Re-examining the Diversification and Welfare Effects of Joint Ventures: New Empirical Evidence

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This study fills an existing gap in the literature on joint ventures by highlighting risk and return effects of such cooperative strategies. The sample is composed of companies engaged in joint ventures over the period of 1981 - 2002. The "standard event study" technique based upon the "market model" is used. The initial sample is divided into different sub samples based on SIC codes of parent companies and the joint ventures. The overall sample analysis indicates that the systematic risk decreases while unsystematic and total risks increase. The same applies to the diversifying parents where two parent companies from different industries announce a joint venture in a different industry. For the sample where both parents choose not to diversify, there is no significant change in all three risk measures. For the sample where both parents within the same industry form a joint venture in an entirely different industry, the systematic risk is reduced while unsystematic and total risks remain the same. For all samples, there is strong evidence that the shareholders, on average, earn high and significantly positive abnormal returns on the day of announcement. However, average abnormal returns after the day of announcement are mostly negative or not significantly different from zero.

INTRODUCTION

A joint venture is a way of combining resources to achieve some objective. Two or more parent companies pool their resources to accomplish that objective (described henceforth) under the combined management of the parent companies. It is owned by two or more parent firms. In this regard, joint ventures are different from corporate mergers. Management under the joint venture differs from that of the parent firms - the original management of the parent firms remains intact under the joint venture. While mergers join two firms together, joint ventures create entirely new entities (McConnel and Nantell, 1985).

Joint ventures are an increasingly common and important type of cooperative strategy in the domestic and international business arena. Brodley (1982) lists some of the reasons for forming joint ventures: to achieve cost savings, to alter industry conduct, and to restructure production in ways profitable to the parent firms. McConnell and Nantell (1985) emphasize different motives for establishing joint ventures and group them under "synergistic" gains resulting from sharing complementary skills and resources. They are as follows: 1) risk sharing to overcome uncertainty

in demand and technology; 2) achieve economies of scale in production; 3) augmented market power; 4) enhanced marketing and product distribution techniques; 5) reallocation of assets to more profitable uses.

Hennart (1991) mentions further instances where joint ventures can be advantageous; the first is when a joint venture is a diversification strategy for the parent. This happens when a joint venture operates in a different market from that of the parent firm. In this case, the parent may find that intermediate inputs needed to venture into a new industry are held by another parent, are difficult to acquire by contract, are costly to replicate, and are therefore most efficiently obtained through a joint venture. Secondly, for the case of international joint ventures, a firm that enters a foreign market for the first time is also likely to opt for a joint venture. This is because such a firm will lack the knowledge of local conditions. Thirdly, firms may also engage in joint ventures to obtain access to resources that are controlled by other firms. This is likely to be the case in natural resource industries where government policies discourage or forbid full ownership by international companies. Finally, joint ventures are used to combine complementary inputs held by two separate firms, when the market for both of these inputs has high transaction costs. In another study, Hennart (1988) argues that joint ventures are efficient and should be the preferred mode of cooperative strategy when two conditions are met at the same time: (1) imperfect intermediate goods (know-how, raw materials, parts and machinery etc.) market where parent firms operate; (2) purchase or reproduction of the resources that used in the production of those goods is more costly than procurement of the right to use the same under the joint venture agreement. In case of market failure for intermediate goods, being co-owner in the new entity will help reduce or eliminate parent firms' incentive to deviate from their objective set by joint venture agreement. The seller of the intermediate goods will have less incentive to take advantage of the buyer by increasing prices or lowering the quality of the goods. Therefore, joint venturing can lower the transaction cost of pooling intermediate inputs into the production process. Also, acquiring the resources is less efficient than having the right to use them through joint ventures when the required assets for use in the production process cannot be separated from non-required ones (Hennart, 1988).

When parent companies contract into a joint venture, the resultant structure can be classified as either horizontal or vertical. If both the parents and the joint venture are in the same industry, then the resulting entity is an example of a horizontal joint venture. This horizontal joint venture will then operate in the same product or service market as the parent companies, although management may be located elsewhere. Vertical strategic alliances (also referred to as diversifying or cross-product strategies) arise when the parent firms and the joint venture are not in the same industry. The motivation for vertical joint ventures is usually the search for new skills, technology and resources (Gleason, et.al., 2003). Some evidence shows that horizontal strategic alliances generate higher abnormal returns than vertical strategic alliances[1] (Chan et. al., 1997). Previous studies on joint ventures have focused either upon the wealth or output effects of joint ventures in single industries such as steel (Scheuerman, 1990), chemicals (Backman, 1965; Berg and Friedman, 1977), real estate (He, et.al., 1997), and financial services industries (Waheed and Mathur, 1995; Gleason, et.al., 2003) or upon antitrust treatments of joint ventures (Brodley, 1982; Grossman and Shapiro, 1986; Shapiro and Willig, 1990).

Although motivations for joint ventures are strong, it is questionable whether in fact they have positive effects on shareholders' wealth. Past studies have found mixed results. Gleason et al. (2003) study the effects of joint venture and strategic alliances announcements in a sample of companies in the banking, investment services, and insurance industries. They find that these

companies earn significant abnormal returns of 0.66 percent on average. They also find significantly positive abnormal returns across the four different modes of expansion: domestic, international, horizontal and diversifying. Johnson and Houston (2000) find that horizontal domestic joint ventures create synergistic gains that are shared by the partners, whereas vertical ones generate gains only for suppliers. McConnell and Nantell (1985) investigate the common stock returns of U.S. companies that announce joint ventures with other U.S. companies and find that there are significant excess returns around the announcement date. They also find that smaller partners earn larger excess rate of return. Kwoka (1992) finds support for wealth creation effects of joint ventures when there is no alteration in the competitive behavior of parent firms after the joint venture. He et al. (1997) study the wealth effects of domestic versus international joint ventures in the real estate industry. Their results suggest that domestic real estate joint ventures lead to an increase in firms' value while international joint ventures have non-significant or less significant value creation effects. While there are studies that have shown positive wealth effects on the announcement date, the literature has also indicated that joint ventures can have negative effects on stock returns on the announcement date. Waheed and Mathur (1995) study announcement effects of foreign expansions through formations of different expansion modes, such as joint ventures, subsidiaries, acquisitions, representative offices or branches, on the market value of U.S. banks. For the overall sample, they find that shareholders of banks earn significant abnormal returns of negative 0.17 percent on the announcement day. They also find that the two-day (-1,0) cumulative average abnormal returns for U.S. banks is negative 0.11. Mohanram and Nanda (1996) find that the US stock market reacts negatively to domestic joint ventures that are motivated by value reducing managerial concerns. Another study by Chang and Chen (2002) finds similar results. They study joint ventures by Taiwanese firms and find that domestic joint venture announcements are associated with negative abnormal returns. They also find that announcement effects are positively related to investment opportunities, the size of the investment and debt ratio, and are negatively related to the business-relatedness variable. The business-related variable refers to parent firms announcing the joint venture that have the same two-digit SIC code.

Previous studies on joint ventures have not focused adequately on the risk-sharing and risk-reducing motivations for creating joint ventures. Contrary to usual expectations in business, it might be the case that companies do not reduce their financial risks when they get involved in establishing joint ventures. Kogut (1989) has attempted to analyze the stability of joint ventures. Factors that improve stability include, but are not limited to, other forms of binding agreements between the parent firms (Kogut refers to this factor as ties), and R&D intensity. Factors that negatively impact stability include, but are not limited to, changes in concentration, and industry growth that leads to competitive rivalry. Competitive factors that motivate the creation of a joint venture have support in the expectation that rivalry between the partner firms would be lessened. However, these factors can also be the source of future instability. As indicated by Berg and Friedman (1981), larger firms seek joint ventures as a medium of technology transfer. Instability can then be triggered by technology imitation, price distortion and competition among the partners (Kogut, 1989).

Several gaps exist in the literature on joint ventures. Most importantly, risk associated with contracting into joint venture agreements has not been adequately examined. This paper aims at testing the risk-reducing or risk-sharing motive for establishing joint ventures. In addition, this study also finds empirical evidence for the welfare effects of joint venturing on shareholders' wealth in a larger sample. This paper aims at finding empirical evidence for the two most

important motives for establishing joint ventures: i) synergy gains resulting from sharing complementary skills and resources and ii) risk-sharing through diversifying joint venture as a corporate strategy. Previous studies have not studied these two motives together. Therefore, it is expected that this study will shed some light on the return, risk and diversification aspects of joint ventures that have previously been inadequately studied. The rest of this paper is organized as follows: section two presents the data and methodology; section three discusses empirical results and test statistics; section four concludes the paper.

DATA AND METHODOLOGY

The sample for this study is composed of companies engaged in only two-parent joint ventures over the period of 1981 - 2002[2]. The sample of joint venture announcing companies was taken from the Securities Corporation Platinum Database. Both parents are included in the joint venture analysis. The final sample is limited to those companies whose stock returns are available on the Center for Research in Security Prices (CRSP). For the purpose of extracting stock returns from CRSP, CUSIP numbers in the data set are merged with PERMNOs (permanent numbers identifying the companies) that are available in CRSP. In order to test whether risk-sharing through diversification is a valid motive for creating a joint venture, five different sub-samples are constructed. The first sub-sample consists of those firms with different SIC codes that engage in a joint venture also with a different SIC code. The second sub-sample is composed of those firms that have the same SIC codes and engage in a joint venture with the same SIC code as each firm. The third sub-sample consists of those firms with the same SIC codes that engage in a joint venture with a different SIC code. The fourth sample is that where one parent is a diversifying parent, that is, only one firm has a different SIC code from the joint venture. The fifth sub-sample is then one where the other parent has the same SIC code as the joint venture, that is, one parent is non-diversifying parent. In this study, the last three sub-samples are referred to as partial-diversification strategies.

To satisfy the requirement of cross-sectional independence, which is a common requirement in event studies to conduct test statistics, multiple announcements, except for the very first announcement in the overall sample, by the same companies are removed from the other five sub-samples. This process also eliminates the apparent “over-representation problem”, which occurs when joint ventures are announced more than once by the same companies. Finally, only companies with 501 days non-missing returns data around the announcement days (+250, 0, -250) are included in the study. After satisfying all the requirements, 2,188 companies are left for the overall sample analysis. This sample size is very large compared to previous studies conducted on the wealth effects of joint ventures.

Market Model

The "standard event study" technique based upon the market model is used to test the effect of announcements on stock returns (see Brown and Warner, 1985). The event study has many applications in the areas of economics, finance and accounting. Some examples of the economy wide events include mergers and acquisitions, earnings announcements, new issues of securities, and announcements related to macroeconomic variables such as trade deficits (MacKinlay, 1997). Economists frequently study the effects of such an economic event on the value of firms. They use financial data to measure the impact of a specific event on the value of a firm. The rationality behind the event study is that the effects of the event will be reflected immediately in

security returns. Therefore, measuring the impacts of a specific event on security prices can be constructed in a relatively short time. In contrast, productivity related measures might take many periods of observation.

The market model relates the return of any individual security to the return of market portfolio. The advantage of using the market model is that it allows the researcher to control for the effects of market-wide fluctuations to measure daily abnormal returns (the market model residuals). Commonly used market portfolios are the S&P 500 index, the CRSP Value Weighted Index, and the CSRP Equal Weighted Index. In this study CRSP Equal Weighted Index returns is used as market returns.

For any security j the market model is:

$$R_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{mt} + \varepsilon_{jt} \quad (1)$$

R_{jt} = the return on security j for period t.
α_j = the intercept term assumed to be constant over the entire time period.
β_j = the systematic risk for security j.
R_{mt} = the market return on the CRSP equal-weighted index in time period t.
ε_{jt} = the error term on security j for period t.

The date of the joint venture announcement is taken as the event date and defined as day t = 0. Additionally, the behavior of average abnormal returns is reported over the event window of days (-5, +5). Pre-event parameters are estimated from the market model over the period t = -250 to t = -30 days relative to the announcement date. Post-event parameters are estimated over the period t = +30 to t = +250 days relative to the announcement day[3].

This study tests to see whether synergy gains and risk-sharing through diversification are valid motivations for the creation of joint ventures. For the purpose of risk analysis, total risk (variance of daily stock returns for security j) is partitioned into two components: systematic risk (security j's beta) and unsystematic risk (variance of the error term ε_j in the market model). The systematic risk is a measure of how an individual asset co-varies with the economy, and the unsystematic risk is a firm specific risk and independent of the economy. To test if there is any significant change in all three risk measures after the announcement, changes in the systematic (ΔSYS), unsystematic risk (ΔUNSYS) and total risk (ΔTOTAL) are computed as:

$\Delta SYS = (\beta_j, post) - (\beta_j, pre)$; $\Delta UNSYS = Var(\varepsilon_j, post) - Var(\varepsilon_j, pre)$; $\Delta TOTAL = Var(R_j, post) - Var(R_j, pre)$.

Standardized Abnormal Return

By using the "standard event study" technique and following Waheed and Mathur (1995), the average standardized abnormal return (AAR) for security j for day t is estimated as:

$$AAR_{jt} = \frac{1}{N} \sum_{j=1}^{N} \frac{R_{jt} - \hat{\alpha}_j - \hat{\beta}_j R_{mt}}{S_{jt}} \quad (2)$$

The Ordinary Least Squares (OLS) method is used to estimate the market model parameters α and β over the estimation period t = -250 days to t = -30 days relative to the announcement day, and the maximum likelihood estimate of standard deviation (S_{jt}) is computed as:

$$S_{jt} = \left[V_j^2 \left[1 + \frac{1}{D} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{k=1}^{D} (R_{mk} - \bar{R}_m)^2} \right] \right]^{1/2} \quad (3)$$

where,
R_{mt} = market return on the CRSP equal-weighted index in time period t.
R_m = mean market return in the estimation period.
V_j^2 = residual variance of security j.
D = number of days in the estimation period.
N = number of announcements in the sample.
R_{jt} = return on security j for period t.

The standardized t statistic is applied to test the hypothesis that standardized average abnormal returns equal zero. In order to make sure that there is no outlier effect, the binomial sign test (B-value) is also employed to test that the proportion of positive (negative) abnormal returns expected under the null hypothesis is 0.50. The B-values are estimated as $(S-PN)/\sqrt{P(1-P)N} \sim N(0,1)$ where N is number of announcements in the sample, P is the proportion of positive average abnormal returns under the null hypothesis (0.50) and S is the number of positive average residuals (Waheed and Mathur, 1995).

Empirical Results

Panel A in Tables 1 to 6 shows daily standardized average abnormal returns (AAR), the Z-values, number of companies with positive daily average abnormal returns (POSAVG), the proportion of daily average positive abnormal returns (%), sample size (N) and the binomial sign test statistic (B-value) for two-party joint ventures. The Z-value is the standardized t statistic to test the hypothesis that the daily average abnormal returns equal zero. The binomial sign test (B-value) is used to test if the proportion of positive abnormal returns in the test period is significantly different from the proportion of positive abnormal returns expected under the null hypothesis (0.50). The binomial sign test is employed to check if a few outliers affect the abnormal returns.

In panel B of Tables 1 to 6, ΔSYS refers to change in systematic risk, ΔUNSYS refers change in unsystematic risk, ΔTOTAL refers to change in total risk, N+ refers to the number of companies for which there is an increase in the risk level after the joint venture announcement, N- refers the number of companies for which there is a decrease in the risk level after the joint venture announcement. Associated test statistics - the ranked sign test and paired t-test - for each risk measures are also provided in panel B. The paired t- test (one tail test) statistic tests whether the mean difference for unsystematic risk and systematic risk is different from zero. SIC1, SIC2 and JVSIC refer to SIC codes for the first parent, the second parent and the joint venture respectively. To check if changes in the levels of the risk measures, ΔSYS, ΔUNSYS and ΔTOTAL, are due to outliers, the median signed rank (Wilcoxon) test statistics are also presented in panel B (see for example, Siegel & Castellan; Nonparametric Statistics, 2nd ed.; p.90).

Panel A of Table 1 shows the standardized daily average abnormal return (AAR) estimations and the associated test statistics for the overall sample of 2188 firms. The AAR on the day of announcement is 30 percent, which is significant at the one percent level. This indicates that, for the overall sample, there is strong evidence that the shareholders of the companies engaged in joint ventures, on average, experience highly significant positive abnormal returns at the time of such announcements.

TABLE 1
DAILY AVERAGE ABNORMAL RETURNS AND TEST STATISTICS FOR THE OVERALL SAMPLE

Panel A

Day (t)	AAR	Z	POSAVG	%	N	B-value
-5	0.023	1.089	1007	46.02	2188	-3.720***
-4	0.055***	2.566	1033	47.21	2188	-2.608***
-3	-0.005	-0.240	985	45.01	2188	-4.661***
-2	-0.001	-0.034	1021	46.66	2188	-3.121***
-1	0.038*	1.756	1047	47.85	2188	-2.010**
0	0.300***	14.051	1174	53.65	2188	3.421***
1	0.028	1.315	1026	46.89	2188	-2.907***
2	-0.004	-0.206	1028	46.98	2188	-2.822***
3	-0.044**	-2.059	982	44.88	2188	-4.789***
4	-0.060***	-2.791	964	44.05	2188	-5.558***
5	-0.004	-0.202	995	45.47	2188	-4.233***

Panel B: Testing the hypothesis that joint ventures are risk-reducing strategies. Significance of the change in systematic, unsystematic and total risks is tested using the t-statistic for means and the nonparametric Wilcoxon signed rank test (Z).

Risk	N+	N-	Z	p-value	t	p-value
ΔSYS	1041	1147	-2.628	0.0086	**-2.10**	**0.0181**
ΔUNSYS	1179	1009	4.326	0.0000	**3.30**	**0.0005**
ΔTOTAL	1183	1005	4.685	0.0001	**3.44**	**0.0003**

***, **, * indicates significance at the 1%, 5% or 10% levels, respectively.

Since 1174 (i.e., 54 %) of 2188 announcements have positive abnormal returns, and the binomial sign test shows that it is significant at 1% level, this finding is not due to an outlier effect. The announcement day t = 0 is the only day on which more than 50 percent of the companies significantly observe positive returns. On the day t = 1, there is positive 2.8 percent return but it is not significantly different from zero. The proportion of companies that observe positive abnormal returns before and after the announcement day (t = 0) is significantly less than 50 percent. The positive and significant announcement effect disappears the day after the announcement (t = 1, 2, 3, 4 and 5). Panel B of Table 1 reports the change in the levels of systematic, unsystematic and total risk measures. Both the t-statistics and the Wilcoxon ranked-sign test statistics significantly indicate that systematic risk has decreased and unsystematic and total risks have increased. If number of assets in a well-diversified portfolio is large enough, then the unsystematic risk tends towards zero. Therefore, if a single asset becomes part of well-diversified portfolio, the unsystematic risk can be diversified away and therefore it can be ignored. However all securities will have some level of systematic risk that cannot be eliminated through diversification. Because systematic risk is directly related to movements in overall market conditions such as inflation and interest rates. These movements occur regardless of what an individual investor follows as an investment strategy. The systematic risk is then the most crucial risk for all investors. Since the findings for overall sample in Panel B of Table 1 show

that the systematic risk has decreased, it can be concluded that firms share risk through joint ventures and that risk-sharing motive is a valid motive for joint ventures.

TABLE 2
DAILY AVERAGE ABNORMAL RETURNS WHERE BOTH PARENT FIRMS AND JOINT VENTURE HAVE DIFFERENT SIC CODES

Panel A: (SIC1≠ SIC2 ≠ JVSIC)

Day (t)	AAR	Z	POSAVG	%	N	B-value
-5	-0.050	-1.539	434	45.39	956	-2.846***
-4	0.051	1.578	453	47.38	956	-1.617
-3	-0.010	-0.310	413	43.20	956	-4.205***
-2	0.044	1.348	456	47.69	956	-1.423
-1	0.020	0.606	460	48.11	956	-1.164
0	0.357***	11.028	539	56.38	956	3.946***
1	0.008	0.232	454	47.48	956	-1.552
2	0.008	0.254	443	46.33	956	-2.264**
3	-0.065**	-2.016	421	44.03	956	-3.687***
4	-0.071**	-2.188	412	43.09	956	-4.269***
5	-0.048	-1.473	430	44.97	956	-3.105***

Panel B

Risk	N+	N-	Z	p-value	t	p-value
ΔSYS	447	509	-2.36	0.0092	**-2.34**	**0.0098**
ΔUNSYS	532	424	4.39	0.0000	**3.75**	**0.0001**
ΔTOTAL	539	417	4.59	0.0000	**3.88**	**0.0001**

***, **, * indicates significance at the 1%, 5% or 10% levels, respectively.

Table 2 refers to the sub-sample where both parent firms and the joint venture have different SIC codes. In this study, since each parent company and the resulting joint venture have entirely different SIC codes, it is referred to as full-diversification strategy. Panel A shows that the AAR at t = 0 is 0.36 which is significant at the one percent level and higher compare to AAR of 0.30 for overall sample in Table 1. Again 539 (i.e., 56 %) of 956 announcements have positive returns, this finding cannot be attributed to any outlier effect since the binomial sign test statistic (B-value of 3.95) shows that on the day of announcement (t = 0) proportion of announcements with positive abnormal return is significantly greater than 50 percent.

In Panel B of Table 2, the t-statistic shows that companies have lower level of systematic risk and higher level of unsystematic and total risks after the joint venture announcement when both parents diversify. The Wilcoxon ranked sign test also supports the same result. Increase in total risk, however, is due to an increase in unsystematic risk which in turn can be diversified away. This indicates that parents following a full-diversification strategy benefit from risk sharing through joint ventures as the stock markets view those joint venture announcements as indicative of diversifying cooperative strategy. Table 3 refers to the sub-sample where the parent firms and the joint venture have the same SIC codes. That is, this sample includes firms that choose not to diversify through joint ventures.

TABLE 3
DAILY AVERAGE ABNORMAL RETURNS WHERE BOTH PARENT FIRMS AND JOINT VENTURE HAVE THE SAME SIC CODES

Panel A: (SIC1 = SIC2 = JVSIC)						
Day (t)	**AAR**	**Z**	**POSAVG**	**%**	**N**	**B-value**
-5	0.170***	2.886	150	52.08	288	0.707
-4	0.048	0.813	136	47.22	288	-0.943
-3	0.007	0.117	131	45.49	288	-1.532
-2	0.037	0.633	133	46.18	288	-1.296
-1	0.077	1.299	143	49.65	288	-0.118
0	0.160***	2.721	146	50.69	288	0.236
1	0.049	0.825	136	47.22	288	-0.943
2	-0.007	-0.121	135	46.88	288	-1.061
3	-0.091	-1.546	125	43.40	288	-2.239**
4	-0.089	-1.518	126	43.75	288	-2.121**
5	0.015	0.253	139	48.26	288	-0.589
Panel B						
Risk	**N+**	**N-**	**Z**	**p-value**	**t**	**p-value**
ΔSYS	136	152	-0.57	0.2856	**0.21**	**0.4155**
ΔUNSYS	145	143	0.73	0.2335	**-0.39**	**0.3487**
ΔTOTAL	142	146	0.64	0.2619	**-0.34**	**0.3861**

***, **, * indicates significance at the 1%, 5% or 10% levels, respectively.

Panel A of Table 3 shows that the AAR at t = 0 is 0.16 which is again significant at the one percent level. However in the case of non-diversifying joint venture announcements (Table 3), the AAR at t = 0 is lower (16%) than the AAR of 36% when the joint venture is a diversifying strategy (Table 2). This indicates that shareholders of diversifying firms gain more than the shareholders of non-diversifying firms. In Panel B, the t-test statistic and the nonparametric sign test statistic together show that there is no significant change in systematic, unsystematic and total risks. These results show that there is no risk sharing benefit associated with joint venture announcements established between parent firms that have the same SIC code as joint venture industry.

Panel A of Table 4 shows the results where both parent companies have the same SIC code but the joint venture has a different SIC code. In this sample parent firms diversify by establishing a joint venture in an entirely different industry even though parent firms are from the same industry.

TABLE 4

DAILY AVERAGE ABNORMAL RETURNS WHERE PARENT COMPANIES HAVE THE SAME SIC CODES BUT JOINT VENTURE HAS A DIFFERENT SIC CODE

Panel A: (SIC1 = SIC2 ≠ JVSIC)

Day (t)	AAR	Z	POSAVG	%	N	B-value
-5	-0.002	-0.044	155	47.26	328	-0.994
-4	-0.079	-1.434	150	45.73	328	-1.546
-3	-0.036	-0.658	140	42.68	328	-2.650***
-2	0.014	0.246	155	47.26	328	-0.994
-1	0.135**	2.439	159	48.48	328	-0.552
0	0.164***	2.964	170	51.83	328	0.663
1	0.094**	1.707	158	48.17	328	-0.663
2	0.008	0.154	156	47.56	328	-0.883
3	-0.078	-1.405	139	42.38	328	-2.761***
4	0.013	0.243	159	48.48	328	-0.552
5	-0.096*	-1.745	140	42.68	328	-2.650***

Panel B

Risk	N+	N-	Z	p-value	t	p-value
ΔSYS	144	184	-1.55	0.0602	**-0.54**	**0.2947**
ΔUNSYS	174	154	0.62	0.2676	**-0.18**	**0.4300**
ΔTOTAL	174	154	0.73	0.2341	**-0.12**	**0.4523**

***, **, * indicates significance at the 1%, 5% or 10% levels, respectively.

The AARs at days t = -1, 0 and 1 are 0.14, 0.16 and 0.09 respectively and they are all significant. In panel B of Table 4, the t-test statistic shows that there is no change in both systematic and unsystematic risks after the joint venture announcement. However, the Wilcoxon ranked sign test statistic shows that at the 6 percent significance level systematic risk decreases after the announcement. This finding suggests that the evidence for fall in systematic risk is more apparent when both parents from different industries establish joint venture in entirely different industry (full-diversification strategy) as shown in Table 2. The number of companies with a decrease in systematic risk (184) is greater than that of companies with an increase in systematic risk (144). This shows that parent firms within the same industry become less risky after establishing joint venture in a different industry.

Another sub-sample is created where one parent is in the same industry as the joint venture industry. In this sample one of the parents that has different SIC code from joint venture is classified as diversifying parent and the other parent is classified as non-diversifying parent. Table 5 shows results for the non-diversifying parents and Table 6 shows results for the diversifying parents.

Panel A of Table 5 shows that the AAR at t = 0 is 0.39 which is significant at the one percent level. The AAR on day t = -1 is 11.2 percent and it is significant at ten percent level. However, the AARs after the announcement day are not significantly different from zero. On day t = 0, the

number of companies with a positive abnormal return (128) is the same as the number of companies with a negative abnormal return (128). Additionally, the binomial sign test shows that proportion of total announcements with positive abnormal returns is not significantly different from 50 percent for each day in the event window of [-5,5]. In panel B of Table 5, both the binomial sign test and the t-test statistics show that systematic and unsystematic risk for non-diversifying parents remain the same after joint venture announcement. However the sign test shows that the systematic risk has decreased after the announcement.

TABLE 5
DAILY AVERAGE ABNORMAL RETURNS FOR NON-DIVERSIFYING PARENTS

Panel A: Daily average abnormal returns for non-diversifying parents (parent 2) that have same SIC code as the joint venture (SIC2 = JVSIC).

Day (t)	AAR	Z	POSAVG	%	N	B-value
-5	0.031	0.491	117	45.70	256	-1.375
-4	0.048	0.771	118	46.09	256	-1.250
-3	-0.004	-0.071	117	45.70	256	-1.375
-2	0.051	0.810	122	47.66	256	-0.750
-1	0.112*	1.795	130	50.78	256	0.250
0	0.388***	6.213	128	50.00	256	0.000
1	0.031	0.502	128	50.00	256	0.000
2	-0.082	-1.317	127	49.61	256	-0.125
3	0.025	0.395	126	49.22	256	-0.250
4	0.009	0.139	125	48.83	256	-0.375
5	0.014	0.231	118	46.09	256	-1.250

Panel B

Risk	N+	N-	Z	p-value	t	p-value
ΔSYS	107	149	-2.24	0.0126	**-0.92**	**0.1788**
ΔUNSYS	119	137	-0.51	0.3061	**-0.38**	**0.3515**
ΔTOTAL	118	138	-0.51	0.3061	**-0.37**	**0.3559**

***, **, * indicates significance at the 1%, 5% or 10% levels, respectively.

Panel A of Table 6 shows that the AAR on the day of announcement is 43.5 percent and significant at one percent level. Additionally, the AAR on day t = 1 is 10.4 percent for diversifying parent and it is also significant at five percent level. The binomial sign test statistics in panel B of Table 6 indicate that the proportion of total announcements with positive abnormal returns is not significantly different from 50 percent for each day in the event window except for days t = 4 and 5. In Panel B, the nonparametric sign test statistics show that systematic risk has decreased at 12 percent significance level. The number of companies with decrease in systematic risk (212) is greater than the number of companies with an increase in systematic risk (181). This provides some evidence that diversifying parent becomes less risky after announcing joint venture in different industry. On the other hand, the t test statistics show there is no significant change in systematic risk but there is a significant increase in unsystematic and total risks.

In general the findings in Tables 5 and 6 together suggest that when only one parent diversifies through joint venture, shareholders of diversifying parents, on average, earn higher

abnormal return on the announcement day. In addition, the findings also suggest that when only one parent diversifies, the binomial sign test shows that the systematic risk for diversifying parent decreases with twelve percent significance level. This finding is not supported by the t-test. However, both the sign test and t-test statistics show that the unsystematic and total risks for diversifying parent increase at one percent significance level. Similarly, the sign test also shows that the systematic risk for the non-diversifying parent decreases whereas the t-test shows that there is no significant change in the systematic risk. On the other hand, both the sign test and t-test statistics indicate that there is no significant change in unsystematic and total risk measures.

TABLE 6
DAILY AVERAGE ABNORMAL RETURNS FOR DIVERSIFYING PARENTS

Panel A: Daily average abnormal returns for diversifying parents (parent 1) that have different SIC code from the joint venture (SIC1 ≠ SIC2 = JVSIC).

Day (t)	AAR	Z	POSAVG	%	N	B-value
-5	0.050	0.995	198	50.38	393	0.151
-4	0.167***	3.305	187	47.58	393	-0.958
-3	0.029	0.574	189	48.09	393	-0.757
-2	-0.046	-0.915	184	46.82	393	-1.261
-1	0.079	1.575	184	46.82	393	-1.261
0	0.435***	8.626	197	50.13	393	0.050
1	0.104**	2.057	182	46.31	393	-1.463
2	0.070	1.382	192	48.86	393	-0.454
3	0.005	0.099	188	47.84	393	-0.858
4	-0.042	-0.839	180	45.80	393	-1.665*
5	-0.076	-1.502	175	44.53	393	-2.169**

Panel B:

Risk	N+	N-	Z	p-value	t	p-value
ΔSYS	181	212	-1.17†	0.1210	**0.02**	**0.4916**
ΔUNSYS	224	169	3.18	0.0007	**2.89**	**0.0020**
ΔTOTAL	221	172	3.43	0.0003	**3.05**	**0.0012**

***, **, * indicates significance at the 1%, 5% or 10% levels, respectively. † significant with p-value of 12 percent.

CONCLUSION

This study tests to see whether diversification and risk-sharing are valid motivations for the creation of joint ventures. The "standard event study" technique based upon the market model is used to examine the risk and return effects of two-parent joint venture announcements.

To investigate if synergy gains and risk-sharing through diversification are valid motives for joint ventures, five different sub-samples are constructed. The overall sample includes firms announcing joint venture for the very first time. Similarly, the five sub-samples also include first joint venture announcements except when an announcement made by a firm exists in a sub-sample more than once, then that firm is excluded from the sub-sample. The test statistics for the overall sample evidence that the systematic risk decreases while unsystematic and total risk increase. The same results apply to the sub-sample where two firms from different industries

announce a joint venture in an entirely different industry (full-diversification strategy). When a security is hold in isolation, increase in total risk might indicate that the risk due to uncertainty in the new product market outweighs the diversification benefits gained from joint ventures. However, the firm-specific unsystematic risk should not be important for an individual investor holding a well-diversified portfolio of assets. Conversely, the analysis for the sample where both parent companies are in the same industry as the joint venture, non-diversifying strategy, shows that there is no change in all three risk measures after the joint venture is announced. Thus, these findings show that a full-diversification strategy reduces systematic risk and validates the risk-sharing motive for a joint venture. The same analysis is applied to the remaining sub-samples in which either one parent firm is from the same industry as the joint venture or both parents are within the same industry but establish a joint venture in a different industry. These sub-samples could be referred to as partial-diversification strategies.

The binomial sign test statistics for the parents where both are in the same industry but engage in a joint venture in a different industry evidence that the systematic risk decreases while unsystematic risk and total risk remain the same. However, the reduction in the systematic risk is not supported by the t-test. Finally, when a sub-sample is created where only one parent is in the same industry as the joint venture, the findings for non-diversifying parents show a reduction in systematic risk while unsystematic risk and total risk remain the same. However, in the case of diversifying parents, the binomial sign test shows that unsystematic risk and total risk increase while the systematic risk decreases. However, the reduction in systematic risk for diversifying parent is not supported by the t-test. In general, the findings for the last three sub-samples (partial-diversification strategies) somewhat show weak evidence for reduction in systematic risk. On the other hand, the full-diversification strategies through joint ventures exhibit strong evidence that the systematic risk falls. And finally non-diversification strategies present no change in all three risk levels.

For all the samples, the shareholders of the companies engaged in joint ventures, on average, experience highly significant positive abnormal returns based upon the market model– between approximately 16 percent and 44 percent - at the time of such announcements. Average abnormal returns after the day of announcement are mostly negative or not significantly different from zero. Another important finding of this paper is that the full-diversification strategies yield higher abnormal returns on the announcement day than those of non-diversifying strategies (36% as opposed to 16% abnormal returns). This also true when only one parent diversifies and the second parent doesn't, diversifying parent earns higher abnormal return on the announcement day (44 percent as opposed to 39 percent). These results contradict the findings of Gleason et al (2003), Weston and Copeland, 1988, Sicherman and Pettway, 1987, and Scanlon, Trifts, and Pettway, 1989 that suggest that corporate mergers/joint ventures in a related business line (horizontal or non-diversifying strategies) dominate mergers in different industries (diversifying strategies).

ENDNOTES

1. While joint ventures and strategic alliances are both forms of cooperative strategies, strategic alliances are less formal and represent less structured contractual agreements.
2. The very large data set and the availability of the data posed certain difficulties in determining whether the joint ventures were domestic or international. The scope of this

study does not allow for the classification of joint ventures into domestic and international forms, but this issue will be addressed in a future study.

3. Waheed and Mathur (1995) use (-170 to –21) and (+21 to +170) as the "pre-event" and "post-event" periods respectively. However, in this study, the market model is run for different time periods, but changing the time periods did not affect the direction of the results derived from the market model. To check for robustness, daily average excess returns based upon equal-weighted market index and associated test statistics for the event window of days [-1, +1] are presented in the Appendix section.

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APPENDIX

TABLE A1
DAILY AVERAGE EXCESS RETURNS

Daily average excess returns based on equal-weighted market index for three-day event window and associated t-test statistics.						
Type of joint venture	**N**	**Day (t)**	**AER**	**σ**	**t-value**	**p-value**
Full-diversification strategy SIC1 ≠ SIC2 ≠ JVSIC	956	-1	0.0010	0.052	0.58	0.5605
Non-diversifying SIC1 = SIC2 = JVSIC	288	-1	0.0047	0.054	1.47	0.1426
Partial diversification SIC1 = SIC2 ≠ JVSIC	328	-1	0.0069***	0.045	2.75	0.0063
Diversifying parent (parent 1) SIC1 ≠ SIC2 = JVSIC	393	-1	0.0026	0.048	1.08	0.2800
Non-diversifying parent (parent 2) SIC1 ≠ SIC2 = JVSIC	256	-1	0.0072***	0.043	2.72	0.0069
Full-diversification strategy SIC1 ≠ SIC2 ≠ JVSIC	956	0	0.0156***	0.065	7.44	<.0001
Non-diversifying SIC1 = SIC2 = JVSIC	288	0	0.0129***	0.072	3.04	0.0026
Partial diversification SIC1 = SIC2 ≠ JVSIC	328	0	0.0074***	0.050	2.68	0.0076
Diversifying parent (parent 1) SIC1 ≠ SIC2 = JVSIC	393	0	0.0163**	0.144	2.25	0.0247
Non-diversifying parent (parent 2) SIC1 ≠ SIC2 = JVSIC	256	0	0.0161***	0.088	2.91	0.0039
Full-diversification strategy SIC1 ≠ SIC2 ≠ JVSIC	956	+1	0.0009	0.057	0.47	0.6397
Non-diversifying SIC1 = SIC2 = JVSIC	288	+1	0.0066	0.076	1.48	0.1398
Partial diversification SIC1 = SIC2 ≠ JVSIC	328	+1	0.0048	0.055	1.57	0.1164

Diversifying parent (parent 1) SIC1 ≠ SIC2 = JVSIC	393	+1	0.0035	0.047	1.48	0.1401
Non-diversifying parent (parent 2) SIC1 ≠ SIC2 = JVSIC	256	+1	0.0001	0.040	0.04	0.9654

Table A1 in the Appendix 1 presents daily average excess returns based upon equal-weighted marked index are obtained from CRSP. For all five sub-samples, the findings suggest that there is strong evidence that the shareholders of the companies engaged in joint ventures, on average, experience positive and significant excess returns – approximately between 1.29 to 1.63 percent - at the time of such announcements. However, daily average excess returns one day before and one day after the day of announcement (days t = -1 and t = +1) are not significantly different from zero except for day t = -1. On this day, the non-diversifying parent in the sub-sample where SIC1 ≠ SIC2 = JVSIC earns positive and significant excess return of 0.72 percent. On the same day, the diversifying parents in the partial diversification sample where SIC1 = SIC2≠ JVSIC earn positive and significant excess return of 0.69 percent.

TABLE A2
SUMMARY OF TABLES 1-6 PRESENTED IN THE PAPER

Samples	AAR (t = 0)	Type of Joint Venture	Systematic Risk	Unsystematic risk	Total Risk
Overall Sample (n=2188)	30 %	NA	Decrease	Increase	Increase
SIC1≠ SIC2 ≠ JVSIC (n=956)	36 %	Full-diversification	Decrease	Increase	increase
SIC1 = SIC2 = JVSIC (n=288)	16 %	Non-diversifying	No change	No change	No change
SIC1 = SIC2≠ JVSIC (n=328)	16 %	Partial diversification	Decrease (weak evidence)	No change	No change
SIC1≠ SIC2 = JVSIC (n=256)	39 %	Non-diversifying parent	Decrease (weak evidence)	No change	No change
SIC1≠ SIC2 = JVSIC (n=393)	44 %	Diversifying parent	Decrease (weak evidence)	Increase	Increase