Stock Prices' Reactions to Layoff Announcements

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Despite continuing economic expansion and low unemployment, companies laid off about half a million workers between 1992-1998. The reasons for this massive work force reduction vary from disappointing sales growth, slowdowns in orders from international markets (particularly Asian countries), off-shore and maquiladoras production in Asia and Mexico which reduced labor costs, and reductions in payroll expenses to become competitive and to improve the bottom line of the business. Analysts often argue that a layoff announcement is a form of informational signaling to investors that the firm's management has embarked on plans to boost the company's stock.

This paper examines stock price reaction to layoff announcements over a seven-year period. A sample of 174 layoff announcements involving U.S. companies occurring between 1992 and 1998 is analyzed. Our findings support the hypothesis that layoff announcements do indeed convey information useful for the valuation of firms. We find positive abnormal returns for the firms with proactive announcements and negative abnormal returns for the firms with reactive announcements

INTRODUCTION

Large-scale layoffs and downsizing are reshaping corporate America. During the period 1992 - 1998, Fortune 1000 firms in the U.S laid off about half a million workers. General Motors Corporation, for example, announced plans in July 1998 to lay off more than 50,000 employees, or 22% of its work force, in order to become more competitive (Blumenstein, 1998) and Northwest Airlines issued notices to 27,500 employees representing 55% of its work force to reduce its payroll expense, which topped $3 billion in 1997 (Carey, 1998). When Boeing's overseas sales were impacted by Asia's economic problems, the company announced sharp production cutbacks for almost every jetliner model, a decision which eliminated 20,000 jobs on top of already announced cuts of 28,000 jobs in the previous year.

Numerous empirical studies have been conducted on various aspects of layoff announcements. For example, O'Shaughnessy and Flanagan (1990) studied the determinants of layoff announcements following mergers and acquisitions. Another study analyzed top management turnover following M&As (Cannella & Hambrick, 1993). While merger announcements have been linked to stock prices, Caves and Kreps (1993) found no support for the argument that merger activity influences the magnitude of the stock market's reaction to layoff announcements.

Hallock (1998) examined the connection between layoffs, executive pay, and stock prices. Cody, Hegemon and Shanks (1987) and Heenan (1989) investigated the impact of layoffs on employee morale and organizational effectiveness. McCune, Beatty, and Montango (1988) examined the design and implementation of layoffs. The evidence concerning the impact of corporate layoffs on the value of the firm is limited and controversial. Lin and Rozeff (1993) examined the relation between stock returns and a set of operating decisions, including layoffs, operation closings, and pay cuts. They found that changes in operations tend to be affected after the stock of the company has experienced substantial negative abnormal returns. Also, they found that temporary layoffs, permanent layoffs, and temporary operation closings are associated with negative abnormal returns. Their focus was on the comparison of different measures of cost cutting, including layoffs, when they developed a model to explain the behavior of market reaction to layoffs. Abowd, Mikovich and Hannon (1990) examined the price effects of a number of human resource decisions, including layoffs, and found no consistent valuation impact from the announcements. Worrell, Davidson, and Sharma (1991) examined the stock market response to layoff announcements, and they found that investors reacted negatively to announcements attributable to financial reasons. Their main focus was to examine whether the market reacts to layoff announcements and not to develop a testable hypothesis that would explain the behavior of the stock market around the time of announcement of corporate layoffs. The studies cited above have not focused on the reaction of stock price to layoff announcements.

Palman, Sun, and Tang (1997) examined the impact of layoff announcements (from 1982 to 1990) based on whether the information was perceived as negative or positive for the company. Layoff announcements induced by adverse market conditions, such as demand declines, resulted in negative cumulative abnormal returns, while positive announcements of improved operational efficiency from layoffs resulted in positive abnormal cumulative returns.

This paper investigates the impact of layoff announcements classified as reactive (negative) or as proactive (positive) which occurred during a period of robust economic activity. Proactive announcements are defined as layoffs that are part of a strategy or a restructuring plan that anticipates the direction of the competitive environment. Reactive announcements are layoffs that are a direct response to financial distress (Elayan, 1998).

In the context of our analysis, a layoff announcement is considered proactive (positive) when it is associated with sequential increasing growth rate in sales and earnings per shares (EPS). The resultant higher free cash flows increase firm value. The layoff announcements are considered reactive (negative) if the company has experienced a sequential declining growth rate in sales and lower EPS. The lower free cash flows lead to reduced firm value.

Our hypothesis is that the firm's layoff announcement is an information signaling to investors about the future prospects of free cash flows and the value of the firm. If true, the rate of return on equity should be abnormally positive for those firms with a prospect of higher future free cash flows and negative for those companies with a prospect of declining free cash flows.

This paper's contributions to the existing literature are as follows. First, the study provides evidence that stock prices respond to corporate layoff announcements considered proactive

(reactive) and generally generate positive (negative) abnormal returns. Second, we show that changes in a firm's stock price generally do not precede the layoff announcements. Third, the study analyzes the effects of corporate layoffs during a single up phase of the business cycle.

DATA AND METHODOLOGY

Data sources and Sample Construction

A sample of layoff announcements for the U. S. firms has been obtained from varied sources, including the *Wall Street Journal* and *Los Angeles Times* from 1992 to 1998. Layoff announcements with confounding events (*i.e.*, CEO dismissal, new executive appointments, mergers, etc.) have been deleted. This resulting sample consists of 174 layoff announcements for firms listed on the New York Stock Exchange, American Stock Exchange and NASDAQ. Since firms traded on exchanges as well as over-the-counter are included, the sample is not biased toward small or large firms.

The sample was further divided into two groups of 105 firms with proactive announcements and 69 with reactive announcements.

For both groups, we chose a 41-day event window, comprised of 20 pre-event days, the event day, and 20 post-event days. Brown and Warner (1985) suggest that when information release dates are identified with uncertainty, a wider window may be used. To the extent that a wider window introduces noise, returns are estimated with greater error, reducing the power of test statistics. However, a 20-day window does not introduce a significant amount of estimation error, thereby addressing concerns regarding the power of test statistics.

Stock return data was obtained from the AMSPEC tapes provided by the California data bank hosted at California Polytechnic State University, San Luis Obispo.

Testable Hypothesis

Our hypothesis is that the firm's layoff announcement represents new information to investors that affects their estimates of free cash flows and the value of the firm. If true, the cumulative abnormal rate of return (*CARR*) should be positive for those firms with an upward revision of its growth rate of sales and future free cash flows and negative for those companies with a revision downward for sales and free cash flows.

Event Study Methodology

Standard event study methodology (Fama, Jensen, & Roll, 1969, and Brown &Warner, 1985) is employed to measure abnormal returns of the company for the days on and around the event of interest (the layoff announcements). For each security *i*, the market model that is suggested by Brown and Warner (1985) to calculate an abnormal return (*AR*) for event day t as follows:

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (1)$$

where R_{it} is the rate of return on security i for event day t, and R_{mt} is the rate of return on the CRSP value-weighted index on event day t. The coefficients of the linear market model in parentheses (α_i, β_i) are estimated by regressing observed rates of return for security i on the corresponding rates of return for a market index. This regression utilizes observed returns for a time period prior to the "event period" so as not to contaminate their estimation with the impact of the event under study.

For example, defining day 0 as the day in which the layoff announcement is publicized, day -1 as one day prior to the announcement, and +1 as one day after, the abnormal return for each security over the event days -20 through 20 days are calculated. Then, the abnormal returns are averaged across all companies for each event day to obtain an average abnormal return (AAR):

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{2}$$

where AAR_t is the average abnormal return for time period t, and N is the number of firms in the study.

The average abnormal returns are then aggregated to find the cumulative average abnormal returns. They are as follows:

$$CAAR_t = \sum_{t=-20}^{20} AAR_t \tag{3}$$

or

$$CAAR_t = AAR_t + CAAR_{t-1}$$

where $CAAR_t$ is the cumulative returns from day –20 to the date (through days +20).

For a sample of N securities, the mean $CARR$ is defined as:

$$\overline{CAAR} = \sum_{j=1}^{N} CAAR_t \tag{4}$$

The expected value of $CAAR$ is zero in the absence of abnormal performance.

The test statistic described by Dodd and Warner (1983) and Hit and Owers (1983) is the mean standardized cumulative average abnormal return. To compute this statistic, the abnormal return AR_{it} is standardized by its estimated standard deviation S_{it}.

$$SAR_{it} = AR_{it}/S_{it} \tag{5}$$

The value of S_{it}^2 is

$$S_{it}^{\ 2} = S_i^{\ 2}[1 + \frac{1}{D_i} + (R_{mt} - \bar{R}_{mt})^2 / \sum_{t=1}^{D_i}(R_{mt} - \bar{R}_{mt})^2] \quad (6)$$

where: S_i^2 = residual variance of security I from the market model regression

D_i = Number of observations during the estimation period

$\bar{R}_{mt}$ = Mean rate of return on the market index during the estimation period, and

R_{mt} = Return on the market for day t of the estimation period.

The standardized cumulative average abnormal return $SCAAR_i$ over the interval $t = T_{1i} \ldots T_{2i}$

$$\overline{SCAAR}_i = \sum_{t=T_{1i}}^{T_{2i}} SAR_{it} / \sqrt{(T_{2i} - T_{1i} + 1)} \quad (7)$$

The test statistic for a sample of N securities is:

$$Z = \sum_{i=1}^{N} \overline{SCAAR}_i / \sqrt{N} \quad (8)$$

Each SAR is assumed to be distributed unit normal in the absence of abnormal performance context. The variable Z is also unit normal.

RESULTS

Table 1 presents the averaged abnormal returns and the averaged cumulative abnormal return for each of the two layoff announcement categories. Plots of the cumulative abnormal returns are included as figure 1 and figure 2.

The results are largely consistent with the existing literature on the information content of layoff announcements. The evidence strongly supports the hypothesis that layoff announcements do indeed convey information useful for the valuation of firms. Focusing on the announcement day (day zero) the average abnormal return for the proactive information is 0.986%. The average abnormal return for reactive information is -.683%. The announcement effect is also evident on day one with average abnormal return of .258% and -.213% for proactive and reactive information respectively.

The $CAAR$ plots show that to some extent the market gradually learns (information leaks out) about the forthcoming announcement. The average $CAAR$ of the proactive information gradually drifts up in days -20 to -1, and the average $CAAR$ of the reactive information drifts down over the same period. The buildup of abnormal returns prior to announcement is consistent with the strong-form of market efficiency hypothesis that if information related to

TABLE 1
Abnormal and Cumulative Returns of Layoff Announcements for Firms: 1992-98

Event	Proactive (105 firms)			Event	Reactive (69 firms)		
Day	AAR	CAAR	Z-statistic	Day	AAR	CAAR	Z-statistic
-20	0.095%	0.095%	1.3380	-20	-0.109%	-0.109%	-1.0583
-19	-0.179%	-0.084%	-1.2431	-19	-0.188%	-0.297%	-0.7642
-18	0.090%	0.006%	0.5625	-18	0.031%	-0.266%	0.9226
-17	0.024%	0.030%	0.8889	-17	-0.081%	-0.347%	-1.9951*
-16	0.020%	0.050%	0.9091	-16	-0.012%	-0.359%	-0.2419
-15	0.041%	0.091%	0.9558	-15	-0.059%	-0.418%	-0.0571
-14	-0.042%	0.049%	-1.4483	-14	-0.023%	-0.441%	-0.0201
-13	0.059%	0.108%	1.9032**	-13	0.009%	-0.432%	0.0074
-12	0.069%	0.177%	1.9167**	-12	-0.095%	-0.527%	-0.5064
-11	0.071%	0.248%	1.7317	-11	-0.092%	-0.619%	-0.5324
-10	-0.030%	0.218%	-1.2000	-10	-0.097%	-0.716%	-0.4450
-9	0.165%	0.383%	1.5566	-9	-0.052%	-0.768%	-0.2980
-8	-0.061%	0.322%	-0.7922	-8	0.083%	-0.685%	0.5024
-7	-0.013%	0.309%	-1.3000	-7	-0.032%	-0.717%	-0.7306
-6	0.109%	0.418%	0.1313	-6	-0.014%	-0.731%	-0.2612
-5	0.089%	0.507%	1.1867	-5	0.166%	-0.565%	1.7548**
-4	0.101%	0.608%	2.0200*	-4	-0.141%	-0.706%	-0.1209
-3	0.119%	0.727%	1.8594**	-3	0.101%	-0.605%	1.1272
-2	0.009%	0.736%	0.8182	-2	-0.113%	-0.718%	-1.9894*
-1	0.172%	0.908%	2.7742*	-1	-0.179%	-0.897%	-2.6401*
0	0.986%	1.894%	2.4346*	0	-0.683%	-1.580%	-2.1244*
1	0.258%	2.152%	2.8166*	1	-0.213%	-1.793%	-1.8750**
2	0.018%	2.134%	2.0000*	2	-0.082%	-1.711%	-1.7680**
3	-0.169%	1.965%	-0.8802	3	0.019%	-1.632%	2.2669*
4	0.018%	1.947%	0.3197	4	-0.108%	1.524%	-1.1295
5	0.014%	2.090%	0.3062	5	0.119%	-1.335%	0.1710
6	-0.058%	2.032%	-1.3942	6	0.079%	-1.256%	0.9049
7	0.068%	2.100%	0.2985	7	0.132%	-1.124%	1.4103
8	0.128%	2.258%	0.4426	8	-0.051%	-1.175%	-0.0483
9	-0.010%	2.248%	-0.0398	9	-0.071%	-1.246%	-1.9241**
10	0.106%	2.434%	1.6909**	10	0.129%	-1.117%	0.1170
11	-0.083%	2.351%	-0.3281	11	-0.010%	-1.127%	-0.2283
12	0.062%	2.413%	1.6021	12	-0.039%	-1.166%	-1.0581
13	0.116%	2.237%	1.1503	13	0.073%	-1.093%	1.9363**
14	-0.093%	2.144%	-0.9451	14	0.018%	-1.0755	0.5065
15	-0.009%	2.135%	-0.3782	15	-0.049%	-1.1245	-1.2929
16	0.078%	2.213%	2.1727*	16	-0.088%	-1.212%	-1.2767
17	0.086%	2.299%	2.0673*	17	-0.053%	-1.2655	-0.5667
18	0.109%	2.478%	0.4918	18	0.068%	-1.197%	1.0236
19	-0.048%	2.430%	-0.0823	19	-0.059%	-1.286%	-1.2732
20	0.016%	2.446%	0.0599	20	-0.027%	-1.313%	-0.5581

* Significant at the 5% level.
** Significant at the 10% level.

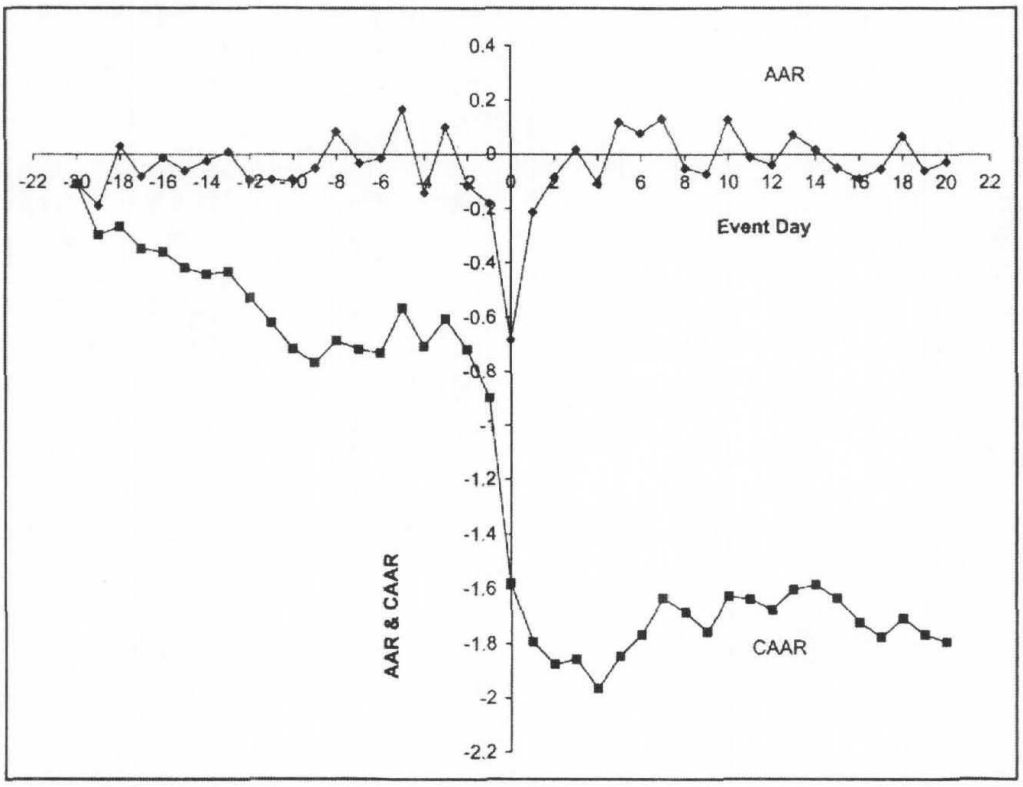

Figure 1. Plot of Abnormal and Cumulative Returns for Proactive Announcements.

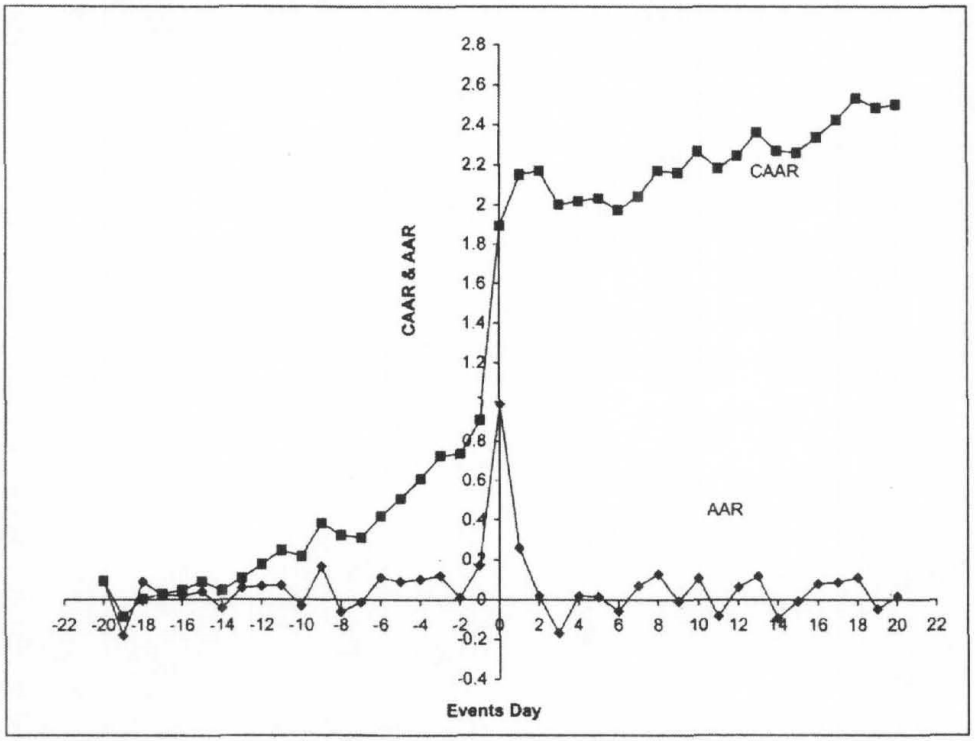

Figure 2. Plot of Abnormal and Cumulative Returns for Reactive Announcements.

the event leaks out prior to the announcement, the *CAAR* will gradually increase in the days prior to the announcement and then substantially increases on the day of the announcement, reflecting the responses of those stocks for which information did not leak out. In the days after the announcements, the *CAAR* for reactive information is relatively stable and no longer increases or decreases significantly. This is in accord with the market efficiency hypothesis that once the layoff announcements became public, the stock prices reacted to the nature of information.

The *CAAR* for the proactive announcement continues to move up suggesting that the layoff announcements were not completely anticipated, and prices continued to adjust after the day of the announcement. This is also in accord with some of the studies that have found evidence of a persistent lag in price adjustments (Brown & Kennelly, 1972; Joy, Litzenberger, & McEnally, 1977).

The results are consistent, albeit different from the cumulative returns reported by Palmon, Sun, and Tang for their sample of 140 layoff announcements over the 8-year period from 1982 to 1990. The results are also different from the -0.4% reported as the 3-day cumulative returns by Worrell *et al.* (1991) for a sample of 441 layoff announcements over an 8-year period from 1979 to 1987. Clearly, the magnitude of the stock price impact of layoff announcements is more profound in the 1990s.

SUMMARY

Over the sample period, U. S. corporations announced record-breaking employee layoffs despite robust economic growth. To investigate the effect of the layoff announcements on firm value, we have defined two types of layoff announcements. Layoff decisions that are part of a strategy or a restructuring plan are considered to be proactive announcements. Layoff decision that are motivated to reduce costs and increase profit margins, perhaps in anticipation of declining sales, are considered to be reactive announcements.

We find positive abnormal returns for the firms with proactive announcements and negative abnormal returns for the firms with reactive announcements.

Our results, while consistent with previous studies of layoff announcements, establish a higher magnitude of cumulative average abnormal returns for the two types of layoff announcements.

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