

Corporate Combinations and Common Stock Returns: The Case of Joint Ventures

JOHN J. McCONNELL and TIMOTHY J. NANTELL*

ABSTRACT

The gain to stockholders from mergers is well documented. However, there is little evidence as to whether the source of the gain is due to synergy or management displacement. Merger is just one of an almost limitless variety of ways in which firms combine resources to accomplish some objective. A joint venture is another. In addition to being of interest as an independent phenomenon, because the original managements of the parent firms remain intact under a joint venture, investigation of wealth gains from joint ventures provides an opportunity to isolate the management displacement hypothesis from the synergy hypothesis as the source of gains in corporate combinations. Our results are 1) there are significant wealth gains from joint ventures, 2) the smaller partner earns a larger excess rate of return while the dollar gains are more equally divided, and 3) the gains, scaled by resources committed, yield "premiums" similar to those in mergers. We are inclined to interpret our results as supportive of the synergy hypothesis as the source of gain from corporate combinations.

THIS PAPER IS AN empirical investigation of the common stock returns of U.S. companies that enter into joint ventures with other U.S. companies. We consider joint ventures in the context of what is by now a burgeoning literature examining the security returns of companies involved in intercorporate mergers and tender offers.¹ In this context, our objective is to provide evidence as to the source of the well-documented gains to stockholders of firms involved in mergers and tender offers. In addition, joint ventures are an interesting economic phenomenon in their own right. They are undertaken by many of the largest U.S. companies, involve billions of dollars in capital expenditures annually, and are subject to considerable scrutiny in the popular press. In this regard, our analysis provides data on what is as yet a relatively unexplored area of economic activity.²

A corporate merger represents the joining together of all the resources of two companies under a single management to accomplish some set of objectives. Empirical studies have found that mergers generally result in significant increases in the total market values of the merging firms with the stockholders of the

* Purdue University and University of Minnesota, respectively.

¹ See, for example, Asquith [1], Asquith, Bruner, and Mullins [2], Bradley [9], Bradley, Desai and Kim [10, 11], Dodd [13], Eckbo [16], Kim and McConnell [24], Langetieg [25], Malatesta [28], Mandelker [30], and Schipper and Thompson [37].

² Previous economic studies of various aspects of U.S. domestic joint ventures include Berg and Friedman [3-7], Boyle [8], Duncan [15], Fusfeld [19], and Pfeffer and Nowack [35]. For the most part, these studies employ accounting and aggregate economic data. To our knowledge, ours is the first study to use stock market data to address questions regarding joint ventures.

acquired company receiving substantial "excess" returns and the stockholders of the acquiring company earning small or negligible "excess" returns.³

Two general hypotheses have been proposed to explain the large increases in wealth associated with mergers.⁴ The first is that the pooling of the resources of the two merging companies gives rise to "synergies" which take the form of economies of scale, the combining of complementary resources, increased market power, improved production techniques, improved marketing and product distribution opportunities, the redeployment of assets to more profitable uses, and so on. The second is that the merger facilitates the replacement of the acquired company's inefficient, ineffective, or deliberately misintentioned management. Unfortunately, various studies of mergers have found it difficult (or impossible) to distinguish empirically between these hypotheses.

In contrast to a merger, a joint venture involves the joining together of a subset of the resources of two (or more) companies to accomplish some objective under the combined management of two (or more) parent companies. In this regard, the primary distinction between a corporate merger and a corporate joint venture is that, although the management of the resources involved in the joint venture differs from that of the management of the parent company, the original management of the parent firms remains intact under the joint venture. Indeed, in regards to the combining of resources, it can be argued that a merger is a special (limiting) case of a joint venture. Thus, if the "synergy" hypothesis of mergers is correct, the stock returns to companies involved in joint ventures should "look like" those of companies involved in mergers. That is, a study of joint ventures provides an opportunity to isolate the "management displacement" hypothesis of mergers from the "synergy" hypothesis.

There is yet another, still broader, perspective in which joint ventures and, by extension, corporate mergers can be considered. That is, that both types of activities merely represent two of a nearly limitless variety of ways in which firms can combine resources to accomplish some objective. Other methods include franchising and trademark agreements, long-term buy/sell agreements, and one-time-only buy/sell transactions. Perhaps the simplest form of intercorporate combination of resources is the classic capital budgeting or investment project in which one firm acquires a variety of resources from a variety of suppliers and combines them to accomplish some objective under its own management. From this perspective, then, intercorporate joint ventures and mergers are merely two special cases of capital investment projects.

As a test of the premise that the wealth increases that accompany corporate mergers reflect the types of gains (or synergies) that are presumed to accompany other instances in which corporations combine resources to accomplish some set of objectives, this paper reports the results of an event-time analysis of the stock returns of 210 U.S. companies that entered into 136 domestic joint ventures over the period 1972-1979. To establish the background for the analysis, Section I

³ Until recently, the negligible "excess" returns to the acquiring company were somewhat of a puzzle. For appealing explanations of this phenomenon, see Asquith, Bruner, and Mullins [2], Bradley, Desai, and Kim [10], Schipper and Thompson [37], and Malatesta and Thompson [29].

⁴ See, for example, Jensen and Ruback [23].

contains a brief discussion of joint venture prosecution under federal antitrust legislation and summarizes the motives for joint ventures as given by corporate managers. Both the history of antitrust proceedings and the managerial motives for joint ventures are shown to parallel those of corporate mergers. Section II describes the sample. Section III describes the data and statistical methodology employed in the analysis while Section IV presents the results. The final section contains a summary and some concluding remarks.

I. Perspectives on Corporate Joint Ventures

In addition to the argument that intercorporate joint ventures and mergers represent similar economic phenomena, parallels between mergers and joint ventures can be seen in the motives given by managers for participating in them and in the way in which both types of transactions have been prosecuted under federal antitrust legislation.

Melicher and Nielsen [32] surveyed managers and reviewed proxy statements describing mergers to compile a list of stated motives for mergers. Their list is contained in Table I along with a similar list of motives for joint ventures as compiled by Berg and Friedman [5] by means of a questionnaire survey. Examination of the two lists indicates a significant overlap in the apparent (or at least the stated) motives for corporate mergers and joint ventures. These can loosely be categorized as achievement of operating and production economies, achievement of marketing efficiencies, achievement of vertical integration, acquisition of enhanced financial resources, and exploitation of patent rights.

Similarities between corporate mergers and joint ventures are evident also in the way in which both have been prosecuted under the federal antitrust laws. Traditionally, the Justice Department has challenged the legality of mergers under Section 1 of the Sherman Act and under the "anticompetitive" provisions

Table I
Managerial Motives for Mergers and Joint Ventures

Motives for Mergers ^a	Motives for Joint Ventures ^b
1. Extension of Existing Markets	1. To Acquire Skills and Technical Know How
2. Improved Distribution Network	2. To Acquire Distribution Facilities
3. Extension of Product Lines	3. To Acquire Production Facilities
4. Improved Production Facilities	4. Joint Venture is a Customer of a Parent
5. Anticipation of Operating Economies	5. Joint Venture is a Supplier of a Parent
6. Improvement of Earnings Stability	6. To Research and Develop a New Product or Process
7. Achievement of Vertical Integration	7. To Acquire Capital
8. Acquisition of New Technologies	8. To Produce for Government Contract
9. Improvement of Research Facilities	9. To Purchase Government Owned Facility
10. Acquisition of Financial Resources	10. To Exploit a Product or a Licensed Process
11. Anticipation of Management Economies	
12. Acquisition of Government Contracts	
13. Acquisition of Timber or Patent Rights	

^a Source: Melicher and Nielsen [32].

^b Source: Berg and Friedman [5].

of Section 7 of the Clayton Act.⁵ The Justice Department has challenged joint ventures under these same laws, and the courts have applied the same tests of unlawfulness. Additionally, when the courts have concluded that a joint venture represents a potential restraint of trade or that it will substantially lessen competition, remedies similar to those applied in antitrust judgments against potential mergers have been applied. Specifically, the courts have ordered that the joint venture either be dissolved or that the joint venture cease from acquiring further market share.⁶ Given the parallels between intercorporate mergers and joint ventures as perceived by the courts and corporate managers, the premise for the empirical tests conducted in this paper—i.e., that the “synergy” gains in mergers and joint ventures should be “similar”—appears to be a reasonable one.⁷

II. Sample Selection

To conduct our investigation, an initial sample of joint ventures involving U.S. corporations was taken from the “Joint Venture Roster” published in *Mergers and Acquisitions* over the period beginning January 1972 and ending December 1979. Based on the description provided by *Mergers and Acquisitions* it is not clear whether the tabulation of joint ventures is exhaustive (although it most certainly is not) and it is not clear how the “Roster” is constructed. However, over the eight years considered, the periodical did report approximately 3500 joint ventures involving U.S. companies.

In order to be included in the final sample, the joint venture had to meet several additional criteria. First, both (or all) of the parent companies involved had to be U.S. corporations.⁸ Second, an announcement of the joint venture had

⁵ Eckbo [16], Stillman [38], and Wier [41] examine common stock returns around events associated with antitrust proceedings initiated by the U.S. Justice Department against potential corporate mergers.

⁶ Brodley [12] surveys judicial cases involving the legal status of joint ventures under the antitrust laws through 1976. Two other more recent cases involve: (1) the forced dissolution in 1981 of a joint venture, called *Premiere*, between four movie studios and Getty Oil (see [34, pp. 40–41]), and (2) the international joint venture between General Motors and Toyota (see [20, pp. 1+]).

⁷ One perception is that intercorporate joint ventures and mergers are different economic phenomena because joint ventures are formed primarily to undertake new projects whereas mergers primarily involve the joining together of existing projects. This perception is not entirely accurate. On the one hand, in most instances joint ventures involve an expansion of activities in which one or both of the joint venture partners had been previously engaged. On the other hand, the result of many mergers is that one or both of the merging companies reorganizes its existing activities or redeploys assets in new ways. In many cases, the redeployment of assets and the reorganization of activities that comes about as a result of the merger can be viewed as a new project. Presumably, there are instances in which a joint venture is the most efficient form of organization to accomplish some set of objectives and there are other instances in which a merger is the most efficient form of organization to accomplish the objectives. A separate question is: What are the fundamental characteristics of the organizational forms that determine which is the most efficient form in the various cases? We do not explore that question in this paper. However, Fama and Jensen [17, 18] provide a framework for analyzing the comparative advantages of alternative organizational forms. Before addressing that question, we address the more basic question in this paper of whether joint ventures are value-creating activities.

⁸ Our sample is limited to domestic joint ventures so as to avoid contaminating the results with any international “diversification” effects that may occur in international joint ventures. However,

Table II
Description of the Sample of Joint Ventures

A. Chronological Profile

<u>Year of Initiation</u>	<u>Number</u>
1972	25
1973	18
1974	12
1975	15
1976	15
1977	12
1978	22
1979	17
Total	136

B. Type of Joint Venture

<u>Category</u>	<u>Number</u>
Real Estate Development	18
TV Programming, Motion Pictures, Video Games, etc.	14
Develop Nuclear Power, Uranium Production, etc.	9
Coal Mining or Develop Coal Mine	8
Petrochemical Facility	7
Convert Waste to Energy	5
Develop Satellite Communications	4
All Others	71
Total	136

to be reported in the *Wall Street Journal* and to be referenced in the *Wall Street Journal Index*. Third, joint ventures in output price regulated industries were excluded.⁹ Fourth, the common stock returns for at least one of the parent companies had to be available on the Investment Services Laboratory, Inc. (ISL) daily returns tape over a period beginning 180 days prior to the joint venture announcement and ending 180 days following the announcement. This last criterion means that all of the parent companies included in the stock returns analysis were listed on the New York Stock Exchange (NYSE) or the American Stock Exchange (ASE) around the date of the joint venture announcement.

This search and screening procedure yielded a sample of 210 companies involved in 136 joint ventures. Table II contains some statistics which describe the sample. Panel A tabulates the joint ventures by year of initiation. According to Panel A, the announcements of joint ventures in the sample were distributed approximately evenly over the time period examined.

Panel B tabulates the joint ventures by the type of undertaking involved. This panel contains eight categories: (1) real estate development; (2) television pro-

Lummer [27] has documented results for international joint ventures that are similar to those reported here for domestic joint ventures.

⁹ Excluded from the sample on the basis of this criterion were three joint ventures among electric utilities for the construction of power generating units, six joint ventures among oil and gas pipeline companies for the construction of oil and gas pipelines, and eight joint ventures between oil and gas companies for drilling and exploration for oil and natural gas.

gramming, motion pictures, video games, etc.; (3) development of nuclear power, uranium production, etc.; (4) coal mining or development of coal mines; (5) construction or development of petrochemical facility; (6) conversion of waste to energy; (7) development of satellite communications; and (8) all others. To determine the category into which each joint venture should be placed, the *Wall Street Journal* article describing the venture was read. The sample is reasonably heterogeneous. By far, the category containing the largest number of joint ventures is "all others." This category contains joint ventures as disparate as catalogue showrooms, leasing services, microfiche systems, newsprint mills, and sporting goods importation. However, the real estate development category, with 18 joint ventures, does represent about 13 percent of the sample and the television programming, motion pictures, video games, etc., with 14 joint ventures, represents about 10 percent of the sample.

III. Statistical Methodology and Data

The primary methodology used to measure the magnitude of security price reactions to announcements of joint ventures is the by now standard residual analysis technique based upon the market model. Additionally, we repeated all of the tests reported here using the comparison period methodology developed by Masulis [31] and found the results to be qualitatively identical to those discussed below.

One of the requirements for the computation of the test statistics employed in most event studies—including this one—is that the events considered not be contemporaneous, otherwise the assumption of cross-sectional independence of returns is likely to be violated. That requirement is met for the sample used in this study. However, even though the joint venture announcements themselves are not contemporaneous, in 65 cases our sample includes the common stock of two or three firms involved in the same joint venture. In these instances the assumption of cross-sectional independence of returns is likely to be violated. To correct for this potential problem, the common stocks of firms in the same joint venture are formed into an equally-weighted portfolio and the portfolio is treated as a single "security" in conducting the statistical analysis that follows. This procedure, then, means that the full sample includes only 136 "securities," each of which represents a single joint venture, even though the common stocks of 210 firms are represented in the sample.

In the tests reported below, the day on which the initial article describing a joint venture appeared in the *Wall Street Journal* is numbered event day $t = 0$. The trading days prior to that day are numbered event days $t = -1$, $t = -2$, $t = -3$, and so on and subsequent trading days are numbered event days $t = +1$, $t = +2$, $t = +3$, and so on. In most cases, the first documented public announcement of a joint venture occurs on the trading day prior to publication of the announcement in the *Wall Street Journal*, i.e., event day $t = -1$. Since it is not possible to determine whether the public announcement came before or after the close of trading on day $t = -1$, the impact of the announcement on the security's price is measured over the two-day trading period consisting of day $t = -1$ and

day $t = 0$. Henceforth, this two-day trading interval is referred to as the announcement period.

The test procedure is implemented by computing ex post excess security returns or security prediction errors (PE) as

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

where R_{jt} and R_{mt} are the observed returns for security j and a market index, respectively, over the two-day event time period day $t - 1$ through day t . The coefficients $\hat{\alpha}_j$ and $\hat{\beta}_j$ are the ordinary least squares estimates of the intercept and slope, respectively, of the market model regression. To compute prediction errors prior to and including the announcement date, the security specific parameters $\hat{\alpha}_j$ and $\hat{\beta}_j$ were estimated with ordinary least squares regression using 60 two-day returns beginning with event day $t = -180$ and ending with event day $t = -61$. To compute prediction errors following the announcement date, the market model parameters were computed using 60 two-day returns beginning with event day $t = +61$ and ending with event day $t = +180$.

The sample cross-sectional average two-day prediction error is computed as

$$\overline{PE}_t = \sum_{j=1}^N \frac{PE_{jt}}{N} \quad (2)$$

where N is the number of observations (i.e., joint ventures) in the sample over the event period day $t - 1$ through day t . Thus, the announcement period average prediction error, \overline{PE}_0 , is the estimated "unexpected" change in stockholders' wealth associated with the public announcement of a joint venture. Cumulative average prediction errors (CPE) are also examined and are computed as

$$CPE_t = \sum_{k=-60}^t \overline{PE}_k \quad (3)$$

for $t = -61$ through $t = +60$. The daily stock returns data used in the tests were taken from ISL daily returns files. The daily market index used is the CRSP value-weighted index of NYSE and ASE securities.

The hypothesis that the average prediction error over any two-day interval or the hypothesis that the cumulative average prediction error over any given interval equals zero is tested using standardized prediction errors as described in the Appendix to Dodd and Warner [14] or in Linn and McConnell [26]. This test procedure yields a z -statistic which is distributed unit normal in the absence of abnormal prediction errors. Additionally, as a check on the possibility that the mean return is unduly influenced by outlier returns, a median test of the null hypothesis is also employed. The particular test used here is the median signed rank (Wilcoxon) test (see, e.g., Hollander and Wolfe [22, pp. 39-40]).

IV. Empirical Results

A. Wealth Gains for the Entire Sample

Estimated changes in stockholder wealth associated with joint venture announcements are presented in Table III for the full sample of 210 firms involved

Table III

Summary of Two-Day Average Prediction Errors and Cumulative Average Prediction Errors (in percent) Surrounding the Announcement of U.S. Domestic Joint Ventures: 1972-1979 (Full Sample, $N = 136$)

(1) Event Day	(2) Two-Day Average Prediction Error (percent)	(3) Percent Positive Two-Day Prediction Errors	(4) Cumulative Average Prediction Error (percent)
-60	-0.25%	45%	-0.25%
-50	-0.06	46	0.43
-40	-0.31	43	0.10
-30	0.32	53	0.92
-20	-0.58	38	0.52
-10	0.40	51	0.94
- 8	0.36	52	1.30
- 6	0.19	50	1.48
- 4	-0.01	51	1.47
- 2	-0.06	43	1.41
0	0.73%	67%	2.15%
+ 2	0.20	50	2.34
+ 4	0.11	48	2.45
+ 6	-0.22	44	2.23
+ 8	0.34	45	2.57
+10	0.32	50	2.89
+20	0.02	51	2.62
+30	-0.28	48	1.90
+40	-0.12	47	1.81
+50	0.29	52	1.73
+60	-0.26	47	2.15

in the 136 announcements. Column (1) identifies the event day relative to event day zero; Column (2) presents the average prediction error (PE_t) over event day $t - 1$ through day t ; Column (3) presents the percentage of two-day PEs that are positive over event day $t - 1$ through day t ; and Column (4) contains the cumulative average prediction error (CPE_t) from event day $t = -61$ through event day t .

Table III shows that the two-day announcement period average prediction error is 0.73 percent. With a z -statistic of 4.10, the null hypothesis of no announcement effect can easily be rejected at the 0.01 level of significance. This result is not due to a few outlier observations as 91 (i.e., 67 percent) of the announcement period PEs are positive. Additionally, the null hypothesis of no announcement effect can be rejected at the 0.01 level of significance according to the median signed rank (Wilcoxon) test.

Examination of Column (4) shows that over the 62-day period beginning with event day -61 and ending on event day 0 the CPE accumulates to 2.15 percent. The z -statistic for this CPE is 1.54 which allows rejection of the null hypothesis at the 0.10 level of significance. Finally, on event day +60 the CPE is at the same

level (i.e., 2.15 percent) as it was on event day 0. Thus, there appears to be no further systematic valuation effect following the initial announcement.

The results indicate that the stockholders of companies involved in joint ventures earn statistically significant excess returns around the time at which intercorporate joint ventures are announced. While the announcement period return of 0.73 percent appears to be "small" it is larger (in absolute value) than any other two-day average prediction error over the 122-day interval surrounding the announcement of the joint ventures. Additionally, the percentage of positive PEs during the two-day event period is greater than the percentage of positive PEs over any other two-day period in the same 122-day interval.

Another way in which to assess the impact of joint venture announcements on shareholder wealth is to convert the average prediction error to a dollar value. To do this, for each of the 210 securities in the sample, the two-day announcement period prediction error was estimated and multiplied by the security's total market value as of event day $t = -61$. The cross-sectional average of these dollar values is \$4,837,893. The degree to which this amount is impressive, of course, lies to a large extent in the eye of the beholder, but it is useful to note that this average "unexpected" wealth increase is greater than the total market values of the equity of a significant fraction of all companies listed on the ASE and NYSE. This relatively large dollar amount associated with a relatively small percentage excess return comes about because the sample includes many of the largest companies listed on the two major exchanges, including International Business Machines, General Electric, Gulf and Western Industries, and Goodyear Tire and Rubber.

The excess returns documented here can be interpreted as being "similar" to those earned by companies involved in mergers. As an example, Asquith [1] finds that the combined excess returns over days -1 and 0 for target (i.e., acquired) firms involved in mergers is approximately 6.5 percent, whereas the combined excess return for bidding (i.e., acquiring) companies over the same interval is approximately 0.3 percent.¹⁰ Because it is not possible to identify acquired and acquiring firms in joint ventures, it seems reasonable that the estimated average wealth increase for *all* firms involved in joint ventures should lie somewhere between those for acquired and acquiring companies in mergers, which it does.

Additionally, Asquith documents that over a 60-day period prior to the merger announcement the CPE increases by approximately 11.0 percent for acquired companies, whereas the CPE is approximately unchanged over the same interval for acquiring companies. Asquith attributes the increase in acquired companies' CPE prior to the event to leakage of information regarding the impending merger announcement. If we attribute the pre-announcement increase in the CPE associated with joint ventures to the same phenomenon, the change in the CPE for all joint ventures again lies somewhere between that for acquiring and acquired companies in mergers.

¹⁰ We compare our results with those of Asquith [1] primarily for convenience. Asquith's results appear to be representative of those found by others. Jensen and Ruback [23] provide a comprehensive review of studies of the stock returns of firms involved in mergers and tender offers. For other references see footnote 1.

Given the description of the sample in Section II, a question that may come to mind is whether the results reported in Table III contain an industry bias due to the apparent "overrepresentation" of joint ventures categorized as real estate or television programming, motion pictures, video games, etc. To check for this possibility the test statistics were reestimated for the sample after deleting companies involved in these two categories of joint ventures. The results are reported in Table IV, Columns (2)–(4).

As the table indicates, the results for this subsample of joint ventures are nearly identical to those for the full sample. The two-day announcement period average prediction error is 0.74 percent ($z = 3.46$); over the period $t = -61$ to $t = 0$ the CPE increases to 3.39 percent ($z = 1.62$); and over the period $t = +1$ to $t = +60$ the CPE declines by 0.61 percent ($z = 1.26$). The number of positive PEs during the two-day announcement period is 70 out of a total of 104 (i.e., 67 percent of the PEs are positive), and the median signed rank (Wilcoxon) test permits rejection of the null hypothesis at the 0.01 level of significance. Finally, the dollar value of the two-day announcement period excess return per firm is \$6,858,933. Given that the remaining joint ventures are approximately evenly spread over a variety of industries, there does not appear to be any significant industry bias in the results.

Another possible factor which may be influencing the test results is the release of other firm-specific information simultaneously with the announcement of the joint venture. To determine the extent of "contaminated" announcements, the *Wall Street Journal Index* was searched for other announcements by firms in the sample over the two-day joint venture announcement period. Thirty companies were identified which made announcements regarding earnings, dividends, financing decisions, capital expenditures, or mergers during the joint venture announcement period. Joint ventures involving these firms were deleted from the sample and the statistical tests were conducted on a "noncontaminated" sample of 108 joint ventures remaining. The results for this smaller sample are reported in Table IV, Columns (5)–(7).

As Table IV indicates, the results of the noncontaminated sample are very similar to those for the full sample. The two-day announcement period \overline{PE} is 0.85 percent ($z = 3.45$); over the period $t = -61$ through $t = 0$ the CPE increases to 2.98 percent ($z = 2.11$); and over the period $t = +1$ through $t = +60$ the CPE declines by 0.23 percent ($z = 0.36$). The number of positive PEs during the announcement period is 74 out of 108 (i.e., 69 percent of the PEs are positive) and the median signed rank test permits rejection of the null hypothesis at the 0.01 level of significance. Thus, the results do not appear to be driven by other firm-specific information released at the same time as the joint venture announcement.

Two other caveats should be mentioned at this point. First, because of the manner in which our sample was compiled, in most cases our results measure the effect of the announcement of the successful completion of joint venture negotiations. Because most of the uncertainty regarding joint venture negotiations has been resolved by the announcement date, our statistical procedure is likely to overestimate the announcement effect of the initiation of joint venture negotiations.

Table IV
 Summary of Two-Day Average and Cumulative Average Prediction Errors (in percent) Surrounding the Announcement of U.S. Domestic Joint Ventures: 1972-1979 (Full Sample Excluding Joint Ventures, Categorized as Real Estate or TV Programming, Motion Pictures, Video Games, etc., $N = 104$, and Noncontaminated Sample, $N = 108$)

(1) Event Day	Full Sample Excluding Joint Ventures Categorized as Real Estate or TV Programming, Motion Pictures, Video Games, etc., ($N = 104$)				Noncontaminated Sample ($N = 108$)			
	(2)		(3)		(4)		(5)	
	Two-Day Average Prediction Error (percent)	Percent Positive Two-Day Prediction Error	Percent Positive Two-Day Prediction Error	Cumulative Average Prediction Error (percent)	Two-Day Average Prediction Error (percent)	Percent Positive Two-Day Prediction Error	Two-Day Average Prediction Error (percent)	Cumulative Average Prediction Error (percent)
-60	-0.29%	45%		-0.29%	-0.35%	42%		-0.35%
-50	-0.15	47		0.77	-0.13	44		0.44
-40	-0.40	42		0.46	-0.35	41		0.16
-30	0.26	52		1.46	0.17	50		1.16
-20	-0.21	42		1.64	-0.60	38		0.83
-10	0.50	51		1.88	0.58	56		1.58
-8	0.51	55		2.39	0.42	55		2.01
-6	0.35	50		2.73	0.23	50		2.24
-4	0.14	54		2.88	0.06	51		2.29
-2	-0.24	42		2.64	-0.17	44		2.13
0	0.74%	67%		3.39%	0.85%	69%		2.98%
+2	0.14	52		3.52	0.10	53		3.08
+4	0.15	46		3.68	0.16	50		3.24
+6	-0.29	40		3.39	-0.45	41		2.78
+8	0.20	41		3.59	0.38	41		3.17
+10	0.30	51		3.89	0.51	52		3.68
+20	0.17	52		3.78	-0.11	50		3.35
+30	-0.25	50		3.48	-0.43	48		2.68
+40	-0.20	45		3.57	-0.07	48		2.92
+50	0.25	50		2.65	0.18	52		2.73
+60	-0.14	50		2.78	-0.37	44		2.75

Second, we have attributed the entire market reaction to joint venture announcements to the joint venture, *per se*. It is possible that joint venture announcements convey additional implicit information to the market about the firm's past or future earnings or investment opportunities. Thus, the wealth increases that we have observed may be a reflection of this other implicit information. However, when we omitted instances in which a firm released other explicit information contemporaneously with the joint venture announcement, the results were very similar to those for the overall sample. Thus, although we cannot rule out an "information" argument as the source of the documented wealth increases, the tests conducted appear to reduce the likelihood of that explanation.

B. Division of Wealth Gains Between Participating Firms

With these caveats in mind, the excess returns and wealth gains reported so far for joint ventures are analogous to those reported for corporate mergers. To push the analogy between mergers and joint ventures a bit further, it can be argued that relative size serves as a proxy for the acquiring and acquired firms in mergers. That is, the acquiring firm is typically the larger of the two firms in a corporate merger. Indeed, Asquith, Bruner, and Mullins [2] have argued that the failure of most studies of mergers to detect any effect of the merger on the acquiring company's shares is due to the fact that the acquiring company is significantly larger than the acquired company. Thus, if the dollar value of the gain in a merger is typically divided approximately evenly between the acquired and acquiring companies and if the acquiring company's market value is 20 times that of the acquired company, then a 10 percent increase in the value of the stock of the acquired company will translate into a 0.5 percent increase in the value of the stock of the acquiring company. Bradley, Desai, and Kim [10] present a similar argument as part of their explanation for the division of gains in tender offers between the bidder and target firms. Asquith, Bruner, and Mullins [2] present evidence to support this argument for mergers, but the evidence of Bradley, Desai, and Kim does not appear to support the argument for tender offers.

To determine the validity of the relative size hypothesis in joint ventures, a subsample of joint ventures in which both (or all) parent companies were included in the full sample was identified. The firms in this sample were then categorized as either the "small" or "large" firm in the joint venture according to the total market value of their common stock 61 trading days before the initial announcement of the joint venture. Both the large firm and the small firm samples contain 65 securities. The remaining 80 companies in the full sample were placed into a third, "all other," category. This sample primarily contains firms for which the joint venture partner's common stock was not listed on either the NYSE or ASE during the period of the study. Presumably, in comparison with their partners, the companies in this sample are relatively even larger than those in the "large" firm sample are in comparison with their "small" joint venture partners. The statistical tests reported above for the full sample were then repeated for each of

the three subsamples.¹¹ The results are reported in Table V. Columns (2)–(4) contain results for the small firm sample; Columns (5)–(7) contain results for the large firm sample; and Columns (8)–(10) contain results for the all other firm sample. To give some indication of the relative sizes of the firms in the three samples, the average market values of the common equity of the companies in the small, large, and all other firm samples are \$625 million, \$3,413 million, and \$1,008 million, respectively.

According to the relative size hypothesis, the excess return of the small partner in a joint venture should be larger than that of the larger partner, but the dollar value of their gains should be approximately equal. Consistent with this hypothesis, the two-day announcement period excess return for the small firm sample is 1.10 percent ($z = 2.77$). For the large firm sample the two-day announcement period excess return is 0.63 percent ($z = 2.30$), and for the all other sample the excess return is 0.57 percent ($z = 1.98$). For all three samples the announcement period average prediction error is different from zero at the 0.05 level of significance according to their z -statistics. For the three samples the percentage of positive announcement period PEs are 57 percent, 57 percent, and 65 percent, respectively, and the median signed rank (Wilcoxon) test permits rejection of the null hypothesis for the three samples at the 0.10 level of significance, the 0.05 level of significance, and the 0.02 level of significance, respectively. Based on these results, then, shareholders appear to gain when companies enter into joint ventures regardless of the relative size of their partner. However, the shareholders of the smaller firm involved in the joint venture appear to earn larger percentage excess returns than the shareholders of the larger firm.

As a final step in this analysis, the cross-sectional average of the dollar values of the announcement period returns was computed for the large firm and small firm subsamples. Again, consistent with the relative size hypothesis, these amounts were \$4,537,522 and \$6,650,544, for the small firm and the large firm sample, respectively. In short, in joint ventures the shareholders of the smaller partner, on average, receive a larger announcement period excess return, but a smaller dollar value gain than the shareholders of the larger partner.¹²

C. Wealth Gains Scaled by Amounts Invested

While the pattern of excess returns to stockholders of companies engaged in joint ventures bears a striking resemblance to that of returns to stockholders of merging firms, it can be argued that for even the small firm sample the announcement period excess return is only slightly greater than 1 percent and this bears little resemblance to the 10 percent to 30 percent excess returns generated for

¹¹ Each of the samples contains only one firm from each joint venture. Thus, in these samples each security represents a single firm.

¹² A similar "size" effect appears to be at work in corporate spin-offs. Both Hite and Owens [21] and Schipper and Smith [36] note that corporate spin-offs can be thought of as reverse mergers. Both studies examine stock price reactions around announcements of corporate spin-offs and both find that relatively large spin-offs generate larger stock price reactions than relatively small spin-offs. Thus, the "size" effect in corporate combinations (or their mirror image) appears to be pervasive.

Table V
Two-Day Average and Cumulative Average Prediction Errors (in percent) Surrounding the
Announcement of U.S. Domestic Joint Ventures: 1972-1979

(1) Event Day	Small firm Sample (N = 65)			Large Firm Sample (N = 65)			All Other Firm Sample (N = 80)		
	(2) Two-Day Average Prediction Error (percent)	(3) Percent Positive Two-Day Prediction Errors	(4) Cumula- tive Average Prediction Error (percent)	(5) Two-Day Average Prediction Error (percent)	(6) Percent Positive Two-Day Prediction Errors	(7) Cumula- tive Average Prediction Error (percent)	(8) Two-Day Average Prediction Error (percent)	(9) Percent Positive Two-Day Prediction Errors	(10) Cumula- tive Average Prediction Error (percent)
-60	-0.13%	45%	-0.13%	0.58%	56%	0.58%	-0.65%	46%	-0.65%
-50	-0.12	45	0.74	-0.15	51	0.77	0.02	46	1.17
-40	0.04	51	0.81	0.43	65	1.82	-0.87	39	-1.11
-30	0.43	57	1.07	0.12	51	2.53	0.38	55	0.21
-20	-0.56	38	1.36	0.20	48	2.38	-0.84	33	-0.60
-10	-0.40	43	1.56	0.43	59	2.95	0.54	50	-0.31
-8	0.40	54	1.96	-0.44	37	2.51	0.64	53	0.33
-6	0.26	45	2.22	0.49	65	3.00	0.02	49	0.35
-4	-0.09	51	2.13	-0.40	52	2.60	0.12	49	0.47
-2	-0.78	45	1.35	-0.30	39	2.30	0.41	49	0.88
0	1.10%	57%	2.45%	0.63%	57%	2.93%	0.57%	65%	1.45%
+2	0.57	40	3.03	-0.05	52	2.88	0.17	52	1.62
+4	0.21	55	3.24	0.20	48	3.08	-0.02	51	1.60
+6	-0.76	49	2.87	0.01	37	3.09	-0.04	47	1.56
+8	-0.02	52	2.85	0.04	45	3.13	0.57	44	2.13
+10	0.18	58	2.20	0.20	41	3.17	0.58	49	2.71
+20	0.69	57	3.36	0.41	52	3.19	-0.33	49	1.97
+30	0.00	51	2.83	0.12	54	3.05	-0.57	44	1.01
+40	0.14	51	3.31	0.22	52	3.57	-0.35	39	0.56
+50	0.09	49	2.93	0.21	52	3.35	0.44	55	0.91
+60	0.15	48	3.47	-0.10	52	3.03	-0.33	43	1.72

the target firms involved in mergers and tender offers. Thus, it seems unrealistic to argue that these episodic events are "merely" another example of a standard capital budgeting project. However, to put this in perspective, recall, as we noted above, that a merger involves the pooling of all the assets of the merging firms, whereas a joint venture involves a combining of only a subset of the involved companies' assets. Presumably the amount of the net present value generated by a project bears some relationship to the initial outlay required. Thus, to compare the total gains in joint ventures with those generated by mergers, it seems reasonable to scale the gains by the amount of resources involved. To do this, each *Wall Street Journal* article describing a joint venture was carefully read to determine whether the outlay required for the project was identified for each partner. In some cases the article reported only the total amount involved. In those cases we assumed an equal contribution by each of the partners. By following this procedure, we identified the dollar amount of the initial outlay for 88 of the 210 companies in the full sample.¹³ The smallest estimated outlay was \$0.9 million, the largest was \$1.37 billion, and the median amount was \$35.0 million.

An estimate of the "premium" (or scaled gain) generated by each firm in the sample was computed as

$$Q_j = \frac{PE_j \cdot MV_j}{I_j} \quad (4)$$

and the average premium for the sample was computed as

$$\bar{Q} = \frac{1}{N} \sum_{j=1}^N Q_j \quad (5)$$

where PE_j is the two-day announcement period prediction error for company j , I_j is the dollar amount of resources committed to the project by company j , and MV_j is the total market value of the common stock of company j 61 days prior to the announcement date of the joint venture.

For this sample the estimated value of \bar{Q} is 0.541 with a standard deviation of 3.88. This number lies substantially above the range of "typical" premiums estimated for mergers and tender offers. However, this estimate was substantially affected by one significant outlier observation. For one company, Q_j was estimated to be 27.0. That is, for one company the wealth gain in the joint venture was estimated to be 27 times the amount of funds committed to the project. When this observation is omitted from the sample, the average premium becomes 0.230 with a standard deviation of 2.60.¹⁴ The average joint venture premium, then,

¹³ For 66 of the 88 companies, the actual dollar outlay for each company could be determined from the *WSJ* article. For the remaining 22 companies, which were involved in nine joint ventures, only the combined total dollar outlay for the entire joint venture could be determined. For these 22 cases, we assumed that the total outlay was funded by equal contributions of the joint venture partners. This assumption seems reasonable given that equal contributions were, in fact, reported for 48 of the 66 firms in which the individual dollar contribution could be identified.

¹⁴ Predictably the median premium of 0.06 lies below the mean. It is difficult to compare this number with those calculated in mergers and tender offers because few studies report the median wealth gain.

lies comfortably within the range of premiums that have been documented in studies of intercorporate mergers and tender offers.¹⁵

There is, however, one potentially important difference between the mean scaled wealth gain computed for firms involved in joint ventures and those computed for firms involved in intercorporate acquisitions. In a merger the premium is computed by dividing the change in stockholders' wealth by the total capitalized value of the common stock of the participating company. In computing the joint venture premiums, we have divided the change in stockholders' wealth by the stated dollar contribution of the joint venture partner. It is possible that the stated dollar value of the contribution understates the total capitalized value of each partner's contribution if nonfinancial resource commitments like patent rights, access to new technology, and specialized labor have not been included. The extent to which this factor might bias the results is impossible to determine. It is still the case, however, that even if nonfinancial resource commitments were equal in size to reported financial commitments, the scaled wealth gain in joint ventures would lie within the range of premiums documented for intercorporate acquisitions—albeit at the lower end of the range.¹⁶

V. Summary and Conclusion

U.S. domestic joint ventures are wealth-creating intercorporate transactions for the shareholders of the participating companies. For the 210 companies examined in this study, the average estimated increase in shareholder wealth associated with the joint venture is approximately \$5.0 million. *Mergers and Acquisitions* has reported that over the period 1972–1979 approximately 7,000 U.S. corporations initiated intercorporate joint ventures. The companies included in our sample are among the largest corporations in the U.S. As a consequence, the resources involved and the wealth created by this sample of joint ventures may overstate those for the “average” joint venture. Nevertheless, because of the number of companies involved, because of the dollar amount of resources committed, and because of the dollar amount of wealth created, the evidence indicates that intercorporate joint ventures play a significant role in U.S. economic and commercial activity and probably deserve somewhat greater attention from financial economists than they have heretofore received.

Additionally, and more importantly for the purposes of this paper, the stockholder returns reported here bear a striking resemblance to those earned by the stockholders of firms involved in other types of corporate combinations. The stockholders of the smaller partner in the joint venture earned a larger “excess” return than the stockholders of the larger partner. However, the average dollar value of the gains tends to be more equally divided. A similar result appears to be at work in mergers. Furthermore, when the dollar value of the gain in the joint venture is scaled by the amount of resources committed to the project, the

¹⁵ In their study of corporate spin-offs, Hite and Owers [21] also compute a measure of the “scaled” wealth increase due to spin-off announcements. To do so, they divide the dollar value of the wealth increase by the capitalized value of the assets which are spun-off. Their average scaled wealth gain is also quite large—on the order of 100 percent of the value of the assets spun-off for the total sample and approximately 50 percent of the value of the assets spun-off for the “small” spin-off sample.

¹⁶ We wish to thank the referee for suggesting this (and many other) valuable point(s) to us.

average "premium" generated lies in the range of premiums generated in intercorporate mergers and tender offers.

The similarity in results for studies of mergers and joint ventures is interesting because of the one major factor that distinguishes them: In mergers, companies pool all of their resources under the ultimate direction of the management of the acquiring company. Thus, it is difficult to distinguish between the synergy hypothesis and the management displacement hypothesis as explanations for the large wealth increases that typically accompany intercorporate mergers and tender offers. In joint ventures, companies combine a subset of their resources to accomplish some objective and, although a primary responsibility for managing the joint venture may reside with the managers of one of the involved parent companies, the original managements of the parent companies are unchanged.

Given the similarities between results reported in various studies of mergers and those reported here for joint ventures, we are inclined to interpret our results as supportive of the synergy hypothesis as the source of gains in other types of corporate combinations. Of course, in no way do our results tell us what the fundamental economic factors are that generate the substantial wealth increases associated with mergers and joint ventures—labelling a phenomenon is not the same as explaining it. Our results do, however, suggest that other types of intercorporate transactions may also generate significant wealth increases for the participating companies' shareholders. If so, then a more careful analysis of these other types of transactions may yield insights into what the fundamental factors are that determine security values. Such information would undoubtedly be of interest to scholars, policy makers, investors, and managers.

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