standpoint, it is important to consider wealth gains of both partners in the dyad when assessing the performance of JVs, rather than focusing on the gains of any single parent given the existence of private benefits.

Apart from leading to differentials in wealth gains between partners, as Khanna et al. (1998) note, the ratio of private benefits to common benefits has a fundamental impact on the behavior of a firm over the course of the JV. The higher the ratio, ceteris paribus, the greater the firm’s incentives to appropriate the partner’s knowledge and engage in non-cooperative behavior as opposed to cooperative behavior. A high private to common benefits ratio may also lead to a learning race (Hamel, 1991) and may seriously destabilize a cooperation (Khanna, 1998). One dimension that may influence a firm’s potential for earning private benefits is the value of the resources and capabilities possessed by the partner relative to its own resources. The greater the value of the resources and capabilities of the partner when compared to the resources of a focal firm, the greater the opportunities for the firm to appropriate resources and earn rents outside the JV. The argument here is that if two firms with differential levels of knowledge and capabilities enter into a JV, then ceteris paribus, the firm that is less competent has more opportunities to appropriate resources and earn private benefits. Hence, as the differential in capabilities between the two partners in a JV increases, the ratio of private benefits to common benefits
for the firm with weaker capabilities increases, thereby increasing its propensity to engage in non-cooperative behavior.

But while a high differential in capabilities may lead to increased opportunities for appropriating resources and earning private benefits for the weaker firm in the cooperation, another potential effect it could have is that it may also lead to a decrease in the overall common benefits that both partners derive from the JV. This may occur as firms dynamically adjust their resource allocation patterns to each other’s actions and behavior over the course of the venture. To highlight this point further, following Khanna et al. (1998), consider a model with two firms involved in a multiperiod JV where each firm has a pre-determined level of managerial resources available for the cooperation. When there is a high differential in capabilities, the firm with capabilities of lower value has greater incentives to allocate a larger proportion of its managerial resources to appropriation, and a smaller proportion to creating common benefits and deriving synergies. In response to such actions (assuming that the firm with lower valued capabilities does indeed allocate more resources to appropriation), initially a partner may allocate its managerial resources with the objective of maximizing common benefits in the cooperation. But once it observes the firm’s resource allocation patterns, in the beginning of the next period it too may shift its resources and allocate greater resources toward deriving private benefits rather than toward joint value creation (Kale & Anand, 2006). Alternatively it may take various steps to protect itself, such as cutting down the personnel allocated to the JV or limiting the scope of the cooperation. As a result of these actions, the mutual learning process in the JV is likely to be hindered leading to an overall decrease in the common benefits for both firms in the JV.³

The above simplified model implies that there is likely to be a tradeoff between common benefits and joint value creation on the one hand, and the extent of private benefits on the other. When more resources are allocated by any one firm in the cooperation toward deriving private benefits, then there is likely to be a concomitant decrease in the common benefits derived by both firms through the JV. This basic tradeoff has been noted by various authors in previous research. Hamel (1991, p. 91) notes that many Western firms adopted defensive attitudes on discovering their Japanese partner’s intent to appropriate resources, which led to overall lower learning and unsatisfactory performance of their ventures. Parkhe (1993) makes a similar point when he notes that when there is a potential for high private benefits, value will be eroded in the JV as partners set up various contractual safeguards which increases coordination costs (cf. Reuer & Arino, 2007).
Larsson, Bengtsson, Henriksson, and Sparks (1998, p. 288) are explicit about the tradeoffs inherent between creating common benefits and attempts to derive private benefits (also see Gulati & Wang, 2003). Thus, they note:

However, pies need to be made, so most socio-economic interaction involves the individual trade-off decisions of each actor regarding how much of his/her limited efforts are to be spent on collaborating and internally competing, respectively. While the collective focus on integrative collaboration would produce a plus-sum game where all actors can win, the focus on distributive competition actually results in a minus-sum game due to the diversion of productive efforts to distributive infighting.

In sum, the above arguments imply that the potential for resource appropriation and the presence of private benefits makes it necessary to examine the wealth gains of both partners in the dyad to gauge the performance impact of JVs. Further, the arguments also suggest that the total value created in a JV is likely to be enhanced under two conditions. First, when both firms in the dyad possess relatively valuable resources and capabilities, value creation will be enhanced because under these conditions the opportunities for combining resources and deriving synergies are likely to be higher. When both firms possess relatively valuable resources, JVs may also provide a more efficient means for combining these resources when compared to market contracts (Hennart, 1988) while obviating the need for making irreversible commitments. Second, value creation will also be enhanced when there is a lower differential in capabilities between partners. Under these conditions, there will be fewer incentives to divert effort toward appropriating resources and non-cooperative behavior, and efforts are likely to be focused toward joint value creation and cooperative behavior. Thus, value creation will be enhanced (1) when both firms possess relatively valuable resources and (2) when there is a low differential in the capabilities between the two firms in the dyad. We now turn to the task of providing empirical evidence pertaining to these various propositions.

2. METHODS

2.1. Sample and Event Study Methods

Given the research questions and propositions outlined above, our analysis is organized into two main parts. In the first part, we examine the distribution of wealth gains and assess the performance of JVs from a
dyadic perspective. In the second part, we examine how the total value created in JVs is influenced by the nature of resources and capabilities of partners.

The first step in our analysis was to conduct an event study of a suitable sample of JV announcements. Our data source in identifying this sample was the Securities Data Company (SDC) database on mergers, acquisitions and alliances. Using this database, we retrieved information on all two partner JVs where both partners were US based beginning with 1985 up to the year 2003. We also retrieved other details from SDC such as the date of the announcement, partner names, equity shares held by each partner and the primary SIC code assigned to the JV. Next, for these JVs, we obtained stock price data for both partners on and around the announcement date from the CRSP database. After retrieving the stock price data, we were left with an initial sample of 597 JVs. For these 597 JVs, we then obtained firm level data from Compustat on independent variables such as size and Tobin’s q (described further below). After combining these latter data items, there were 344 JVs remaining in our sample.

We conducted the event study by estimating the market model over the period –250 to –50 with the announcement date serving as day 0. We used the software EVENTUS with the CRSP equally weighted index serving as the market return. Prediction errors were calculated across varying event windows including $[-2, 0]$, $[-1, 0]$ and $[0, 0]$. To minimize the effects of sample attrition, we initially used the sample of 597 JVs to examine how wealth gains are distributed at the dyadic level. As a next step, we used the smaller sample of 344 JVs to examine how the resources and capabilities of firms in the dyad influence total value creation. Our results are presented in the next section accordingly.

2.2. Dependent Variable, Independent Variables and Model

The second part of our analysis involves testing how the total value created in a JV is influenced by the resources and capabilities of firms in the dyad. For this part of the analysis, the dependent variable we used was the total value created in the JV, which was calculated as the sum of the absolute dollar value of the gains of the two firms at the time of JV announcement. The absolute dollar value of gains was obtained by multiplying the cumulative abnormal return over the $[-1, 0]$ period and the market value of the firm at the end of the fiscal year prior to the formation of the JV.4
In the previous section, the propositions we developed were that total value is likely to increase with the sum of the value of resources in the dyad, and decrease as the differential in the value of resources in the dyad increases as incentives are shifted away from cooperative behavior to non-cooperative behavior. To test these propositions, the measure we used to capture the value of resources and capabilities possessed by a firm was Tobin’s \( q \). The rationale behind using this measure was as follows. The total market value of a firm \( V \) can be written as the sum of two components:

\[
V = T + I
\]

where \( T \) is the value of tangible assets and \( I \) the value of intangible assets. Dividing throughout by \( T \), we get:

\[
\frac{V}{T} = 1 + \frac{I}{T}
\]

The left-hand side is Tobin’s \( q \) while the right-hand side is an indication of the value of intangible resources possessed by the firm including its knowledge, resources and skills, and capabilities (Lev, 2001; Villalonga, 2004). The higher the Tobin’s \( q \), the more valuable the intangible resources possessed by a firm. Tobin’s \( q \) is a relevant measure in the context of the present study given that intangible resources are particularly prone to appropriation hazards in JVs. We calculated Tobin’s \( q \) as the sum of market value of equity, short- and long-term debt, preferred stock at liquidating value and book value of convertible debt normalized by book value of total assets (Perfect & Wiles, 1994). These data items were retrieved for each parent from the Compustat database for the year end preceding the formation of the JV.

Once having decided on Tobin’s \( q \) as the measure of valuable resources and capabilities, we specified the following regression model:

\[
\text{TOTVAL}[-1,0] = a_0 + a_1 \text{SUMQ} + a_2 \text{DIFFQ} + a_3 \text{SUMSIZE} + a_4 \text{SUMEXP} + a_5 \text{SUMDIST} + a_6 \text{RELSHARE} + \varepsilon
\]

The dependent variable, TOTVAL, is the total dollar value of gains derived by both partners in the JV over the \([-1, 0]\) window. In terms of independent variables, SUMQ represents the sum of Tobin’s \( q \) of the two partners. Correspondingly, DIFFQ is the absolute value of the difference in the Tobin’s \( q \) of the two firms in the JV. Our expectation is that SUMQ will have a positive impact on the total value created in the JV as the potential for creating synergies in the dyad increases. Conversely, we expected
DIFFQ to have a negative impact on TOTVAL as incentives are shifted away toward non-cooperative behavior.

Additional variables were included in the model to control for the effects of size (McConnell & Nantell, 1985), relatedness of each partner with the JV’s business (Balakrishnan & Koza, 1993; Koh & Venkatraman, 1991) and the JV capabilities present in the dyad (Anand & Khanna, 2000). SUMSIZE represents the sum of sales of the two partners in the year end preceding the formation of the venture. JVs where both partners are large may enjoy an advantage in terms of market power. SUMSIZE is used to control for this possibility. SUMDIST is used to control for the degree of relatedness of the two partners with the JV’s business. SUMDIST was calculated as the sum of the absolute value of the difference between the SIC code of the JV (retrieved from SDC) and the SIC code of each parent (Balakrishnan & Koza, 1993). SUMEXP is the sum of the number of JVs formed by each parent prior to the focal JV as reported in the SDC database. SUMEXP controls for the possibility that dyads with greater JV experience may create more joint value than dyads with lesser combined experience. Finally, we also included the ratio of equity shares (RELSHARE) to control for any value-destructive effects that may arise in JVs with high asymmetries in ownership.

3. RESULTS

3.1. Event Study Results

Table 1 presents the event study results for the 1,194 parents in the 597 JVs. This analysis is based on pooling all firms together without differentiating between parents belonging to the same JV. As shown in Table 1, overall

<table>
<thead>
<tr>
<th>Event Window</th>
<th>[0, 0]</th>
<th>[−1, 0]</th>
<th>[−2, 0]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative abnormal return (%)</td>
<td>0.68</td>
<td>1.00</td>
<td>1.32</td>
</tr>
<tr>
<td>t statistic</td>
<td>6.554</td>
<td>5.243</td>
<td>6.336</td>
</tr>
<tr>
<td>p &gt;</td>
<td>t</td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>No of +/−</td>
<td>603:591</td>
<td>643:551</td>
<td>644:550</td>
</tr>
<tr>
<td>Binomial p</td>
<td>0.7502</td>
<td>0.0084</td>
<td>0.0071</td>
</tr>
<tr>
<td>Wilcoxon z</td>
<td>2.820</td>
<td>3.547</td>
<td>4.624</td>
</tr>
<tr>
<td>p &gt;</td>
<td>z</td>
<td></td>
<td>0.003</td>
</tr>
</tbody>
</table>
1,194 firms experienced a $[-1, 0]$ cumulative abnormal return of 1%. This compares well with previous studies. McConnell and Nantell (1985) find a corresponding cumulative abnormal return of 0.73% while Koh and Venkatraman (1991) find a return of 0.87%. Both the binomial and Wilcoxon sign tests were also significant indicating that there were no influential outliers driving the results. The average wealth created by the JV announcement over the $[-1, 0]$ window was USD 19.54 Mn. The proportion of negative returns was 46% (551 firms), which once again compares well with previous studies. Koh and Venkatraman (1991) find 42% of firms experienced negative returns during the $[-1, 0]$ window while Gulati and Wang (2003) find a corresponding figure of 46%. Overall the results in Table 1 are consistent with previous studies and the notion that JVs create value on average for individual parent firms.

Next, to understand whether JVs create value at the dyadic level, we divided the 1,194 parents into two groups: firms that experienced higher wealth gains in each JV dyad and correspondingly firms that experienced lower wealth gains in each JV dyad. Thus, the two groups contained 597 parents each, and were formed on the basis of whether a firm gained relatively more than its partner or relatively less than its partner. After creating these two groups, we then examined to what extent the following three patterns of gains were observed across the sample of JVs: (1) cases where both partners earned positive returns (what we term as $+/+$ JVs), (2) cases where the partner that gained more experienced positive returns, and the partner that gained less experienced negative returns ($+/-$ JVs), and (3) cases where both partners experienced negative returns on announcing the JV ($-/-$ JVs). Table 2a presents the results. As shown in the table, in our sample, $+/+$ ventures constituted 32% of the sample. In contrast, $+/-$ ventures constituted 44% of the sample and $-/-$ ventures constituted the remaining 24%. Thus, the highest proportion in the sample

<table>
<thead>
<tr>
<th></th>
<th>$[-1, 0]$</th>
<th>Proportion of Full Sample (III)</th>
<th>Expected Proportion under Null (IV)</th>
<th>$p$-Value of Difference (V)</th>
<th>Ratio of Observed to Expected (VI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$+/+$ ventures</td>
<td>1.7</td>
<td>6.8</td>
<td>0.32</td>
<td>0.25</td>
<td>0.000</td>
</tr>
<tr>
<td>$-/+$ ventures</td>
<td>-2.6</td>
<td>3.9</td>
<td>0.44</td>
<td>0.5</td>
<td>0.002</td>
</tr>
<tr>
<td>$-/-$ ventures</td>
<td>-3.8</td>
<td>-1.5</td>
<td>0.24</td>
<td>0.25</td>
<td>0.70</td>
</tr>
</tbody>
</table>
was cases where one partner gained in value and the other lost in value when
the JV was announced.

To understand the implications of these results for value creation at the
dyadic level, it is necessary to examine the expected proportions of these
three patterns of gains. Under the null hypothesis that JVs neither create nor
destroy value, there is a probability of 0.5 (or a 50% chance) that an
individual firm would experience positive returns on announcing a venture.
Accordingly, under the null hypothesis of zero value creation, there is a
probability of $0.5 \times 0.5 = 0.25$ that when a JV is announced, both firms
would earn positive returns. Correspondingly, there is a probability of 0.25
that both firms would experience negative returns on announcing the JV.
The remaining probability of 0.5 is associated with the likelihood that one
partner would gain in value and the other would lose value (i.e. $+/-$ JVs).
Thus, the benchmark for testing whether JVs create value for both partners
in the dyad is to examine whether more than 25% of the JVs in the sample
were instances where both partners experienced positive wealth gains.

Following this logic, Table 2a presents the expected ratios of the three
patterns of gains (column IV) and compares them with the observed
patterns (column III). Assuming a binomial distribution, we examined
whether the proportion of $+/+$ gains in the dyad was equal to 0.25, and
whether the proportion of $+/-$ gains was equal to 0.5. $p$-Values of the
difference in proportions are reported in the second column from the right.
As shown, the proportion of $+/+$ ventures was significantly higher than 0.25
with a $p$-value $<0.000$. Correspondingly, the proportion of ventures with
$+/-$ gains was significantly lower than 0.5. In contrast, the proportion of
$-/-$ ventures was not significantly different from what was expected under
the null. These findings suggest that the three patterns of gains observed are
consistent with the alternate hypothesis that JVs create value for both
parents. Thus, even though $+/-$ gains constituted the highest proportion of
JVs in the sample, this does not necessarily imply that JVs are not value
creating at the dyadic level.

The above analysis assumes that firms are randomly assigned to dyads
and that there is no systematic value creation effect at the JV level. If JVs do
indeed create value at the dyadic level, then this increases the probability
that two firms with positive gains would be observed within the same
venture. Put differently, if common benefits are significant and positive, then
rather than being random, this increases the probability that two firms with
positive abnormal returns would fall in the same JV. However, if common
benefits are insignificant, and the positive wealth gains experienced by firms
in the sample are mainly the result of private benefits, then the incidence
of ++/+ ventures would not be significantly different from random assignment. Hence, an alternative way to examine whether JVs create value at the dyadic level is to test that given the observed proportion of positive gains in the overall sample, to what extent does the proportion of ++/+ and −/− ventures differ from random assignment? This would provide evidence of whether there is indeed a significant ‘JV effect’, and that the three patterns of gains do not occur purely due to individual firms’ private benefits.

As shown in Table 1, the observed proportion of firms with positive returns in the sample is 643/1,194 = 0.538. If these firms were randomly assigned and there was no JV effect and common benefits, the expected proportion of ++/+ ventures would be 0.538 × 0.538 = 0.29. The expected proportion of −/− ventures would be (1−0.538) × (1−0.538) = 0.21. The remaining 1−0.29−0.21 = 0.5 would be the expected proportion of ++/− JVs.

Table 2b provides a formal test of a comparison of these proportions with observed proportions using a binomial distribution. The second column shows the observed proportions, the third column shows the expected proportions given that the observed proportion of positive gains in the overall sample was 0.538, the fourth column provides the $p$-value of the difference and the fifth column provides the ratio of observed to expected proportions. As shown, all three proportions are significantly different than what was expected if there were random assignment. Thus, while the proportion of ++/+ gains was significantly greater than 0.29, the proportion of −/− gains was also significantly greater than the expected value of 0.21. The expected value of ++/− JVs was once again significantly lower than the expected value of 0.5. These results suggest that there appear to be distinct JV effects operating, with some JVs systematically creating positive value and others systematically destroying value. If this were not the case, then we would not see significant differences between observed proportions and expected proportions under random assignment. Thus, the three patterns of gains show some evidence of systematic value creation at the dyadic level.

Table 2b. Extent of Three Patterns of Gains compared with Expected Proportion.

<table>
<thead>
<tr>
<th></th>
<th>N (I)</th>
<th>Proportion of Full Sample (II)</th>
<th>Expected under Observed Proportion of Positives (III)</th>
<th>p-Value of Difference (IV)</th>
<th>Ratio of Observed to Expected (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>++/+ ventures</td>
<td>191</td>
<td>0.32</td>
<td>0.29</td>
<td>0.10</td>
<td>1.10</td>
</tr>
<tr>
<td>−/+ ventures</td>
<td>261</td>
<td>0.44</td>
<td>0.5</td>
<td>0.003</td>
<td>0.88</td>
</tr>
<tr>
<td>−/− ventures</td>
<td>145</td>
<td>0.24</td>
<td>0.21</td>
<td>0.08</td>
<td>1.14</td>
</tr>
</tbody>
</table>
The results and tests presented in Tables 2a and 2b are non-parametric in nature and are concerned mainly with the signs of the wealth gains in the dyad rather than the values. To develop insight into the extent of wealth gains of firms in the dyad, next we examined the abnormal returns of firms that gained more than the partner in each JV and firms that gained less than the partner, respectively. Table 3 presents the results. The upper panel presents the event study results of firms that gained more in the JV, and the lower panel presents the results of firms that gained less. The results show that firms that gained more on average earned $[-1, 0]$ returns of $+3.5\%$. In contrast, firms that gained less on average earned negative returns of $-1.5\%$. These results call for a qualified view of the performance of JVs at the dyadic level. If on average JVs create value at the dyadic level, then we may expect firms that gain more from forming the JV would enjoy positive abnormal returns. But the finding that firms that gain less earn negative returns suggests that there is also significant value destruction in JVs. In absolute dollar terms, the value destruction for firms that gained less was USD $-54.2$ Mn. Had the value-destructive effects of JVs been comparatively moderate, we would have observed firms that gain less either breaking even or earning positive abnormal returns. However, this does not

**Table 3.** Abnormal Returns of Parents within a JV.

<table>
<thead>
<tr>
<th>Event Window</th>
<th>[0, 0]</th>
<th>[-1, 0]</th>
<th>[-2, 0]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Firms that gained more from announcing the JV (n = 597)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative abnormal return (%)</td>
<td>2.5</td>
<td>3.5</td>
<td>4.25</td>
</tr>
<tr>
<td>$T$</td>
<td>10.18</td>
<td>11.21</td>
<td>12.72</td>
</tr>
<tr>
<td>$p &gt;</td>
<td>t</td>
<td>$</td>
<td>0.000</td>
</tr>
<tr>
<td>No of $+/-$</td>
<td>437:160</td>
<td>452:145</td>
<td>455:142</td>
</tr>
<tr>
<td>Binomial $p$</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Wilcoxon $z$</td>
<td>13.92</td>
<td>14.19</td>
<td>14.83</td>
</tr>
<tr>
<td>$p &gt;</td>
<td>z</td>
<td>$</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Firms that gained less from announcing the JV (n = 597)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative abnormal return (%)</td>
<td>$-1.14$</td>
<td>$-1.52$</td>
<td>$-1.6$</td>
</tr>
<tr>
<td>$T$</td>
<td>$-9.42$</td>
<td>$-9.48$</td>
<td>$-8.59$</td>
</tr>
<tr>
<td>$p &gt;</td>
<td>t</td>
<td>$</td>
<td>0.000</td>
</tr>
<tr>
<td>No of $+/-$</td>
<td>166:431</td>
<td>191:406</td>
<td>189:408</td>
</tr>
<tr>
<td>Binomial $p$</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Wilcoxon $z$</td>
<td>$-11.43$</td>
<td>$-10.52$</td>
<td>$-9.668$</td>
</tr>
<tr>
<td>$p &gt;</td>
<td>z</td>
<td>$</td>
<td>0.000</td>
</tr>
</tbody>
</table>
seem to be the case indicating that negative value creation plays a significant role in JVs. Overall the evidence in Table 3 also seems to suggest that the pattern of $+/−$ gains plays an important and influential role in JVs, given that on average one firm appears to be experiencing positive abnormal returns and the other negative abnormal returns.

In sum, the event study results suggest that JVs create value at the dyadic level for both partners, as evidenced by the higher than expected proportion of $+/+$ ventures in the sample. Further there is also an indication that there is a systematic ‘JV effect’ in influencing the returns to the two partners due to the presence of common benefits, and that the observed patterns are not purely due to private benefits. But the evidence also suggests that there is substantial negative value creation in JVs as evidenced by the overall negative returns to firms that gain less than their partners in the dyad. With this backdrop, we now turn toward understanding the total value created in the JV.

### 3.2. Total Value Creation in the Dyad

In this second part of our analysis, we present OLS estimates of Eq. (1) with TOTVAL $[−1, 0]$ as the dependent variable. As noted earlier, the essence of our argument is that total value is likely to increase with the value of resources in the dyad and decrease as the differential in the value of resources in the dyad increases since incentives are shifted away from joint value creation to non-cooperative behavior. Eq. (1) provides a test of these arguments. As a first step in estimating Eq. (1) using OLS, we examined the correlations between the dependent and various independent variables (not reported). The data showed that there was a high degree of correlation between the two independent variables of interest, SUMQ and DIFQ. This is not surprising considering the first variable is the sum of two random variables (Tobin’s $q$ of the two partners) and the second variable is the difference between the same two random variables. The correlation was above 0.9 indicating the presence of substantial multicollinearity. Multicollinearity may not only inflate standard errors, but may also reverse the signs of independent variables (Neter, Kutner, Nachtsheim, & Wasserman, 1996). To prevent any potential biases, we replaced the DIFQ variable with three separate variables. First, we took the log of DIFQ to produce a transformed variable LOGDIF which had a lower correlation with SUMQ (0.83) but a high correlation with DIFQ (0.88). Next, we also performed a median split based on the median value of DIFQ and coded a binary variable DIFFMDN $= 1$ if the difference in Tobin’s $q$ for a
particular dyad was above the median value, and 0 otherwise. As a third step, we also performed a mean split on DIFQ and coded a binary variable \(\text{DIFFMEAN} = 1\) if the difference in Tobin’s \(q\) was above the mean, and 0 otherwise. We report results with these three independent variables added separately in the model.

Table 4 presents the results after replacing DIFQ with the three separate variables. As shown, SUMQ had a consistently positive and significant

<table>
<thead>
<tr>
<th>Table 4. OLS Results, Total Value Creation.</th>
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<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>SUMQ</td>
</tr>
<tr>
<td>LOGDIF</td>
</tr>
<tr>
<td>SUMSIZE</td>
</tr>
<tr>
<td>SUMEXP</td>
</tr>
<tr>
<td>SUMDIST</td>
</tr>
<tr>
<td>RESHARE</td>
</tr>
<tr>
<td>SUMQ</td>
</tr>
<tr>
<td>(R^2)</td>
</tr>
<tr>
<td>(F)</td>
</tr>
<tr>
<td>SUMQ</td>
</tr>
<tr>
<td>DIFFMDN</td>
</tr>
<tr>
<td>SUMSIZE</td>
</tr>
<tr>
<td>SUMEXP</td>
</tr>
<tr>
<td>SUMDIST</td>
</tr>
<tr>
<td>RESHARE</td>
</tr>
<tr>
<td>CONS</td>
</tr>
<tr>
<td>(R^2)</td>
</tr>
<tr>
<td>(F)</td>
</tr>
<tr>
<td>SUMQ</td>
</tr>
<tr>
<td>DIFFMEAN</td>
</tr>
<tr>
<td>SUMSIZE</td>
</tr>
<tr>
<td>SUMEXP</td>
</tr>
<tr>
<td>SUMDIST</td>
</tr>
<tr>
<td>RESHARE</td>
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<tr>
<td>CONS</td>
</tr>
<tr>
<td>(R^2)</td>
</tr>
<tr>
<td>(F)</td>
</tr>
</tbody>
</table>

\(+ p < 0.10,\ two\ tailed;\)
\(* p < 0.05,\ two\ tailed;\)
\(* * p < 0.01,\ two\ tailed;\)
\(* * * p < 0.001,\ two\ tailed.\)
coefficient in all three sets of regressions. This indicates that as the value of resources in the dyad increased, total value created in the JV increased because of greater synergies. In line with expectations, all three variables capturing the differential in capabilities between partners had a significant negative impact on total value created. Thus, as the differential in capabilities between partners increased, the total value decreased perhaps because of the increased likelihood for non-cooperative behavior and shifting of incentives from joint value creation. In terms of the control variables, the SUMSIZE variable was consistently positive and significant indicating that JVs involving larger partners created more value, possibly because of market power effects. The SUMEXP and SUMDIST variables were insignificant likely because the variables used in this study are relatively crude measure of JV capabilities and the degree of relatedness. Finally, RELSHARE was also insignificant indicating that JVs with asymmetries in ownership did not necessarily create less value.

In sum, the results presented in Table 4 suggest that value creation in JVs depends not just on the characteristics of any single firm, but also on the resources and capabilities in the dyad. This occurs because the distribution of capabilities in the dyad influences the dynamics of the JV in terms of the potential for cooperative and non-cooperative behavior. We now turn to a discussion of these various results.

4. DISCUSSION AND CONCLUSION

This chapter set out with two main objectives: (1) to examine to what extent JVs create value at the dyadic level, rather than the individual parent level, and (2) to explain the total value created in the JV as a function of the resources and capabilities of partners in the dyad. In terms of the first research objective, the study finds that JVs create value on average for both parents. This was evidenced by the finding that the proportion of JVs where both parents experienced positive gains was significantly greater than what was expected under the null hypothesis of no value creation. In addition, the proportion was also greater than what would be observed if positive gains were distributed randomly across JVs and there were no ‘JV effect’ per se in creating value. These results together suggest that there is systematic value creation at the dyadic level in JVs. Previous research has mainly focused on the wealth gains accruing to individual parent firms. As a result, one question that has remained unaddressed is whether JVs like acquisitions create value for one firm while destroying value for the other. The present
research has sought to address this important question. In doing so, it reinforces the findings of previous research that JVs are on average a value-creating organizational form.

However, the results also suggest that value creation is far from a forgone conclusion. As in the case of acquisitions, there were a significant proportion of JVs where one partner gained and the other lost in terms of value. This trend was also evident in the overall sample with firms that gained less than their partners experiencing on average negative abnormal returns. This finding in particular highlights that there are also significant costs attached to JVs which can be borne asymmetrically between partners.

In terms of the second research objective, the study finds that total value created is systematically related to the resources and capabilities present in the dyad. This finding also constitutes a departure from previous research where the focus has been on a single firm’s characteristics and their impact on wealth gains. Thus, the results indicate that when both partners bring valuable resources to the JV, total value creation is enhanced since the potential for deriving synergies under these conditions increases. In contrast, as the differential in the value of resources across partners increases, total value created decreases as incentives are shifted away from cooperative behavior toward non-cooperative behavior and appropriation of private benefits (Khanna et al., 1998).

The implications of these latter results are that value creation in JVs is not just an outcome of common benefits, but also private benefits. Previous research has mainly focused on potential synergies when trying to understand the performance of JVs. Yet common benefits constitute only part of the picture and it is also necessary to understand how private benefits factor into the dynamics of the JV. In this regard, the findings of this study highlight that common benefits and private benefits may themselves not be independent of each other. To the extent that firms have limited managerial resources to allocate to a particular JV, a greater potential for earning private benefits for one partner may shift incentives and resources away from joint value creation leading to an overall decrease in the total value created in the JV. Thus, there may be a tradeoff operating between private benefits and common benefits, an aspect that has not been highlighted by previous research.

The second implication of these results is that they also highlight some fundamental differences between JVs and acquisitions. In the case of acquisitions (e.g. Lang, Stulz, & Walking, 1989; Servaes, 1991), it has been consistently found that value creation is enhanced when firms with high Tobin’s $q$ acquire firms with low Tobin’s $q$. But the results of this study suggest that value creation decreases as the differential in Tobin’s $q$ increases
between partners in a JV. Thus, unlike acquisitions in the case of JVs, the capital market seems to prefer a ‘marriage of equals’. Fundamentally speaking, this difference arises due to the incomplete control and the presence of private benefits in JVs. Since in the case of acquisitions these benefits do not arise and there is complete control over resources, there are fewer hazards involved when a high Tobin’s \( q \) firm joins forces with a low Tobin’s \( q \) firm. From a normative standpoint, this suggests that managers may need to be particularly careful when partnering with firms with relatively lower valued capabilities. As the results presented here suggest, it may be better to acquire such firms in order to access their complementary resources rather than to partner with them given the hazards of appropriation in JVs.

Future research could build on this study in various ways. First, this study uses an event study methodology to examine the performance of JVs at the dyadic level. Future research could corroborate the findings of this study by using direct assessments obtained from managers of both partners, and comparing them to see if similar patterns are observed as reported in Tables 2a and b. Second, there is also a need to examine the validity of these findings in alternative samples and settings. For example, do international JVs similarly show positive value creation for both partners? To what extent do private benefits/common benefits and the value of resources in the dyad explain total value creation in these JVs? Third, greater attention needs to be paid to the value-destructive consequences of JVs. In particular, good theoretical explanations need to be developed for why some firms may be entering into JVs despite seemingly losing in value. Fourth, other potential factors affecting the total gains can also be examined. For example, what is the role of the JV contract in influencing these gains? How does the structure and governance of the JV and the allocation of decision rights affect dyadic level returns? Addressing these various questions and shifting the focus to the dyadic level holds considerable potential for enhancing our understanding of JVs.

NOTES

1. The studies that are mentioned as exceptions do not specifically examine how wealth gains are distributed between partners in JV dyads. In addition, while they examine how factors such as relative size impact an individual parent firm’s wealth gains, apart from Gulati and Wang (2003), they also do not examine total value creation in the dyad.

2. Khanna et al. (1998) highlight various asymmetries such as relative scope and size as determinants of the ratio of private benefits to common benefits. In line with these arguments, here we highlight another asymmetry that we believe is basic in
affecting this ratio, which is the value of resources possessed by the partner relative to a firm’s resources.

3. The dynamics of how firms adjust their resource allocation patterns in the JV to their partner’s behavior is a complicated issue and is not the focus of this paper. Khanna et al. (1998) discuss many of the nuances. For the present, we would mainly like to note that there would be a tendency to allocate lesser resources to joint value creation as the potential for earning private benefits increases. However, firms interested in maximizing their private benefits may continue to allocate some amount of resources to joint value creation to ensure the JV is sustained and that they are able to extract resources from the partner. This would ensure that the cooperation does not break down entirely before private benefits are realized.

4. We obtained similar results when we used cumulative returns over the $[-2, 0]$ window to calculate total value created.

5. Put differently, the question that we are addressing here is: are the positive gains observed in the sample purely the result of private benefits? Or are they the result of positive common benefits in some JVs? If the answer to the first question is affirmative, then we would observe positive gains occurring randomly, rather than systematically to both partners in some JVs.

ACKNOWLEDGMENTS

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REFERENCES


