

## **CHANGES IN CORPORATE PERFORMANCE ASSOCIATED WITH LAYOFFS**

Zahid Iqbal\* and Aigbe Akhigbe\*\*

### **Abstract**

This paper examines changes in the industry-adjusted financial performance of 48 sample firms that laid off five percent or more employees between 1985 and 1990. Our findings indicate that the firms show significant improvements in operating cash flows and cost efficiency despite poor sales performance following layoffs. There is also evidence that the firms' asset size increases after the layoffs. Further, we find that firms disclosing favorable news with the layoff announcements experience improvements while firms without favorable news experience deteriorations in performance. Also, the stock price reactions to layoffs are negative for firms without favorable news.

### **INTRODUCTION**

Employee layoffs have become a general knowledge in recent years. Some of the recent examples are layoffs by Atlantic Richfield, Digital Equipment, and Hughes Aerospace and Electronic. Theoretical arguments suggest that layoff is a cost-saving strategy that can increase earnings. For example, Bailey and Sherman (1988) note that downsizing can boost profitability and Bhagat, Shleifer, and Vishny (1990) note that the effect of the labor cost savings on a firm's value can be substantial.<sup>1</sup> Layoffs, on the other hand, can be costly to the firm. Bailey and Sherman (1988), McCune, Beatty, and Montagno (1988), Greenhalgh and McKersie (1980), Sutton (1980), Staw, Sandlelands, and Dutton (1981) and Greenhalgh (1982) have outlined numerous costs such as those associated with outplacement services, high employee turnovers, low morale and productivity of the surviving employee, rehiring in the event of an economic upturn etc. The stock performance study by Worrell et al. (1991) indicates that layoffs do not make good economic sense. Their findings of negative stock price reactions for the overall sample and for subsamples of large layoffs and financially weak firms suggest that layoffs signal poor performance ahead. Thus the issue of whether layoffs improve firm performance is still debatable.

The purpose of this paper is to examine whether firm performance improves due to layoffs. The study focuses on four performance areas: earnings, costs, sales, and assets. After adjusting for industry effects, our findings indicate that the layoff firms experience improvements in operating cash flows and costs performance, but experience decline in sales. Also, the book value and market value of assets increase following layoffs. Overall, layoffs appear to have favorable effect on firm performance. Further analysis reveals that improvements in earnings and costs occur for firms who, at the time of the layoff announcements, disclose favorable news. Firms that merely respond to weak financial conditions do not experience improvements in earnings and costs. The stock return analysis indicates that the stockholders react negatively to layoffs and that the negative reactions occur for firms disclosing unfavorable news.

### **DATA AND SAMPLE**

The original sample consists of 312 firms that reported layoffs in the *Wall Street Journal (WSJ)* from 1985 to 1990. Of the 312 firms, 120 are removed because they are not listed on the *Compustat Industrial, Research*, or

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\*Texas Southern University

\*\*Florida Atlantic University

*OTC* tapes; 48 are removed because they are in the financial or automobile industry; 5 are removed because the layoffs are related to mergers; and 14 are removed because the layoff rates are not available or could not be computed. The financial firms are excluded to facilitate comparisons of the performance measures, while the automobile firms are excluded to avoid frequent and temporary layoffs. For the majority of the remaining 125 firms, the layoff rates are reported in the *WSJ*. When the number of employees laid off are reported instead, we compute the rates as employees laid off divided by the firm's work force one year before the layoff. In the event when a firm has multiple layoffs in a year and/or in different years over the sample period, the rates are aggregated. For example, if a firm laid off 4% of its employees in 1986 and 3% in 1989, the layoff rate over the sample period is 7%.

Since large layoffs are likely to have a greater impact on firm performance than small ones, we retain firms with layoff rate of 5% or higher over the sample period. 67 firms belong to this arbitrarily determined large-layoff category. Of the 67 firms, complete firm and industry data are available on the *COMPUSTAT* tapes for 48 firms which form the basis of the economic analysis for this paper.

## PERFORMANCE MEASURES

Our empirical analysis is based on the evaluation of changes in earnings, costs, sales, and assets performance in the prelayoff, layoff, and postlayoff periods. The prelayoff and the postlayoff periods are three years before and three years after the layoff period, respectively. The layoff period is defined in the following way. It is the year of the layoff for firms that do not have layoffs in any other year during the sample period. For a firm with layoffs in multiple years (13 firms in our sample), the layoff period starts from the year of the first layoff through the year of the last layoff. In this case, the median value in the layoff period represents performance for that period. For example, if layoffs for a firm occurred in 1986 and in 1989, the median value in the layoff period 1986-1989 measures performance for that period.

Table 1 provides a description of the performance measures. Four indicators of earnings performance are examined. Following related studies on mergers by Healy et al. (1992) and Cornett and Tehranian (1992), the earnings performance indicators are measured in terms of operating cash flows. Healy et al. (1992) argue that operating cash flow represents the true economic benefits generated by a firm's assets. They state that it excludes the effect of depreciation, goodwill, interest expense and income, and taxes. Operating cash flow is defined as sales, minus cost of goods sold and selling and administrative expenses, plus goodwill and depreciation expenses. In addition to focusing on the dollar value of operating cash flow and the operating cash flow return on sales and book value of assets, we examine operating cash flow as a percentage of market value of assets. This measure is similar to the one used by Healy et al. (1992) who state that market value represents the opportunity cost of a firm's assets. The market-value measure dominates accounting and other historical estimates because it simplifies intertemporal and cross-sectional comparisons. The market value of assets is computed as the market value of common and preferred stock plus the book value of debt less cash and marketable securities. A potential limitation is that the market value of assets changes as the expectations of firm's future performance change. As a result, the market value in the post layoff years should be adjusted for any change in equity value associated with the layoffs.<sup>2</sup> We adjust the market value of assets in the post layoff years by subtracting changes in equity value from five days before to five days after the day of layoff announcement reported in the *WSJ*.

Cost performance is examined in terms of cost of goods sold in dollars and as a percentage of sales. Since layoffs are obvious attempts to cut costs, it is important to examine if firms can actually reduce their cost of operations. For sales performance, we evaluate dollar value of sales as well as how much sales are being turned over relative to book value and market value of assets. The asset performance is measured primarily by how the investors valued the firms' assets.

We evaluate firm performance after adjusting for contemporaneous industry effects. The problem with the unadjusted measure is that a change in performance cannot be fully attributed to the layoffs, because firm performance can also be influenced by industry-wide events. A better estimate of changes in firm performance due to the layoffs can be obtained by netting out simultaneous changes in performance from the average of non-layoff firms in the industry. We compute industry-adjusted performance by subtracting the four-digit SIC median from the layoff firm's market value, for each year and firm. The data for the layoff firms have been excluded when computing the industry median.

**TABLE 1**  
**Definitions Of Performance Measures For The 48 Firms That**  
**Laid Off Five Percent Or More Employees Between 1985-1990**

| Performance Measures         | Definition  |
|------------------------------|---|
| <b>Earnings Performance:</b> |   |
| Operating Cash Flow          | Sales minus cost of goods sold and selling and administrative expenses, plus goodwill and depreciation expenses   |
| Return On Sales              | Operating cash flow as a percent of sales   |
| Return On BV Of Assets       | Operating cash flow as a percent of book value of total assets  |
| Return On MV Of Assets       | Operating cash flow as a percent of market value of assets (market value of common stock, plus net book value of debt and preferred stock). The market value in the post-layoff years is deflated by change in equity value around layoff announcements |
| <b>Cost Performance:</b>     |   |
| Cost Of Goods Sold           | Cost of goods sold  |
| Cost To Sales                | Cost of goods sold as a percent of sales  |
| <b>Sales Performance:</b>    |   |
| Sales                        | Sales   |
| BV Asset Turnover            | Book value of assets to sales   |
| MV Asset Turnover            | Market value of assets to sales   |
| <b>Asset Performance:</b>    |   |
| MV Of Assets                 | Market value of assets  |
| MV To BV Of Assets           | Market value of assets to book value of assets  |
| BV Of Assets                 | Book value of assets  |

## EMPIRICAL FINDINGS

### Changes In Industry-Adjusted Performance

The median values of the changes in the industry-adjusted performance in the layoff period ( $y=0$ ) and post-layoff years ( $y=1$ ,  $y=2$ , and  $y=3$ ) relative to the median performance in the pre-layoff period ( $y=-1$ ,  $y=-2$ , and  $y=-3$ ) are reported in Table 2. The findings indicate that return on sales and book value of assets and market-value asset turnover change significantly in the layoff period,  $y=0$ . Return on sales and return on book value of assets decrease by 1.3% and 3.1%, respectively, while the market-value asset turnover ratio increases by 0.09 time. The findings that earnings indicators decline in the layoff period may suggest firms lay off employees to improve earnings.

The findings for the post-layoff years, however, indicate that the firms' earnings do not improve relative to the pre-layoff years. None of the earnings indicators exhibit significant change. There is improvement in cost efficiency, however. The cost of goods sold to sales ratio decreases by 4.0% in  $y=2$ . The post-layoff median is also 6.8% less than the pre-layoff median. With regard to sales performance, although dollar sales do not change significantly, the firms generate less sales on its book value investment in assets and higher sales on its market value of assets. The market value of the firms' assets does not increase although book value increases significantly.

**TABLE 2**  
**Median Changes In The Industry-Adjusted Performance Indicators In Layoff And Postlayoff Years Relative To The Prelayoff Years For 48 Firms That Laid Off Five Percent Or More Employees In The Period, 1985-1990**  
**y=0 Is The Layoff Period<sup>a</sup>**

|                             | y=0<br>vs<br>pre<br>median | y=1<br>vs<br>pre<br>median | y=2<br>vs<br>pre<br>median | y=3<br>vs<br>pre<br>median | post<br>vs<br>pre<br>median |
|-----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|
| <b>Earnings Performance</b> |                            |                            |                            |                            |                             |
| Operating Cash Flow         | -\$3.6                     | -\$5.2                     | -\$2.3                     | \$5.5                      | -\$4.9                      |
| Percent Positive            | 49%                        | 48%                        | 50%                        | 53%                        | 47%                         |
| Return On Sales             | -1.3%*                     | -1.4%                      | -0.6%                      | -0.7%                      | -2.2%                       |
| Percent Positive            | 36%*                       | 33%                        | 45%                        | 43%                        | 47%                         |
| Return On BV Assets         | -3.1%*                     | -1.1%                      | -1.4%                      | -0.3%                      | -1.2%                       |
| Percent Positive            | 32%**                      | 44%                        | 46%                        | 46%                        | 48%                         |
| Return On MV Assets         | 1.9%                       | -0.6%                      | -0.1%                      | 0.1%                       | 2.3%                        |
| Percent Positive            | 56%                        | 45%                        | 47%                        | 50%                        | 54%                         |
| <b>Cost Efficiency</b>      |                            |                            |                            |                            |                             |
| Cost Of Goods Sold          | -\$6.5                     | \$2.4                      | -\$35.8                    | -\$3.7                     | -\$39.9                     |
| Percent Positive            | 42%                        | 50%                        | 43%                        | 50%                        | 45%                         |
| Cost To Sales               | -2.0%                      | -0.7%                      | -4.0%**                    | -2.6%                      | -6.8%*                      |
| Percent Positive            | 47%                        | 48%                        | 36%*                       | 40%                        | 39%*                        |
| <b>Sales Performance</b>    |                            |                            |                            |                            |                             |
| Sales                       | -\$2.9                     | \$16.7                     | \$0.0                      | \$8.4                      | -\$5.9                      |
| Percent Positive            | 46%                        | 53%                        | 49%                        | 59%                        | 49%                         |
| BV Asset Turnover           | -0.03x                     | -0.06x*                    | -0.05x*                    | -0.06x*                    | -0.02x                      |
| Percent Positive            | 47%                        | 36%*                       | 48%                        | 40%                        | 43%                         |
| MV Asset Turnover           | 0.09x***                   | 0.11x**                    | 0.11x                      | 0.07x                      | 0.27x***                    |
| Percent Positive            | 77%***                     | 63%*                       | 56%                        | 65%                        | 73%***                      |
| <b>Asset Size</b>           |                            |                            |                            |                            |                             |
| BV Of Assets                | -\$1.2                     | \$24.8*                    | \$15.8                     | \$46.6*                    | -\$83.7                     |
| Percent Positive            | 47%                        | 55%                        | 52%                        | 63%                        | 43%                         |
| MV Of Assets                | -\$40.5                    | -\$0.7                     | -\$10.1                    | \$22.4                     | -\$48.2                     |
| Percent Positive            | 43%                        | 49%                        | 46%                        | 54%                        | 45%                         |
| MV To BV Of Assets          | -0.09x                     | 0.01x                      | -0.01x                     | -0.02x                     | -0.03x                      |
| Percent Positive            | 44%                        | 50%                        | 50%                        | 44%                        | 45%                         |

<sup>a</sup>Significance levels for the magnitude of the changes are based on Wilcoxon signed-ranks test and significant levels for the direction of the changes are based on the sign test.

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

The findings in Table 2 do not provide convincing evidence that layoffs improve firm performance relative to the pre-layoff years. A potential drawback with using pre-layoff years as the reference period is that the firm could be financially healthy in the pre-layoff years and that the layoffs occurred due to poor performance in the layoff period, y=0. Consequently, comparing post medians with pre medians may not provide the true impact of layoffs on firm performance. In this case, it would be appropriate to examine how the firm fared compared to the financial conditions at the time of the layoff decision.

Table 3 provides findings on post-layoff performance relative to  $y=0$ . The findings indicate that the operating cash flow increases significantly in the post-layoff years. The operating cash flows increase by \$13.8 million, \$20.3 million, and \$89.8 million in  $y=1$ ,  $y=2$ , and  $y=3$ , respectively. The return on book value of assets also increases by 2.3% in  $y=3$ .

The cost indicators suggest a significant reduction in cost of goods sold in dollars and as a percentage of sales. The dollar amount of the cost of goods sold decreases by \$56.4 million in  $y=2$ . The post-layoff median also decreases by \$109.9 million. Cost of goods sold as a percentage of sale declines significantly by 2.5% and 2.7% in  $y=2$  and  $y=3$ , respectively.

The sales indicators show declining sales performance following layoffs. There is a significant decline in sales of \$80.2 million in  $y=2$ . Both market value and book value turnover ratios also fall significantly following layoffs. This is due to a decrease in sales and increase in both market value and book value of assets.

The book value of assets increases by \$61.6 million in  $y=3$  and the market value of assets increases by \$126.4 million in  $y=2$  and by \$68.1 million in  $y=3$ . This suggests that a decrease in asset size is not necessarily associated with layoffs. The ratio of market value to book value of assets also shows improvement. The ratio increases by 0.11 time in  $y=2$  and by 0.14 time in  $y=3$  suggesting that the increase in the market value cannot be solely attributed to the increase in book value. It appears that there is a favorable revaluation of the firms' future prospects.

**TABLE 3**  
**Median Changes In Industry-Adjusted Performance Indicators In The**  
**Postlayoff Years Relative To The Layoff Period For 48 Firms That Laid Off Five**  
**Percent Or More Employees In The Period, 1985-1990**  
 **$y=0$  Is The Layoff Period<sup>a</sup>**

|                             | $y=1$<br>vs<br>$y=0$<br>median | $y=2$<br>vs<br>$y=0$<br>median | $y=3$<br>vs<br>$y=0$<br>median | post<br>vs<br>$y=0$<br>median |
|-----------------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|
| <b>Earnings Performance</b> |                                |                                |                                |                               |
| Operating Cash Flow         | \$13.8**                       | \$20.3*                        | \$89.8***                      | -\$18.9                       |
| Percent Positive            | 65%*                           | 61%                            | 73%***                         | 45%                           |
| Return On Sales             | 0.0%                           | 0.9%                           | 0.1%                           | 0.0%                          |
| Percent Positive            | 51%                            | 61%                            | 59%                            | 50%                           |
| Return On BV Assets         | 0.1%                           | 1.4%                           | 2.3%**                         | 3.1%                          |
| Percent Positive            | 50%                            | 54%                            | 69%**                          | 58%                           |
| Return On MV Assets         | -1.4%                          | -1.0%                          | -0.5%                          | -0.1%                         |
| Percent Positive            | 43%                            | 44%                            | 46%                            | 49%                           |
| <b>Cost Efficiency</b>      |                                |                                |                                |                               |
| Cost Of Goods Sold          | -\$28.6                        | -\$56.4**                      | -\$7.5                         | -\$109.9*                     |
| Percent Positive            | 40%                            | 28%**                          | 49%                            | 32%**                         |
| Cost To Sales               | -0.7%                          | -2.5%*                         | -2.7%*                         | -3.2%                         |
| Percent Positive            | 42%                            | 35%*                           | 34%*                           | 43%                           |

<sup>a</sup>Significance levels for the magnitude of the changes are based on Wilcoxon signed-ranks test and significant levels for the direction of the changes are based on the sign test.

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

**TABLE 3 (Cont'd)**  
**Median Changes In Industry-Adjusted Performance Indicators In The**  
**Postlayoff Years Relative To The Layoff Period For 48 Firms That Laid Off Five**  
**Percent Or More Employees In The Period, 1985-1990**  
**y=0 Is The Layoff Period<sup>a</sup>**

|                          | y=1<br>vs<br>y=0<br>median | y=2<br>vs<br>y=0<br>median | y=3<br>vs<br>y=0<br>median | post<br>vs<br>y=0<br>median |
|--------------------------|----------------------------|----------------------------|----------------------------|-----------------------------|
| <b>Sales Performance</b> |                            |                            |                            |                             |
| Sales                    | -\$15.7                    | -\$80.2*                   | -\$1.9                     | -\$173.0*                   |
| Percent Positive         | 46%                        | 32%*                       | 50%                        | 39%*                        |
| BV Asset Turnover        | -0.04x*                    | -0.06x**                   | -0.08x*                    | -0.02x                      |
| Percent Positive         | 40%                        | 33%**                      | 39%                        | 45%                         |
| MV Asset Turnover        | -0.08x**                   | -0.13x***                  | -0.12x**                   | -0.01x                      |
| Percent Positive         | 36%*                       | 33%**                      | 29%**                      | 48%                         |
| <b>Asset Size</b>        |                            |                            |                            |                             |
| BV Of Assets             | \$3.9                      | \$0.0                      | \$61.6**                   | -\$137.6                    |
| Percent Positive         | 51%                        | 47%                        | 59%                        | 39%                         |
| MV Of Assets             | \$49.8                     | \$126.4**                  | \$68.1*                    | -\$15.7                     |
| Percent Positive         | 55%                        | 60%                        | 58%                        | 40%                         |
| MV To BV Of Assets       | 0.08x                      | 0.11x**                    | 0.14x**                    | -0.07x                      |
| Percent Positive         | 59%                        | 62%                        | 60%                        | 44%                         |

<sup>a</sup>Significance levels for the magnitude of the changes are based on Wilcoxon signed-ranks test and significant levels for the direction of the changes are based on the sign test.

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

## Stated Reasons For Layoffs

Previous research by Worrell et al. (1991) on layoffs and by Blackwell et al. (1990) on plant closings indicate that the market responds to the stated reasons and that negative stock price reactions are associated with unfavorable news. Negative reactions indicate that the firm's financial troubles are real. In an attempt to examine if the post layoff performance reflects the information presented at the time of the layoffs, we classify the sample into "passive response" and "improve efficiency" groups. Of the 48 firms, 19, classified as passive-response firms, laid off employees citing financial difficulties without any indications of improving performance. For example, "Citing continuing slow demand for its expensive supercomputers, firm (Cray Research Inc) will lay off about 400 people, Cray's first layoff in its 17-year history." (WSJ, 10/03/89). Of the remaining firms, 20 are classified as improve-efficiency firms because their layoffs are associated with favorable news about the firm's future performance. For example, "Tektronix Inc. announced plans to dismiss about 1000, or 6% of its work force, in a bid to boost earnings." (WSJ, 03/07/88).

The findings in Table 4 indicate that both passive response and improve efficiency firms' earnings indicators in the layoff year decline from the pre-layoff years. For the passive response firms, return on sales declines by 1.3% and for the improve efficiency firms, return on book value of assets declines by 1.9%. The passive response firms also experience decline in the market value of assets of \$155.5 million.

In the post-layoff years, the passive response firms show a decrease in operating cash flow by \$77.7 million and \$86.6 million relative to prelayoff median and y=0, respectively. The return on market value of assets also decreases by 2.4% in the post layoff years relative to y=0. The improve efficiency firms, on the other hand, show improvements in return on book value of assets of 4.9% relative to y=0. The cost of goods sold to sales increases by 10.1% in post layoff years compared with pre layoff median for the passive response firms. The ratio, however,

decreases by 6.3% relative to the prelayoff years and by 8.0% relative to the layoff year for the improve efficiency firms. The dollar sales for the passive response firms decline by \$259.9 million and the market value turnover increases by 0.22 time. For the improve efficiency firms, market value asset turnover increases by 0.31 time in the post layoff years. The market value of assets of the passive response firms decreases by \$967.8 million. Overall, the passive response firms appear to show deteriorations in performance while the improve efficiency firms experience improvements.

**TABLE 4**  
**Median Changes In The Industry-Adjusted Performance Indicators**  
**For The 19 Passive Response And 20 Improve-Efficiency Firms That Laid Off**  
**Five Percent Or More Employees In The Period, 1985-1990<sup>a</sup>**  
**y=0 Is The Layoff Period<sup>b</sup>**

|                             | Passive Response           |                             |                             | Improve Efficiency         |                             |                             |
|-----------------------------|----------------------------|-----------------------------|-----------------------------|----------------------------|-----------------------------|-----------------------------|
|                             | y=0<br>vs<br>pre<br>median | post<br>vs<br>pre<br>median | post<br>vs<br>y=0<br>median | y=0<br>vs<br>pre<br>median | post<br>vs<br>pre<br>median | post<br>vs<br>y=0<br>median |
| <b>Earnings Performance</b> |                            |                             |                             |                            |                             |                             |
| Operating Cash Flow         | -\$4.1                     | -\$77.7*                    | -\$86.6*                    | -\$3.6                     | \$37.7                      | -\$8.7                      |
| Percent Positive            | 47%                        | 35%*                        | 38%                         | 47%                        | 53%                         | 47%                         |
| Return On Sales             | -1.3%*                     | -4.0                        | -1.1%                       | 0.1%                       | 1.4%                        | 1.3%                        |
| Percent Positive            | 18%***                     | 35%                         | 44%                         | 53%                        | 58%                         | 59%                         |
| Return On BV Assets         | -3.3%                      | -6.8%                       | -1.0%                       | -1.9%*                     | -1.2%                       | 4.9%*                       |
| Percent Positive            | 35%                        | 41%                         | 44%                         | 25%*                       | 44%                         | 63%*                        |
| Return On MV Assets         | 2.2%                       | 0.9%                        | -2.4%*                      | 2.7%                       | 2.4%                        | 1.7%                        |
| Percent Positive            | 59%                        | 53%                         | 31%*                        | 65%                        | 58%                         | 59%                         |
| <b>Cost Efficiency</b>      |                            |                             |                             |                            |                             |                             |
| Cost Of Goods Sold          | -\$6.8                     | -\$26.2                     | -\$79.5                     | -\$36.2                    | -\$49.7                     | -\$196.1                    |
| Percent Positive            | 37%                        | 44%                         | 28%*                        | 42%                        | 47%                         | 32%                         |
| Cost To Sales               | 2.1%                       | 10.1%*                      | 4.8%                        | -6.3%***                   | -8.0%***                    | -5.5%**                     |
| Percent Positive            | 63%                        | 67%                         | 61%                         | 32%*                       | 21%**                       | 26%*                        |
| <b>Sales Performance</b>    |                            |                             |                             |                            |                             |                             |
| Sales                       | -\$21.7                    | -\$46.2                     | -\$256.9*                   | \$0.0                      | \$40.1                      | -\$6.3                      |
| Percent Positive            | 37%                        | 44%                         | 33%*                        | 47%                        | 53%                         | 42%                         |
| BV Asset Turnover           | 0.04x                      | -0.01x                      | -0.06x                      | -0.09x                     | -0.05x                      | 0.03x                       |
| Percent Positive            | 53%                        | 44%                         | 39%                         | 39%                        | 50%                         | 56%                         |
| MV Asset Turnover           | 0.18x*                     | 0.22x*                      | -0.03x                      | 0.09x**                    | 0.31x**                     | 0.00x                       |
| Percent Positive            | 72%                        | 67%                         | 50%                         | 78%**                      | 83%***                      | 47%                         |
| <b>Asset Size</b>           |                            |                             |                             |                            |                             |                             |
| BV Of Assets                | \$42.4                     | -\$107.6                    | -\$282.4                    | -\$5.7                     | \$11.4                      | -\$86.6                     |
| Percent Positive            | 37%                        | 33%                         | 39%                         | 50%                        | 50%                         | 39%                         |
| MV Of Assets                | -\$155.5**                 | -\$967.8**                  | -\$549.3                    | \$9.9                      | -\$449.8                    | -\$271.2                    |
| Percent Positive            | 25%**                      | 17%***                      | 33%                         | 56%                        | 28%*                        | 32%                         |
| MV To BV Of Assets          | -0.13x                     | -0.08x                      | -0.21x*                     | -0.19x                     | -0.15x                      | 0.15x                       |
| Percent Positive            | 47%                        | 39%                         | 28%*                        | 35%                        | 47%                         | 61%                         |

a Of the 48 firms, 9 firms could not be included in either one of two categories based on information disclosed at the time of the layoff announcements.

b Significance levels for the magnitude of the changes are based on Wilcoxon signed-ranks test and significant levels for the direction of the changes are based on the sign test.

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

## Stock Price Reactions To Layoffs

In order to examine how stockholders viewed the layoffs in our sample, we compute prediction errors (*PE*) for firm *j* on day *t* in the following way:

Equation 1

$$PE_{jt} = R_{jt} - (\alpha_j + \beta_j R_{mt})$$

where  $R_{jt}$  is the return for security *j* on day *t* and  $R_{mt}$  is the return on the *CRSP* equally weighted index on day *t*.  $\alpha_j$  and  $\beta_j$  are the estimated values of the market model parameters. The estimation period spans 120 days, from  $t=-135$  to  $t=-16$ , with  $t=0$  being the day of the layoff announcement. For a sample of *N* firms, the cumulative prediction error (*CPE*) from  $t=T1$  to  $t=T2$  is expressed as:

Equation 2

$$CPE_{T1,T2} = \frac{1}{N} \left[ \sum_{j=1}^N \left( \sum_{t=T1}^{T2} PE_{jt} \right) \right]$$

The test statistic for the *CPE* is given by:

Equation 3

$$Z = \frac{1}{\sqrt{N}} \left[ \sum_{j=1}^N \left( \sum_{t=T1}^{T2} \frac{PE_{jt}}{S_{jt}} \right) \right]$$

where  $S_{jt}$  is the square root of the adjusted residual variance from the market model.

The difference in the *CPEs* between two portfolios (portfolio 1 and portfolio 2) are tested using the following *Z* value:

Equation 4

$$Z = \frac{Z_1 \sqrt{N_2} - Z_2 \sqrt{N_1}}{\sqrt{N_1 + N_2}}$$

where  $Z_1$  and  $Z_2$  are *Z* statistics and  $N_1$  and  $N_2$  are sample sizes for portfolios 1 and 2, respectively.

Table 5 presents the findings on stockholders' reactions to layoff announcements. For the total sample, we find significant negative reactions to layoffs. The *CPEs* are -0.77% (*z value*=-2.54) from  $t=-1$  to  $t=0$  and -1.86% (*z value*=-2.71) from  $t=-5$  to  $t=0$ . These findings are consistent with that by Worrell et al. (1991) that layoffs in general convey bad news to investors. The stock price reactions by the reported reasons also support the findings by Worrell et al. (1991). We find that the passive-response firms who lay off employees in response to weak financial conditions without providing favorable information about their future performance exhibit negative reactions. The *CPEs* are -2.75% (*z value*=-4.19) and -4.24% (*z value*=-3.77) in the intervals  $t=-1$  to  $t=0$  and  $t=-5$  to  $t=0$ , respectively. The improve-efficiency firms, on the other hand, show significant positive reactions from  $t=-1$  to  $t=0$ . The findings on the differences indicate that the passive-response firms earn -4.11% (*z value*=-2.77) and -5.20% (*z value*=-3.37) less stock returns from  $t=-1$  to  $t=0$  and from  $t=-1$  to  $t=0$ , respectively, than the improve efficiency firms. The stock return findings, therefore, indicate that stockholders' perceptions of layoffs depend on the information revealed at the time of the layoff announcements. The market becomes pessimistic about the firm's future performance if the layoff is a passive response to weak financial conditions.



**TABLE 5**  
**Stock Price Reactions To Layoffs For The Total Sample And By Stated Reasons<sup>a</sup>**  
**Day=0 Is The Day Of The Layoff Announcement**

| Interval | Total Sample<br>(N=37) |      | Passive Response<br>(N=18) |      | Improve Efficiency<br>(N=11) |      | Difference<br>CPE<br>(z value) |
|----------|------------------------|------|----------------------------|------|------------------------------|------|--------------------------------|
|          | CPE<br>(z value)       | %pos | CPE<br>(z value)           | %pos | CPE<br>(z value)             | %pos |                                |
| -1,0     | -0.77%<br>(-2.54)**    | 43%  | -2.75%<br>(-4.19)***       | 22%  | 1.36%<br>(1.81)*             | 64%  | -4.11%<br>(-2.77)***           |
| -5,0     | -1.86%<br>(-2.71)***   | 45%  | -4.24%<br>(-3.77)***       | 33%  | 0.96%<br>(0.35)              | 73%  | -5.20%<br>(-3.37)***           |

aOf the 48 firms, stock return data are not available for 11 firms. Of the remaining 37 firms, 8 firms don't belong to the passive response or the improve efficiency category.

\*\*\*Significant at the 1% level. \*\*Significant at the 5% level. \*Significant at the 10% level.

## CONCLUSION

Although the layoff literature is replete with theoretical and empirical research on various issues such as private and social costs of layoffs to the employees, the effects of layoffs on the surviving employees, and the factors that effect layoffs, the effect of layoffs on firm performance is not fully explored.

This paper examines the postlayoff performance of 48 firms that laid off five percent or more employees from 1985 to 1990. Our findings indicate that, after adjusting for industry effects, earnings and cost efficiency of the layoff firms improve following layoffs, particularly, when compared to the performance in the layoff year. Upon further analysis, our findings also suggest that performance improves for those firms which, at the time of the layoff, provide favorable news. Those without favorable news elicit negative stock price reactions to layoffs and do not show improvements in performance. The empirical findings of this paper provide important insights into the justifications of layoffs from the firm's point of view. The evidence that firm performance improves suggests that layoffs are not necessarily undesirable from the firm's financial standpoint. It does not, however, rule out the possibility of other alternatives to layoffs such as wage cuts, job sharing, and reduction in work hours.

## ENDNOTES

1. A related study by Blackwell et al. (1990) indicates that firm's return on equity improves slightly after plant closings.
2. See Healy et al. (1992, pp. 142-143) for a discussion of this adjustment in the market value of assets.

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