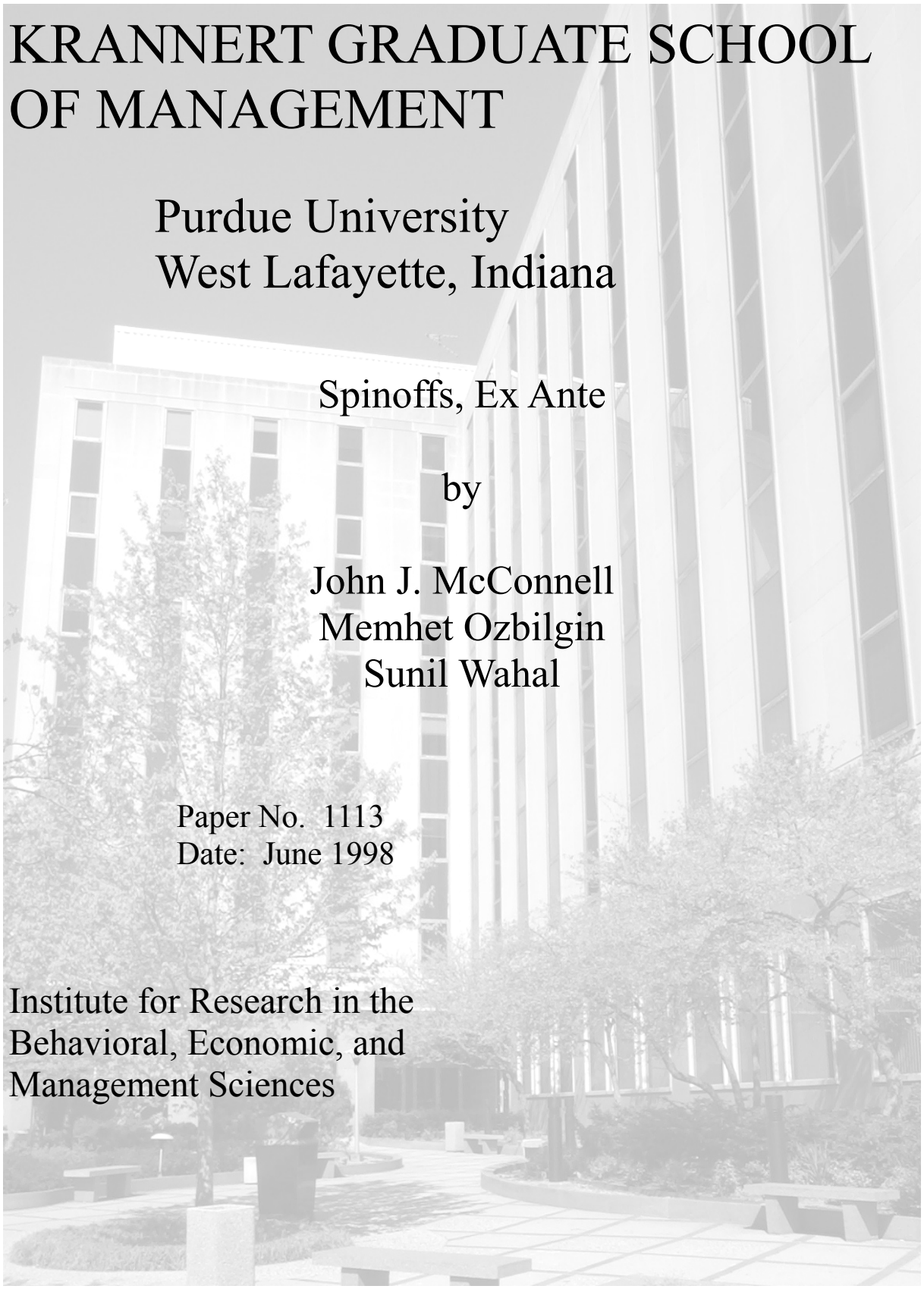

KRANNERT GRADUATE SCHOOL OF MANAGEMENT

Purdue University
West Lafayette, Indiana

Spinoffs, Ex Ante

by

John J. McConnell
Memhet Ozbilgin
Sunil Wahal

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Management Sciences

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John J. McConnell
Purdue University

Mehmet Ozbilgin
Purdue University

Sunil Wahal
Emory University

Abstract

Cusatis, Miles and Woolridge (1993) report large positive excess stock returns following spinoffs for the parent firms that undertake the spinoffs and for the spun off subsidiaries themselves. They examine the period 1965 through 1988 and consider returns for up to 36 months following the spinoff. We investigate whether a trading strategy based on this *ex post* analysis earns positive excess returns on an *ex ante* basis using a holdout sample of spinoffs that occurred over the period 1989 through 1995. We find that, at best, such a strategy produced break-even results when compared with a size- and industry-matched firm benchmark. Tests of "beat-the-market" strategies based on long-run post-event returns are often used to argue against the semi-strong form of the efficient market hypothesis. We do not know whether U.S. stock markets are semi-strong form inefficient, but our results indicate that post-spinoff returns cannot be used to make that argument.

June 26, 1998

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Abstract

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Cusatis, Miles and Woolridge (1993) report large positive excess stock returns following spinoffs for the parent firms that undertake the spinoffs and for the spun off subsidiaries themselves. They examine the period 1965 through 1988 and consider returns for up to 36 months following the spinoff. We investigate whether a trading strategy based on this *ex post* analysis earns positive excess returns on an *ex ante* basis using a holdout sample of spinoffs that occurred over the period 1989 through 1995. We find that, at best, such a strategy produced break-even results when compared with a size- and industry-matched firm benchmark. Tests of "beat-the-market" strategies based on long-run post-event returns are often used to argue against the semi-strong form of the efficient market hypothesis. We do not know whether U.S. stock markets are semi-strong form inefficient, but our results indicate that post-spinoff returns cannot be used to make that argument.

Spinoffs, Ex Ante

1. Introduction

Cusatis, Miles and Woolridge (1993) present evidence that a strategy of investing in either parent companies that undertake spinoffs of subsidiaries or of investing in the spun off subsidiaries themselves provides superior investment performance. Cusatis et al. are careful not to tout their findings as the discovery of a "beat the market" strategy. Rather, their interest is in identifying the source of the well-documented stock price effect associated with the announcement of corporate spinoffs [Hite and Owers (1983), Miles and Rosenfeld (1983), and Schipper and Smith (1983)]. Nevertheless, either as a result of their evidence or coincident with it, the popular press has picked up on the notion that a strategy of buying spun off entities once they begin trading as independent stocks provides a route to superior portfolio performance [Serwer (1992), Michels and Neumeier (1994), Gutner (1996), Hayes (1997)]. The popular press has also reported that some portfolio managers have implemented such a strategy [Ellis (1993), Henriques (1991)].

In this study, we investigate whether a strategy of buying parents and subsidiaries after spinoffs over the 7 years following completion of the analysis reported by Cusatis et al. did, in fact, provide excess returns. We do not quarrel with the performance benchmark nor the empirical procedure employed by these authors. (Though concerns on those dimensions are clearly important and have been reviewed by Fama (1998)). We accept the benchmark and empirical procedures employed by Cusatis et al. as reasonable. We ask whether such a strategy, when implemented over a non-overlapping holdout period, would have generated excess returns

given their empirical methodology. Specifically, for the period 1989 through 1995, we mimic the procedure employed by Cusatis et al. to compile portfolios of the parents of spinoffs and their spun off subsidiaries. We then construct performance benchmarks composed of size-matched stocks from the same industries as the parents and subsidiaries and follow these stocks and their size- and industry-matched benchmarks for up to 36 months following the spinoff.

Our interest in this topic is both scientific and pragmatic: From a scientific perspective, for empirical validation, "beat the market" strategies must be tested on an ex ante basis over a holdout period. From a pragmatic perspective, one of the authors of this paper attempted to implement such a strategy, but did so in a less than scientific way. The question is whether a more careful implementation would have yielded a better result (as, for example, reported in Scholes and Wolfson (1989)).

What do we discover? First, careful implementation of a strategy of buying parents and/or subsidiaries involved in spinoffs over the period 1989 through 1995 would have been a break even strategy at best: In terms of their average returns, over the 24 months following the spinoffs, the portfolio of parents beat its benchmark by roughly 19% and the portfolio of subsidiaries beat its benchmark by about 6%, but the t-statistics associated with this superior performance are modest (0.57 for parents and 0.30 for subsidiaries). Over the 36 months following the spinoffs, the performance was even less good: On average, the portfolio of parents beat its benchmark by 4.3% (t-statistic = 0.11), while the portfolio of subsidiaries *underperformed* its benchmark by 18.2% (t-statistic = -0.71). Second, for both parent and subsidiary portfolios, the mean portfolio returns are highly dependent upon the extraordinary performance of one stock out of 80 for parents and 96 for subsidiaries. In some cases, the

extraordinary performance is attributable to a stock in the sample of spinoff parents or subsidiaries; in others, it is due to a stock in the samples of matching companies.

Studies of long-run post-event stock returns have been used to reject the semi-strong form of the efficient market hypothesis. Cusatis et al. can be interpreted in that vein. We do not know whether the U.S. stock market is inefficient, but our results indicate that post-spinoff stock returns cannot be used to make that argument.

In the next section, we review the Cusatis et al. (1993) study in greater detail. In section 3, we describe our sample and the procedure used to generate performance benchmarks. Section 4 presents the empirical results. Section 5 considers certain related questions including the extent to which the difference in excess returns between Cusatis et al. and our analysis is due to the difference in takeover activity between the two time periods considered and whether using the Fama-French three-factor model as a benchmark would have yielded different results. It does not. Section 6 concludes.

2. Prior investigations of spinoff portfolio performance

Cusatis, Miles and Woolridge (1993) compile a sample of spinoffs that took place over the period 1965 through 1988 by examining the *Moody's Dividend Record*, the Center for Research in Security Prices (CRSP) *Master File*, and the *CCH Capital Changes Reporter*. To be included in their sample for further investigation, a spinoff candidate had to satisfy four criteria: (1) the distribution of stock in the spun off subsidiary had to be fully nontaxable; (2) the distribution of stock had to be voluntary; (3) stock prices for the parent and the subsidiary (after the spinoff) had to be available from one of the following sources: the CRSP *Monthly Returns File*, the *Bank and Quotation Record*, the COMPUSTAT PDE *Tape*, Standard and Poor's *Daily*

Stock Price Record, or the *Wall Street Journal (WSJ)*, and (4) the shares in the spun off entity could not have been trading prior to the spinoff announcement. These criteria yielded a sample of 146 "pure" spinoffs. The bulk of the spinoffs in the sample occurred in the second half of the period studied with 116 of the 146 occurring during the interval 1978 through 1988 for an average of just under 12 per year.

In conducting their analysis, Cusatis et al. did not set out to test a trading rule or to conduct a test of market efficiency. Rather, they were attempting to determine the source of the announcement period gains associated with spinoff announcements as documented, for example, in Hite and Owers (1983), Miles and Rosenfeld (1983) and Schipper and Smith (1983)[1]. Cusatis et al. compute buy-and-hold returns for both the parent and the subsidiary. For parents, they compute returns beginning with the ex-date and, for subsidiaries, they compute returns beginning with the initial listing date. They compare these returns with the buy-and-hold returns of a sample of size-matched stocks from the same industries. They refer to the average difference between the buy-and-hold returns of the parents' (subsidiaries') stocks and the buy-and-hold returns of the matching stocks over the T months following the spinoff as the matched-firm-adjusted return for time T ($MFAR_T$).

Cusatis et al. discover the following:

(1) For parents, over the 36 months following the ex-date, the cumulative MFAR is +18.1% (t-statistic = 1.59). This excess return is actually a drop-off from the cumulative MFAR of +26.7% over the first 24 months following the ex-date (t-statistic = 2.55). Furthermore, over

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[1] More recent studies of announcement period returns to spinoffs include Allen, Lummer, McConnell, and Reed (1995), Daley, Mehrotra and Sivakumar (1997), Wruck and Wruck (1997), Gilson, Healy, Noe, and Palepu (1997), and Desai and Jain (1997).

the first 24 months following the ex-date, excess returns to parents accrete relatively uniformly: Over months 1 through 6, the cumulative MFAR is +6.8% (t-statistic = 1.75); over months 7 through 12 the cumulative MFAR is +5.7% (t-statistic not given); and over months 13 through 24 it is +14.3% (t-statistic not given).

(2) For subsidiaries, over the 36 months following the initial listing date, the MFAR is +33.6% (t-statistic = 2.31) and most of this excess return occurs over months 13 through 24 where the MFAR is +20.5% (t-statistic not given). Indeed, over the first six months following the ex-date, the MFAR is -1.0% (t-statistic = -0.19) and over the first 12 months following the ex-date the cumulative MFAR is only +4.5% (t-statistic = 0.58).

(3) Cusatis et al. determine that a disproportionate number of spinoff parents and spun off subsidiaries are taken over or merged (i.e., acquired) following the spinoff. To determine the extent to which the excess returns that accrue following the spinoffs are due to these takeovers, they separate their samples into parents and subsidiaries that are acquired in the 36 months following the spinoff and those that are not. The authors determine that the cumulative MFAR is larger for those parents and subsidiaries that are acquired. Further, for those parents and subsidiaries that are acquired, the post spinoff cumulative MFAR is statistically significantly different from zero, but it is not for those that are not acquired. However, even for those that are not acquired, the post spinoff cumulative MFAR is impressive. For example, over the first 24 months following the spinoff, for subsidiaries that are not acquired, the cumulative MFAR is +18.9% (t-statistic = 1.64). For parents that are not acquired, the cumulative MFAR is +21.8% (t-statistic = 1.84).

Cusatis et al. are careful in interpreting their results. They interpret their results to imply that "...spinoffs create value primarily by providing an efficient method of transferring control of

corporate assets to acquiring firms" (p. 310). They are careful not to present their results as a guide to a beat-the-market strategy, although they do allow that "the superior mean returns after the spinoff...suggest that...event studies underestimate the value created through spinoffs" (p. 310).

Despite the careful interpretation that Cusatis et al. give to their results, it is tempting to interpret these results as evidence contrary to the semi-strong form of the efficient market hypothesis. It is easy to classify their results as part of the recent set of literature that specifically tests the efficient market hypothesis by analyzing "long-term" returns following certain corporate events. These events include earnings announcements [Ball and Brown (1968), Bernard and Thomas (1990)], mergers and acquisitions [Agrawal, Jaffe and Mandelker (1992), Rau and Vermaelen (1998), Loughran and Vijh (1998)], initial public offerings [Brav and Gompers (1998), Carter, Dark and Singh (1998), Loughran and Ritter (1995), Ritter (1991)], seasoned equity offerings [Lee (1997), Speiss and Affleck-Graves (1995)], new listings on the NYSE and the AMEX [Dharan and Ikenberry (1995)], open market share repurchases [Ikenberry, Lakonishok and Vermaelen (1995)], stock splits [Ikenberry, Rankine and Stice (1996)], proxy contests [Ikenberry and Lakonishok (1993)], and dividend announcements [Michaely, Thaler and Womack (1995)][2]. Indeed, in his review of this literature, Fama (1998) lumps the study by Cusatis et al. in with a set of studies that purport to identify "under-reaction" on the part of investors to corporate events. Fama goes on to question the validity of the Cusatis et al. results and those of other studies that use similar empirical methodologies. We will come to that

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[2] Given the rate at which this set of literature is evolving, there are almost certainly other studies and topics which we have failed to cite. We apologize to those authors. Our oversights are unintentional. A separate set of related literature examines whether the "excess" long-run performance reported by these various studies is robust to alternative procedures used to measure performance [Barber and Lyon (1997), Kothari and Warner (1997)].

question later, but it is not the primary focus of our study. Our interest is in determining whether the Cusatis et al. results are replicable on an out-of-sample set of spinoffs.

Although long-run post-event returns are not the primary focus of the work, two other recent studies examine long-run post-spinoff stock returns. Desai and Jain (1997) examine long-run returns to parents and subsidiaries following spinoffs that occurred during the period 1975-1991. Given that 13 of the 16 years examined by Desai and Jain overlap the years covered by Cusatis et al., it is perhaps not surprising that their results are similar. (The focus of the Desai and Jain study is correlation between the firms' post-spinoff stock returns, degree of "focus", and post-spinoff operating performance.) Wruck and Wruck (1997) also examine long-run returns following spinoffs. Their sample encompasses the period 1985-1995 and so partially overlaps with Cusatis et al. They use a single-factor market-model as the benchmark and determine that "the order of magnitude of their [i.e., Cusatis et al.] average raw and adjusted returns is similar to ours" (p. 10). (The focus of the Wruck and Wruck study is the correlation between spinoff announcement period returns and post-spinoff operating performance.)

3. Sample selection

To compile our sample, we follow the steps employed by Cusatis et al.: We use *Moody's Dividend Record*, the CRSP *Monthly Master File*, and the *CCH Capital Changes Reporter* to identify firms' distributions of the stock of other corporations. For the period January 1989 through December 1995, we identify 381 distributions. From these, we exclude all distributions for which we could find no information describing the transaction in the CCH *Capital Changes Reporter* (89), distributions for which a description is not available in the *WSJ* (24), taxable distributions (115), distributions classified as a return of capital (20), involuntary distributions

(1), distributions by firms for which stock prices are not available in the CRSP *Monthly Master File*, the *WSJ*, the S&P *Daily Stock Price Record*, the *Bank and Quotation Record*, and the COMPUSTAT *PDE Tape* (15), distributions in which the stock of the spun off subsidiary was trading prior to the announcement of the spinoff (19), and distributions of a security other than common stock (2 distributions of warrants)[3]. The sample includes 96 spinoff events for which there are 80 parents and 96 subsidiaries. The sample contains only 80 parents because 1 company had 3 spinoffs, 2 companies had 2 spinoffs, and 12 parent company stocks ceased trading because the companies were taken over at or near the ex-date. The 96 spinoffs over the 7 years of the sample imply an average of just over 13 spinoffs per year, which is just about the number of spinoffs per year during the latter half of the period studied by Cusatis et al.

Panel A of table 1 presents the distribution of the samples by year and exchange listing. The spinoffs are spread reasonably evenly through time, although there is some diminution during 1991 and 1992 relative to the other 5 years. Parents tend to trade on the NYSE/AMEX (60 out of 80 stocks), whereas subsidiaries are evenly split between the NYSE/AMEX (47 out of 96) and NASDAQ. Panel B classifies the samples by two-digit SIC code. Parents represent 36 different SIC categories and subsidiaries represent 37 different categories, but they are not necessarily the same categories.

For parents, matching stocks are selected as of the ex-date of the spinoff according to market value (i.e., number of shares times the closing price on the ex-date) and 4-digit SIC code. Subsidiaries are matched as of the first listing date. For each parent and subsidiary, we identify the stock with the closest market value and the same 4-digit SIC code. If there is no matching

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[3] The initial sample also included 8 issues of "tracking" or "targeted" stock. Such securities did not exist during the period considered by Cusatis et al.

stock within the same 4-digit SIC code and within +/-25% of the market value of the parent (or subsidiary), the match is based on the 3-digit code, then the 2-digit code, and, finally, the 1-digit code.[4] Panel A of table 2 gives the average market values of the parents, the subsidiaries, and their matching stocks by year. On average, matching stocks have market values within +/- 7.7% for parents and +/- 7.1% for subsidiaries. Panel B shows the number of matches at the 4-digit, 3-digit, 2-digit and 1-digit levels.

4. Empirical results

4.1 Methodology

For parents, raw buy-and-hold returns are computed for each stock i as

$$R_{i,T} = \left[\prod_{t=1}^{T} (1 + r_{i,t}) \right] - 1 \qquad (1)$$

where $r_{i,t}$ is the return (price appreciation plus dividends) on stock i in month t relative to the spinoff ex-date where XD signifies the ex-date month. The return over the first partial month is considered to be the return in month XD. The interval XD-6 includes the first partial month's return and the returns over the next 5 months. The average of the N individual buy-and-hold returns for the T months following the ex-date is calculated as

$$\overline{R}_T = \frac{\sum_{i=1}^{N} R_{i,T}}{N} . \qquad (2)$$

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[4] For one stock, we could find no match within +/-25% of the market value in the 4-, 3-, 2-, or 1-digit SIC code. For this stock, we expanded the matching interval to +/-80% and identified a match in the same 4-digit classification.

Buy-and-hold returns are calculated for the matching stocks ($R^{m}_{i,T}$) just as in (1) and (2). MFARs are calculated as the average of the differences in the buy-and-hold returns over the T months following the ex-date as

$$\overline{MFAR}_T = \frac{\sum_{i=1}^{N} \left[R_{i,T} - R^{m}_{i,T} \right]}{N} . \qquad (3)$$

To judge the statistical significance of the MFARs, a t-statistic is calculated as

$$t = \frac{\overline{MFAR}_T}{s / \sqrt{N}} \qquad (4)$$

where s is the sample standard deviation of MFARs for the N firms in the sample.

For subsidiaries, raw returns and MFARs are calculated in the same way except that the calculations begin with the initial listing date, ID.

4.2 Excess returns

To determine whether a particular strategy "beats the market" on an ex ante basis, it is necessary to spell out in advance precisely what that strategy is. Because the primary focus of Cusatis et al. is not the development of a beat-the-market strategy, they do not spell out precisely what such a strategy might be. On the one hand, they note that the highest average excess returns are generated over a 24-month holding period following the spinoff. On the other hand, they present and discuss returns for the first 36 months following the ex-date and various writers in the popular press appear to imply that a 36-month holding period following the ex-date is a good strategy [Michels and Neumeier (1994), Ellis (1993), Serwer (1992)]. Recall, however, that in the Cusatis et al. study, subsidiaries actually show negative MFARs over months ID-6 and, at least, one writer in the popular press has proposed that investors buy spinoffs 6 months after the ex-date [Gutner (1997)].

Table 3 presents the average raw returns and average MFARs for intervals of 6, 12, 24 and 36 months following the ex-date for parents (Panel A) and the initial listing date for subsidiaries (Panel B). In calculating average raw returns and average MFARs for any interval of 24 months or less, if a stock in the sample stops trading for any reason, the buy-and-hold return is computed using the last available stock price and this return is used for performance measurement purposes for all subsequent intervals up to 24 months. Because our stock price data end with December 31, 1997, in calculating returns for the intervals XD-36 or ID-36, we include only spinoffs that occurred prior to February 1995 so that the stock *could* have been held for 36 months. This reduces the sample of parents to 66 and the sample of subsidiaries to 79. Again, if any of these stopped trading for any reason during the 36 months following the spinoff, the buy-and-hold return is computed using the last available stock price and this return is used for performance measurement purposes for all subsequent intervals. If a matching stock stops trading for any reason, a new matching stock is chosen to replace that stock based on the same criteria as used to select the original matching stock.

For mean-variance investors, the average return is the relevant measure of performance. Nevertheless, to give further information about the distribution of returns, the table also presents the medians, minima, and maxima MFARs along with the fraction of MFARs that are positive for both parents and subsidiaries over intervals of 6, 12, 24 and 36 months following the spinoffs.

4.3 Parent company excess stock returns

As shown in panel A of table 3, for parent company stocks, regardless of the interval considered, raw buy-and-hold returns are impressive. Likewise, the average MFAR of +18.66% over months XD-24 is eye-catching. However, the t-statistic for this mean MFAR is only 0.57.

Furthermore, the median MFAR is -1% and 51% of the individual MFARs are negative. What's going on?

What's happening is that the average MFAR for months XD-24 is pulled up by one very large positive outlier of +2272%. As shown in Figure 1, this one very positive MFAR is indeed unusual. When that one observation is dropped from the analysis, the distribution of MFARs is more symmetric and the mean MFAR becomes -9.87%. The extreme positive MFAR is due to Republic Industries, a stock that went from $3 to $69.38 (on a split-adjusted basis) over the 24 months following the spinoff. It was not the target of a takeover.

The average MFAR for parents over the 36 months following the ex-date is a much less impressive +4.32% (t-statistic = 0.11). However, the median return over this interval is now +13% and 55% of the MFARs are positive. Now what's going on? Over the interval XD-36, the mean MFAR is pulled down by one very large negative MFAR of -2220%. Again, the distribution of MFARs in Figure 2 shows the degree to which this one observation is an extreme outlier. When this observation is removed from the calculations, the mean MFAR becomes +38.6%. This outlier is due to the performance of one of the matching stocks, Micron Technology Inc., that went from $15.50 to $384.38 (on a split-adjusted basis) over the 36 months following the spinoff. In both of these instances, the median MFARs are, of course, unchanged by deletion of the outlier.

With regard to parent company stocks, one further observation from table 3 is that the largest increment to the mean MFAR accrues over the interval XD-6. If an investor had followed a strategy of buying parent company stocks 6 months after the spinoff, (or, in our case, 5 months plus the first partial month) the average MFAR would have been negative. For example, over the interval 7-24 months, the mean MFAR was -5.1% (t-statistic = -0.5). Over the interval 7-36

months, the mean MFAR was -2.7% (t-statistic = -0.11). Thus, the strategy of buying parent stocks 6 months after the spinoff would have lead to worse, rather than better, returns.

4.4 Subsidiary company excess stock returns

As shown in Panel B of table 3, subsidiary stock average raw returns are also impressive over various intervals following the spinoff, though they are not nearly as impressive as those of their parents. As regards average MFARs, after the first 6 months, they are either puny or negative. Unlike parent company MFARs, the distributions of MFARs for subsidiaries tend to be symmetric (as shown in Figures 3 and 4). And the medians are close to zero. For example, over the interval ID-24, the average MFAR is +6.1% (t-statistic = 0.30). The median MFAR is -1% and 52% of the MFARs are negative. The largest positive MFAR is impressive at +734%, but that is offset by the largest negative MFAR of -875%.

Over the interval ID-36, for subsidiaries, the mean MFAR is -18.2% (t-statistic = -0.71), the median MFAR is 3%, and 53% of the MFARs are positive. Again, the largest positive MFAR of +759% is offset by the largest negative MFAR of -749%.

Finally, the bulk of the MFAR to subsidiaries accrues over the first 6 months following the spinoff. Indeed, if an investor had followed the strategy of buying subsidiary stocks 6 months after the spinoff, the average MFAR would have been negative over every interval considered. Over the interval 7-24, the average MFAR was -3.4% (t-statistic = -0.24). Over the interval 7-36, the average MFAR was -13.1% (t-statistic = -0.61).

In short, contrary to the time period considered by Cusatis et al., over the subsequent seven-year period, neither parents nor their spun off subsidiaries consistently provided superior investment performance when compared with similar-sized companies from the same industries. There is superior performance over some holding periods, but that performance depends very

much on the holding period considered. Furthermore, if the investor had happened to miss the one extreme performer, the strategy yielded negative excess returns.

5. Other considerations

5.1 Takeover activity

Cusatis et al. determine that a large fraction of the excess returns to the parents and subsidiaries in their sample was due to the stocks of companies that were taken over or merged. Perhaps our results differ from theirs because the time period encompassed by our sample experienced an unusually low level of takeover activity. Cusatis et al. report that 14% of their 146 parent companies and 14% of their 131 subsidiaries were taken over or merged during the 36 months following the spinoff. These fractions are quite comparable to those experienced by our parents and subsidiaries. Of our 80 parent companies, 11, or 14% of the sample, were taken over or merged during the 36 months following the spinoff; of our 96 subsidiaries, 15, or 16% of the sample, were taken over or merged during the same 36 months. (For spinoffs that occurred in 1995, we actually have less than 36 months to observe takeovers so that the rate of takeovers during our time period is mildly understated.) Thus, when we consider spinoff parents and subsidiaries, the difference in takeover activity between the two time periods cannot explain the difference between our results and those of Cusatis et al.

5.2 The performance benchmark

We have used the matching firm procedure (as implemented by Cusatis et al.) to generate our performance benchmarks. Perhaps a different benchmark would have yielded different results. A currently popular benchmark for judging portfolio performance is the Fama- French (1993) three-factor model.

The three factors of the F-F model are the monthly returns on a size factor (small market value stock returns minus large market value stock returns), the monthly returns on a market/book factor (the return on high book-to-market stocks minus the return on low book-to-market stocks), and the monthly returns on a market factor (the return on a value-weighted portfolio index of all NYSE, AMEX and Nasdaq stocks less the contemporaneous return on a 30-day Treasury bill).

We implement the F-F model as in Loughran and Ritter (1995) and Ikenberry, Lakonishok and Vermaelen (1995). In particular, the average monthly return on the portfolio of parent (subsidiary) stocks less the contemporaneous return on a 30-day T-bill is regressed against the contemporaneous returns of the three factors of the F-F model (which were kindly provided to us by Gene Fama). New parent (subsidiary) stocks are added to the portfolio in the calendar month of the stocks XD (ID) and stocks are removed in the calendar month that marks the end of the holding period of interest or when the stock is delisted. Regressions are estimated for holding periods of 6, 12, 24 and 36 months. The intercept of this regression represents the average monthly excess return earned by the parent (subsidiary) stock portfolio.

The results for parents are presented in panel A of table 4 and results for subsidiaries in panel B. To a certain extent, the F-F procedure provides stronger support for the contention that a strategy of buying the stocks of parents and/or subsidiaries following spinoffs provided superior performance over the period 1989-1995 than does the matching firm procedure. For each interval considered and for both parents and subsidiaries, the intercept is positive. Albeit, in no case is the t-statistic greater than 1.50 and most are much below that level.

For parents, for the 24-month holding period, the intercept is 0.0032, which implies a total excess return of +7.7% over the 24-month holding period. For the 36-month holding

period, the intercept is 0.0031, which implies a total excess return of +11.2% over the 36-month holding period. Although the implied excess returns would not be considered statistically significant based upon conventionally required levels of significance, for many investors, these excess returns might be judged to be quite handsome. As might be anticipated, these results are highly sensitive to the one large outlier - - Republic Industries. When that observation is omitted, the magnitude of the intercepts, and their implied excess returns, declines by about 50% for the 24-month period and by about 25% for the 36-month period, but they are still positive in each case. For completeness, we also estimate the regressions for holding periods of 7-24 and 7-36. The intercepts are 0.0028 and 0.0026 with t-statistics of 0.85 and 0.90, respectively.

For subsidiaries, as might be anticipated, the intercepts are smaller than are those for parents. For example, the intercept for the 24-month holding period is 0.0013 which implies a total excess return of +3.1% over the 24-month period. For the 36-month period, the intercept is 0.0014 which implies a total excess return of +5.0% over the 36-month period. For the intervals of 7-24 and 7-36, the intercepts are considerably lower at 0.0009 and 0.0010. For the 18 months 7-24, the total excess return is +1.6% and for the 30 months 7-36, the total excess return is +3.0%.

Thus, when measured against the F-F three-factor model, the strategy of buying spinoff parents and subsidiaries over the period 1989-1995 provided positive, albeit small, excess returns. In no case is the intercept of the F-F regression significant at conventional levels. Whether the excess returns generated by the strategy are economically significant must lie in the eye of the beholder. To us, they look rather modest. However, if an investor had implemented the strategy on an ex ante basis over the time period considered and if the F-F model is considered the appropriate benchmark of performance, the investor could conclude that he/she

had "beat the market". Taken as a whole, however, these results cannot be considered as robust evidence against the semi-strong form of the efficient market hypothesis.

6. Summary and Conclusion

Studies of long-horizon post-event stock returns (such as Cusatis et al. (1993)) have been interpreted as evidence against the semi-strong from of the efficient market hypothesis. We examine long-run returns generated by a strategy of buying the stocks of parent firms that undertake spinoffs and/or the stocks of the spun off subsidiaries after the spinoff occurred. We consider the period 1989-1995. We analyze this period because it follows and does not overlap with the period considered by Cusatis et al.

We compare returns against two benchmarks: (1) a size- and industry-matched portfolio of stocks and (2) the Fama-French three-factor model. We analyze returns over several intervals suggested by the Cusatis et al. results. In no interval, with either benchmark, are excess returns different from zero at even the 0.10 level of significance. We do not know whether U.S. stock markets are inefficient, but post-spinoff stock returns cannot be used to make that argument.

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Table 1
Sample characteristics

Exchange listings (Panel A) and industry classification (Panel B) for a sample of 80 spinoff parents and 96 subsidiaries over the period 1989-1995. The spinoff parents and subsidiaries are identified from a search of the Moody's Dividend Record and the Center for Research in Security Prices (CRSP) Master File. The information on the exchange listings of spinoff parents and subsidiaries are obtained from the CRSP Master File. The industry classifications are defined by 2-digit CRSP Standard Industry Classification codes.

Panel A: Exchange listings

	NYSE		ASE		NASDAQ		Other	
Year	Parents	Subsidiaries	Parents	Subsidiaries	Parents	Subsidiaries	Parents	Subsidiaries
1989	7	9	0	1	4	6	0	0
1990	5	4	0	0	5	8	0	0
1991	4	3	2	1	1	4	0	0
1992	6	5	0	0	2	4	0	0
1993	10	6	3	2	1	7	0	0
1994	12	9	0	0	4	9	0	0
1995	10	5	1	2	3	10	0	1
Total	54	41	6	6	20	48	0	1

Panel B: Industry Classification

	Parents	Subsidiaries		Parents	Subsidiaries
Agricultural production- crops	0	1	Communications	1	4
Metal mining	1	0	Electric, gas, and sanitary services	2	2
Oil and gas extraction	2	3	Wholesale trade-durable goods	2	5
Food and kindred products	6	2	Wholesale trade-nondurable goods	1	0
Textile mill products	0	1	General merchandise stores	2	2
Lumber and wood products	0	1	Apparel and accessory stores	1	0
Furniture and fixtures	1	0	Eating and drinking places	0	2
Paper and allied products	1	1	Miscellaneous retail	1	0
Printing and publishing	1	1	Depository institutions	1	1
Chemicals and allied products	10	11	Nondepository credit institutions	2	3
Petroleum and coal products	1	0	Security and commodity brokers	2	3
Rubber and miscellaneous plastics products	0	1	Insurance carriers	0	4
Leather and leather products	1	3	Real estate	1	1
Stone, clay, glass, and concrete products	1	1	Holding and other investment offices	5	3
Primary metal industries	1	1	Hotels, rooming houses, and lodging places	3	4
Fabricated metal products	1	2	Business services	4	8
Industrial machinery and equipment	9	4	Auto repair, services, parking	1	0
Electrical and electronic equipment	4	8	Motion pictures	1	1
Transportation equipment	1	1	Health services	2	3
Transportation by air	1	2	Motor freight transportation and warehousing	1	1
Instruments and related products	4	2	Social services	0	1
Railroad Transportation	1	1	Engineering and management services	0	1

Table 2
Descriptive statistics for spinoff parents and subsidiaries and for matching firms

Panel A shows the average market values of equity for spinoff parents and subsidiaries and for their matching firms categorized by year of spinoff. The market value of equity is calculated by multiplying the number of shares outstanding by the closing stock price on the ex-date (for parent firms) or by the closing stock price on the initial listing date (for subsidiary firms). For parents (subsidiaries) matching stocks are selected as of the ex-date (initial listing date) of the spinoff according to market value and 4-digit CRSP Standard Industry Classification (SIC) code. If there is no match within the same 4-digt SIC code and within +/-25% of the market value of the parent (or subsidiary), the match is based on the 3-digit code, then the 2-digit code, and, finally, the 1-digit code. Panel B shows the number of matches at the 4-digit, 3-digit, 2-digit, and 1-digit levels.

Panel A: Average market value of equity

Year	Number of parents	Average market value of equity for parents ($ million)	Average market value of equity for matching firms of parents ($ million)	Number of subsidiaries	Average market value of equity for subsidiaries ($ million)	Average market value of equity for matching firms of subsidiaries ($ million)
1989	11	1104.35	1125.33	16	381.44	360.51
1990	10	1137.49	1070.07	12	383.55	345.47
1991	7	1107.69	1160.79	8	326.27	318.10
1992	8	2008.91	1999.92	9	442.05	396.53
1993	14	815.47	764.18	15	510.52	521.67
1994	16	3783.87	3508.09	18	641.93	624.76
1995	14	3401.23	3180.09	18	270.57	270.54

Panel B: Number of firms matched based on SIC code

	Parents	Subsidiaries
Number of firms matched at the 4-digit SIC level	42	52
Number of firms matched at the 3-digit SIC level	10	17
Number of firms matched at the 2-digit SIC level	19	22
Number of firms matched at the 1-digit SIC level	9	5
Total number of firms	80	96

Table 3

Average raw and matched-firm-adjusted buy-and-hold returns of spinoff parents and subsidiaries for the period January 1989 through December 1995

Panel A (Panel B) shows the average raw and matched-firm-adjusted buy-and-hold returns (MFARs) of spinoff parent (subsidiary) stocks for the 6, 12, 24 and 36 months following the ex-date of distribution (initial listing date). Panel A (Panel B) also shows the minima, 25th fractiles, medians, 75th fractiles, and maxima of MFARs for parent (subsidiary) stocks along with the fraction of MFARs that are positive. For parents (subsidiaries) the matched firms are selected based on market value of equity on the ex-date of distribution (initial listing date) and the industry classification. The month of the distribution ex-date for parents (XD) and the month of the initial listing date (ID) for subsidiaries are considered to be month 1 for buy-and-hold return calculations. The matching stock returns are computed contemparenously with those of each parent and subsidiary stock. The MFARs are obtained by subtracting the matching stock returns from the parent and subsidiary stock returns for a given return interval. The mean MFARs represent the equal-weighted average of the individual MFARs. If a parent stock or a subsidiary stock stops trading for any reason, the buy-and-hold return is computed using the last available stock price, and this return is used for all subsequent intervals up to 24 months. Since the stock price data end with December 31, 1997, in calculating the returns for the intervals XD-36 and ID-36, only the spinoffs that occurred prior to February 1995 are included so that the stock could be held for 36 months. This reduces the sample of parents to 66 and the sample of subsidiaries to 79 for the calculation of buy-and-hold returns for the intervals XD-36 and ID-36. If a matching stock stops trading, a new matching stock is chosen to replace that stock based on the same criteria as used to select the original matching stock. t-statistics are in parentheses.

Panel A: Parents

				MFARs						
Months relative to ex-date (XD)	Number of Stocks	Mean Parent Stock Raw Returns	Mean Matching Stock Raw Returns	Mean	Minimum	25 th Fractile	Median	75 th Fractile	Maximum	Percent positive
6	80	17.77% (1.94)	8.84% (2.88)	8.93% (0.94)	-154%	-15%	3%	18%	684%	58%
12	80	35.33% (2.60)	21.77% (3.03)	13.57% (0.91)	-379%	-14%	4%	34%	963%	54%
24	80	79.09% (2.66)	60.44% (4.83)	18.66% (0.57)	-606%	-45%	-1%	37%	2272%	49%
36	66	97.71% (4.14)	93.39% (2.49)	4.32% (0.11)	-2220%	-39%	13%	69%	1126%	55%

Panel B: Subsidiaries

				MFARs						
Months relative to initial listing date (ID)	Number of Stocks	Mean Subsidiary Stock Raw Returns	Mean Matching Stock Raw Returns	Mean	Minimum	25 th Fractile	Median	75 th Fractile	Maximum	Percent positive
6	96	21.07% (2.38)	12.68% (3.13)	8.39% (0.86)	-191%	-36%	-1%	30%	730%	50%
12	96	28.93% (2.76)	22.39% (3.52)	6.54% (0.55)	-241%	-50%	4%	48%	734%	52%
24	96	55.93% (3.91)	49.85% (3.78)	6.09% (0.30)	-875%	-70%	-1%	74%	734%	48%
36	79	70.73% (4.34)	88.94% (4.41)	-18.21% (-0.71)	-749%	-108%	3%	86%	759%	53%

Table 4
Fama-French regressions of spinoff parent and subsidiary stock portfolios

Panel A (Panel B) shows the coefficients of the following time-series regression for spinoff parent (subsidiary) stocks over the holding periods XD-6, XD-12, XD-24, and XD-36 (ID-6, ID-12, ID-24, and ID-36):

$$(R_P - R_F)_t = \alpha + \beta_1 (R_M - R_F)_t + \beta_2 SMB_t + \beta_3 HML_t + \varepsilon_t$$

where: $(R_P - R_F)_t$ is the average monthly return on the portfolio of parent (subsidiary) stocks less the contemporaneous return on a 30-day T-bill in calendar month t, $(R_M - R_F)_t$ is the return on a value-weighted portfolio index of all NYSE, AMEX and Nasdaq stocks less the contemporaneous return on a 30-day T-bill, SMB_t is the difference between the value-weighted average return on the small-cap portfolios and large-cap portfolios, and HML_t is the difference between the value-weighted average return on the high book-to-market portfolios and low book-to-market portfolios. New parent (subsidiary) stocks are added to the portfolio in the calendar month of the stocks' XD (ID) and stocks are removed in the calendar month that marks the end of the holding period of interest or when the stock is delisted. *t*-statistics are in parentheses.

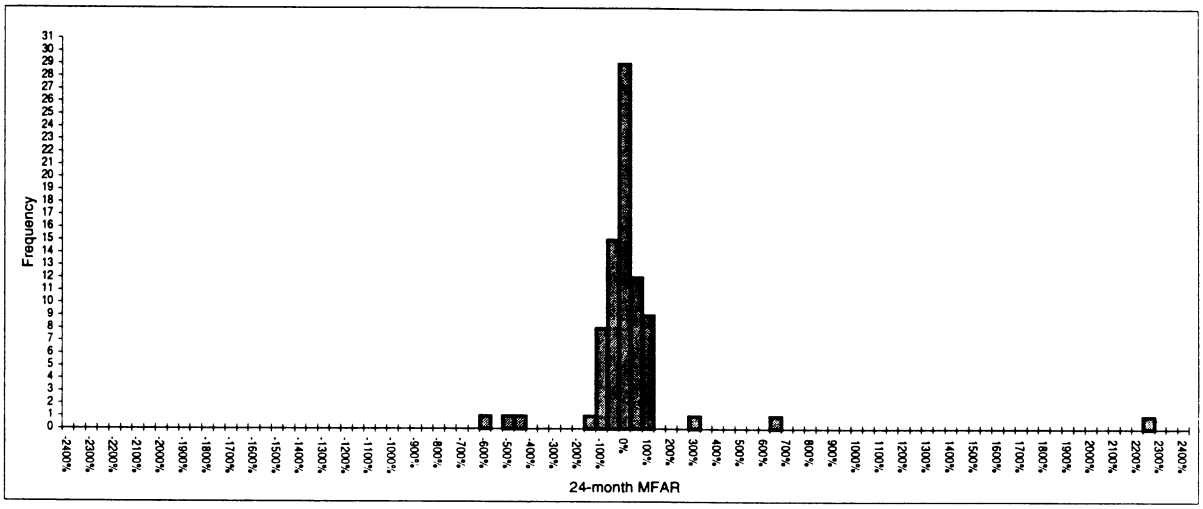
Panel A: Parents

Months relative to ex-date (XD)	Coefficient estimates				R^2
	α	β_1	β_2	β_3	
6	0.0074 (0.76)	0.4609 (1.02)	1.3256 (4.28)	-0.1713 (-0.42)	0.17
12	0.0072 (1.48)	0.0072 (0.03)	1.0469 (6.85)	0.1972 (2.87)	0.43
24	0.0032 (1.06)	-0.1513 (-1.09)	1.1170 (12.11)	0.5554 (4.88)	0.69
36	0.0031 (1.20)	-0.0313 (-0.26)	1.0456 (13.33)	0.6834 (7.06)	0.73

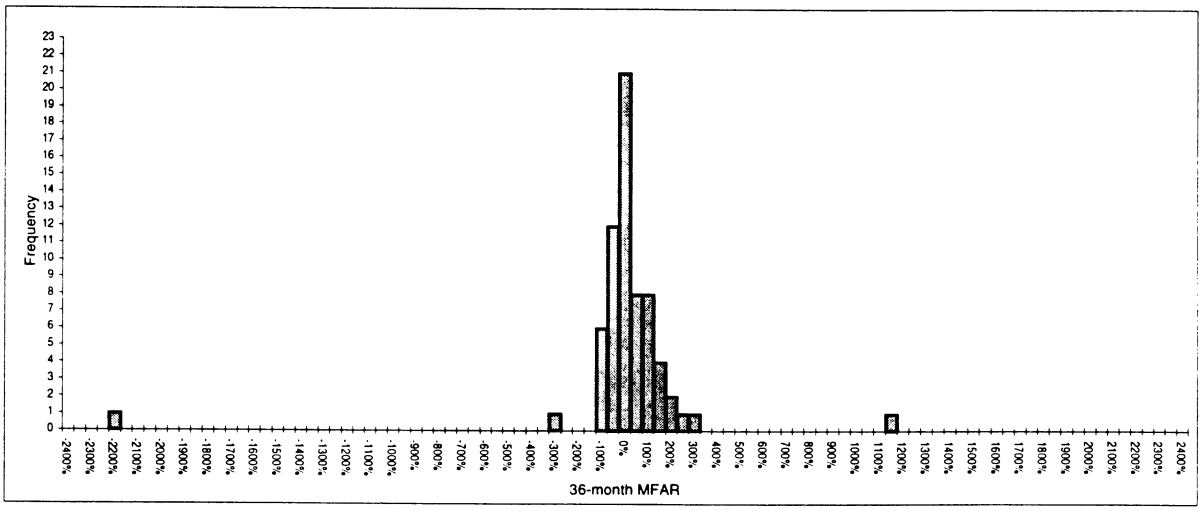
Panel B: Subsidiaries

Months relative to initial listing date (ID)	Coefficient estimates				R^2
	α	β_1	β_2	β_3	
6	0.0107 (1.34)	0.5840 (1.59)	0.8616 (3.46)	1.5069 (4.62)	0.30
12	0.0039 (0.77)	0.2133 (0.92)	1.3074 (8.25)	1.0134 (4.94)	0.54
24	0.0013 (0.30)	0.1252 (0.66)	1.2662 (9.95)	1.1112 (7.07)	0.63
36	0.0014 (0.44)	0.2239 (1.53)	1.1895 (12.26)	1.0388 (8.66)	0.71

Figure 1
Frequency distributions of parent firm MFARs

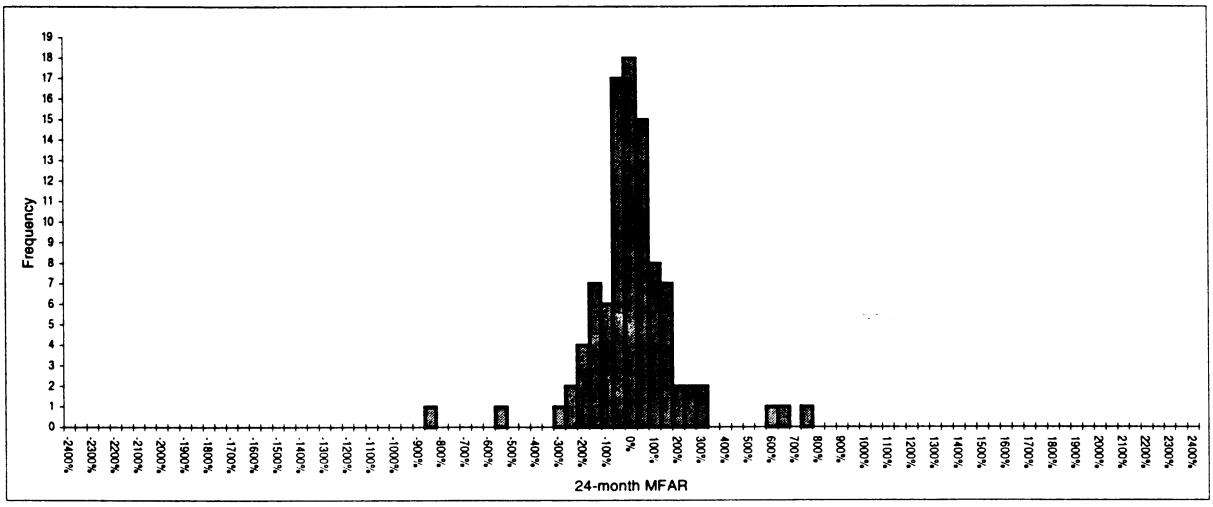


(a) Frequency distribution of matched-firm-adjusted buy-and-hold returns (MFARs) of spinoff parent stocks for the 24-month period following the ex-date of the spinoff.

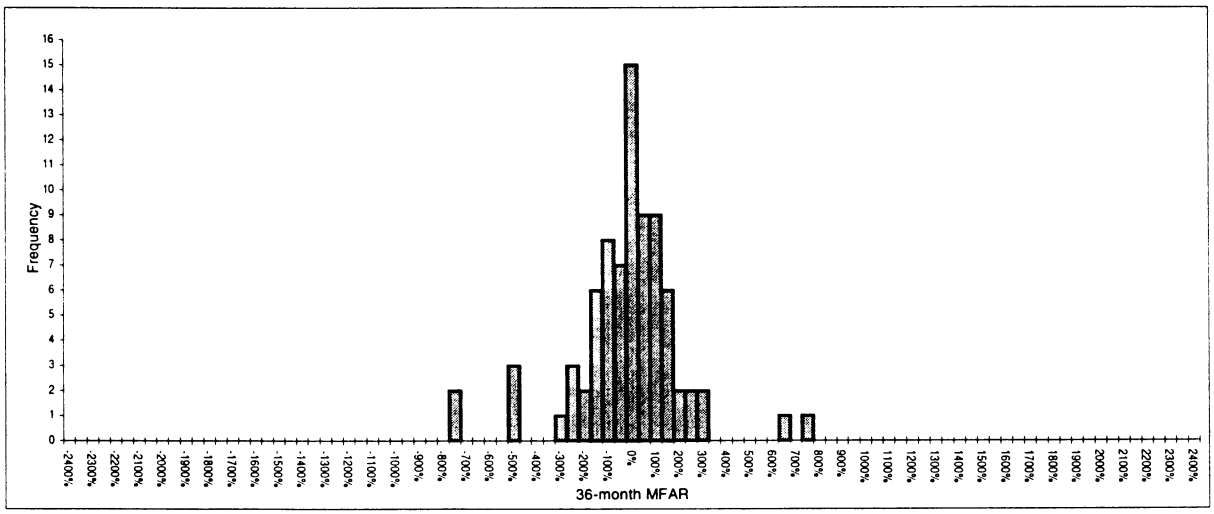


(b) Frequency distribution of matched-firm-adjusted buy-and-hold returns (MFARs) of spinoff parent stocks for the 36-month period following the ex-date of the spinoff.

Figure 2
Frequency distributions of subsidiary firm MFARs



(a) Frequency distribution of matched-firm-adjusted buy-and-hold returns (MFARs) of subsidiary stocks for the 24-month period following the initial listing date.



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