

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, 2003), 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 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.¹ 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 use information from the *Wall Street Journal* 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 30 years from 1970 through 1999. We collected data on 4273 RIFs. This is about three times more than examined in any previous study, and the 30 years are roughly four times more than any previous work. These data offer us the opportunity to investigate whether and, to some extent, why there has been a changing relationship between share prices and announced RIFs over time.

¹ See, for example, Dial and Murphy (1995) who present an interesting intensive case study of restructuring at General Dynamics in the early 1990s. They argue that the restructuring, which included RIFs, resulted in efficiency improvements and value creation.

We were motivated by at least five different questions in this work. While we do not fully develop a single conceptual framework here, we concentrate on these main areas (and others) throughout the work.

- Has the share price impact of announced employment reductions become less negative over time?
- Has the distribution of reason types changed over time?
- Do stock prices react differently to RIF announcements of different reasons?
- How much of the decline in the share price reaction can be attributed to changes in reasons for layoffs?
- Can changes in other characteristics of announcements account for the decline in the share price reaction?

We find evidence that the stock market reaction to announcements of RIFs has, in fact, changed. The average share price reaction, as measured by the average cumulative excess return (CER) over a three day event window centered on the announcement date, was most negative in the early part of the period covered, and the average reaction has become less negative in more recent years. We estimate the average share price reaction over the entire 1970-1999 period to be -0.104 percent (s.e. = 0.052). Broken down by decade, the average reaction was -0.283 (s.e. = 0.085) in the 1970s, -0.091 (s.e. = 0.088) in the 1980s, and +0.125 (s.e. = 0.100) in the 1990s. We also find 1) that the distribution of announced reasons changed, moving away from “deficient-demand” and toward “restructuring” and “cost issues”, and 2) that the stock price reaction to deficient-demand announcements is more negative than the reaction to other announcements. We go on to develop a multivariate regression model of the CER in order to consider whether the mix of reasons for the announced RIFs, the industry makeup and other RIF characteristics have changed over time and whether any of these have any explanatory power in describing the trend in the average CER. We find that very little, if any, of the decline in the negative average stock price reaction between the 1970s and 1990s can be accounted for by changing characteristics of the announced RIFs.

2 Data

Our data come from three distinct sources. The first is a comprehensive set of information collected from the *Wall Street Journal* of every announcement we could find of a job loss in each firm that ever existed in the Fortune 500 over a period of 30 years beginning in 1970. We collect accounting data from Standard and Poor's COMPUSTAT and daily stock return data from the Center for Research in Security Prices (CRSP) at the University of Chicago.

We created our job loss announcement sample by identifying each firm that ever existed in the Fortune 500 from 1970-1999. This left us with a list of 1849 different firm names over the 30 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 and then went on and read the full article in order to gather as much information as possible about each announcement. An unusual feature of our data is the long time period. We searched the paper index because, at the time the data were collected, no electronic source would allow us to search as far back as 1970 and we wanted to use a consistent sample throughout the entire time period. Our tabulations of announcements of RIFs compare favorably with Hallock (1998) who has completed the largest previous study (using data from 1987-1995) using data from an electronic source.

There are some potential problems in using data collected from a source such as the *Wall Street Journal* (see Thompson, Olsen, and Dietrich, 1987). For example, it may not be the case either that all RIFs are announced in the *Wall Street Journal* or that the Journal chooses to report all events. But we believe that most events are reported in the *Wall Street Journal*. This is because the original sample consists of firms that are among the largest in the United States, so it makes sense that the *Wall Street Journal* would report news of even quite small events involving these firms. Evidence for this is that there are many instances of very small events reported. In addition, we are primarily interested in investigating the share price reaction to *announced* RIFs, and RIFs that are not announced are less likely to have substantial effects on share prices.

We recorded 18 different reasons for the announced RIFs, and we were able to identify reasons for over 97 percent of the observations. For the purposes of our analysis, we collapsed

these 18 reasons into five categories (reorganization, plant closing, demand slump, cost issues, and other). We also know the number of workers planned to be let go as part of the RIF for 84.9 percent of the announcements. While the mean number of workers announced was 2749 (standard deviation of 8410), the median number of workers let go was 700.

We were able to determine whether workers involved were hourly, salaried, or some combination for 25 percent of the RIFs, and, among these, 35 percent involved hourly workers, 24 percent involved salaried workers, and 41 percent involved both. It is interesting that the composition of RIF announcements changed systematically over the 30 years studied toward inclusion of salaried workers. In the 1970s, 52 percent of announcements included salaried workers. This increased to 82 percent in the 1990s. The fraction including hourly workers fell from 82 percent in the 1970s to 68 percent in the 1990s.² This change is consistent with the finding that job loss among more-skilled workers has become more common in the last twenty years (Farber, 2003).

We recorded whether the job loss was temporary or permanent for 96.5 percent of the announcements, and, among these, 28 percent were temporary. Finally, we identified whether the RIF involved a foreign subsidiary for 91 percent of the announcements. Of these, only 16.6 percent did involve a foreign subsidiary.

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. We identified 1,849 firm names that were in the Fortune 500 in any year from 1970-1999. After dropping firm names for which there was no information in CRSP (probably because they were not publicly traded), dropping firm names that were identified with multiple securities, and dropping names that were identified with the same firm as another with either a similar (or in some cases quite different) name³, we were left with 1160 unique firms over the 30 years

² The form of pay of workers is highly correlated with broad occupation, with salaried workers largely white collar and hourly workers largely blue collar. The sum of the shares including salaried and hourly workers exceeds one because a substantial fraction of announcements include both types of workers.

³ 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.

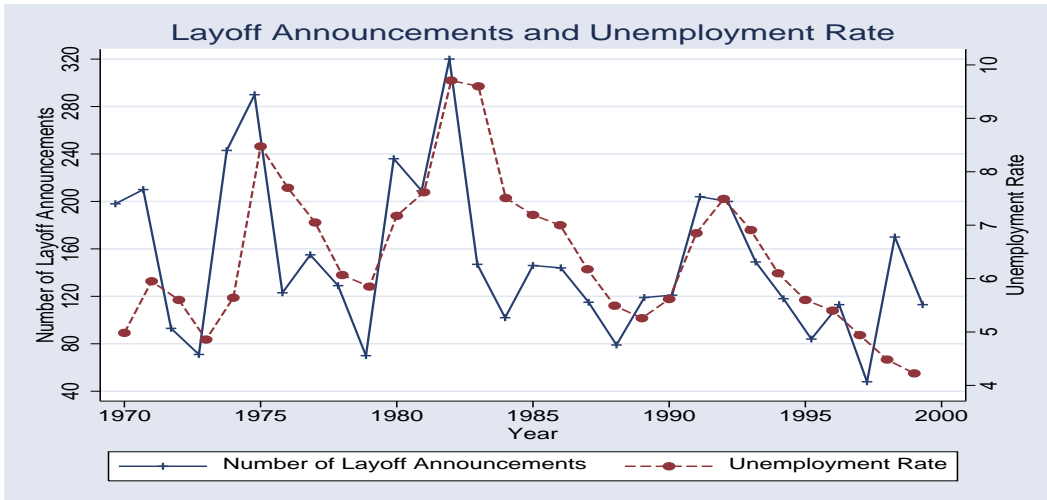


Figure 1: Number of Layoff Announcements and Unemployment Rate, by Year

from 1970-1999 for which we have valid stock data for at least some years. We were able to identify 4273 job loss announcements (made in 702 firms) that had matched stock return data for the relevant periods.

Finally, we collected information on annual accounting and related data from Standard and Poor’s COMPUSTAT. The data we use include industry and number of employees. The median firm in the sample has roughly 49,000 employees.

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. Figure 1 displays the number of RIFs in our sample by year along with the civilian unemployment rate. The number of announcements varied from a minimum of 48 in 1997 (a year of very low unemployment) to a maximum of 320 in 1982 (a year of very high unemployment). Overall, the mean number of announcements per year was 150.6 with a standard deviation of 68.9. The simple correlation between the number of announcements and the civilian unemployment rate over the 1970-1999 period was 0.55. The time series of the number of RIF announcements per year follows the time series of the unemployment rate quite closely.

Farber (2003) reports “three-year rates of job loss” using data from ten Displaced Worker’s

Surveys (DWS). He documents a decline in the overall rate of job loss from 12.8 percent in 1981-83 to 8.5 percent in 1987-88, followed by an increase to an average of 11.8 percent in 1989-91 and a decline to 8.6 percent in 1997-99. These findings are largely consistent with ours.

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; Campbell, Lo, and MacKinlay, 1997, Fama, Fisher, Jensen, and Roll, 1969, and MacKinlay, 1997) and we will, therefore, only describe the very basic ideas here. We should note that clearly defining the event date is critical and is often very difficult. For example Card and Krueger (1995) study the effects of news about legislation concerning the minimum wage on firms that may employ minimum wage workers. They suggest that some events, such as when it was revealed that Labor Secretary Robert Reich unexpectedly suggested to President Clinton that the administration not push for an (expected) increase in the minimum wage are more useful (i.e., generally unanticipated) events than others such as when President George H. W. Bush (not unexpectedly) vetoed a minimum wage increase.

In our case, we assume that the market became aware of the RIF on the day it was reported in the *Wall Street Journal* or at a time very close to that day. However, it may be that the market knew of what we identify as the announced event at some time prior, and, to the extent that this is the case, our analysis will not capture the full effect of layoff announcements on stock prices.

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,

$$(1) \quad R_{it} = \alpha_i + \beta_i R_{mt} + \eta_{it},$$

is estimated for a period from day $s - 60$ to day $s - 30$.⁴ Next, for days around the event date, we calculate the daily abnormal, or excess, return, in the following way,

$$(2) \quad ER_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}),$$

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 computed using the three-day window.⁵

5 Has the Market Reaction to RIF Announcements Changed Over Time?

5.1 A review of the Literature

Our analysis is the first investigation that covers a sufficiently long time period (30 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, none of these studies uses data earlier than 1979 and they use sample periods ranging from two to only nine years. The number of RIFs involved in each is also highly variable. In addition the focus of the previous papers was not always on a general set of announced

⁴ We tried various prediction periods such as -500 to -250 and -100 to -70 with no meaningful effect on the results.

⁵ While we do not present the results here, we also computed cumulative excess returns for a one day window (day s alone) and an eleven-day window (from day $s - 5$ to day $s + 5$). The results, as expected, are quite similar to those for the three day window reported here.

RIFs from a sample of firms from the United States. For example, Abowd, Milkovich, and Hannon (1990) examined the share price reaction to a wide variety of announcements of human resource management practices, including employee compensation increases, health and safety violations, and permanent staff reductions. Blackwell, Marr, and Spivey (1990), and Kalra, Henderson, and Walker (1994) studied only plant closings. Gunderson, Verma, and Verma (1997) only examined Canadian Firms, Caves and Krepps (1993) were focused on manufacturing firms, and Hallock (1998) examined the relationship between Chief Executive Officer pay and announcements of worker reductions. 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).⁶ 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, although two estimates, Caves and Krepps (-0.9 percent) and Datta and Iskandar-Datta (-1.3 percent) seem to be somewhat more negative than the others. The median estimate is -0.50 percent.⁷

5.2 Changes Over Time in Stock Market Response

As a basis of comparison with the existing literature, table 1 also contains estimates based on our sample of the mean cumulative excess returns in a three-day event window for the entire 1970-99 time period as well as for three sub-periods. The overall mean for the 1970-99 period using our sample is -0.104 percent (s.e. = 0.052), 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 -0.283 percent (s.e. = 0.085) for the 1970-79 period, -0.091 percent (s.e. = 0.088) for the 1980-89 period, and +0.125 percent for the 1990-99 period (s.e. = 0.100).⁸ This pattern implies that the negative

⁶ In all but three studies from the previous literature we were able to identify the cumulative average excess return over the three day window.

⁷ Cascio, Young, and Morris (1997) investigate longer-term effects of layoffs on firms.

⁸ The differences between the mean for the 1970-79 period and the means for the other two periods are statistically significant at conventional levels (p-value = 0.004). The difference between the mean for the

Table 1: Summary of Selected Previous Studies and Comparison with New Data

Author(s)	3-day Window			Cum Ex. Ret (%)
	Years	N	Type	
Abowd, et. al. (1990)	1980	87	Perm. RIFs	-0.6
Abowd, et. al. (1990)	1987	38	Perm. RIFs	-0.2
Blackwell, et. al. (1990)	1980-84	286	Plant closings	-0.7
Caves & Krepps (1993)	1987-91	513	Manuf.	-0.9
Datta & Iskandar-Datta (1996)	1989-91	228	Broad set	-1.3(a)
Golomba & Tsetkekos (1992)	1980-86	282	Plant closings	-0.5
Gunderson, et. al (1997)	1982-89	214	Canadian firms	-0.5
Hallock (1998)	1987-95	1287	Broad Set	-0.3
Kalra, et. al. (1994)	1984-87	132	Plant Closings	-0.5(a)
Ursel & Armstrong-Stassen (1995)	1989-92	137	Broad Set	-0.6(b)
Worell, et. al. (1991)	1979-87	194	Broad Set	-0.4
Farber & Hallock	1970-79	1529	Broad set	-0.283
Farber & Hallock	1980-89	1533	Broad set	-0.091
Farber & Hallock	1990-99	1211	Broad set	+0.125
Farber & Hallock	1970-99	4273	Broad set	-0.104

Note: (a) From day -1 to day 0 only. (b) day 0 only.

effect of layoff announcements on share prices has moderated over the sample period.

The upper left panel of figure 2 contains a plot of average cumulative excess returns by year using a 3-day event window for our sample of 4273 layoff announcements. Superimposed on this plot are the predicted values from an OLS regression of the annual values on a time trend.⁹ While the average shows substantial year-to-year variation, consistent with the summary by decade of our results in table 1, the trend is clearly upward. By the latter part of the period, the predicted values are positive. The upper right panel of figure 2 repeats this analysis for the median cumulative excess return. As expected, the median shows less year-to-year variation, and the trend is also clearly upward with positive predicted values by the late 1990s. The bottom panel of the figure carried out a similar analysis on the fraction of the cumulative excess returns in each year that are positive. This also shows an upward trend, with predicted probability of a positive share price reaction greater than one-half by

1980-89 period and the 1990-99 period is not statistically significant at conventional levels (p-value = 0.321).

⁹ This regression is weighted by the inverse of the standard error of the annual averages.

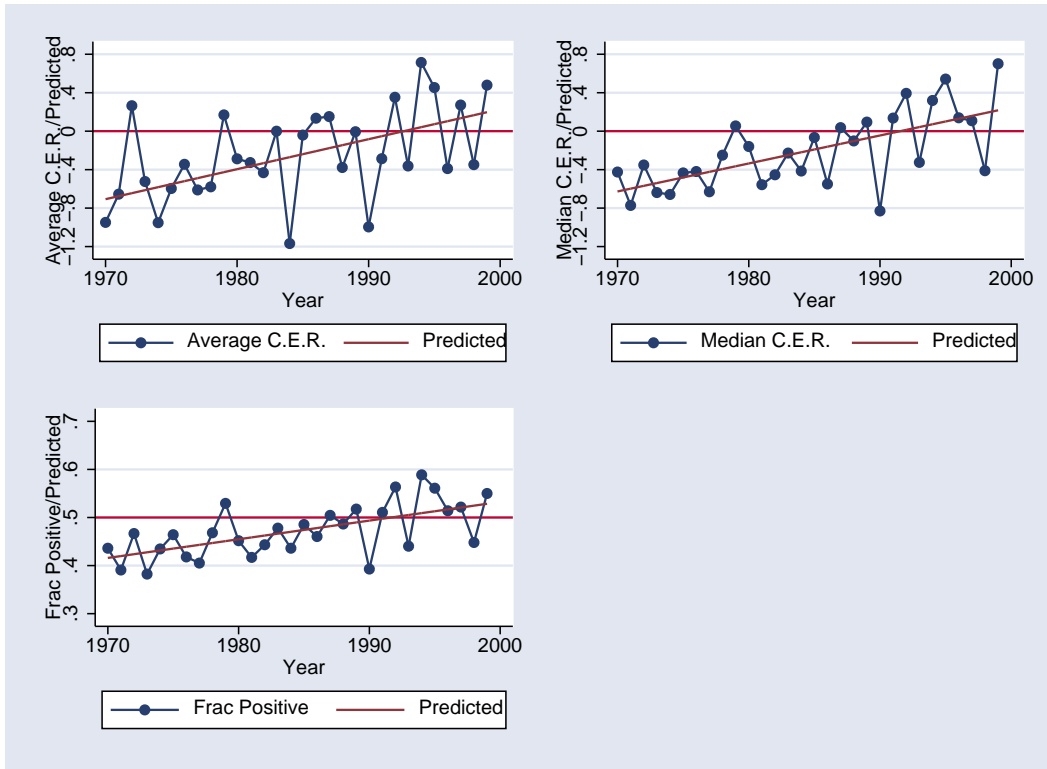


Figure 2: Measures of Central Tendency, C.E.R., by Year

the late 1990s.

It is clear back in figure 1 that the number of announcements of RIFs follows the business cycle (as measured by the unemployment rate) quite closely. On this basis, it might be expected that the market reaction to job loss announcements would be smaller in absolute magnitude in a weak labor market because laying off workers in a weak labor market would naturally carry less information about firm prospects. While there is substantial year-to-year variation in the average market reaction, no such cyclical pattern is obvious on examination of figure 2. As a crude indication of the lack of a cyclical pattern, the simple correlation between the unemployment rate and the annual average cumulative excess return for the three-day window is -0.04 (the wrong sign and insignificant, $p\text{-value} = 0.84$).

The results in the lower panel of table 1 and in figure 2 suggest that the stock market response to layoff announcements has, in fact, become less negative by several measures of central tendency. Given the substantial variation in stock market response to individual announcements that is not captured by the measures of central tendency, it is useful to

examine in more detail how the distribution of stock market responses has changed.

It is possible that layoff announcements occur systematically around the time of other announcements that could affect stock prices. To the extent that this is the case, we could be mis-attributing systematic movements in stock prices to the layoff announcements when, in fact, they are due to the release of other information. In order to investigate this possibility, we calculated average cumulative excess returns for various subsets of our layoff announcements that occurred in temporal isolation from other important announcements. First, we considered layoff announcements that were not within ten days in either direction of a dividend announcement for that firm. Second, we considered layoff announcements that were not within ten days in either direction of an earnings announcement for that firm. Finally, we considered layoff announcements where there was not another layoff announcement by that firm in the 100 previous days.

The results of this analysis are contained in table 2. There is a strong pattern in the results suggesting that “clean” layoff announcements (announcements that are not temporally close to other announcements) have a stronger negative effect on average than do “dirty” layoff announcements (announcements that are close to other announcements). Considering the entire 1970-1999 period, the average 3-day cumulative excess returns for dirty layoff announcements are not significantly different from zero while the average 3-day cumulative excess returns are significantly different from zero for clean layoff announcements. However, both types of layoff announcements show an upward (less negative) trend across the decades. Figure 3 contains plots by year of the average, median, and percent positive 3-day cumulative excess returns for the clean and dirty announcements separately. While the stock market reaction is more negative for the clean than for the dirty announcements, both series show a similar increase over time.¹⁰

In order to illustrate how the distribution of stock market responses has changed more generally over time, the top panel of figure 4 contains kernel density estimates of the distribution of cumulative excess returns for all layoff announcements by decade for the range -0.1

¹⁰ In no case are the time trends in the two subsamples significantly different from each other.

Table 2: Average Cumulative Excess Returns, 3-day Window
(by time period and isolating events)

	N	1970-99	1970-79	1980-89	1990-99
All Announcements	4273	-0.104 (0.052)	-0.284 (0.079)	-0.091 (0.086)	0.125 (0.111)
Selection Criterion:					
Near Dividend Announcement	2010	0.095 (0.073)	-0.147 (0.106)	0.099 (0.123)	0.476 (0.161)
Not Near Dividend Announcement	2263	-0.308 (0.074)	-0.447 (0.116)	-0.273 (0.121)	-0.186 (0.151)
Near Earnings Announcement	1495	0.021 (0.085)	-0.236 (0.139)	-0.037 (0.140)	0.333 (0.164)
Not Near Earnings Announcement	2778	-0.180 (0.066)	-0.306 (0.095)	-0.124 (0.110)	-0.047 (0.149)
Near Other RIF Announcements	1940	-0.046 (0.074)	-0.222 (0.102)	0.092 (0.121)	0.104 (0.187)
Not Near Other RIF Announcements	2333	-0.161 (0.074)	-0.372 (0.123)	-0.281 (0.123)	0.136 (0.138)
Near At least One Announcement	2811	-0.009 (0.062)	-0.195 (0.092)	0.045 (0.103)	0.198 (0.135)
Not Near Any Announcement	1462	-0.333 (0.096)	-0.531 (0.153)	-0.403 (0.157)	-0.028 (0.194)

Note: Cumulative average excess returns are for the three days around the announcement of the job loss. Standard errors are reported in parentheses. “Not Near Dividend Announcement” implies no dividend announcements within 10 days before or after the layoff announcement. “Not Near Earnings Announcement” implies no earnings announcements within 10 days before or after the layoff announcement. “Not Near Other RIF Announcement” implies no other layoff announcements in the 100 days prior to this layoff announcement.

to +0.1.¹¹ There are some differences across decades in this part of the distribution. There is more probability mass between -0.05 and 0 in the 1970s and 1980s than in the 1990s. Correspondingly, there is more probability mass between 0 and +0.05 in the 1990s than in the 1970s and 1980s. Thus, it appears that the movements in central tendency are a result of a reduction in the likelihood of small negative cumulative excess returns and an increase in

¹¹ Fully 95.5 percent of the stock market reactions to layoff announcements are in the range from -0.1 to +0.1, and the kernel density estimates of the distributions by decade are virtually identical outside this range.

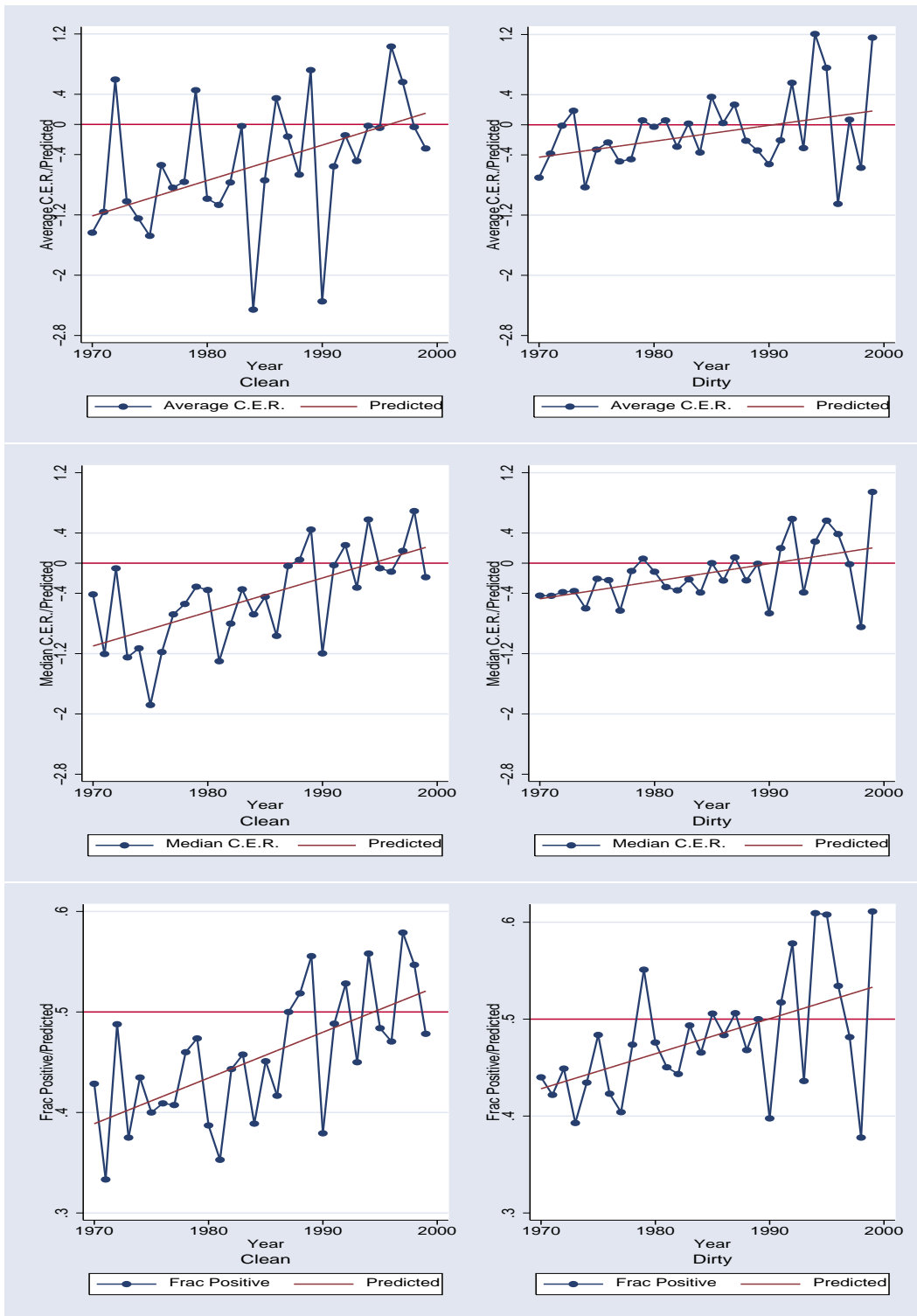


Figure 3: Measures of Central Tendency, C.E.R., by Year and Proximity

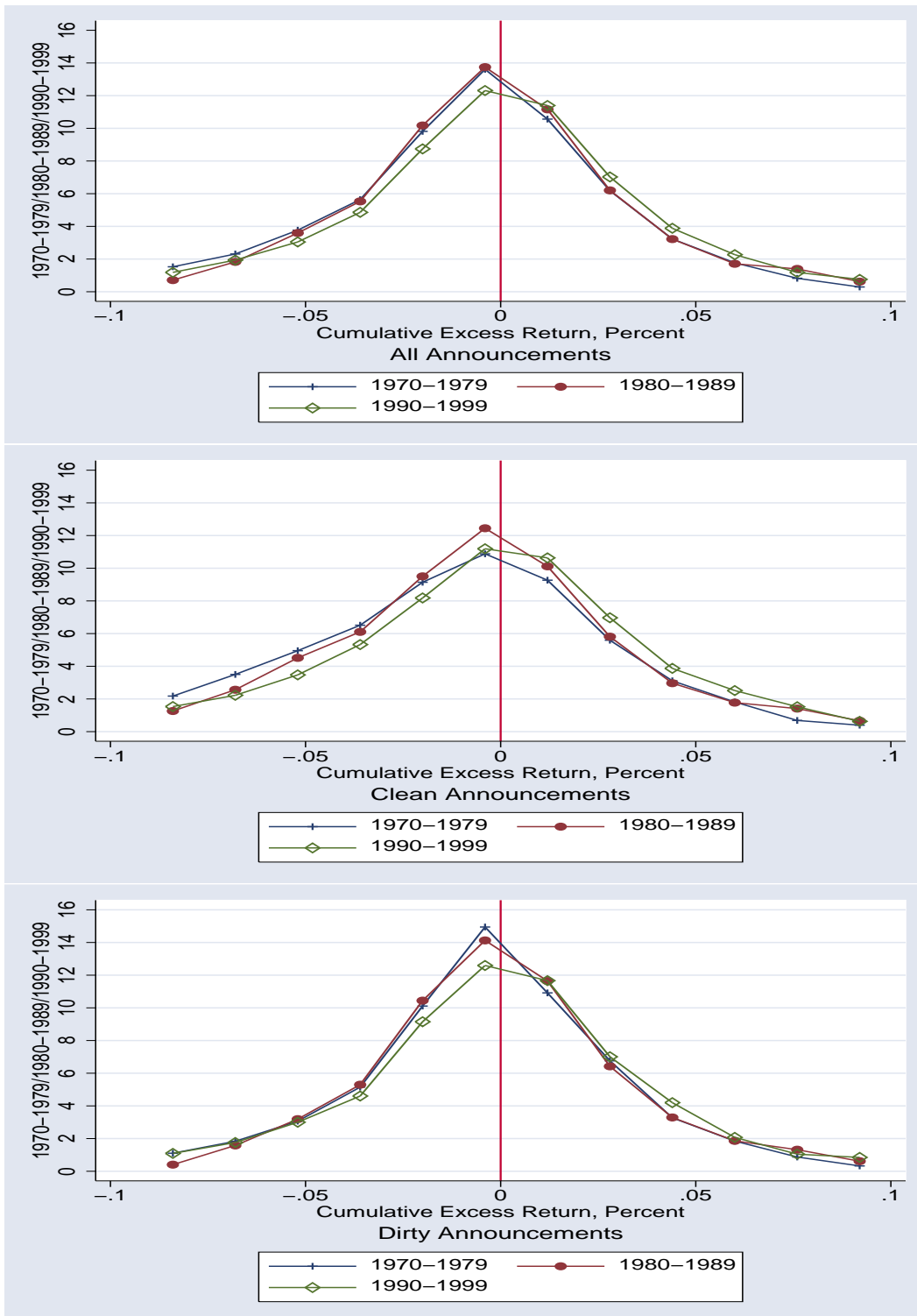


Figure 4: Distribution of C.E.R., by Decade. Kernel Density Estimates

the likelihood of small positive cumulative excess returns between the 1970s and the 1990s.

The next two panels of figure 4 contain kernel density estimates of the distribution of cumulative excess returns for clean and dirty layoff announcements respectively. The distribution for the clean announcements shows a sharp shift of probability mass from below zero to above zero between the 1970s and 1990s. In contrast, the distribution for the dirty announcements shows a somewhat smaller shift from negative to positive values. Another contrast between the distributions is that the stock market response to clean announcements is more disperse than that for dirty announcements. In particular, there is more mass in the lower tail (a higher probability of large negative share price reactions) for clean announcements.

Overall, the pattern is clear. Our view is that the stock market reaction to clean announcements are more easily interpretable as due to the layoff announcements themselves. Interpretation of the dirty announcements is complicated by the possibility that at least some of the observed response is due to other contemporaneous news. However, the general time series patterns are similar in the two groups. The time-series of stock market reactions to announcements of both types show a sharp upward trend, starting from a negative average reaction in the 1970s and moving toward a roughly zero reaction on average in the 1990s.

6 What Accounts for the Decline in the Negative Share Price Reaction?

Given we have documented that the share price reaction to announcements of reductions in force is most negative early in our 30 year sample and has become less negative over time, we investigate some potential causes for this change.

One purely mechanical explanation might be that improvements in information technology and communication have caused layoff announcements to carry less new information than they once did. This would account for a decrease in the absolute size of stock price reaction to the announcements over time. The kernel density estimates in figure 4 can be used to help rule out this explanation. It is clear from the top panel of this figure that the

variance of the stock price reaction has not declined. The distributions of stock price reactions in each decade have approximately the same dispersion. The standard deviation of the 3-day cumulative excess returns in the 1970s was 0.044. The standard deviation increased over time to 0.046 in the 1980s and to 0.053 in the 1990s. Thus, there is no evidence that layoff announcements became less newsworthy over the sample period.¹²

Perhaps the most interesting possible explanation has to do with the stated reason for the layoff. Based on our reading of the articles in the *Wall Street Journal* announcing the layoffs, we were able to attribute reasons to all but 4.4 percent of the layoff announcements. In very broad terms, layoff announcements attribute layoffs to several major factors. The largest category is a “demand slump”, accounting for 42.5 percent of layoffs. We expect that such layoffs would signal difficulty in selling output and would be a negative signal to the market. Another 33.0 percent is accounted for by “cost issues” and “reorganization”. These might reflect efforts by management to streamline operations and reduce costs, and this might be a positive signal to the market. Plant closings account for another 7.6 percent of layoff announcements, and these could plausibly be interpreted as positive or negative news. The remaining 16.9 percent of announcements are for other stated reasons (12.5 percent) or missing reason (4.4 percent).

The relative frequencies of these categories varied substantially over the period studied. Figure 5 contains histograms by decade of the distribution of layoff announcements by reason. Most striking is that the fraction of RIFs associated with a demand slump decreased sharply in the 1990s while the reorganization category increased substantially in both the 1980s and 1990s. Announcements associated with cost issues also increased over the period.¹³

The shift in the composition of RIF announcements away from the deficient-demand category and toward the efficiency categories has the potential to explain the decline in the magnitude of the negative average share price effect since 1970. A necessary condition

¹² Hallock and Mashayekhi (2003) investigate the share price reaction to a variety of corporate financial news announcements over time, including dividends announcements, stock splits, and earnings announcements. They do not find a general trend toward a zero reaction as would be expected from the “news is less newsworthy” hypothesis.

¹³ An annual breakdown (not shown) shows that the demand-slump category has been quite variable and consistent with the business cycle. There are peaks associated with each of the recessions in the 1970s and 1980s and a smaller peak associated with the recession of the early 1990s.

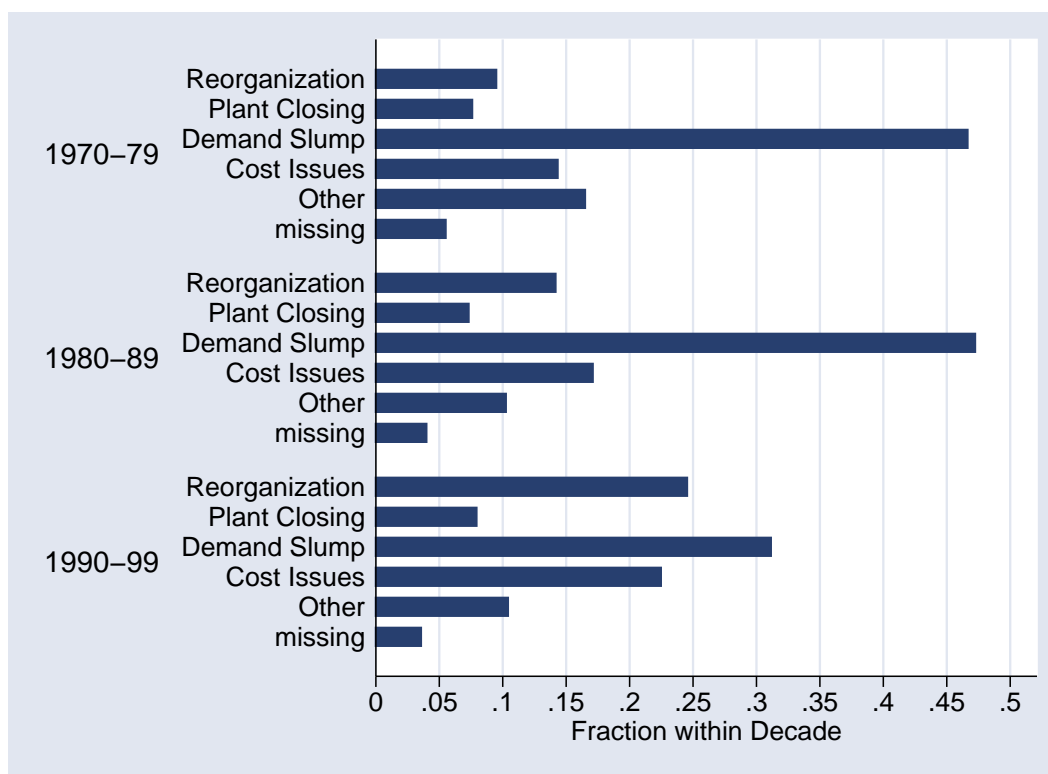


Figure 5: Distribution of Layoff Announcements by Reason and Decade

for this explanation to be plausible is that it must be the case that average cumulative excess returns are more negative for deficient-demand RIFs than for efficiency RIFs. In order to investigate this directly, table 3 contains results of regression analyses of cumulative excess returns for the 3-day event window around layoff announcements. Given the similar time trends for clean (temporally isolated from other announcements) and dirty (temporally proximate to other announcements) announcements shown in figure 3, we pool both types of announcements in this analysis but allow for an intercept shift between the two types.¹⁴

The estimates in the first column of table 3 contain the results for a model that includes only the dirty indicator and decade indicators. Starting from a significantly negative average cumulative excess return (CER) for clean announcements in the 1970s, the average CER increased in the 1980s and even further in the 1990s. By the 1990s, the average CER is not

¹⁴ Exploration with separate models for clean and dirty announcements generally imply that the intercept shift is sufficient to capture the differences between the two types of announcements.

Table 3: Regression Analysis of Cumulative Excess Returns, 3-day Window

	(1)	(2)	(3)	(4)	(5)
	1970-99	1970-99	1970-79	1980-89	1990-99
Constant	-0.537 (0.121)	-0.876 (0.141)	-0.759 (0.189)	-0.778 (0.200)	-0.386 (0.274)
Dirty	0.341 (0.116)	0.408 (0.117)	0.303 (0.183)	0.528 (0.192)	0.328 (0.243)
1980-89	0.206 (0.122)	0.235 (0.123)	—	—	—
1990-99	0.428 (0.131)	0.414 (0.135)	—	—	—
Reason Indicators:					
Reorganization	—	0.505 (0.159)	0.407 (0.293)	0.646 (0.257)	0.431 (0.298)
Plant Closing	—	0.354 (0.200)	0.705 (0.292)	0.558 (0.311)	-0.772 (0.497)
Cost Issues	—	0.257 (0.155)	0.011 (0.258)	0.277 (0.250)	0.422 (0.308)
Other	—	0.693 (0.161)	0.619 (0.214)	0.661 (0.287)	0.905 (0.387)
Missing	—	0.677 (0.243)	0.453 (0.313)	0.991 (0.445)	0.783 (0.608)
p -value Decade=0	0.005	0.008	—	—	—
p -value Reason=0	—	0.000	0.018	0.024	0.030
N	4273	4273	1529	1533	1211
R-Squared	0.004	0.011	0.011	0.012	0.011

Note: Standard errors are reported in parentheses. Observations are weighted by the inverse of the standard error of the cumulative excess return. Dirty indicates that the job loss announcement was temporally proximate to a dividend, earnings or other layoff announcement. The base category consists of layoff announcements in the 1970-79 period due to a “demand slump” that were clean.

significantly difference from zero. Dirty announcements have significantly higher average cumulative excess returns than clean announcements.

The estimates in the second column of the table additionally include a set of indicator variables for the different stated reasons for the announced layoffs. The base category consists of clean layoff announcements in the 1970s due to a slump in demand, and announced layoffs in this category have an average CER of -0.876 percentage points. Dirty announcements have significantly less negative average cumulative excess returns (as expected) than

clean announcements by 0.41 percentage points. Consistent with our expectations, layoffs announced to be due to the growing category of reorganization have a significantly greater (by 0.51 percentage points) average CER. Layoff announcements in every category have a greater average CER than do those due to a slump in demand. Thus, it is possible that the change in average response over time can be accounted for by the the shift in announcements away from those due to a demand slump toward categories with a less negative stock market response. However, the estimated coefficients on the decade dummy variables do not change in magnitude after the announced reason is controlled for. There remains a significant shift toward less negative stock market reaction to layoff announcements even within specific categories.

The final three columns of table 3 contain separate analyses by decade. While the estimates are less precise due to the smaller sample sizes, the general pattern of results is identical to that in column 2. Layoff announcements attributed to a demand slump have a more negative average stock price response than do layoff announcements attributed to any of the other reasons. An F-test of the hypothesis that the structure of the model is the same across the three decades apart from an intercept shift cannot be rejected at conventional levels (p -value = 0.331). In other words, the constrained model in column 2 of the table cannot be rejected against the unconstrained model in columns 3-5.

6.1 Other Characteristics of Announced RIFs

It may be that shifts in other characteristics of announced layoffs could account for the increase in stock price reaction since the 1970s. We collected information from *Wall Street Journal* articles announcing the layoffs on several characteristics in addition to the stated reason, including the type of workers involved (salaried, hourly, or both), the duration of the announced layoff (temporary or permanent), and the number of workers involved in the announced layoff. We created an indicator for large announced layoffs by calculating the share of total firm employment of each layoff announcement and coding the announced layoff as large if the share exceeded the median in our sample (0.016).¹⁵

¹⁵ We used total firm employment data from COMPUSTAT in computing the layoff share.

Table 4 contains WLS regressions of cumulative excess returns that include measures of these layoff characteristics in addition to the reason indicators, decade indicators and the clean/dirty indicator used in table 3. The first column of the table contains only the controls for decade, clean/dirty, and reason. This reproduces the estimates in column 2 of table 3 for ease of comparison. The estimates in column 2 of table 4 include the additional controls, and we also present p -values of F-tests of the hypothesis that the controls in each dimension have zero coefficients. Controlling for decade, clean/dirty, and reason explain statistically significant shares of the variation in cumulative excess returns. We do not present the coefficient estimates for reason and clean/dirty indicators, but they are qualitatively similar to those in column 2 of table 3. However, the coefficients in the other dimensions are of marginal statistical significance.

There is weak evidence that announcements of permanent layoffs result in a more negative average stock price reaction than do announcements of temporary layoffs. There is also weak evidence that announcements of large (greater than median share) layoffs have a more negative share price reaction than do announcements of relatively small layoffs. These findings are consistent with the notion that both permanent layoffs and large layoffs are likely to carry more information about firms' longer run prospects than their complements.

The coefficients on the decade indicators do not change substantially when controlling for the additional announcement characteristics. The pattern of increasing (less negative) stock price reactions to layoff announcements over time remains.

The last three columns of table 4 contain separate regression analyses by decade. Once again, the null hypothesis that the constrained version of the model, estimated in column 2, that allows for separate intercepts by decade but constrains other coefficients to be constant over time cannot be rejected (marginally) at conventional levels (p -value = 0.106). However, there are some interesting contrasts in effects over time. In the 1970s, large layoffs are associated with a significantly larger negative average stock price reaction than are small layoffs. No such relationship exists in the 1980s or 1990s. Permanent layoffs are not significantly related to average stock price reaction in the 1970s or 1980s, but they are associated with a significantly larger negative average share price reaction in the 1990s than are temporary layoffs.

Table 4: Regression Analysis of Cumulative Excess Returns, 3-day Window

	(1)	(2)	(3)	(4)	(5)
	1970-99	1970-99	1970-79	1980-89	1990-99
Constant	-0.876 (0.141)	-0.657 (0.221)	-0.540 (0.309)	-0.470 (0.362)	-0.069 (0.531)
1980-89	0.235 (0.123)	0.264 (0.125)	—	—	—
1990-99	0.414 (0.135)	0.497 (0.142)	—	—	—
Type of Worker					
Salaried	—	0.088 (0.266)	-0.160 (0.494)	0.349 (0.441)	0.223 (0.541)
Salaried and Hourly	—	0.215 (0.229)	-0.024 (0.359)	-0.223 (0.364)	1.058 (0.526)
Missing Type	—	-0.148 (0.173)	-0.135 (0.242)	-0.137 (0.280)	-0.005 (0.442)
Duration of Layoff					
Permanent	—	-0.230 (0.134)	-0.018 (0.186)	-0.315 (0.221)	-0.734 (0.360)
Missing Duration	—	0.228 (0.293)	0.572 (0.340)	-0.396 (0.553)	0.230 (1.261)
Size of Layoff					
Greater than Median Share	—	-0.203 (0.137)	-0.664 (0.217)	-0.008 (0.229)	-0.033 (0.285)
Missing Size	—	0.108 (0.126)	0.055 (0.184)	0.104 (0.207)	0.217 (0.297)
Other Controls					
Reason (6 categories)	Yes	Yes	Yes	Yes	Yes
Dirty (2 categories)	Yes	Yes	Yes	Yes	Yes
<i>p</i> -value Decade=0	0.008	0.002	—	—	—
<i>p</i> -value Reason=0	—	0.000	0.015	0.030	0.011
<i>p</i> -value Type=0	—	0.151	0.936	0.547	0.027
<i>p</i> -value Duration=0	—	0.091	0.186	0.346	0.103
<i>p</i> -value Size=0	—	0.076	0.003	0.848	0.616
N	4273	4273	1529	1533	1211
R-Squared	0.011	0.014	0.021	0.015	0.023

Note: Standard errors are reported in parentheses. Observations are weighted by the inverse of the standard error of the cumulative excess return. The base category consists of clean permanent layoff announcements smaller than median share of employment for hourly workers in the 1970-79 period due to a “demand slump”.

Overall, none of the measured characteristics of layoffs announcements has any substantial effect on the trend toward smaller average cumulative excess returns around the announcements of layoffs.

6.2 Variation by Industry

The industrial composition of layoff announcements has changed dramatically over the last three decades. Table 5 contains the frequency distribution by decade of layoff announcements for three industry groups. Over the period as a whole, fully 30 percent of layoff announcements were by firms whose primary industry was motor vehicle equipment manufacturing (SIC 37) and an additional 49 percent was by firms in other manufacturing industries. Firms outside of manufacturing accounted for 21 percent of layoff announcements. The distribution has shifted away from manufacturing since the 1970s. The total manufacturing share of layoff announcements declined from 88.6 percent in the 1970s to 64.4 percent in the 1990s. The decline in motor vehicle manufacturings shares was even sharper, from 37.3 percent to 21.7 percent.

This shift in the locus of layoff announcements raises the possibility that part of the increased share price reaction could be accounted for by the move away from manufacturing in general and motor vehicle manufacturing in particular. In order to investigate this possibility, table 6 contains average cumulative excess returns calculated separately for each

Table 5: Layoff Announcements by Industry and Decade and Decade
Frequency Distribution
(row percentages)

Decade	Non Manuf	Non MV Manuf	MV Manuf
1970-79	11.45	51.21	37.34
1980-89	18.39	51.98	29.64
1990-99	35.60	42.68	21.73
1970-99	20.96	49.02	30.03

Note: Announcements with missing industry are not included in the calculations. The total number of announcements is 3560.

Table 6: Layoff Announcements by Industry and Decade and Decade

Decade	Average Cumulative Excess Returns				p -value all equal
	All	Non Manuf	Non MV Manuf	MV Manuf	
1970-79	-0.315 (0.093)	0.147 (0.258)	-0.497 (0.154)	-0.287 (0.122)	0.069
1980-89	-0.094 (0.095)	0.138 (0.190)	-0.379 (0.150)	0.130 (0.156)	0.027
1990-99	0.072 (0.109)	0.152 (0.165)	-0.032 (0.189)	0.090 (0.225)	0.777
1970-99	-0.132 (0.057)	0.146 (0.112)	-0.337 (0.089)	-0.095 (0.098)	0.003

Note: Standard errors of means are reported in parentheses. Observations are weighted by the inverse of the standard error of the cumulative excess return. Announcements with missing industry are not included in the “All” column. The total number of announcements is 3560.

decade and three industry groups.¹⁶ The average for all industries shows the movement from a significantly negative average CER in the 1970s to a positive and insignificant value by 1990-99.

It is clear that the average CER for the three industry groups are quite different from one another (p -value of equality across industries = 0.003). There is a clear pattern when considering the entire 1970-99 period. There is a significant negative average share price reaction to layoff announcements by manufacturing firms outside of motor vehicles. There is not a significant average share price reaction to layoff announcements by firms outside manufacturing or in motor vehicle manufacturing.

The time series patterns by industry group are interesting. The estimated average share price reaction to layoff announcements by firms outside of manufacturing is positive but insignificantly different from zero in each decade, and the differences across decades are not statistically significant (p -value = 0.999). In manufacturing outside of motor vehicles, the share price reaction becomes less negative over time with a change between the 1970s and 1990s of 0.465 (p -value = 0.0567). In motor vehicle manufacturing there is a significant move

¹⁶ The overall averages do not match those shown in table 2 because announcements with missing industry are not included.

toward a positive average share price reaction between the 1970s and 1980s (from -0.287 to +0.130, p -value = 0.036).

The general pattern is clear. There is no significant share price reaction to layoff announcements outside of manufacturing in any decade. Within manufacturing, there is a significant negative share price reaction early in the period that disappears by the 1990s. The negative share price reaction in manufacturing is larger in absolute value outside of motor vehicles than in the motor vehicle sector.

In order to investigate whether the shift in layoff announcements away from manufacturing can account for the movement away from a negative share price reaction, we next carry out a multivariate analysis of the share price reaction that accounts for the set of announcement characteristics used in table 4. This analysis is contained in table 7. The estimates in the first column of the table replicate those in the first column of table 3 and show the raw average share price reaction by decade controlling only for temporal proximity to other announcements. The second column of the table contains estimates for a model that additionally includes controls for industry group. These estimates confirm that, relative to firms outside of manufacturing, manufacturing firms (at least those outside of motor vehicle manufacturing) have a significantly more negative share price reaction. The time series changes measured by the decade variables are only slightly attenuated from their values in the model that does not control for industry. Thus, the shift in the industry composition of firms announcing layoffs does not account for much of the change over time in the average share price reaction. The estimates in column 3 of the table are from a model that additionally controls for the broader set of announcement characteristics used in table 4. The changes over time are a bit larger in this specification, but the general pattern of results is unchanged.

The last three columns of table 7 contains estimates from separate models for each of the three industry groups. There is clearly no significant change over time in average share price reaction to layoff announcements by firms outside of manufacturing. Similarly, while the point estimates suggest that average share price reaction to layoff announcements by firms in manufacturing other than motor vehicles increased over time, the hypothesis that there has been no change across decades cannot be rejected (p -value = 0.286). It is only for

Table 7: Regression Analysis of Cumulative Excess Returns, 3-day Window
By Industry

	(1) All	(2) All	(3) All	(4) Non Manuf	(5) Non MV Manuf	(6) MV Manuf
Constant	-0.537 (0.121)	-0.325 (0.172)	-0.420 (0.262)	0.224 (0.580)	-0.756 (0.495)	-0.463 (0.431)
1980-89	0.206 (0.122)	0.196 (0.124)	0.251 (0.126)	0.020 (0.334)	0.231 (0.221)	0.513 (0.204)
1990-99	0.428 (0.131)	0.374 (0.136)	0.440 (0.145)	-0.121 (0.342)	0.419 (0.271)	0.559 (0.268)
Industry						
Non-MV Manufacturing	—	-0.361 (0.148)	-0.326 (0.150)	—	—	—
Motor Vehicle Manufacturing	—	-0.178 (0.157)	-0.210 (0.166)	—	—	—
Missing Industry	—	-0.001 (0.173)	-0.080 (0.202)	—	—	—
Other Controls						
Dirty (2 categories)	Yes	Yes	Yes	Yes	Yes	Yes
Reason (6 categories)	No	No	Yes	Yes	Yes	Yes
Type (3 categories)	No	No	Yes	Yes	Yes	Yes
Duration (3 categories)	No	No	Yes	Yes	Yes	Yes
Size (3 categories)	No	No	Yes	Yes	Yes	Yes
p -value Decade=0	0.005	0.022	0.009	0.867	0.286	0.017
p -value Industry =0	—	0.040	0.169	—	—	—
N	4273	4273	4273	746	1745	1069
R-Squared	0.004	0.005	0.015	0.013	0.028	0.028

Note: Standard errors are reported in parentheses. Observations are weighted by the inverse of the standard error of the cumulative excess return. “Dirty” indicates that the job loss announcement was temporally proximate to a dividend, earnings or other layoff announcement. The base category consists of clean permanent non-manufacturing layoff announcements smaller than median share of employment for hourly workers in the 1970-79 period due to a “demand slump”.

layoff announcements by firms in motor vehicle manufacturing that the average share price reaction has become significantly less negative over time (p -value = 0.017), with the change occurring between the 1970s and 1980s.

The 1970s were a period of sharp negative demand shocks for the motor vehicle industries in the wake of rapidly increasing fuel prices due to the OPEC oil embargoes while the 1980s

were a period of retrenchment and reorganization for the industry. We would expect a more negative response to the 1970s shocks relative to the 1980s reorganization. The fact that the stated reason variables do not appear to account for the change between these two decades may reflect difficulty in measuring the true reasons for the layoffs.

Overall, the analysis by industry shows a substantial shift away from layoffs in manufacturing, particularly motor vehicle manufacturing, and toward non-manufacturing. The average share price reaction to layoff announcements outside of manufacturing was around zero throughout the period and the locus of negative share price reactions is in the manufacturing sector. However, share price reactions became less negative on average within manufacturing so that the shift in announcements away from manufacturing cannot account for the overall decline in share price reaction.

7 Concluding Remarks

We use a very large sample of layoff announcements by large firms over a 30-year period to investigate whether there has been a change in the relationship between share prices and announced RIFs over time. We have several findings including:

- The number of announced RIFs seem to follow the business cycle quite closely.
- The overall stock price reaction, as measured by any of several measures of the distribution of cumulative excess returns, is most negative earlier in the sample and has become less so over time.
- The variance across announcements in the stock price reaction has not declined over time, suggesting that there has not been a general reduction in the information content of layoff announcements.
- Layoff announcements that are temporally proximate to other public announcements, including dividend announcements, earnings announcements, and other layoff announcements, have a smaller absolute effect on stock price than do temporally isolated layoff announcements.

- While there has been a shift away from layoffs due to a slump in demand and toward layoffs due to restructuring and cost considerations, this shift cannot account for the change over time in the stock price reaction.
- Changes in the industrial composition of layoff announcements away from firms in manufacturing industries cannot account for the change over time in the stock price reaction.
- Other characteristics of announced layoffs, including proposed duration, salaried vs. hourly workers, and the size of the layoff are not strongly related to the stock price reaction.

One limitation of our analysis is that it is based on layoff announcements by firms in the Fortune 500 at some point over the past three decades. While our findings likely generalize to the population of large firms, it may not be the case that the share price reactions of smaller firms would follow the same pattern.

We believe that we have showed convincingly that the stock market reaction to layoff announcements has become less negative over time. However, despite our best efforts, we have not been able to isolate the reasons for this change.¹⁷

¹⁷ Perhaps other research methods such as interviews may prove fruitful. For example, Hallock (2003) interviewed 40 senior managers in variety of firms in order to investigate such issues as whether published reasons for firm actions are credible and why firms make layoffs at certain times of the year or week.

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