
by

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January 15, 1999

Abstract. We report preliminary results of an analysis of the reaction of stock prices to announcements of reductions in force (RIFs) using a large sample of such announcements during the 1970-1997 period collected from the Wall Street Journal index. We find some evidence that the stock market reaction to the announcement of RIFs has become less negative over this period. While a complete understanding of the underlying causes of this finding awaits further research, one possible interpretation is that, over the last three decades, RIFs designed to improve efficiency have become more common relative to RIFs designed to cope with reductions in product demand.

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1. Introduction

There has been substantial discussion in the business press and elsewhere recently about the effects of “downsizing” on firms, workers, and families. While the effects of job loss on workers are clearly negative (see, for example, Farber, 1997), there have been suggestions in the business press and by policy groups that owners of firms profit handsomely as stock prices increase around the time of job loss announcements (Anderson and Cavanagh, 1994, and Sloan, 1996). These suggestions persist despite a growing body of empirical work (see Table 1) that finds fairly consistent negative reactions of stock prices to announcements of reductions in the labor force (RIFs).

A straightforward interpretation of a negative relationship between announcements of RIFs and stock prices is that the RIFs signal a reduction in product demand relative to existing production capacity. It is more difficult to understand why stock prices might respond positively to announcements of RIFs. One interpretation that resonates with much of the recent attention paid to corporate “downsizing” and “restructuring” is that announcements of RIFs might signal that management has found more efficient ways to produce using less (or cheaper) labor. For example, Exxon and Mobil recently (December 1998) announced a merger, one consequence of which will be substantial employment reductions. News reports of the merger state clearly that these anticipated RIFs and the resulting cost savings and increases in efficiency are an important part of the rationale for the merger. To the extent that “efficiency” RIFs have become more common relative to “deficient demand” RIFs over the last three decades, we would expect that the average...
relationship between announcements of RIFs and stock prices would have become less negative (or even positive) over time.

In order to address this issue, we used the Wall Street Journal Index to create as complete a list as possible of announcements of RIFs by every firm that was ever listed in the Fortune 500 for each of the 28 years from 1970 though 1997. In this study, we report results of a preliminary analysis of these data that sheds some light on whether and how the reaction of stock prices to announcements of RIFs has changed over time.

We find some evidence that the stock market reaction to announcements of RIFs has, in fact, changed. The average share price reaction was most negative in the early part of the period covered, and the average reaction has become less negative in more recent years. We conclude by offering some suggestions for investigating the source of the increasing share price effect.

2. Data

We created our sample by including each firm that ever existed in the Fortune 500 from 1970-1997. This left us with a list of 1703 different firm names over the 28 years. For each year, we then searched through the abstracts of each Wall Street Journal Index by company name for any announcement of a RIF. When an example was found, we recorded the date of the announcement as well as (where available) information on the reason for the announcement, the number of workers affected, whether the job loss was temporary or permanent, whether the instance was related to a foreign subsidiary, and the type of worker involved (production line, managerial, etc.). In this study we present our first analysis of how stock prices reacted to the announcement of RIFs. At this point, we have not analyzed the additional information on detailed characteristics of the RIFs.

In order to measure the stock price reaction, we used daily stock returns for each firm for each day in the sample. These data are collected by the Center for Research in Security Prices (CRSP) at the University of Chicago. Obviously, we needed to match our firm names as reported in Fortune with unique security identifiers used in CRSP. There was no information in the CRSP data for 146 of the 1703 firm names from our Fortune 500 list, probably because they were not traded in the New York, American, or Nasdaq
stock exchanges. Of the 1557 unique firm names that were left over, 198 were identified with multiple securities and were dropped from this analysis. Of the 1359 “unique” firm names that remained, 183 names were identified with the same firm as another with either a similar (or in some cases quite different) name.1 This left us with 1176 unique firms over the 28 years from 1970-1997 for which we have valid stock data for at least some years. We were able to identify 3878 job loss announcements that had matched stock return data for the relevant periods.

3. Frequency of Job Loss Announcements

The number of RIFs announced by firms in our sample varies substantially across the years we study in ways that, not surprisingly, closely follow the state of the labor market. The number of announcements varied from a minimum of 48 in 1997 (a year of very low unemployment) to a maximum of 285 in 1982 (a year of very high unemployment). Overall, the mean number of announcements per year was 139 with a standard deviation of 64. The simple correlation between the number of announcements and the civilian unemployment rate (Council of Economic Advisors, 1998) over the 1970-1997 period was 0.58. With the exception of the first two years in our sample (1970 and 1971) the time series of the number of RIF announcements per year follows the time series of the unemployment rate quite closely.2 The correlation from 1972-1997 (omitting 1970 and 1971) between the number of RIF announcements and the unemployment rate is 0.68.

Farber (1997) reports “three-year rates of job loss” using data from seven Displaced Worker’s Surveys (DWS). He documents a decline in the overall rate of job loss from 13.3 percent in 1981-83 to 9 percent in 1987-88 and then a continuous increase to 12.8 percent in 1991-93. These findings are largely consistent with ours. Interestingly, Farber (1997) shows that the job loss rates in the DWS increased again (to 15.1 percent) in the 1993-95 sample, while our measure of the fraction of firms with at least one job loss announcement

1 For example Freeport Sulfur is the same as Freeport Minerals, Hoover Universal is the same as Hoover Ball and Bearing, and Standard Oil of California is the same as Chevron.

2 The unemployment rate in 1970 and 1971 was relatively low (averaging 5.4 percent) while the number of announcements in those two years was relatively high (averaging 193 per year).
fell in this latter period as did the unemployment rate. However, our tabulations from the most recently released DWS (February 1998) show a decrease in job loss to 12.0 percent in the 1995-97 period.

4. The Event Study Method

The event study method that we employ is widely used in the empirical corporate finance literature (Brown and Warner, 1985; MacKinlay, 1997) and we will, therefore, only describe the very basic ideas here. Cumulative average excess returns are calculated, as described below, using value-weighted return data from the Center for Research in Security Prices (CRSP) at the University of Chicago. Let \( t \) index time in trading days, let \( s \) indicate the “event date” (the date of the RIF announcement), and let \( i \) index firms. First, the firm daily return, \( R_{it} \), is regressed on \( R_{mt} \), the value weighted market index for date \( t \), which is available from CRSP. This regression,

\[
R_{it} = \alpha_i + \beta_i R_{mt} + \eta_{it},
\]

is estimated for a period from day \( s - 60 \) to \( s - 30 \).\(^3\) Next, for days around the event date, we calculate the daily abnormal, or excess, return, as the residual from this regression. This is

\[
ER_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}),
\]

where \( \hat{\alpha}_i \) and \( \hat{\beta}_i \) are the estimated regression coefficients from equation (1). Intuitively, the excess return is the part of the movement in the stock return of firm \( i \) that is not correlated with overall market movement in stock returns and presumably reflects unexpected firm-specific factors.

The excess returns calculated for each day around a RIF announcement are used to calculate the cumulative excess return for each announcement. These are computed by adding up the daily excess returns over various intervals called “event windows” around the date of the announcement. We report analyses based on cumulative excess returns

\(^3\) We tried various prediction periods with no perceptible effect on the results.
computed using three such intervals: 1) the day of the announcement, 2) from one day prior to one day after the announcement (three day interval), and 3) from five days prior to five days after the announcement (eleven day interval). As a useful summary of the data, we then compute the mean and median of the cumulative excess returns across all RIF announcements in each year for each of the three event windows. We also compute the fraction of RIF announcements in each year with negative cumulative excess returns for each of the three event windows. If the announcements have no systematic effect on stock returns, then the mean and median cumulative excess return will not differ significantly from zero and the fraction negative will not differ significantly from 0.5. If the announcements have a negative (positive) systematic effect on stock returns, then the mean and median cumulative excess return will be significantly negative (positive) and the fraction negative will be greater than (less than) 0.5. The basic goal of our analysis is to see if there are systematic cumulative excess returns over these windows around job loss announcement dates and whether such returns are positive, negative, or zero.

5. Has the Market Reaction to Announcements of RIFs Changed Over Time?

Our analysis is the first investigation that covers a sufficiently long time period (28 years) to provide meaningful facts on changes over time in the reaction of stock prices to the announcements of RIFs. While a large number of previous studies have investigated the simple relationship between announcements of RIFs and share price reactions using various time periods, all of these studies use data no earlier than 1979 and use sample periods ranging from two to only nine years. The top panel of table 1 contains a brief review of some of these studies and reports point estimates of the average cumulative excess returns from the day prior to the day after the RIF announcement (the three-day event window). These studies show a relatively stable and small estimate of the share price reaction to RIF announcements of between -0.05 and -1.29 percent. The median estimate is -0.50 percent.

As a basis of comparison with the existing literature, the bottom panel of table 1 contains estimates based on our sample of the mean cumulative excess return in a three-day event window for the entire 1970-1997 time period as well as for three sub-periods. The
overall mean for the 1970-1997 period using our sample is -0.376 percent, which is within the range of the existing estimates reported in the top panel of table 1. The estimates by subperiod provide preliminary evidence that the mean cumulative excess returns in response to announcements of RIFs have become less negative over time. The subperiod means were -0.647 percent for the 1970-1979 period, -0.261 percent for the 1980-1989 period, and -0.112 percent for the 1990-1997 period.

In order to compare our estimates with the estimates derived by others, we have plotted in figure 1, by year, the mean cumulative excess returns over a three day window using our data. In addition, we have graphically represented the results of the earlier studies (a-j from table 1) with dark solid lines. The horizontal span of the lines represents the years the previous studies covered and the vertical location represents the mean cumulative excess returns over the three day window (where available). Analogously, we have graphically represented the decadal averages of the cumulative excess returns computed from our data (k-m from table 1) with dotted lines. The estimates from the earlier literature are remarkably consistent with our own annual estimates. This figure makes clear that periods covered by the earlier studies are concentrated in the 1980’s, and, as a result, they cannot address the issue of changes over time in the stock market reaction to job loss announcements.

To investigate further the extent to which the share price reaction to RIF announcements has changed over time, figure 2 contains a series of plots which display the mean cumulative excess returns, the median cumulative excess returns, and the fraction negative cumulative excess returns by year over various event windows. A linear time trend, fitted by OLS, is also included in each plot. The first row of the figure contains the plots for the one-day event window (the day of the RIF announcement) for each of the 28 years in the sample. The second row of the figure contains the analogous plots for the three-day event windows (day -1 to day +1), and the third row of the figure contains those for the eleven-day event window (day -5 to day +5).

There does appear to be some evidence that market reaction to job loss announcements has changed over time, becoming less negative more recently. However, the strength of the relationship depends on the particular event window selected. While the slopes of
the time trends in each of the figures suggest that the market reactions are becoming less negative, the strongest results are found for the three-day event window. As a crude test, OLS regressions of the annual values for the mean and median cumulative excess returns on a time trend yield significantly positive coefficients at standard levels for the three-day event window.\(^4\) Additionally, an OLS regression of the percent negative cumulative excess returns on a time trend yields a significant negative coefficient for the three-day event window.\(^5\) One possible interpretation of this general pattern is that there has been a shift in the composition of RIFs away from “deficient demand” RIFs and toward “efficiency” RIFs since 1970.

### 6. Concluding Remarks

There now is a growing body of work which documents that announcements of RIFs by large firms leads, on average, to small negative effects on stocks prices. We confirm this result using a very large sample of firms over 28 years. We show further that the overall stock price reaction (as measured for example by average or median cumulative excess returns), which has always been small (less than 1 percent), is most negative earlier in the sample and has become less so over time. Additionally, the fraction of announcements of RIFS that are associated with negative stock price reactions has declined steadily over time, perhaps suggesting that there has been a shift in the nature of RIFs away from those caused by deficient product demand and toward those designed to improve efficiency.

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\(^4\) For the other windows we report on, only the time trend of the median cumulative excess return in the eleven-day window is statistically significant at conventional levels.

\(^5\) The time trends of the percent negative cumulative excess return are not significantly different from zero at conventional levels for the one-day or eleven-day windows.
7. References


TABLE 1: Summary of Selected Previous Studies and Comparison with New Data
Three-Day Event Window (day -1 to day +1)

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Years Data Cover</th>
<th>Number of Observations</th>
<th>Type of Announcement</th>
<th>Ave. Cumulative Excess Return (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abowd, et. al. (1990)</td>
<td>1980,1987</td>
<td>87 and 88</td>
<td>Permanent reductions</td>
<td>-0.6 and -0.2</td>
</tr>
<tr>
<td>Blackwell, et. al. (1990)</td>
<td>1980-1984</td>
<td>244</td>
<td>Plant closings</td>
<td>-0.7</td>
</tr>
<tr>
<td>Caves &amp; Krepps (1993)</td>
<td>1987-1991</td>
<td>513</td>
<td>Manufacturing firms</td>
<td>-0.9</td>
</tr>
<tr>
<td>Datta &amp; Islandar-Datta (1996)</td>
<td>1989-1991</td>
<td>228</td>
<td>Broad set</td>
<td>-1.3(a)</td>
</tr>
<tr>
<td>Golomba &amp; Tsetekos (1992)</td>
<td>1980-1986</td>
<td>282</td>
<td>Plant closings</td>
<td>-0.5</td>
</tr>
<tr>
<td>Hallock (1998)</td>
<td>1987-1995</td>
<td>1287</td>
<td>Broad Set</td>
<td>-0.3</td>
</tr>
<tr>
<td>Kalra, et. al. (1994)</td>
<td>1984-1987</td>
<td>132</td>
<td>Plant Closings</td>
<td>-0.5(a)</td>
</tr>
<tr>
<td>Ursel &amp; Armstrong-Stassen (1995)</td>
<td>1989-1992</td>
<td>137</td>
<td>Broad Set</td>
<td>-0.6(b)</td>
</tr>
<tr>
<td>Worell, et. al. (1991)</td>
<td>1979-1987</td>
<td>194</td>
<td>Broad Set</td>
<td>-0.4</td>
</tr>
<tr>
<td>Farber &amp; Hallock</td>
<td>1970-1979</td>
<td>1503</td>
<td>Broad set</td>
<td>-0.647</td>
</tr>
<tr>
<td>Farber &amp; Hallock</td>
<td>1980-1989</td>
<td>1491</td>
<td>Broad set</td>
<td>-0.261</td>
</tr>
<tr>
<td>Farber &amp; Hallock</td>
<td>1990-1997</td>
<td>884</td>
<td>Broad set</td>
<td>-0.112</td>
</tr>
<tr>
<td>Farber &amp; Hallock</td>
<td>1970-1997</td>
<td>3878</td>
<td>Broad set</td>
<td>-0.376</td>
</tr>
</tbody>
</table>

Notes: (a) From day -1 to day 0 only. (b) day 0 only.
Figure 1. Mean Cumulative Excess Returns, 3 Day Window
Figure 2 - Cumulative Excess Returns, by Year

(All Graphs Include Fitted Trend Line)