Evidence on the Overreaction Hypothesis: The Case of Management Awards

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Abstract

This study examines a sample of best managed firms for evidence on the investor overreaction hypothesis. The standard event study method supports the overreaction hypothesis. Pre-award stock excess returns are abnormally high and postaward excess returns are negative. Corrections for potential size and risk changes eliminate the negative postaward excess returns. The results support recent criticism that considers evidence of overreaction as an artifact of technical methodological flaws.

Introduction

Recent research such as DeBondt and Thaler (1985, 1987) and Lehman (1990) finds that abnormal profits can be made in the stock market by buying losers and selling winners. This evidence frequently is interpreted as suggesting that investors overreact to news; stock prices of successful firms are bid up, while stocks of loser firms fall below their fundamental values.[1]

Opposition to the overreaction hypothesis focuses on technical flaws in the DeBondt and Thaler studies. Chan (1988), Brown and Harlow (1988), Brown, Harlow, and Tinic (1988), and Zarowin (1990) criticize DeBondt and Thaler for improper adjustments for risk and size changes. Once these changes are accounted for, overreaction phenomena diminish.

The purpose of this study is to provide further evidence on the investor overreaction hypothesis and its criticism. The focus of the current study is a

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[1]The overreaction hypothesis is consistent with observed individual behavior. Individuals are poor Bayesian decision makers; they tend to overweigh recent information and underweigh the fundamentals. (See Kahneman and Tversky (1982).) Experimental cognitive psychology further predicts that deviations from value are only temporary. As less favorable news is received, the former winner price is revised downward. Similarly, former losers become winners after their fundamentals become apparent.

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different brand of winners: excellence award winners. The sample consists of 101 companies whose chief executive officer received a best manager award from a panel of specialists appointed by *Financial World* magazine. If the award is a manifestation of market overenthusiasm about these firms, by the time of the award their stock could be overvalued; in the postaward period, performance could be dismal.[2]

Standard empirical tests support the overreaction hypothesis. Using standard event study methodology, a +21 percent average excess return was documented in the two years preceding the award, and a -9.3 percent average excess return was documented in the two years following the award. After correcting the tests for potential biases, however, the postaward excess return vanishes. These findings lend support to recent criticism of the overreaction evidence.

The Sample of Best Managed Firms

The sample of best managed firms is taken from *Financial World* magazine. *Financial World* awards yearly medals to the most outstanding chief executive officers (CEOs) of the year. The selection of the best managers by *Financial World* follows a lengthy process that is largely independent of *Financial World.* First, a large group of analysts selects the most outstanding CEOs in about 50 industry groups. Then a senior committee, consisting of the more experienced of these analysts, chooses the top executives in ten broad industry categories (12 industries since 1982). These ten (12) winners have been announced in the March issue of *Financial World* since 1975.

Appendix A outlines the criteria used in the selection of the best managers and quotes the reasons Mr. John R. Opel of IBM received a best manager award in 1984. The criteria seem broadly based and do not emphasize the stock price performance of the company. A closer examination, however, may reveal that the criteria and selection process are influenced by stock price performance.

From 1975 to 1984, 106 best manager awards were granted. Table 1 lists the winners' companies. Most of these companies are well known, with common stocks trading on the New York Stock Exchange. Few companies receive the award in two consecutive years.

Monthly return data for the stocks in the sample are collected from the Center for Research in Security Prices (CRSP) tapes. Three award-winning

[2]The main difference between the current winners and DeBondt and Thaler winners is the winning criteria. DeBondt and Thaler define winners according to past stock gain, while this study defines winners according to managerial skill and firm success and prestige. Thus, DeBondt and Thaler are likely to sample firms that progressed fast in recent years, while the current study is more likely to sample firms that were on the top.

firms—Intel, Brown Forman, and American International Group—are eliminated from the sample because their data are not on the monthly CRSP tape. Two additional firms—Federal Express and Bank America—are excluded because they do not have stock return data in the parameter estimation period. The final sample size, therefore, is 101 firms.

Methodology

The market model-based event study methodology is employed to examine stock performance around the award.[3] Parameters of the market model are estimated in months -84 to -25 relative to the award, and excess returns for each stock are calculated in months -24 to +24. (See Appendix B for more details.)

Several average excess return measures are constructed. AR_T, the cross-sectional mean excess return in month T relative to the award, is computed as

$$(1)\quad AR_T = \frac{\sum_{i=1}^{N_T} AR_{i,T}}{N_T},$$

where:

$AR_{i,T}$ = the excess return of stock i in month T; and
N_T = the number of stocks for which the excess return in month T can be calculated.

In addition, CAR (T_b, T_e), the cumulative average excess return in months T_b through T_e, is calculated as

$$(2)\quad CAR(T_b,T_e) = \sum_{T=T_b}^{T_e} AR_T .$$

[3]The market model-based methodology is highlighted in the simulation tests of Brown and Warner (1980) who conclude that " ... beyond the simple, one factor market model, there is no evidence that more complex methodologies convey any benefit."

The statistical significance of these abnormal performance measures is determined using the Patell and cross-sectional methods. The cross-sectional method obtains a t-statistic by dividing the average excess return in month T, AR_T, by its standard error, where the standard error is estimated based on the cross-sectional standard deviation of the individual stocks excess returns in month T (the $AR_{i,T}$s). The Patell method first assesses a t-value for each $AR_{i,T}$ based on the past residual variance of stock i returns and then aggregates the t-values of all sample stocks in month T to obtain a statistic that has a normal distribution. Exact computation formulae are outlined in Appendix B.

Preliminary Evidence

Table 2 documents average performance measures of 101 best managed firms using the standard event study methodology with the NYSE value-weighted index as a proxy of the market index. Column 1 indicates the month relative to the event date. Columns 2 and 3 report the average raw returns and the cumulative average raw returns. The best managed firms earn a cumulative raw return of 50.0 percent from month -24 to month -1 and a cumulative raw return of 27.5 percent from month 1 to month 24.

Column 4 shows the average excess returns. The average excess return in the month of the award announcement is close to zero. Apparently, the announcement of the winners has no effect on the stock price. The t-statistics of the average excess returns are given in columns 6 and 7. The average excess returns in the pre- and postaward months are typically statistically insignificant.

More interesting results are found in Column 8, where the cumulative average excess returns are documented. In the 24 month period preceding the month of the award, the cumulative average excess return is 21 percent with t-statistics of between 5.3 and 5.6. By the time of the award, the stock is already fully (and perhaps overly) appreciated.

The lower half of column 8 in Table 2 tracks the cumulative average excess returns over the postaward period. In the 24 months following the award, the cumulative average excess returns decline about 9.3 percent. The evidence of the postaward tumble is relatively solid:

- The cumulative average postaward excess returns are statistically significant (Table 2 reports that CAR (1, 24) is -9.3 percent with t-statistics of -2.5 to -2.7);
- The postevent decline in the cumulative average excess return is almost monotonic in event time (in 17 of the 24 postaward months the average excess return is negative); and

- The postevent decline does not seem to be driven by a few large negative outliers (in 18 of the 24 postaward months the percentage of stocks with positive excess returns is less than 50 percent).

A Closer Look: Do Best Managed Firm Stocks Really Overreact?

Overall, the behavior of best managed company stocks (the strong preaward gain and the negative postaward excess returns) seems to support the market overreaction hypothesis. Other interpretations, however, are also possible. For example, a potential explanation for the postaward shortfall of best managed firms involves management changes. Fifteen of the 101 best managers left their firms within two years of receiving the award. The postaward performance of the 86 firms that retained their best managers for at least two years after the award continues, however, to be dismal. The postaward CAR (1, 24) of these firms is -9.4 percent with t-statistics of -2.3 approximately.

Other robustness tests indicate that excluding firms that have merged does not mitigate the preaward gain or the postaward loss. Similarly, results do not seem dependent on the choice of market index and estimation period length. The clustering problem also appears insignificant. Despite the fact that there are only ten different event dates in the sample, average correlation of contemporaneous $AR_{i,T}$s is only -0.001. In most of the sample years the preaward abnormal return is positive, and the postaward abnormal return is negative.

The failure of standard robustness tests to detect biases in the results does not conclude this analysis. Best managed firms were on the rise in the years preceding the award. Hence, it is possible that the market model parameters estimated over the period -7 years to -2 years are irrelevant benchmarks for postaward return evaluation. More concretely, any positive abnormal performance during the estimation period tends to bias the estimated market-model intercept $\hat{a}_i$ upwards, and such a bias induces spurious negative excess returns in the postaward period.

There is another reason to suspect analysis based on past market model fitting. The firms become systematically larger between the estimation and award periods (due to significant preaward gains). Table 3 records the size distribution of the sample stocks relative to all NYSE stocks. Most of the firms are large. In the pre-event parameter estimation period, 41 of the sample stocks belong to decile 10 (the top capitalization decile of NYSE stocks), 22 belong to decile 9, 20 to decile 8, and 18 to lower deciles. By the award date their sizes become even larger: 55 belong to the top decile, 24 to decile 9, 15 to decile 8, and only 9 to lower deciles. The mean size-decile increases from 8.7 (in the estimation period) to 9.1 (on the award month) and the median size-decile increases from 9 to 10. The phenomenon of size increase is important because larger firms tend to have

lower average stock returns (Banz, 1981; Reinganum, 1981) which means either lower market model betas or lower market model intercepts or both. It appears that the market model parameters decline between estimation and event periods, and that this decline artificially induces the negative postaward excess returns.

The size change and abnormal estimation period problems suggest the need for a postaward return evaluation method that is less dependent upon past estimation periods. One such methodology is to compute excess returns relative to the CAPM benchmark. Using the CAPM, the expected return in the two-year postaward period can be approximated as

$$24\ [\bar{R}_f + \bar{\beta}\ (\bar{R}_m - \bar{R}_f)]$$

where:

$\bar{R}_f$ = average monthly risk-free rate;
$\bar{\beta}$ = average beta; and
$\bar{R}_m$ = average monthly market return.

The average beta of the sample stocks during the postaward period (months 1 through 24) is 1.08, the average NYSE value-weighted monthly return in the postaward period is 1.17 percent, and the average one month T-bill rate in the sample period is 0.68 percent.[4] Thus, the expected two year postaward return according to the CAPM is 29 percent. This expected return figure is insignificantly different from the 27.5 percent average return realized by the sample stocks in the postaward period. The postaward returns of best managed firm stocks appear normal.

Reinforcing evidence for the normal postaward return conclusion is provided by a different methodology specifically designed to treat such problems. Dimson and Marsh (1986) demonstrate that in cases of systematic size changes, standard event study methodology fails. (See especially their discussion on page 133.) As an alternative, they suggest a simple size control only methodology: compute the excess return, $AR_{i,T}$, as

$$AR_{i,T} = R_{i,T} - RS_{i,T},$$

[4]For each stock i, the market model is run in stock i's 24 month postaward period. The average R_m during this 24 month period is calculated, as is the beta of i. The average beta and average value-weighted market return reported in the text are computed as averages of 101 betas and 101 average R_ms. The average one month T-bill rate is calculated based on monthly CRSP data for 1975:1 through 1985:12.

where:

$R_{i,T}$ = the realized return on stock i in month T; and
$RS_{i,T}$ = the realized return in month T on a portfolio of stocks that belong to the same size-decile as i.

Average excess return measures are calculated as in equations (1) and (2), and t-statistics are computed using the cross-sectional method described in Appendix B.[5]

Some preparatory work is required before implementing the Dimson-Marsh methodology. First, the total market value of each stock traded on the NYSE at each calendar-year end (since 1974) is calculated. Second, size-decile cutoffs are determined for each year according to this stock-capitalization figure. Next, at each year-end, each NYSE stock is assigned to a particular size-decile portfolio. (The stock remains a member of that portfolio for the next 12 months.) Last, the n-th size-decile portfolio return is calculated as a simple (equally-weighted) average of its member returns.

Table 4 documents the results of the Dimson and Marsh size control methodology. Best managed firms do not perform poorly in the postaward period. The cumulative average excess return from month 1 to month 24 is -1.4 percent with a t-statistic of -0.4. The preaward period remains, however, illustrious. The two year preaward average excess return in Table 4 is 28 percent. The award seems to mark the high-point of stock performance. Following the award, excess returns are virtually nil.

Conclusions

The study examines a sample of winners for evidence of overreaction and winner's curse. The winner firms are picked not according to their past stock performance, but according to their excellent general performance and superior management. The 101 firms studied won a best management award from a panel of specialists.

Standard tests support the overreaction hypothesis. Preaward stock returns are abnormally high, and postaward excess returns are negative. Corrections for potential size and risk changes in the spirit of Chan's (1988) and Zarowin's (1990) criticisms on the overreaction hypothesis tests, however, eliminate the negative postaward excess return. The most reliable estimate is that best managed firm stocks earn normal returns in the postaward period. This

[5]Dimson and Marsh's size control methodology does not require any parameter estimation period. Without data estimated over such a period, the Patell t-statistic technique cannot be employed.

conclusion supports recent criticism that views evidence of overreaction as an artifact of technical methodological flaws.

The study is also interesting in a narrower sense. It offers direct evidence on the performance of best managed firm stocks. As such, the excellent preaward gain and the normal postaward returns cast doubt on recent attempts (e.g., Solt and Statman, 1989; Bannister, 1990) to portray good company stocks as bad stocks.

References

1. Bannister, B., "In Search of Excellence: A Portfolio Management Perspective," *Financial Analysts Journal*, 46 (March-April 1990), pp. 68-71.

2. Banz, R., "The Relationship Between Return and Market Value of Common Stock," *Journal of Financial Economics*, 9 (March 1981), pp. 3-18.

3. Brown, K., and W.V. Harlow, "Market Overreaction: Magnitude and Intensity," *Journal of Portfolio Management*, 14 (Winter 1988), pp. 6-13.

4. Brown, K., W.V. Harlow, and S.M. Tinic, "Risk Aversion, Uncertain Information and Market Efficiency," *Journal of Financial Economics*, 22 (December 1988), pp. 355-385.

5. Brown, S., and J. Warner, "Measuring Security Price Performance," *Journal of Financial Economics*, 8 (September 1980), pp. 205-258.

6. Chan, K.C., "On the Contrarian Investment Strategy," *Journal of Business*, 61 (April 1988), pp. 147-163.

7. Collins, D., and W. Dent, "A Comparison of Alternative Testing Methodologies Used in Capital Market Research," *Journal of Accounting Research*, 22 (Spring 1984), pp. 48-84.

8. DeBondt, W., and R. Thaler, "Does the Stock Market Overreact?" *Journal of Finance*, 40 (July 1985), pp. 793-805.

9. DeBondt, W., and R. Thaler, "Further Evidence on Investor Overreaction and Stock Market Seasonality," *Journal of Finance*, 42 (July 1987), pp. 557-581.

10. Dimson, E., and P. Marsh, "Event Study Methodologies and the Size Effect: The Case of UK Press Recommendations," *Journal of Financial Economics*, 17 (September 1986), pp. 113-142.

11. Kahneman, D., and A. Tversky, "Intuitive Prediction: Biases and Corrective Procedures," in D. Kahneman, P. Slovin, and A. Tversky (eds.), *Judgment Under Uncertainty: Heuristics and Biases* (New York: Cambridge University Press, 1982).

12. Lehman, B.N. "Fads, Martingales, and Market Efficiency," *Quarterly Journal of Economics*, 105 (February 1990), pp. 1-28.

13. Patell, J. "Corporate Forecasts of Earnings Per Share and Stock Price Behavior: Empirical Tests," *Journal of Accounting Research*, 14 (Autumn 1976), pp. 246-276.

14. Reinganum, M. "Misspecification in Capital Asset Pricing: Empirical Anomalies Based on Earning Yields and Market Values," *Journal of Financial Economics*, 9 (March 1981), pp. 19-46.

15. Solt, M., and M. Statman, "Good Companies, Bad Stocks," *Journal of Portfolio Management*, 15 (Summer 1989), pp. 39-44.

16. Zarowin, P., "Size, Seasonality, and Stock Market Overreaction," *Journal of Financial and Quantitative Analysis*, 25 (March 1990), pp. 113-125.

Table 1
A Sample of 106 Firms Whose Chief Executive Officers Won Best Manager Awards from *Financial World* 1975 through 1984

1975 Winners
American Natural Resources
Beatrice Foods
Citicorp
Dow Chemical Co.
Exxon
Hewlett-Packard
Eli Lilly
McDonald's Corp.
Trans Union
Union Pacific

1976 Winners
American Electric Power
Dow Chemical Co.
Genuine Parts
Levi Strauss
Merrill Lynch
Moore McCormack Resources
Philip Morris
Standard Oil (Indiana)
Tandy Corp.
Whirlpool Corp.

1977 Winners
Atlantic Richfield Co.
Boise Cascade
Eastern Airlines
General Motors
MCA Inc.
Panhandle Eastern Pipeline
Philip Morris
Revlon
Singer Co.
U.S. Fidelity & Guarantee

1978 Winners
Cooper Industries
Dana Corp.
Delta Airlines
Houston Natural Gas
Merck & Co.
Philip Morris
RCA Corp.
Standard Oil (Indiana)
Tandy Corp.

1979 Winners
American Broadcast Co.
Boeing
Du Pont De Nemours
Mobile Corp.
Philip Morris
SmithKline Corp.
Texas Utilities
Transamerica Corp.

1980 Winners
American Motors
Consolidated Foods (Sara Lee)
Duke Power
Fluor Corp.
Hercules Inc.
Kennecott (merged with Standard Oil, 1981)
Santa Fe Industries
Shearson Loeb Rhoades (merged)
Warner Communications
White Consolidated Ind.

Table 1 (continued)
A Sample of 106 Firms Whose Chief Executive Officers Won
Best Manager Awards from *Financial World*
1975 through 1984

1981 Winners
Boeing Co.
Brown-Forman
Central Telephone & Utilities
Houston Natural Gas
Levi Strauss
Shearson Loeb Rhoades (merged)
Union Pacific Corp.
Warner Communications
Wheelabrator-Frye

1982 Winners
Baxter Travenol Lab.
Chesebrough-Pond's Inc.
Dun & Bradstreet Corp.
Genuine Parts
Heinz
Hewlett-Packard
Missouri Pacific Corp. (merged)
Northwest Industries
Tandy Corp.
Union Oil of California
Wisconsin Power & Light

1983 Winners
Albertson's
American Express
Capital Cities Communications
Chrysler
Dover Corp.
Enserch
General Mills
Hospital Corp. of America
IBM
Lenox Inc.
Potomac Electric Power
Rockwell International
Wal-Mart

1984 Winners
Chrysler
Coca-Cola
CSX Corp.
Gannett
Geico
Hospital Corp. of America
IBM
Parsons Corp. (employee ownership, 1-14-85)
Sedco
Tucson Electric Power
VF Corp.

Table 2 (continued)
Performance Measures of 101 Best Managed Firms
Using the Market Model with the NYSE Market Value-Weighted Index
1975-1984

Month (1)	Average Raw Return % (2)	Average Cumulative Raw Return % (3)	Average Excess Return % (4)	Percentage of Positive Excess Return (5)	t-statistic of Average Excess Return (Cross-Section Method) (6)	t-statistics of Average Excess Return (Patell Method) (7)	Average Cumulative Excess Return % (8)	Number of Observations (9)
6	1.06	60.16	0.57	55.6	0.76	1.10	18.62	99
7	-0.27	59.89	-0.28	45.9	-0.45	-0.32	18.34	98
8	3.65	63.54	-0.81	48.0	-1.03	-1.37	17.53	98
9	1.44	64.98	0.18	46.9	0.31	0.66	17.71	96
10	0.14	65.12	-1.48	38.5	-1.67	-2.80	16.24	96
11	-2.26	62.86	-1.67	29.2	-2.35	-2.25	14.57	96
12	3.36	66.22	2.02	57.3	1.80	2.35	16.59	96
13	2.36	68.59	-0.33	51.0	-0.40	-0.13	16.26	96
14	0.43	69.01	-0.07	46.9	-0.10	-0.21	16.20	96
15	1.99	71.00	-0.97	44.7	-1.37	-1.58	15.22	94
16	-0.20	70.80	-0.98	40.4	-1.85	-1.22	14.24	94
17	2.50	73.30	-0.64	45.7	-0.87	-0.80	13.60	94
18	-0.74	72.56	-1.03	48.9	-1.63	-1.35	12.57	94
19	-1.46	71.10	-0.60	47.9	-0.73	-0.65	11.97	94
20	3.93	75.03	-0.88	48.9	-1.21	-1.05	11.09	94

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1975-1984

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-24	3.77	3.77	3.31	63.4	4.01	4.52	3.31	101
-23	1.29	5.06	-0.14	50.5	-0.21	-0.25	3.17	101
-22	2.30	7.36	1.92	55.4	2.73	2.42	5.09	101
-21	0.81	8.18	-1.05	42.6	-1.33	-1.38	4.04	101
-20	2.86	11.04	2.81	63.4	3.27	3.20	6.85	101
-19	0.39	11.43	0.05	43.6	0.04	-0.53	6.89	101
-18	0.69	12.12	2.03	63.4	2.80	3.05	8.92	101
-17	2.93	15.05	0.23	55.4	0.23	0.91	9.15	101
-16	2.30	17.35	-0.20	50.5	-0.26	-0.34	8.95	101
-15	1.75	19.10	1.17	56.4	1.48	1.88	10.12	101
-14	3.45	22.55	0.14	46.5	0.15	-0.22	10.27	101
-13	1.42	23.97	0.91	48.5	0.98	0.85	11.18	101
-12	4.77	28.74	3.56	68.3	4.75	4.66	14.74	101
-11	3.75	32.49	0.82	55.4	0.97	1.39	15.55	101
-10	0.88	33.38	-0.09	51.5	-0.12	-0.41	15.46	101

Table 2 (continued)
Performance Measures of 101 Best Managed Firms
Using the Market Model with the NYSE Market Value-Weighted Index
1975-1984

Month (1)	Average Raw Return % (2)	Average Cumulative Raw Return % (3)	Average Excess Return % (4)	Percentage of Positive Excess Return (5)	t-statistic of Average Excess Return (Cross-Section Method) (6)	t-statistics of Average Excess Return (Patell Method) (7)	Average Cumulative Excess Return % (8)	Number of Observations (9)
-9	3.00	36.37	0.17	45.5	0.22	0.33	15.63	101
-8	1.30	37.67	2.15	63.4	3.03	3.08	17.78	101
-7	0.71	38.38	-0.29	47.5	-0.48	-0.18	17.49	101
-6	-0.72	37.66	0.51	52.5	0.70	0.70	17.99	101
-5	4.34	42.00	2.33	61.4	2.85	3.80	20.33	101
-4	4.96	46.96	0.60	56.4	0.88	0.88	20.93	101
-3	1.15	48.10	0.78	51.5	0.95	0.74	21.72	101
-2	2.69	50.79	-0.22	49.5	-0.25	-0.72	21.49	101
-1	-0.80	49.99	-0.50	45.5	-0.58	-0.81	20.99	101
0	1.40	51.39	-0.01	46.5	-0.02	0.12	20.98	101
1	4.27	55.66	0.98	56.4	1.14	1.95	21.95	101
2	-0.34	55.32	-0.80	45.5	-1.37	-1.40	21.15	101
3	3.27	58.59	0.17	48.0	0.22	0.45	21.32	100
4	-1.33	57.27	-1.55	41.4	-2.22	-2.36	19.77	99
5	1.84	59.10	-1.72	39.4	-2.55	-2.44	18.06	99

Table 2 (continued)
Performance Measures of 101 Best Managed Firms
Using the Market Model with the NYSE Market Value-Weighted Index
1975-1984

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13	2.36	68.59	-0.33	51.0	-0.40	-0.13	16.26	96
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15	1.99	71.00	-0.97	44.7	-1.37	-1.58	15.22	94
16	-0.20	70.80	-0.98	40.4	-1.85	-1.22	14.24	94
17	2.50	73.30	-0.64	45.7	-0.87	-0.80	13.60	94
18	-0.74	72.56	-1.03	48.9	-1.63	-1.35	12.57	94
19	-1.46	71.10	-0.60	47.9	-0.73	-0.65	11.97	94
20	3.93	75.03	-0.88	48.9	-1.21	-1.05	11.09	94

Table 3
Changes in Size Between the Event and Estimation Periods
for the 101 Best Managed Firm Stocks

Size Decile Relative to All NYSE Stocks	Number of Best Managed Firm Stocks in Each Decile at: The Middle of the Pre-Event Parameter Estimation Period	The Event Month
1	1	1
2	3	—
3	—	—
4	—	1
5	1	1
6	2	4
7	11	2
8	20	13
9	22	24
10	41	55
Mean Size	8.7	9.1
Median Size	9	10

Decile 1 includes the 10 percent smallest NYSE firms, and decile 10 includes the 10 percent largest NYSE firms

Table 2 (continued)
Performance Measures of 101 Best Managed Firms
Using the Market Model with the NYSE Market Value-Weighted Index
1975-1984

Month (1)	Average Raw Return % (2)	Average Cumulative Raw Return % (3)	Average Excess Return % (4)	Percentage of Positive Excess Return (5)	t-statistic of Average Excess Return (Cross-Section Method) (6)	t-statistics of Average Excess Return (Patell Method) (7)	Average Cumulative Excess Return % (8)	Number of Observations (9)
21	1.89	76.92	0.33	53.2	0.36	0.57	11.43	94
22	-0.15	76.77	-0.72	43.6	-0.86	-1.16	10.70	94
23	-0.36	76.42	-0.19	37.6	-0.26	-0.38	10.51	93
24	2.45	78.87	1.19	55.9	1.52	1.06	11.70	93

Using the cross-sectional method, the cumulative average excess return from month 1 to month 24 is -9.3 percent with a t-statistic of -2.5. Using the Patell method, the cumulative average excess return from month 1 to month 24 is -9.3 percent with a t-statistic of -2.7. Beta is estimated from month -84 to month -25. The number of observations in the postevent period drops from 101 to 93 because seven firms were merged and one firm had an employee tender offer

Table 4
Performance Measures of 101 Best Managed Firms
Using the Dimson-Marsh Size Control Method
1975-1984

Month (1)	Average Raw Return % (2)	Average Cumulative Raw Return % (3)	Average Excess Return % (4)	Percentage of Positive Excess Return (5)	t-statistic of Average Excess Return (Cross-Section Method) (6)	Average Cumulative Excess Return % (7)	Number of Observations (8)
-24	3.77	3.77	2.97	61.4	3.95	2.97	101
-23	1.29	5.06	0.07	47.5	0.10	3.04	101
-22	2.30	7.36	1.96	56.4	2.93	5.00	101
-21	0.81	8.18	-0.65	41.6	-0.86	4.35	101
-20	2.86	11.04	2.44	58.4	3.09	6.79	101
-19	0.39	11.43	0.09	47.5	0.09	6.88	101
-18	0.69	12.12	1.57	63.4	2.34	8.45	101
-17	2.93	15.05	1.20	53.5	1.34	9.65	101
-16	2.30	17.35	0.49	53.5	0.62	10.14	101
-15	1.75	19.10	1.29	59.4	1.65	11.43	101
-14	3.45	22.55	0.92	52.5	1.03	12.35	101
-13	1.42	23.97	1.47	50.5	1.66	13.82	101
-12	4.77	28.74	3.19	68.3	4.42	17.01	101
-11	3.75	32.49	1.37	57.4	1.63	18.39	101
-10	0.88	33.38	0.40	51.5	0.58	18.79	101

Table 4 (continued)
Performance Measures of 101 Best Managed Firms
Using the Dimson-Marsh Size Control Method
1975-1984

Month (1)	Average Raw Return % (2)	Average Cumulative Raw Return % (3)	Average Excess Return % (4)	Percentage of Positive Excess Return (5)	t-statistic of Average Excess Return (Cross-Section Method) (6)	Average Cumulative Excess Return % (7)	Number of Observations (8)
-9	3.00	36.37	0.98	49.5	1.33	19.77	101
-8	1.30	37.67	2.12	64.4	3.09	21.89	101
-7	0.71	38.38	-0.02	48.5	-0.03	21.87	101
-6	-0.72	37.66	0.71	55.4	1.05	22.58	101
-5	4.34	42.00	2.45	62.4	3.07	25.03	101
-4	4.96	46.96	1.48	61.4	2.11	26.51	101
-3	1.15	48.10	0.57	50.5	0.75	27.08	101
-2	2.69	50.79	0.77	53.5	0.85	27.85	101
-1	-0.80	49.99	0.09	47.5	0.12	27.94	101
0	1.40	51.39	0.22	50.5	0.32	28.16	101
1	4.27	55.66	1.36	57.4	1.62	29.52	101
2	-0.34	55.32	-0.69	44.6	-1.21	28.83	101
3	3.27	58.59	0.63	48.0	0.87	29.46	100
4	-1.33	57.27	-0.85	51.5	-1.19	28.61	99
5	1.84	59.10	-1.46	38.4	-2.27	27.14	99

Table 4 (continued)
Performance Measures of 101 Best Managed Firms
Using the Dimson-Marsh Size Control Method
1975-1984

Month (1)	Average Raw Return % (2)	Average Cumulative Raw Return % (3)	Average Excess Return % (4)	Percentage of Positive Excess Return (5)	t-statistic of Average Excess Return (Cross-Section Method) (6)	Average Cumulative Excess Return % (7)	Number of Observations (8)
6	1.06	60.16	1.18	59.6	1.63	28.33	99
7	-0.27	59.89	-0.31	44.9	-0.44	28.02	98
8	3.65	63.54	0.32	52.0	0.41	28.34	98
9	1.44	64.98	0.58	55.2	1.06	28.92	96
10	0.14	65.12	-1.47	36.5	-1.81	27.45	96
11	-2.26	62.86	-1.16	32.3	-1.70	26.29	96
12	3.36	66.22	1.77	60.4	1.67	28.06	96
13	2.36	68.59	0.22	53.1	0.28	28.28	96
14	0.43	69.01	-0.06	44.8	-0.10	28.22	96
15	1.99	71.00	-0.32	48.9	-0.48	27.90	94
16	-0.20	70.80	-0.47	45.7	-0.88	27.42	94
17	2.50	73.30	-0.35	44.7	-0.48	27.08	94
18	-0.74	72.56	-0.60	48.9	-1.01	26.47	94
19	-1.46	71.10	-0.72	46.7	-0.90	25.75	94
20	3.93	75.03	0.26	50.0	0.36	26.01	94

Appendix A

The Criteria Used for Selecting the Best Managers

The five criteria established by the *Financial World* magazine to guide the committee selecting the winners of the best manager awards are:

1. During 1975 this corporate chief so managed his or her company's affairs that it was among the leaders in the standard analytic measurement tools of performance. Given the limitations of the economy in general—and problems in the industry in particular—the company was able to effect comparatively good performance in such things as rate of return on capital, net income, debt management, etc.

2. This chief executive so managed his or her company that it increased its position in its field significantly or maintained its position in spite of general adversity.

3. This chief executive has assembled an effective working team to surround him or her so that corporate affairs are run smoothly with creativity and innovation. Morale in the company is high in response to his or her leadership.

4. This chief executive dealt ably and effectively with various constituencies such as his work force, labor unions, shareholders, the investment community, etc.

5. This chief executive has not only been responsible for input into his or her company but has contributed significantly to the industry and/or the nation at large.

(Taken from *Financial World*, March 1976, p. 26)

Financial World also includes articles in which the reasons for the selection of specific best managers are detailed. For example, the March 1984 issue includes a four page article about John R. Opel of IBM. Opel is praised:

- "He has striven to make IBM the lowest cost producer in its field. And he is drawing nearer to his goal with each record-earning year. Last year, for instance, IBM's revenues rose 17 percent to $40 billion—faster than the overall industry rate for the second straight year—while personnel increased just 1.5 percent. Net income spurted 24.4 percent to $5.48 billion."

- "Momentum is usually what drives large companies, and CEOs often find that they are unable to have major impact. But Opel has proven that you can run a large company like a small high-tech firm."

- "Small, independent business units are given unconventionally long leashes on which to operate. And Opel backs them with money. Last year, IBM spent $3.6 billion on research—a healthy 9.5 percent of sales."

- "In a change from past patterns IBM now relies on outside vendors more than ever."
- "Last year, long-term debt decreased by $200 million from $2.8 billion."

Appendix B

Computation Formulae for Excess Returns and Test Statistics

Excess Return Measurement

Stock returns are assumed to follow the market model (equation (B.1)), and the parameters of the model, a_i and b_i, are estimated in a period preceding the event:

$$(B.1) \quad R_{i,t} = a_i + b_i R_{m,t} + e_{i,t},$$

where:

$R_{i,t}$ = the return of stock i in period t;
$R_{m,t}$ = the return of the stock market in period t;
$e_{i,t}$ = the idiosyncratic return of stock i in period t (a mean zero, random disturbance term that is orthogonal to $R_{m,t}$); and
a_i, b_i = constant parameters.

In this study, the parameter estimation period includes months -84 to -25 (month 0 is the event month).

The excess returns of each stock in the months surrounding the event are calculated as

$$(B.2) \quad AR_{i,T} = R_{i,T} - \hat{a}_i - \hat{b}_i R_{m,T},$$

where:

$AR_{i,T}$ = the estimated excess return of stock i in month T;
$R_{i,T}$ = the return of stock i in month T;
$R_{m,T}$ = the return of the NYSE value-weighted index in month T,
T = time relative to the event (T < 0 for periods before the event and T > 0 for periods after the event); and
$\hat{a}_i$, $\hat{b}_i$ = estimates of the parameters of the market model of stock i.

In this study, excess returns are calculated in months -24 to +24.

The Patell Test Statistics

For the Mean Abnormal Return in Month T

Patell (1976, p. 257) shows that under the null hypothesis of no abnormal returns in month T:

$$(B.3)\quad Z_T = \frac{\sum_{i=1}^{N_T} \frac{AR_{i,t}}{\hat{\sigma}_i \sqrt{C_{i,T}}}}{\left(\sum_{i=1}^{N_T} \frac{N_{i-2}}{N_{i-4}} \right)^{0.5}}$$

is distributed N(0, 1) in samples of reasonable size,

where:

T = time (in months) relative to the event month;

$AR_{i,T}$ = the abnormal return of stock i in month T;

$\hat{\sigma}_i$ = the residual standard deviation of the market regression of stock i in the parameter estimation period;

$C_{i,T}$ = a variance-inflating factor necessary because $AR_{i,T}$ is an out-of-sample prediction;

N_T = the number of stocks for which excess returns in month T can be calculated; and

N_i = the number of nonmissing return observations of stock i in the parameter estimation period.

For the Cumulative Average Abnormal Return

The statistical significance of $CAR(T_b,T_e)$—the cumulative average abnormal return in the months T_b through T_e (relative to the event)—is tested by the statistic:

$$(B.4)\quad \sqrt{\frac{1}{T_e - T_b + 1}} \sum_{T=T_b}^{T_e} Z_T.$$

Under the null that $CAR(T_b,T_e) = 0$, the statistic described by (B.4) is distributed N(0, 1).

The Cross-Sectional Test Statistics

For the Mean Abnormal Return in Month T

According to the cross-sectional method (see Collins and Dent, 1984, p, 60), under the null of no abnormal return in month T:

$$(B.5)\quad \frac{AR_T}{\hat{\sigma}(AR_T)}$$

is distributed N(0, 1) in samples of reasonable size,

where:

$$\hat{\sigma}(AR_T) = \left(\frac{\sum_{i=1}^{N_T} (AR_{i,T} - AR_T)^2}{N_T (N_T - 1)} \right)^{0.5},$$

AR_T is the average abnormal return in month T (see equation (1)), and the rest of the notation is as in equation (B.3).

For the Cumulative Average Abnormal Return

The statistic:

$$(B.6)\quad \frac{CAR(T_b,T_e)}{\sqrt{\sum_{T=T_b}^{T_e} \hat{\sigma}^2(AR_T)}}$$

is distributed N(0, 1) in samples of reasonable size under the null that $CAR(T_b,T_e) = 0$.