

Why Do Real Estate Master Limited Partnerships Seem to be Undervalued?

*Donald G. Christensen**

*Donald R. Levi**

Abstract. This study investigates one reason why real estate master limited partnerships (MLPs) are undervalued. The study finds that parents of MLPs, generally, and parents of non-real estate MLPs experience positive stock price increases when creating MLPs in the same business as the parent firm and insignificant price increases otherwise. Parents of real estate MLPs experience insignificant stock price changes whether or not the MLP is in the same business as the parent firm. However, despite insignificance, we find evidence that real estate parents forming real estate MLPs may experience greater stock price appreciation than non-real estate parents creating real estate MLPs.

Introduction

Firms with assets that are perceived by management to be undervalued by the capital markets due to information asymmetry frequently reveal those assets to market participants by separating them from the parent firm for financing purposes. Quite often, the assets are either separately incorporated, using an organizational form known as an equity carve-out, or are separated from the parent as a publicly traded partnership, known as a master limited partnership (MLP). The parent firm maintains ownership control of the new separately financed subsidiary and, upon announcement of the new subsidiary, the capital markets revalue the subsidiary's assets and the parent firm's equity.

This study focuses on new subsidiaries created using the MLP organizational form. Specifically, the goal of this study is to attempt to explain why, upon first public announcement, firms creating real estate MLP subsidiaries seem to experience less significant parent equity revaluation than firms creating non-real estate MLPs.¹ To do this, we segment our sample into subsamples based on whether newly created MLPs are in the same industry as parent firms. We make the assumption that management, in creating new MLPs, views these financing activities as positive net present value projects and acts in the interest of shareholder wealth maximization.

The second section of the paper contains a literature review of the relevant empirical literature while the third section presents theoretical background for the thesis of the paper. The fourth section sets forth the sample segmentation process and testable hypotheses arising from the theoretical predictions. The data collection procedures and statistical methodology are contained in the fifth section followed by an analysis of results in the sixth section. The final section summarizes and concludes the study.

*Department of Finance, Real Estate and Decision Sciences, Barton School of Business, The Wichita State University, Wichita, Kansas 67208.

Date Revised—April 1992; Accepted—August 1992.

Literature Review

Rutherford and Nourse (RN) (1988) studied the equity revaluation response for non-real estate parent firms upon the announcement of the creation of new MLPs. They found a positive equity price impact for their sample of real estate MLPs. Moore, Christensen and Roenfeldt (MCR) (1989) also found a positive parent equity price effect for various categories of MLP announcements but did not segment their sample by real estate versus non-real estate MLPs. Hite, Owers and Rogers (HOR) (1984) found a positive share price response for their sample of real estate spin-offs but did not specifically study MLPs. Christensen and Levi (CL) (1992) specifically compared parent equity price responses for parents forming real estate versus non-real estate MLPs. They found a positive price response for parents announcing non-real estate MLPs but, contrary to RN (1988), no significant price response for parent firms forming real estate MLPs. However, CL (1992) did not provide tests to attempt to identify why parent firm equity responds differently to the announcement of the creation of non-real estate MLPs versus real estate MLPs.

Theoretical Background

One possibility for the lack of a price effect for real estate MLPs may be that parent firms forming real estate MLPs are in different businesses than the newly created MLP. That is, investors and analysts who normally participate in the initial valuation of financing activities in the parent's line of business may have little or no experience evaluating real estate investments and, real estate analysts may not be immediately aware of real estate investments by parent firms not in the real estate business. Thus, given an inefficient valuation process and the attending risks, real estate MLPs may be undervalued upon creation resulting in a lack of any real parent equity price response. Using CL's example, if an oil and gas parent forms an oil and gas MLP, industry analysts and investors who normally participate in the oil and gas business will have little difficulty initially valuing this financing activity. However, if the same parent created a real estate MLP, it is possible, given the risks of overvaluation faced by analysts in valuing something with which they are not familiar, that the new real estate MLP, upon first public announcement, will be undervalued. This may occur because real estate analysts may not be aware, upon first public announcement, of the investment by a non-real estate parent in a new real estate MLP.

Sicherman and Pettway (SP) (1987) studied the common equity wealth reaction upon announcement by firms of the acquisition of divested assets. They categorized their study into firms acquiring divested assets in the same business as the acquiring firm and those acquiring assets in different businesses. SP note that finance theory does not support real asset diversification by firms because investors can diversify much more efficiently on their own account. They argue that, due to synergies, economic rents may be available to firms acquiring assets in the same business as the acquiring firm. Further, corporate combinations in the same business may be more likely to succeed due to management efficiency in managing assets with which they are already familiar. Hence, investors may value acquisition of related assets more highly than unrelated assets. SP's empirical analysis provides evidence in support of that assertion. They find that

firms acquiring related assets experience greater positive stock price revaluation upon announcement than those acquiring unrelated assets.

The logic of SP's arguments also applies to the creation of new MLPs. Both the SP study and this study analyze equity valuation effects when unanticipated information reaches the capital markets about investment by parent firms in sets of assets. In SP's case, the new information is about assets acquired from outside the parent firm. In the case of this study, the new information is about the separate financing of assets already held by the firm. In both cases, the investment in the assets is not known prior to the announcement. Specifically, the value of assets separately financed through creation of an MLP is insider information and is not available to the capital markets prior to the announcement of the MLP by the parent firm. Thus, the creation of MLPs also leads to a solution of the asymmetric information problem posed by Myers and Majluf (MM) (1984). Hence, economic rents may be available to parent firms when assets are separately financed. Further, as in the case of assets acquired from outside the firm, economic rents may be greater, due to synergies, if the separately financed assets are in the same industry as the parent firm. Because management efficiencies may be expected to be greater for those firms separately financing assets in the same business as the parent firm, investors may infer that such MLP/parent firm combinations may have a greater probability of success than those parents forming MLPs in unrelated businesses. Therefore, due to synergies, management efficiencies and possible market inefficiencies in valuing new information, the revealing of a related asset investment through the announcement of a new MLP by the parent firm may be greeted by a greater upward stock price revision than for those parent firms revealing investments in unrelated assets.

Sample Segmentation and Testable Hypotheses

We extend the work of CL (1992) and test this notion by segmenting our real estate and non-real estate MLP samples into six groups as follows:

- A. Parent industry and MLP industry are the same:
 - (1) Full sample with both real estate and non-real estate MLPs;
 - (2) Non-real estate MLPs only;
 - (3) Real estate MLPs only.
- B. Parent industry and MLP industry are not the same:
 - (4) Full sample with both real estate and non-real estate MLPs;
 - (5) Non-real estate MLPs only;
 - (6) Real estate MLPs only.

The first group (subsamples (1), (2) and (3)) contains MLP announcements in which the parent firm and the MLP are in the same business. The second group (subsamples (4), (5), and (6)) contains MLP announcements in which the parent and its newly created MLP are in different businesses. Using standard event study methodology, these groupings allow a test of the contention that parent firms creating MLPs in related industries fare better than parent firms creating unrelated MLPs and a test of at least one possible reason why real estate and non-real estate MLPs are valued differently, on average, upon announcement. Our general hypotheses may be stated as follows.

- H_0 : Parent firm common stock revaluations are the same whether or not the newly created MLP is in the same industry as the parent.
- H_a : Parent firm common stock revaluations are greater (more positive) when the parent firm and the newly created MLP are in the same industry.

We find that, overall, parent firms creating MLPs in the same business as the parent experience significant positive stock price revaluations upon announcement of the new MLP. Further, parent firms creating unrelated industry MLPs do not experience significant stock price revaluations. These results also hold for parent firms creating non-real estate MLPs in the same and different industries, respectively, as the parent. However, the result does not hold for parent firms creating real estate MLPs. Parent firms creating real estate MLPs experience insignificant stock price revaluations, whether or not the parent firm is in the same business as the MLP. But, a close analysis of the results indicates that, despite statistical insignificance, real estate parent firms creating real estate MLPs may fare better than non-real estate parents creating real estate MLPs.

Data Collection Procedures and Methodology

The sample we analyze in this study is the same sample used in the CL (1992) study. That sample is an updated version of the sample used by MCR (1989). The use of similar samples facilitates comparison of results across the three studies and represents the complete population of MLP announcements from 1980 to 1989 that meet the data screening criteria for studies of this nature. A thorough description of the original data collection procedures and screens and the sample update process may be found in the MCR and CL studies, respectively. Our goal in this study is to compare the common equity revaluation impact for parent firms rolling-out MLPs in the same industry as the parent versus parent firms rolling-out MLPs in different industries. We use two-digit Standard Industrial Classification codes (SICs) to determine which parent firms are in the same industry as the MLP subsidiary and which are not. The sample used by CL contained fifty MLPs (thirty-seven non-real estate and thirteen real estate MLPs). Because of ambiguous SIC codes for three parent firms, the sample we use in this study contains forty-seven MLPs (thirty-five non-real estate and twelve real estate MLPs). SICs for the parent firms and MLPs were obtained from Standard and Poor's COMPUSTAT Status Reports and Research COMPUSTAT Status Reports. Standard event study methodology in the manner of MCR and CL was used to produce the results for this study.²

Results

Exhibits 1 through 6 contain the results of our statistical analysis. As discussed above, the sample for this study has three fewer MLP announcements than the samples used by Christensen and Levi. To ensure consistency of our results with those of CL, we replicated their study and estimated event study models for our full sample of forty-seven MLP announcements and our sample subsetted into non-real estate and real estate MLPs. The results of those analyses were very similar to CL's Exhibit 1 and Exhibit 2 results and are available from the authors upon request.

Exhibit 1[†]

Two-day Period Ending Day	APE %	Z-value	Corrado t-value	CAPE %	Z-value	% Positive	Z-value
-20	-1.03	-1.14	-.92	-1.03	-1.14	37.5	-.75
-18	-.43	-.39	-.52	-1.45	-1.08	43.8	-.25
-16	.49	.88	.26	-.96	-.38	43.8	-.25
-14	1.94	2.33**	1.17	.97	.84	50.0	—
-12	-1.56	-1.13	-.83	-.59	.24	43.8	-.25
-10	2.31	1.70*	.99	1.72	.92	62.5	.75
-8	.42	.68	.82	2.14	1.11	43.8	-.25
-6	.90	1.01	1.20	3.04	1.39	50.0	—
-4	.30	.40	.71	3.35	1.44	53.3	—
-2	2.05	2.10**	1.22	5.40	2.03**	56.3	.25
0	4.17	5.25***	3.08***	9.57	3.52***	81.3	2.25**
+2	-1.36	-1.39	-1.51	8.20	2.97***	31.3	-1.25
+4	.50	.41	.15	8.70	2.97***	50.0	—
+6	-1.12	-.79	-.99	7.58	2.65***	43.8	-.25
+8	-1.02	-1.03	-.96	6.56	2.30**	37.5	-.75
+10	-.13	-.13	-.15	6.43	2.19**	43.8	-.25
+12	.06	.02	.04	6.49	2.13**	50.0	—
+14	.42	.17	.49	6.92	2.11**	50.0	—
+16	1.38	1.34	1.74	8.29	2.36**	68.8	1.25
+18	-.24	-.77	-.58	8.05	2.13**	50.0	—
+20	-.31	-.18	-.47	7.74	2.04**	31.3	-1.25

[†]Average Prediction Errors (APEs),^a Cumulative Average Prediction Errors (CAPEs), the percentage of APEs positive and test statistics for a sample of 16 real estate and non-real estate MLPs in the same industry as their parent firms over the period 1980 to 1989

^aPrediction errors were computed from the market model using the CRSP equally weighted index. Prediction errors also were computed using the value-weighted index and the mean-adjusted returns model with results similar to those above.

*significant at .01 level (two-tailed test)

**significant at .05 level (two-tailed test)

***significant at .10 level (two-tailed test)

Exhibit 1 shows the results for our sample of MLPs in the same industry as the parent firms. This sample includes both real estate and non-real estate MLPs. The first column in the exhibit shows the number of two-day periods surrounding the two-day announcement period. The announcement period is the two-day period ending day zero. It is composed of trading days -1 to 0. Trading day 0 is the day the MLP announcement first appeared in the *Wall Street Journal* or, where a *Wall Street Journal* announcement date was not available, the day after the Securities and Exchange Commission (SEC) filing date.³ Two-day period ending day -2 is composed of trading days -2 and -3 relative to trading day 0, and so on.

Average prediction errors (APEs) are compounded across each of these two-day periods in the manner of MCR and CL. APEs are in the second column in the exhibit. Z-values for hypothesis testing for the APEs are in the third column of the exhibit. Because the Z-values are parametric statistics and are sensitive to distributional

asymmetries in the underlying distribution of firm-specific prediction errors (PEs), a nonparametric statistic, the Corrado *t*-value (Corrado, 1989), also was computed. The Corrado *t*-value is shown in column four of the exhibit. Cumulative average prediction errors (CAPEs) are shown in column five of the exhibit and *Z*-values for the CAPEs are shown in column six. As a test for how widespread across the sample the results typified by the APE are, and as a test for the influence of outliers in the firm-specific PEs, the percent positive of the underlying PEs and a binomial *Z*-value are shown in columns seven and eight of the exhibit, respectively. The binomial *Z*-value tests the hypothesis that the number of PEs underlying the APE that are positive or negative is significantly greater than 50%.

For the sample of sixteen MLPs in the same industry as their parent firms, column two of Exhibit 1 shows an APE of 2.05% on two-day period -2 and an APE of 4.17% on the two-day announcement period. Both of these results are significant at the .05 and .01 levels, respectively. The Corrado *t*-value for the two-day announcement period (column four) is also significant at the .01 level. These results are strong evidence of a powerful and positive stock price response for parent firms announcing the creation of new MLPs in the same industry as the parent firm. Further, CAPEs are large, positive and significant at the .05 level or better starting on two-day period -2 and continuing throughout the event window. This result provides evidence that the positive stock price impact experienced by parent firms on the announcement period continues in the form of better than expected (prior to the MLP announcement) returns for several trading days following the announcement of the new MLP. The percent positive PEs underlying the APE is 81.3%, (binomial *Z*-value, 2.25) on the announcement period and is significantly different from 50% at the .05 level. Thus, the announcement period result is widespread across the sample of MLPs in the same industry as their parents and is not driven by outliers.

Exhibit 2 shows the results for our sample of thirty-one MLPs in different industries than their parent firms. This sample contains both real estate and non-real estate MLPs. Column two of Exhibit 2 shows an announcement period APE of 1.10%. This result is 3.07% less than the announcement period APE for MLPs in the same industry as their parents. However, the result for the thirty-one MLPs not in the same industry as their parents appears to be significantly positive at the .05 level according to the *Z*-value on the APE. But the nonparametric Corrado *t*-value for the announcement period is not significant and the percent positive of the PEs underlying the APE (58.1%, binomial *Z*-value, 0.72) is not significantly different from 50%. A univariate analysis of the distribution of the firm-specific PEs underlying the APE revealed that the APE is driven by a positively skewed distribution influenced by outliers and that the positive result is not widespread. Finally, while CAPEs for the sample of MLPs matched with their parent's industries showed positive and significant gains to the parent firms through the end of the event window, the results for the MLPs in different industries than their parents shows only marginal positive returns (generally significant at the .10 level) occurring after the announcement period.

To summarize the general results for MLPs in the same and different industries as their parent firms, the parents of MLPs in the same industry experience greater economic gains upon the announcement of the new MLP and greater economic gains for several trading days after the announcement than do parents of MLPs not in the same industry as their newly created MLPs. Further, these superior gains seem to be widespread across

Exhibit 2[†]

Two-day Period Ending Day	APE %	Z-value	Corrado t-value	CAPE %	Z-value	% Positive	Z-value
-20	.13	.47	.41	.13	.47	45.2	-.36
-18	-.41	-1.03	-1.47	-.29	-.39	25.8	-2.51**
-16	.01	.41	.74	-.28	-.09	58.1	.72
-14	.51	1.12	1.50	.23	.48	61.3	1.08
-12	-.21	-.14	-.47	.02	.37	41.9	-.72
-10	.37	.82	1.06	.40	.67	64.5	1.44
-8	.53	.60	1.02	.93	.85	54.8	.36
-6	-.54	-.75	-.91	.39	.53	32.3	-1.80*
-4	.67	1.74*	1.65	1.06	1.08	61.3	1.08
-2	.59	1.17	.34	1.65	1.39	45.2	-.36
0	1.10	2.35**	1.58	2.75	2.04**	58.1	.72
+2	-.18	-.06	-.19	2.57	1.94*	45.2	-.36
+4	.40	.41	.03	2.96	1.97**	41.9	-.72
+6	-.08	-.06	-.13	2.88	1.88*	41.9	-.72
+8	.20	.40	.31	3.08	1.92*	48.4	—
+10	-.67	-1.12	-.88	2.41	1.58	45.2	-.36
+12	.16	.93	1.32	2.57	1.76*	61.3	1.08
+14	.25	.39	1.01	2.82	1.80*	54.8	.36
+16	-.27	-.10	-.68	2.55	1.73*	38.7	-1.08
+18	.09	.16	-.10	2.64	1.72*	48.4	—
+20	.05	.25	.40	2.68	1.74*	45.2	-.36

[†]Average Prediction Errors (APEs),^a Cumulative Average Prediction Errors (CAPEs), the percentage of APEs positive and test statistics for a sample of 31 real estate and non-real estate MLPs in different industries than their parent firms over the period 1980 to 1989

^aPrediction errors were computed from the market model using the CRSP equally weighted index. Prediction errors also were computed using the value-weighted index and the mean-adjusted returns model with results similar to those above.

*significant at .01 level (two-tailed test)

**significant at .05 level (two-tailed test)

***significant at .10 level (two-tailed test)

the parents of MLPs in the same industry while gains to parents of MLPs in unrelated industries seem to be concentrated in a few outliers. These results support our alternative hypothesis.

Exhibit 3 contains the results for our sample of eleven non-real estate MLPs in the same industry as their parent firms. Echoing the results for the Exhibit 1 sample, the announcement period APE, 5.32%, is positive and significant according to both the Z-value on the APE and the Corrado *t*-value. Further, the percent positive is 81.8%, (binomial Z-value, 1.81) and is significantly different from 50% at the .10 level. Thus, the result is reasonably widespread and is not driven by outliers. Further, the results for the CAPEs are significant at the .05 level or better through two-day period +8.

Exhibit 4 shows the results for our sample of twenty-four non-real estate MLPs in different industries than their parent firms. The APE on the announcement period for this sample is not significant. Further, the percent positive, 62.5%, (binomial Z-value,

Exhibit 3[†]

Two-day Period Ending Day	APE %	Z-value	Corrado t-value	CAPE %	Z-value	% Positive	Z-value
-20	-.35	-.38	-.17	-.35	-.38	45.5	—
-18	-1.16	-.93	-1.07	-1.51	-.92	46.4	-.60
-16	-.08	.34	-.41	-1.59	-.55	27.3	-1.21
-14	.82	1.26	.26	-.77	.15	36.4	-.60
-12	-1.47	-.74	-.60	-2.23	-.20	54.5	—
-10	2.37	1.20	.47	.13	.31	63.6	.60
-8	.80	.95	.96	.93	.64	36.4	-.60
-6	1.08	1.04	1.35	2.01	.97	54.5	—
-4	-.09	-.02	.18	1.93	.91	45.5	—
-2	2.50	2.10**	1.51	4.42	1.52	63.6	.60
0	5.32	5.60***	2.62**	9.74	3.14***	81.8	1.81*
+2	-1.03	-.88	-.96	8.71	2.76***	36.4	-.60
+4	-.08	-.18	-.17	8.63	2.60***	45.5	—
+6	-1.24	-.56	-.63	7.39	2.34**	45.5	—
+8	-.79	-.65	-.84	6.60	2.11**	36.4	-.60
+10	-1.03	-.92	-.94	5.57	1.81*	36.4	-.60
+12	.72	.70	.69	6.28	1.93*	54.5	—
+14	1.07	.63	.96	7.35	2.02**	54.5	—
+16	.70	.51	.94	8.05	2.09**	63.6	.60
+18	-.58	-1.13	-1.22	7.47	1.78*	36.4	-.60
+20	.16	.32	.11	7.63	1.81*	45.5	—

[†]Average Prediction Errors (APEs),^a Cumulative Average Prediction Errors (CAPEs), the percentage of APEs positive and test statistics for a sample of 11 non-real estate MLPs in the same industry as their parent firms over the period 1980 to 1989

^aPrediction errors were computed from the market model using the CRSP equally weighted index. Prediction errors also were computed using the value-weighted index and the mean-adjusted returns model with results similar to those above.

*significant at .01 level (two-tailed test)

**significant at .05 level (two-tailed test)

***significant at .10 level (two-tailed test)

1.02) is not significantly different from 50%. The CAPE on the announcement day is significant at the .05 level. Further, following the two-day announcement period, there are some marginally significant gains, as indicated by CAPEs, to parent firm shareholders but these disappear after two-day period +8.

The results for the samples of non-real estate MLPs seem to be very similar to the results for the full samples. Shareholders of parent firms rolling-out MLPs in the same industry experience highly positive and significant gains on the announcement period and those gains continue for several trading days following the announcement period. Shareholders of parent firms creating MLPs in different industries experience, on average, insignificant gains on the announcement period with only marginally positive gains for the two-day periods following the announcement period.

Exhibit 5 shows results for our sample of five real estate MLPs in the same industry as their parent firms. None of the APEs in proximity to the announcement period is

Exhibit 4[†]

Two-day Period Ending Day	APE %	Z-value	Corrado t-value	CAPE %	Z-value	% Positive	Z-value
-20	.30	.69	.50	.30	.69	45.8	-.20
-18	-.68	-1.24	-1.59	-.38	-.39	25.0	-2.25
-16	.30	.83	1.05	-.08	.16	58.3	.61
-14	.53	.88	1.20	.45	.58	58.3	.61
-12	.03	.43	.17	.48	.71	45.8	-.20
-10	.26	.65	.60	.74	.91	58.3	.61
-8	.94	1.30	1.79*	1.68	1.34	66.7	1.43
-6	-.40	-.28	-.28	1.28	1.15	33.3	-1.43
-4	.77	1.75*	1.41	2.04	1.67*	58.3	.61
-2	.47	1.08	.48	2.51	1.93*	45.8	-.20
0	.91	1.45	1.90*	3.42	2.27**	62.5	1.02
+2	-.60	-.89	-.36	2.82	1.92*	45.8	-.20
+4	.32	.38	-.14	3.13	1.95*	41.7	-.61
+6	-.10	.23	.22	3.03	1.94*	45.8	-.20
+8	.23	.10	.59	3.26	1.90*	54.2	.20
+10	-1.02	-1.53	-1.45	2.25	1.46	37.5	-1.02
+12	.22	.81	1.36	2.46	1.61	62.5	1.02
+14	.33	.29	.98	2.79	1.63	50.0	—
+16	-.57	-.37	-1.23	2.21	1.50	29.2	-1.84
+18	.37	.72	.38	2.59	1.63	50.0	—
+20	.12	.39	.59	2.70	1.67*	45.8	-.20

[†]Average Prediction Errors (APEs),^a Cumulative Average Prediction Errors (CAPEs), the percentage of APEs positive and test statistics for a sample of 24 non-real estate MLPs in different industries than their parent firms over the period 1980 to 1989

^aPrediction errors were computed from the market model using the CRSP equally weighted index. Prediction errors also were computed using the value-weighted index and the mean-adjusted returns model with results similar to those above.

*significant at .01 level (two-tailed test)

**significant at .05 level (two-tailed test)

***significant at .10 level (two-tailed test)

significant. Further, though 80% of the announcement period PEs underlying the APE are positive, given the small sample size, the binomial Z-value on the announcement period, .89, indicates that the number of positive price responses is not significantly different from 50%. The CAPE on the announcement period is marginally significant at the .10 level but none of the CAPEs after the announcement period are significant.

Exhibit 6 contains the results for the sample of seven real estate MLPs in different industries than their parent firms. Interestingly, the APE on the announcement period appears to be positive and significant at the .05 level according to the Z-value on the APE. However, this result is not supported by the Corrado t-value (-.18). Further, the percent positive PEs underlying the APE on the announcement period, 42.9%, is less than 50%. A univariate analysis of the distribution of PEs underlying the APE reveals that the positive APE on the announcement period is driven by outliers.

Because of the small sample sizes (five real estate MLPs in the same industry as their parents and seven MLPs in different industries) the real estate MLP results must be

Exhibit 5[†]

Two-day Period Ending Day	APE %	Z-value	Corrado t-value	CAPE %	Z-value	% Positive	Z-value
-20	-2.51	-1.48	-1.35	-2.51	-1.48	20.	-.89
-18	1.18	.68	.65	-1.33	-.57	60.	—
-16	1.74	1.06	1.04	.41	.15	80.	.89
-14	4.40	2.29**	1.64	4.81	1.27	80.	.89
-12	-1.77	-.93	-.56	3.04	.72	20.	-.89
-10	2.19	1.27	1.02	5.23	1.18	60.	—
-8	-.42	-.18	.02	4.81	1.02	60.	—
-6	.50	.27	.11	5.32	1.05	40.	—
-4	1.36	.80	1.11	6.68	1.28	75.	.50
-2	1.07	.65	-.09	7.75	1.42	40.	—
0	1.65	1.08	1.52	9.40	1.68*	80.	.89
+2	-2.10	-1.18	-1.22	7.30	1.27	20.	-.89
+4	1.76	1.00	.52	9.06	1.49	60.	—
+6	-.86	-.58	-.79	8.20	1.29	40.	—
+8	-1.51	-.88	-.45	6.69	1.02	40.	—
+10	1.85	1.14	1.10	8.54	1.27	60.	—
+12	-1.38	-.99	-.94	7.16	.99	40.	—
+14	-.99	-.64	-.55	6.17	.81	40.	—
+16	2.87	1.63	1.64	9.04	1.16	80.	.89
+18	.50	.30	.79	9.54	1.20	80.	.89
+20	-1.33	-.79	-.98	8.21	1.00	—	-1.79*

[†]Average Prediction Errors (APEs),^a Cumulative Average Prediction Errors (CAPEs), the percentage of APEs positive and test statistics for a sample of 5 real estate MLPs in the same industry as their parent firms over the period 1980 to 1989

^aPrediction errors were computed from the market model using the CRSP equally weighted index. Prediction errors also were computed using the value-weighted index and the mean-adjusted returns model with results similar to those above.

*significant at .01 level (two-tailed test)

**significant at .05 level (two-tailed test)

***significant at .10 level (two-tailed test)

interpreted with caution. Though the APE on the announcement period for the related industry sample is not significant, it is positive. When the outliers are removed from the unrelated industry sample, the announcement period APE for that sample is negative (-1.69%), 3.34% less than the APE for the related industry sample. Further, the CAPEs for the related industry sample, though not significant, are considerably larger than the CAPEs for the unrelated industry sample. The corresponding Z-values also are greater. Finally, the percent positive PEs underlying the APE for the related industry sample, 80%, is much larger than the percent positive PEs underlying the APE, 42.9%, for the unrelated industry sample. This evidence seems to point to the fact that though the sample sizes are small, and the numbers generally are statistically insignificant, the signs and relative magnitudes of the numbers seem to indicate that the shareholders of real estate parent firms rolling-out real estate MLPs may experience greater gains than the shareholders of non-real estate parent firms rolling-out real estate MLPs.

Exhibit 6[†]

Two-day Period Ending Day	APE %	Z-value	Corrado t-value	CAPE %	Z-value	% Positive	Z-value
-20	-.46	-.28	-.06	-.46	-.28	42.9	—
-18	.51	.13	-.16	.06	.11	28.6	-.76
-16	-1.01	-.68	-.39	-.95	-.48	57.1	—
-14	.44	.72	.94	-.51	-.05	71.4	.76
-12	-1.03	-1.09	-1.31	-1.54	-.54	28.6	-.76
-10	.76	.52	1.14	-.78	-.28	85.7	1.51
-8	-.86	-1.15	-1.17	-1.64	-.69	14.3	-1.51
-6	-1.01	-1.05	-1.43	-2.65	-1.02	28.6	-.76
-4	.34	.42	.88	-2.31	-.82	71.4	.76
-2	1.01	.46	-.17	-1.30	-.63	42.9	—
0	1.75	2.27**	-.18	.45	.08	42.9	—
+2	1.25	1.51	1.07	1.70	.52	42.9	—
+4	.68	.16	.33	2.38	.54	42.9	—
+6	-.02	-.56	-.68	2.36	.37	28.6	-.76
+8	.10	.67	-.46	2.46	.53	28.6	-.76
+10	.52	.48	.85	2.98	.64	71.4	.76
+12	-.03	.45	.27	2.94	.73	57.1	—
+14	-.01	.28	.32	2.93	.77	71.4	.76
+16	.77	.48	.85	3.70	.86	71.4	.76
+18	-.89	-.99	-.91	2.80	.62	42.9	—
+20	-.20	-.20	-.26	2.61	.56	42.9	—

[†]Average Prediction Errors (APEs),^a Cumulative Average Prediction Errors (CAPEs), the percentage of APEs positive and test statistics for a sample of 7 real estate MLPs in different industries than their parent firms over the period 1980 to 1989

^aPrediction errors were computed from the market model using the CRSP equally weighted index. Prediction errors also were computed using the value-weighted index and the mean-adjusted returns model with results similar to those above.

*significant at .01 level (two-tailed test)

**significant at .05 level (two-tailed test)

***significant at .10 level (two-tailed test)

Summary and Conclusions

CL (1992) found that real estate MLPs seem to be undervalued upon announcement relative to non-real estate MLPs. The purpose of this study is to extend the work of CL and attempt to explain why real estate MLPs seem to be undervalued. This study asserts that real estate MLPs may be undervalued when they are created by parent firms in industries other than the real estate industry. An extension of this assertion is that all MLPs created by firms in industries other than the parent firm's industry are undervalued. This may be because investors and analysts following particular industries are not sufficiently competent to value initially assets in other industries. Further, analysts and investors that follow the industry of the new asset investment may not be immediately aware of the activity. When a parent rolls-out an MLP in an industry other than its own, parent firm industry analysts, fearing overvaluation, may undervalue the new MLP upon first public announcement. Further, extending the arguments of

Sicherman and Pettway (1987) to the case of MLPs, economic rents, due to synergies and the revelation of insider information, may be available, upon announcement, to parent firms creating MLPs and those rents may be greater for parent firms creating MLPs in the same industry as the parent. This may occur because MLP/parent firm combinations may be viewed as much more likely to succeed if management is charged with managing assets with which they are already familiar. Finally, finance theory does not support real asset diversification, that is, conglomerate investment, as being, generally, in the shareholders' best interest. Shareholders can diversify much more easily on their own. Thus, finance theory supports the notion of rolling-out related industry MLPs as being more valuable from the shareholder's perspective than the creation of unrelated industry MLPs.

This study finds solid evidence to support the creation of related industry MLPs as being more valuable than the creation of MLPs in unrelated industries. The results hold true for MLPs in general and for parent firms creating non-real estate MLPs. For parents creating real estate MLPs, the results are difficult to interpret due to small sample sizes, but the signs and relative magnitudes of the numbers seem to indicate that real estate parent shareholders whose firms create real estate MLPs may have greater stock price returns than non-real estate parents creating real estate MLPs. Thus, whether or not the newly created MLP is in the same industry as the parent firm may be one reason why real estate MLPs seem to be undervalued.

Notes

¹For a complete discussion of the rationale behind the expectation of either positive or negative stock price impacts upon the announcement of separately financed assets using the MLP organizational form, see the papers by Moore, Christensen and Roenfeldt (MCR) (1989) and Christensen and Levi (CL) (1992).

²A thorough description of the event study methodology used in this study may be found in either MCR or CL.

³For a complete discussion of the methodology used to set up the two-day announcement period and the event window see either MCR (1989) or CL (1992).

References

- Christensen, D. G. and D. R. Levi, Shareholders' Wealth and Organizational Restructuring: Are Real Estate Master Limited Partnerships Different?, *Journal of Real Estate Research*, 1991, 7:1, 1-12.
- Corrado, C., A Nonparametric Test for Abnormal Security Price Performance in Event Studies, *Journal of Financial Economics*, 1989, 23:2, 385-95.
- Hite, G. L., J. E. Owers and R. C. Rogers, The Separation of Real Estate Operations by Spin-Off, *AREUEA Journal*, 1984, 12:3, 318-32.
- Moore, W. T., D. G. Christensen and R. L. Roenfeldt, Equity Valuation Effects of Forming Master Limited Partnerships, *Journal of Financial Economics*, 1989, 24:2, 107-24.
- Myers, S. C. and N. S. Majluf, Corporate Financing and Investment Decisions When Firms Have Information that Investors Do Not Have, *Journal of Financial Economics*, 1987, 13:2, 187-221.
- Rutherford, R. C. and H. O. Nourse, The Impact of Corporate Real Estate Unit Formation on the Parent Firm's Value, *Journal of Real Estate Research*, 1988, 3:3, 73-84.
- Sicherman, N. W. and R. H. Pettway, Acquisition of Divested Assets and Shareholders' Wealth, *Journal of Finance*, 1987, 42:5, 1261-73.