# Human Capital Reorganizations and Market Performance: U.S. Firms

Anne Anderson

Perella Chair in Finance, College of Business and Economics, Lehigh University

27 Memorial Drive West, Bethlehem, PA 18015

Tel: 1-610-758-5936    E-mail: ama6@lehigh.edu


E. James Cowan (Corresponding author)

Silberman College of Business, Fairleigh Dickinson University

285 Madison Avenue, Madison, NJ 07940

Tel: 1-201-207-6437    E-mail: ejcowan2@fdu.edu


Karen C. Denning

Silberman College of Business, Fairleigh Dickinson University

1000 River Road, Teaneck, NJ 07666

Tel: 1-201-7294    E-mail: denning@fdu.edu

Alphabetical listing of authorship. Equal contribution to the manuscript.

**Abstract**

This empirical examination of human capital reorganizations uses Standard and Poor's large, mid and small cap firms and demonstrates that the typical market response is suggestive of what casual empiricism would suggest: firms undertake work force reductions in periods of poor performance. Though the average firm experiences negative price impacts, nearly half (45%) do not. Firm size and technological intensity matter in impacting the negative abnormal results. Bankruptcy potential and financial distress do not appear to be significant indicators. Offshoring and financing changes intensify the market effect whereas asset changes have a positive impact. Changes in business focus and changes in technology seem

to have no impact on the market response to layoffs decisions.

**Keywords:** Restructuring, Capital budgeting, Information and efficiency

**JEL classifications:** G14, G31, G32, G34

## 1. Introduction

John, Lang and Netter (1992) suggest that public corporations may undertake a human capital restructuring[1] in much the same way as they might reorganize their assets or financial structure. Potentially there are many rationales that may prompt human capital reorganization. Among them, we consider changes in firm attributes and changes in associated firm-level decisions.[2] Our empirical examination considers twelve hypotheses in these two areas.

Over the past three decades major changes in technology, business practices and governmental intervention have led to alterations in how firms manage their human resources. These changes have contributed to globalization, manufacturing and white collar outsourcing and downsizing in domestic markets. In addition, the media seems to suggest that financial distress is a significant factor in layoffs and downsizings. For example, General Motors undertook vast human capital reorganizations in the last decade to forestall declining profitability and potential bankruptcy.[3] Forbes reported that in January 2009 there were 163,662 workers laid off in America's largest companies. *Job Market Monitor* reports that since September 2012 North American firms have laid off over 62,000 workers. Kodak ruled the film world until they were challenged by Fuji in 1980 and the arrival of digital technology during the 1990s and 2000s. Kodak's slow response to these challenges resulted in a series of early retirements, layoffs and job cuts culminating in a Chapter 11 filing in January 2012.[4] Employment downsizing is an important tactic affecting the firm's performance, workers and investors.

John, Lang and Netter's (1992) analysis of 46 public firms in the 1980s led them to conclude that firms experience changes in operating, investing and financial activity following a voluntary restructuring. They suggest that rather than face a potential takeover, firms reduce their workforce to improve performance. Davidson, Worrell and Fox (1996) examine the market reaction to the firm's announcements of early retirement programs and find evidence of a positive stock price response prior to the announcement, but not on the announcement day. This suggests that the market anticipates the news and views the corrective action positively. Elayan, Swales, Maris and Scott's (1998) results reinforce this. They also suggest that for companies with below average performance, the market anticipates the work force

---

[1] We use restructuring and reorganization interchangeably in this paper. We focus on companies who implement these changes by using human resource layoffs, early retirements or job cuts and who signal these changes by announcing them in the media.

[2] See Johnson, Davidoff and Perese (2003).

[3] General Motors was aided by the U.S. government and its provision of TARP (troubled asset relief funds) and more recently had an IPO. See Baldwin and Kim (2010).

[4] De La Merced, Michael, J., Eastman Kodak Files for Bankruptcy, *New York Times, Legal/Regulatory Restructuring & Bankruptcy,* January 19, 2012, 1:12 am. *Downloaded June 13, 2013 from* http://dealbook.nytimes.com/2012/01/19/eastman-kodak-files-for-bankruptcy.

reduction and thus there is no significant stock price reaction. Palmon, Sun and Tang (1997) find that firms which lay off workers as a result of declining demand experience negative stock returns and those that lay off workers in response to efficiency improvements experience positive returns. In contrast, Hallock (1998) finds a small but negative market reaction to the firm's downsizing decision. Lopez, Regier and Webb (2005) examine accounting performance and discover that firms engaging in restructuring experience negative long term operating margins. Denis and Kruse (2000) suggest that improvements in operating performance follow corporate restructurings, including work force reductions. Farber and Hallock (2009) hypothesize that reductions in the firm's work force designed to improve efficiency have become more common over time and those in response to declining product demand less so. However, controlling for layoff attributes, managerial rationale, and industry, almost none of the small negative stock reactions can be explained. Marshall, McColgan and McLeish (2012) find positive stock price responses associated with the layoff decision for UK firms in the rising market conditions of 2005-2006, which is consistent with increases in firm level efficiency and negative stock price responses during the 2008 global financial crisis, as well as with declining firm level investment opportunities. Their findings underline the importance of financial market conditions associated with the investor response to the firm's downsizing decision and they interpret that market conditions override firm rationales in determining security price responses.

Relying on the above research, we theorize that unexpected reductions in the work force might be associated with either a positive or a negative market response. A potential positive response might stem from the firm's corrective action. Conversely, a potential negative response might stem from the inability of the layoff to resolve the problems faced by the firm. This paper adds to the general empirical literature in corporate restructuring by examining the announcement effect of human capital reorganization and restructuring by considering firm characteristics and associated internal decisions.

We find that the market response to human capital reorganizations is statistically and economically significant. The average market response is negative, but 45% of the sample experiences a positive reaction. Firm size and technological intensity matter in impacting the negative abnormal results. Bankruptcy potential and financial distress do not appear to be a significant indicator. Offshoring and financing changes intensify the negative market effect whereas asset changes have a positive impact. Changes in business focus and changes in technology seem to have no impact on the market response to layoffs decisions.

Section 2 of this paper discusses the theoretical underpinnings of our analysis and the resultant hypotheses. Section 3 discusses data, descriptive statistics and methodology. Section 4 reports the results of the empirical examination. Concluding comments are contained in Section 5.

## 2. Theoretical Discussions and Hypotheses Development

### 2.1 Announcements of Work Force Reductions

Work force reductions are analogous to corporate divestment. The firm is shedding

unnecessary assets, intending to derive some benefit from doing so. Ex-ante, from a simple capital budgeting perspective, the present value of the benefits received (elimination of labor costs) are expected to be greater than the present value of the costs incurred (legal, administrative, pension and health care).[5] When the firm eliminates part of its workforce there may be some resulting cash flow benefit from doing so. However, ex-post there may also be ancillary costs. For instance, there is the potential for lost sales and revenue as the labor needed to meet future demand may not be available.[6] When the firm announces a work force reduction it is sending a signal that should have a positive impact on shareholder value.[7,8] Nonetheless, the interpretation of the signal by the market may be positive or negative depending on firm attributes and managerial decisions.[9] In fact the efficiency enhancement and declining investment opportunity hypotheses discussed in the employment restructuring literature further elaborates these two distinct market responses.[10] Chen, Mehrotra, Sivakumar and Yu (2001) suggest that managerial signaling may be intentionally vague. Marshall, McColgan and McLeish (2012) categorize managerial rationales as restructuring, office and plant closings, economic conditions, offshoring or outsourcing.

Thus, our initial hypothesis (H1) is the null one of no abnormal market response associated with work force reductions. A secondary hypothesis (H2) is whether the market interpretation of the signal is positive or negative.[11] The third hypothesis (H3) splits our sample into two subsamples: those with single and those with multiple work force reductions and examines whether there is a significant market response in both subsamples.

*2.2 Hypotheses Relating to Firm Attributes*

Hypotheses four through seven organize our sample based on firm characteristics. The attributes we consider are developed from the literature and popular media because they may have an influence on how the market interprets work force reductions. We include size (H4), bankruptcy potential (H5 and H6) and technological intensity (H7).

Because size should be associated with firm flexibility, we stratify our sample based on firm size to examine the market response associated with the announcement of workforce

---

[5] Brookman, Chang and Rennie (2007b) interpret the evidence from layoffs occurring in the 1990s as suggestive of positive net present value decisions that result in permanent improvements in operating efficiencies.

[6] Prior to 1990, layoffs were considered a negative signal and foretold a reduction in sales to investors. See Worrell, Davidson and Sharma (1991).

[7] Palmon, Sun and Tang (1997) explicitly suggest that the announcement accompanying a layoff decision may be viewed by investors as a signal. They also suggest there may be either a decrease or an increase in share value accompanying this layoff announcement.

[8] Blackwell, Marr and Spivey (1990), Gombola and Tsetsekos (1992) and Palmon, Sun and Tang (1997) discuss managerial motivations to explain the negative stock price response associated with layoffs.

[9] Also see Kalra, Henderson and Walker (1994).

[10] See Palmon, Sun and Tang (1997), Elayan, Swales, Maris and Scott (1998), Hillier, Marshall, McColgan and Werema (2007) and Marshall, McColgan and McLeish (2012).

[11] We examine multiple hypotheses concerning work force reductions and consider the impact for the full sample and for the positive and negative responding firms. See Keasler and Denning (2009b) for an example of the use of this analytic technique.

reductions.[12] Hallock (1998) finds that firms that make layoff decisions have several attributes in common and one of them is size. Larger firms are more likely to be followed by financial analysts with the result that smaller firms may not receive the same amount of attention when a work force reduction occurs and therefore may not have as strong a market response.

Media reporting may also lead one to infer that layoffs result from poor financial performance and the potential for subsequent bankruptcy. Chen, Mehrotra, Sivakumar and Yu (2001) and Lin and Rozeff (1993) report that layoffs follow a period of poor performance.[13] Altman's (1968, 1984, 2014a, 2014b) methodology measures whether a firm is a likely candidate for bankruptcy. A firm experiencing financial distress will have negative market returns. Reducing labor costs may remediate the firm's distress and lessen the negative market return or even engender a positive one. Thus we stratify the sample based on bankruptcy potential and examine the market response associated with human capital restructuring.

In addition we examine the impacts of firm technological intensity on announcements of labor force downsizings. Elayan, Swales, Maris, and Scott (1998) find significantly different market responses to downsizing announcements depending on the firm's capital intensity: firms with higher levels of human capital respond more strongly to layoffs than those which rely on physical capital. Paytas and Berglund (2004) classify the technological intensity of firms according to NAIC code. We use their classification scheme to address whether technology intensity is associated with the market response to human resource reorganizations. In contrast to Elayan, Swales, Maris, and Scott (1998), ex-ante, we expect firms with high capital intensity that lay off workers to be viewed negatively by investors since it is more likely that irreplaceable human capital is lost.

*2.3 Hypotheses Relating to Managerial Decisions*

In the next set of hypotheses, we examine internal firm decisions and the announcement effect of work force reductions. The specific decisions we consider include firm asset changes, financial changes, business focus changes, technology changes[14], and offshoring.[15] John, Lang and Netter (1992) suggest that firms making asset changes and financial changes may also be those that engage in human capital restructuring. Asset changes include mergers, acquisitions, major manufacturing closings or openings and divestitures. We expect the market will have a positive reaction to human capital reductions when firm assets are changing. For example, when firms increase their asset size and are simultaneously reducing

---

[12] Roll (1983) finds size is an explanatory variable differentiating returns for small and large firms.

[13] See also Denning and Shastri (2011).

[14] We differentiate between technological intensity in Section 2.2 which measures the level or state of technology in the firm and managerial decisions concerning process and product technological change in Section 2.4.

[15] We use the term offshoring to mean the outsourcing of a business function outside of the national boundaries. It is a term used in the consulting industry (Agrawal and Farrell, 2003) and in the information technology literature (for example, Dossani and Kenney, 2003), and more recently in the economics literature (Blinder, 2006).

workforce, we expect improved efficiency. When firms decrease asset size and simultaneously reduce work force, we also anticipate improved efficiency and a positive market response (H8).[16] Financial changes include issuances of stock and debt, announced capital structure changes, capital structure exchanges and substantive write-offs in accounting reports. Firms that are reducing their work force and simultaneously optimizing their capital structure or their earnings are reducing both their operating costs and capital costs and hence should theoretically exhibit a positive market response (H9).

Hypothesis 10 considers the potential impacts on a firm's returns of a simultaneous human resource restructuring and a major focus change by the firm. Focus changes occur when a firm makes an announced shift in business direction or simply reclassifies itself as having a different primary NAIC code. Chen, Mehrotra, Sivakumar and Yu (2001) suggest that layoffs are intended to increase corporate focus and return the firm to profitability. We expect the market will have a positive reaction to simultaneous downsizing and focus changes as firms strive to improve their profitability.

We examine announcements about human capital reductions and simultaneous announcements of self-reported introductions of product or process technologies (H11). For self-reported technological change, capital for labor substitution results in increasing productivity and we anticipate investors view this change favorably as firms reduce their workforce. Finally, we examine the market reaction to the firm's layoff announcement and simultaneous managerial announcement of international offshoring. We classify a firm as offshoring when they report their own overseas expansion. We hypothesize that international expansion may cause firms to reduce their domestic work force (H12) and hence there may be an associated market response. We expect the market response to the simultaneous layoff and offshoring to be positive because of the reduction in labor cost. See Table 1 for a summary of our hypotheses.

---

[16] See Marshall, McColgan and McLeish (2012) for an expanded discussion of this hypothesis.

Table 1. Summary of Hypotheses

| Hypothesis number | Null Hypotheses regarding Human Capital Changes | Model | Results by Table |
|---|---|---|---|
| ABNORMAL MARKET RESPONSES TO WORK FORCE REDUCTIONS (SECTION 2.1) | | | |
| H1 | No abnormal market response to announcements of work force reductions | | 3 |
| H2 | The number of positive and negative abnormal market responses is the same. | | 3 |
| H3 | Abnormal market responses to a single announcement and multiple announcement firms are the same | | 4 |
| ABNORMAL MARKET RESPONSES TO WORK FORCE REDUCTIONS AND FIRM ATTRIBUTES (Section 2.2) | | | |
| H4 | No abnormal market response to work force reduction announcements based on firm size as measured by the natural logs of total assets, sales, and market capitalization | 1 | 5 |
| H5, H6 | No abnormal market response to work force reduction announcements based on the firm's financial distress as measured by Altman's Z and interest coverage ratio | 1 | 5 |
| H7 | No abnormal market response to work force reduction announcement based on the technological intensity of the firm | 1 | 5 |
| ABNORMAL MARKET RESPONSES TO WORK FORCE REDUCTIONS AND MANAGERIAL DECISIONS (Section 2.4) | | | |
| H8 | No abnormal market response to human capital reduction announcements when management simultaneously makes asset change decisions | 2 | 6 |
| H9 | No abnormal market response to human capital reduction announcements when management simultaneously makes financing change decisions | 2 | 6 |
| H10 | No abnormal market response to human capital reduction announcements when management simultaneously makes business focus change decisions | 2 | 6 |
| H11 | No abnormal market response to human capital reduction announcements when management simultaneously makes technology change decisions | 2 | 6 |
| H12 | No abnormal market responses to human capital reduction announcements when management simultaneously makes offshoring change decisions | 2 | 6 |

## 3. Data, Descriptive Statistics and Methodology

### 3.1 Data

A search of ProQuest U.S. National Newspapers Expanded[17] over the time period that it is available (1981 onward) identifies over 100,000 news articles concerning human capital work force reductions. We create a segmented subsample consisting of all U.S. domiciled firms in the Standard & Poor's indices. Our human capital restructuring sample is segmented into the Large Capitalization (S&P500) Index, Small Capitalization (S&P 600) Index and Mid-Capitalization (S&P 400) Index during the time period 1981 to March 2010.[18] This provides a sample of varying asset and market sizes and includes all NAIC [19] industrial classifications.[20] However our study is subject to a survivorship bias. In order to correct this bias the sample is collected backwards in time to 1981, thereby including all firms that were deleted from one of the S&P Indices.

For the sample of S&P firms an electronic search of all global news sources is conducted for news releases concerning early retirement opportunities, job cuts, and layoffs. A firm is included in the sample if it is or was part of an S&P index, has a human capital reduction in the time period of 1981-2010 and is reported in any U.S. news source. All data comes from firms with work force reductions that are a minimum of six months apart and the news reporting did not indicate that this reduction was the next step in an on-going layoff plan. Therefore our sample of 1758 events, representing 385 firms is larger than or comparable to most previous studies.[21]

### 3.2 Descriptive Statistics

Firms of various sizes have engaged in workforce reductions. There are 2762 index firms in the 1981-March 2010 time period and slightly over 13.9% (or 385) of them have engaged in a workforce reduction, with large-cap firms providing most (1272 events, 29%) (Table 2, Panel A). Of these firms with events, we identify those with single and multiple workforce reductions. Of the 13.9% of firms with events, 77% have multiple events (Table 2, Panel B).

---

[17] We use ProQuest National Newspapers Expanded which contains 27 national newspapers and 13 databases to develop our events associated with the S&P 500, S&P 400 and S&P 600 firms.

[18] We truncate the sample in March of 2010. We retain the April 2010-2014 as a holdout period for future analyses which allows us to avoid data snooping biases in future research.

[19] NAICS descriptions replaced SIC descriptions beginning in the middle of the sample period so we chose to map firms to the NAICS descriptions using the SIC to NAICS Cross Reference tools provided by the United States Census. See also North American Industry Classification System, (1996-2012).

[20] This includes financial service firms and utilities.

[21] For example, see Brookman, Chang and Rennie (2007a, b), Chen, Mehrotra, Sivakumar and Yu (2001), Elayan, Swales, Maris, and Scott (1998), Hallock (1998), Marshall, McLeish and McColgan (2012), Palmon, Sun and Tang (1997). The exception is the work of Farber and Hallock (2009) which includes 4273 announcements for 1160 large firms.

Table 2. Panel A: Standard and Poor's 1981-March 2010, Firms with Work Force Reductions-Descriptive Statistics:

| | Current Index Firms | Deleted Index Firms | Total Firms | Number of Firms with Events[22] | % of Total Firms with events | Number of Announcements of Events |
|---|---|---|---|---|---|---|
| S&P 400 | 400 | 438 | 838 | 123 | 14.7% | 363 |
| S&P 500 | 500 | 225 | 725 | 209 | 28.8% | 1272 |
| S&P 600 | 600 | 599 | 1199 | 53 | 4.4% | 123 |
| Total | 1500 | 1262 | 2762 | 385 | 13.9% | 1758 |

Table 2. Panel B: Standard and Poor's 1981-March 2010, Firms with Work Force Reductions-Number of and Composition of Events and Announcements

| | Total Firms | Number of Firms with Events | Number of firms with Single Events | Number of firms with Multiple Events | Number of Announcements of Events |
|---|---|---|---|---|---|
| **S&P 400** | 838 | 123 | 40 | 83 | 363 |
| **S&P 500** | 725 | 209 | 20 | 189 | 1272 |
| **S&P 600** | 1199 | 53 | 27 | 26 | 123 |
| **Total** | 2762 | 385 | 87 | 298 | 1758 |

Firms with human resource events tend to spike in numbers during periods of downturns in the economy (1991, 1998, 2001, and 2008) (Figure 1) and the number of employees impacted mirror the same pattern (Figure 2).

---

[22] This excludes events with missing data within the estimation window.
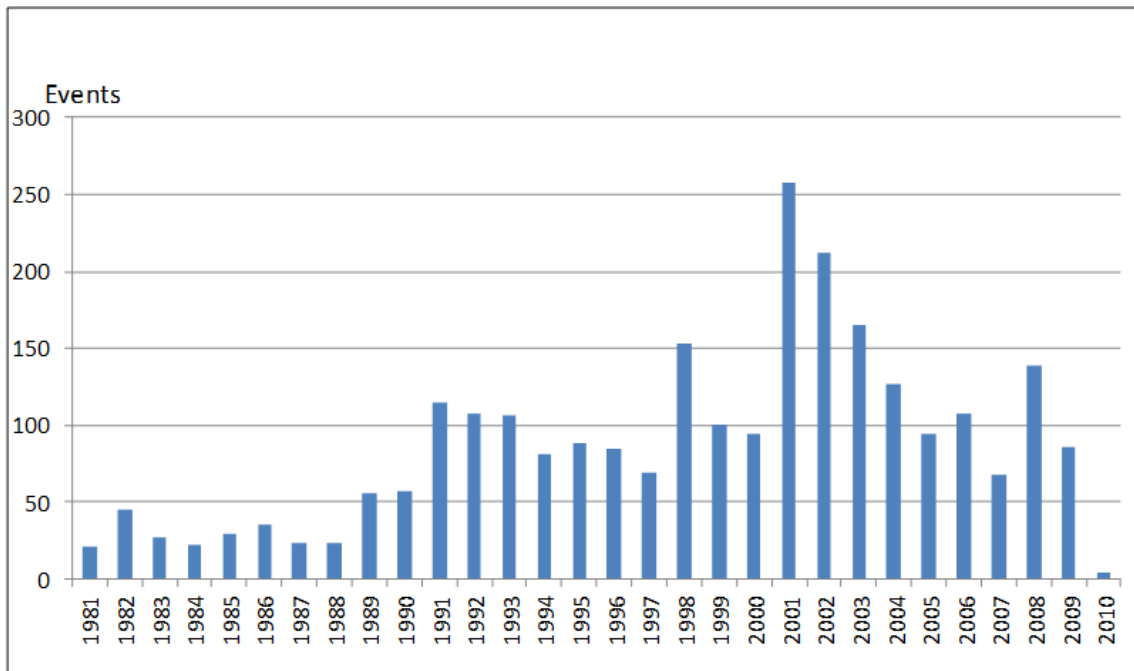
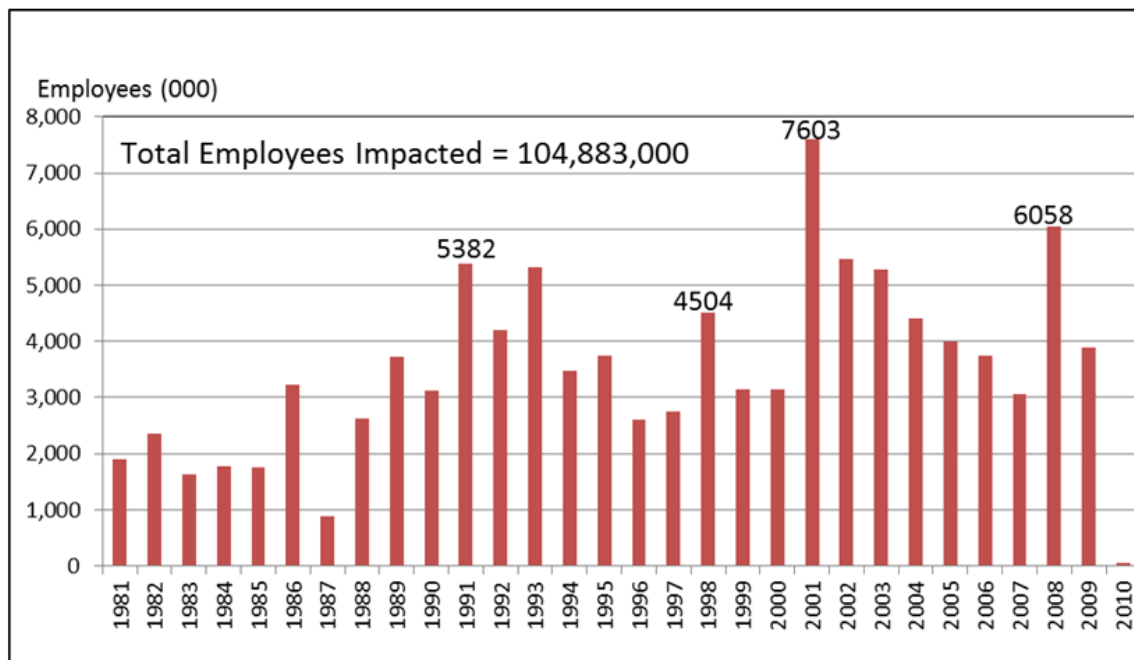Figure 1. Number of Announcements of Events by Year: 1981 to March 2010



Figure 2. Employees Impacted by Year: 1981 to March 2010

Finally, there is a high percentage (64.4%) of events with simultaneous announcements of asset changes within six months of the event date (Table 2, Panel C).

Table 2. Panel C: Firms with Work Force Reductions—Number of and Composition of Simultaneous Layoffs and Asset Changes 1981- March 2010

|  | Total Firms | Number of Firms with single and multiple Events | Total Number of firms with multiple Events | Number of Firms with Single Events and Asset Changes | Number of Firms with Multiple Events with Asset Changes | Total number of firms with Events and Asset Changes |
|---|---|---|---|---|---|---|
| S&P 400 | 838 | 123 | 83 | 27 | 48 | 75 |
| S&P 500 | 725 | 209 | 189 | 16 | 127 | 143 |
| S&P 600 | 1199 | 53 | 26 | 12 | 18 | 30 |
| Total | 2762 | 385 | 298 | 55 | 193 | 248 |

*3.3 Methodology*

We calculate cumulative abnormal returns around the event period following the standard Brown and Warner (1985) approach. Abnormal performance is estimated using both an equally weighted and a value weighted market model and daily stock returns from the *CRSP* file.[23,24] The estimation period begins on day $t = -150$ and ends on day t = -50. Day zero is the announcement day with abnormal returns as predicted by deviations from the market model estimate being calculated in various intervals: $t = (-1$ to $+1)$, $t = (0$ to $+1)$ and $t = (-5$ to $+5)$. Standard Z-tests are reported for the total sample and Chi-squared tests for the positive and negative truncated samples. Using a multivariate regression of dummy and indicator variables against cumulative abnormal returns in the various event windows allows for an examination of the factors we suggest may have a critical impact on the announcement period outcome of the human capital restructuring. We estimate a series of regressions to test the hypotheses depending on firm attributes and managerial decisions. We use ordinary least squares regressions to estimate the total sample of cumulative abnormal returns and we use Tobit models[25] to estimate the parameters based on separate positive or negative cumulative abnormal returns.[26]

3.3.1 Regressions Relating to Firm Attributes

We consider the influence of firm attributes by estimating four regressions. Those attributes include size, Altman "Z", and high, medium and low values of Altman "Z" or technology intensity.

$$c_{it} = \alpha_{it} + B_1 s_{ijt1} + \beta_k v_{ikt} + \varepsilon_{it}, \; j = 1,...3; k = 2,...,5; t = 1,...,T \; (1)$$

---

[23] *Center for Research in Security Prices*, University of Chicago.

[24] We report only value weighted results. We also estimate equally weighted results but find they are substantively the same. The equally weighted results and results in alternative event windows are available from the authors.

[25] We use the Tobit model for the regressions associated with positive and negative CARs since the dependent variable in each is restricted. We use this in each of the regressions in sections 4.2 and 4.3 (Tobin, 1958). See also Dacin, Hitt, and Levitas (1997), Duysters, Kok and Vaandrager (1999), and Park and Ungson (2001).

[26] See Keasler and Denning (2009a).

*where*

$c_{it} = CAR$ *for firm i for time t*

$s_{ijt1} = size$ *for firm i for* $j = sales$, *firm assets or market capitalization*

$v_{i2t} = Altman$ *"Z" for firm i for* $k = 2$

$v_{i3t} = Medium\ Altman$ *"Z" for firm i for* $k = 3$

$v_{i4t} = Low\ Altman$ *"Z" for firm i for* $k = 4$

$v_{i5t} = Techno \log y$ *Intensity for* $k = 5$

$\alpha_{it}, \beta_{ijk}, \varepsilon_{it} = \operatorname{int} ercept$, *slopes and error term respectively*

Size is estimated using three different proxies: the natural log of firm assets, the natural log of sales and the natural log of market capitalization. For ease of exposition and since the coefficient on the size variable is statistically significant, we use the size (s, below) variable in all subsequent regressions as well as our split of the sample into negative and positive CARs subsamples. In our second regression, we use Altman's Z as a proxy for the financial health of the firm.[27]   To further calibrate this we divide the sample into high (above 2.97), medium (between 1.81 and 2.96) and low Altman's Z (below 1.80) values in regression 3.[28] Moving forward, we drop the Altman's Z from the estimation process as its coefficient(s) is (are) not statistically significant regardless of whether we disaggregate Z-scores or consider them as a whole. Our next regression considers the impact of technological intensity. We classify a firm's technological intensity following Paytas and Berglund (2004) and estimate the regression with size and technological intensity as the two right hand side variables, where firms are coded 1 if technologically intensive, zero otherwise.

### 3.3.2 Regressions Relating To Firm Decisions

We use six regressions to examine the impacts of internal business decisions coincident with the work force reduction announcements. The managerial decisions we examine include asset changes, financial changes, business focus changes, technological changes and offshoring. For each workforce reduction announcement, we examine these coincident events for six months before and six-months after the announcement date to determine the net effect.

$$c_{it} = \alpha_{it} + \beta_1 s_{i1t} + \beta_k v_{ikt} + \varepsilon_{it}, k = 8,...,11$$
$$c_{it} = \alpha_{it} + \beta_1 s_{i1t} + \gamma_8 \delta_{i8t} + \varepsilon_{it} \qquad (2)$$
$$c_{it} = \alpha_{it} + \beta_1 s_{i1t} + \beta_{12} v_{i8t} + \beta_{13} v_{i9t} + \beta_{14} v_{i11t} + \varepsilon_{it}$$

---

[27]As an alternative proxy for financial health we use interest coverage ratios from Compustat and find no substantive differences in results. These results are available from the authors on request.

[28]  See Altman (1968, 1984, 2014a, 2014b).

*where*

$c_{it} = CAR$ *for firm i for time t*

$s_{ijt} = size$ *for firm i measure where j = sales, firm assets or market capitalization*

$v_{i8t} = announcement$ *of asset change decision for* $k = 8$

$v_{i9t} = announcement$ *of financing change decision for* $k = 9$

$v_{i10t} = announcement$ *of focus change decision for* $k = 10$

$v_{i11t} = announcement$ *of offshoring decision for* $k = 11$

$\delta_{i8t} = is\ a\ dummy$ *variable measuring the technological change as reported by firm i for* $k = 8$

$\alpha, \beta, \varepsilon = intercept,\ slopes\ and\ error\ term\ respectively$

Asset change announcements include mergers and acquisitions, divestitures, spin-offs, and other business asset restructurings. If an asset change occurs, we code the dummy variable with a 1, and 0 otherwise. In our second regression, we use financial change announcements such as issuances of stock and debt, capital structure changes and substantive write-offs in accounting reports. If a financial change occurs, we code the dummy variable with a 1, and 0 otherwise. Thirdly, we add focus change announcements. We determine focus changes in two ways: if the firm changes its primary NAIC code it is categorized as having a focus change. Additionally, if the firm announces a focus change, it is also categorized as having one. If a focus change occurs, we code the dummy variable with a 1, and 0 otherwise. In our fourth regression we use self-reporting of technological change. Self-reporting of technological change includes announcements of both process and product innovations. In this phase of the examination, technological change is reported by the firm independent of whether the firm is technologically intense. If a technology change occurs, we code the dummy variable with a 1, and 0 otherwise. In the fifth regression, we introduce offshoring announcements. If an offshoring announcement is made the 0, 1 coding is again used. Finally, based on the results of the above five regressions, we consider a multivariate regression using the three internal decision variables (asset changes, financial changes and offshoring), as well as any interaction effects.

## 4. Empirical Results and Analyses

### 4.1 Results of Work Force Reductions

Empirical results reported in Table 3 summarize the market response associated with the announcement of work force reductions. Note the number of events is biased toward large capitalization firms with 1125 events; 321, for mid-capitalization firms; and 120, for small capitalization firms. In Panel A, the results indicate a statistically negative abnormal return to the average firm announcing a work force reduction. This result is captured for the large cap firms (Panel B) and though present in the S&P 400 (Panel C) is significant only for event window t = (0 to +1) and for the S&P 600 (Panel D), only at the 10% level.[29] The evidence

---

[29] We examine the statistical significance of the difference in the CARs in our three indices samples. We use Lasfer, Sudarsanam, and Taffler (1996) and correct the multiple comparison statistical problems as in Chow and Denning (1993, 2005). For tabular critical values see Stoline and Ury (1979). Because these findings are not statistically significant they are not reported here but are available from the authors.

that most significant events are found in the large capitalization firms may reflect a combination of larger firms having more employees and hence more employees to layoff and/or a reporting bias towards greater news coverage of larger firms.[30] Despite the evidence of significantly negative abnormal returns, the results are not consistent across firms with approximately half the sample, independent of firm size, experiencing positive returns. We interpret these results as distinct from those of Davidson, Worrell and Fox (1996) for our total Standard and Poor's sample. The split between firms with negative market responses and those with positive market responses is approximately 55/45 in keeping with that of Palmon, Sun and Tang's (1997) findings. This result is also consistent with that of Brookman, Chang and Rennie (2007a) who examine 229 Wall Street Journal layoff announcements between 1993 and 1999 and find approximately 50% of the sample experience positive (and negative) CARs. Therefore, in the ensuing analysis we report the results for the total sample as well as the positive and negative subsamples. The ratios of positive to negative CARs are statistically different and significant for the total, market value weighted sample for event windows t = (0 to +1) at the 1% level and for t = (-1 to +1) at the 5% level.

Hypothesis 3 addresses whether firms with a single work force reduction differ from those with a pattern of continuing layoffs. Table 4 provides evidence concerning this hypothesis.[31] It is evident that the majority of firms engaging in a work force reduction do so multiple times. For the 385 firms with 1566 announcements of events,[32] the market response is negative with larger S&P 500 firms experiencing a statistically significant outcome. Again the number of positive and negative firms is roughly half of the sample, and the final column in Table 4 does indicate that firms with negative market responses are statistically different in number than those with positive ones.

These results cause us to conjecture that firms employing labor force reductions may be taking corrective action to improve their performance, a perspective that will be more fully explored below. Considered together, the results of Tables 3 and 4 lead us to conclude that the market response to work force reductions is not uniform. Approximately half the sample experiences significant negative abnormal returns. These dwarf the non-negative returns of the remaining half. Further, the evidence suggests the strongest market response comes from firms in two sub-groups, those engaging in a pattern of human capital reductions and larger firms. Since there is little evidence that the market responds to firms announcing single human resource events, we exclude them from our analysis.

---

[30] We wish to thank an anonymous referee for this helpful comment.

[31] For the sake of brevity we do not report the results from single event firms. For firms that engage in a solitary work force reduction, the only statistically significantly market response is for the midcap sized firms. Further, the number of firms with a positive market response is approximately comparable to that with a negative market response and the associated Z-statistic is typically insignificant. However, care must be taken in interpreting this result because the total number of firms in this subsample is small: only 84.

[32] In Table 3, the total sample of 1758 announcements is reduced to 1566 due to missing data. In Table 4 we use only multiple event data with 1483 announcements. For Tables 5 –7 we identity the specific sample size associated with each regression. The sample size varies due to data availability.

Table 3. Cumulative Abnormal Return Evidence for Human Resource Events by Value of the Firm and Decision Window: All Firms

| Event Window | CAR CRSP value weighted index as proxy for market portfolio | # Positive to # Negative (Announcements of events) | Total Announcements of Events | Z-stat for abnormal return | Z-stat to test ratio of positive to negative abnormal returns |
|---|---|---|---|---|---|
| **Panel A: All Firms** | | | | | |
| (0,+1) | -0.36% | 709:857 | 1566 | -2.692*** | -2.638*** |
| (-1,+1) | -0.54% | 712:854 | 1566 | -2.908*** | -2.486** |
| (-5,+5) | -0.43% | 764:800 | 1565 | -1.417 | 0.244 |
| | | | | | |
| **Panel B: S&P 500** | | | | | |
| (0,+1) | -0.20% | 510:615 | 1125 | -1.673* | -2.191** |
| (-1,+1) | -0.35% | 507:618 | 1125 | -2.362** | -2.370** |
| (-5,+5) | -0.36% | 556:569 | 1125 | -1.002 | 0.553 |
| | | | | | |
| **Panel C: S&P 400** | | | | | |
| (0,+1) | -0.74% | 140:181 | 321 | -2.139** | -1.789* |
| (-1,+1) | -0.58% | 154:167 | 321 | -0.870 | -0.226 |
| (-5,+5) | 0.00% | 161:160 | 321 | 0.046 | 0.556 |
| | | | | | |
| **Panel D: S&P 600** | | | | | |
| (0,+1) | -0.81% | 59:61 | 120 | -0.946 | 0.107 |
| (-1,+1) | -2.21% | 51:69 | 120 | -1.803* | -1.354 |
| (-5,+5) | -2.16% | 49:71 | 120 | -1.740* | -1.720* |

In Table 3 we examine whether there is an abnormal market response associated with the announcement of work force reductions. The estimation window for calculation of abnormal returns includes only firms with a minimum of 100 daily observations. Estimation window extends from day t = -150 to day t = -51. Data for inclusion in this table come from firms with work force reductions that are a minimum of six months apart and the news reporting did not indicate that this reduction was the next step in an on-going layoff plan. Column 1 indicates the event window, column 2 the cumulative abnormal return, column 3 the number of firms with positive and negative returns, column 4 the Z-statistic associated with the significance of the abnormal return and column 5 the Z-statistic examining the difference between the positive and negative returns. Panel A reports the results including all sample firms using a value weighted market portfolio proxy with event windows of t = (0 to +1), t = (-1 to +1), and t = (-5 to +5) days. (Equally weighted market portfolio results are similar and are available from the authors). Panel B considers only the S&P 500, Panel C the S&P 400 and Panel D the S&P 600. CARs are based on the Brown and Warner (1985) methodology.

* significant at 10%, ** significant at 5%, *** significant at 1%

Table 4. Cumulative Abnormal Return Evidence for Human Resource Events by Value of Firm and Decision Window for Multiple Event Firms

| Event Window | CAR | # Positive to # Negative | Z-stat for abnormal return | Z-stat to test ratio of positive to negative abnormal returns |
|---|---|---|---|---|
| **Panel A: All Firms** | | | | |
| CRSP value weighted index as proxy for market portfolio | | | | |
| (0,+1) | -0.32% | 673:810 | -2.231** | -2.493** |
| (-1,+1) | -0.49% | 673:810 | -2.553** | -2.493** |
| (-5,+5) | -0.37% | 730:753 | -0.948 | 0.468 |
| **Panel B: S&P 500** | | | | |
| | | | | |
| CRSP value weighted index as proxy for market portfolio | | | | |
| (0,+1) | -0.23% | 502:604 | -1.776* | -2.133** |
| (-1,+1) | -0.36% | 497:609 | -2.345** | -2.434** |
| (-5,+5) | -0.34% | 545:561 | -0.899 | 0.454 |
| In Table 4 we examine the abnormal market response associated with multiple announcements of a work force reduction, but only for those labor force changes that are at least six months apart.).  The estimation window for calculation of abnormal returns includes only firms with a minimum of 100 daily observations. Estimation window extends from day t = -150 to day t = -51. Data for inclusion in this table come from firms with work force reductions that are a minimum of six months apart and the news reporting did not indicate that this reduction was the next step in an on-going layoff plan. Column 1 indicates the event window, column 2 the cumulative abnormal return, column 3 the number of firms with positive and negative returns, column 4 the Z-statistic associated with the significance of the abnormal return and column 5 the Z-statistic examining the difference between the positive and negative returns. Panel A reports the results including all sample firms using a value weighted market portfolio proxy with event windows of t = (0 to +1), t = (-1 to +1), and t = (-5 to +5) days. Panel B considers only the S&P 500. CARs are based on the Brown and Warner (1985) methodology. * significant at 10%, ** significant at 5%, *** significant at 1% | | | | |

## 4.2 Results Relating to Firm Attributes

In Table 5 we present the evidence of regressions of cumulative abnormal returns against firm size, Altman's 'Z' and technology intensity. The evidence suggests a statistically significant response when using firm assets as a proxy for size.[33] The total CARs model is significant at the 1% level. Perhaps the most interesting result comes from an examination of the regression parameters. Though the F-statistic is large, the R-squared is small and the intercept is statistically significant. This suggests that though size matters in impacting security market returns something other than firm size is driving the abnormal market response associated with announcements of early retirements, downsizings and layoffs.

When the sample is split into negative and positive market responses, the results vary. The coefficient for size in the negative CARs subsample is 0.0067 (t = 6.47) and the positive CARs subsample is -.004 (t = -3.61). Both are statically significant at the 1% level. The Chi-squared statistic is significant for negative CARs ($X^2 = 40.87$) and for positive CARs

---

[33] We also use firm sales and market capitalization as proxies for size. The results are not substantively different and may be obtained from the authors. This is not surprising given the historical evidence concerning market size in the literature. See Roll (1984) and Queen and Roll (1987) and Hallock (1998).

( $X^2 = 12.93$ ).[34] Also note that size tends to dampen the market response in both subsamples, i.e., for negative market responses, the sign on the size variable is positive and for positive market response the sign is negative. Since market size is significant we include it in our regressions used to test hypotheses 5-12.

The popular media may lead one to infer that firms experiencing financial distress are those that engage in work force reductions. Given these (naïve) ex-ante expectations, the results in Table 5 can be interpreted as surprising! For the total sample, we find no statistically significant response associated with the Altman's Z-score.[35] This leads us to split the firms into the three categories: those with high Z scores, (above 2.99), those with medium (Altman 'Z' between 1.8 and 2.98) and those with low (Altman 'Z' less than 1.8). Nonetheless, the coefficients remain statistically insignificant. Hence we interpret bankruptcy potential to not be associated with the market response to workforce reductions. Preliminarily, this result is suggestive of efficiency enhancements as well performing and poorly performing firms might potentially profit from workforce reductions. When we examine the results of our regressions using the positive and negative subsamples either at the total Altman's 'Z' or by adding the three categorizations of Altman's Z-scores the results are consistent with the total sample result above. Thus, this well-known measure of financial distress does not appear to be driving the abnormal response associated with announcements of early retirements or workforce reductions. As the t-values associated with Altman's Z scores are not significant in either the total or subsamples, we exclude them from the analysis in the regressions going forward.

Next we examine technological intensity. Some firms may reduce their workforce in the face of a less labor intensive production function. For the total sample, the dummy for the technological intensity estimate is not statistically significant. However, technology intensity does appear to have explanatory power as evidenced by the statistically significant results for the negative CARs subsample at the 1% level (and the positive CARs subsample at the 10% level). The negative sign on the technology intensity coefficient in the negative CARs regression indicates that technological intensity acts as an intensifier: when technologically intense firms reduce their work force the market apparently responds more negatively. For the negative CARs, we interpret these results as suggestive of the market disliking the layoff of knowledge workers. For the subsample of firms that respond positively to work force reductions and the technologically intensive firms layoff their work force, the market responds positively. When the regression without the technology intensity dummy is compared to the regression with the technological intensity dummy, we see some evidence of the influence of technological intensity as the chi-squared statistic increases from 12.93 to 16.49. We view technology intensity as an influencing variable for the negative CARs subsample.

---

[34] Note we only discuss the $F - statistic$ and $X^2 - statisic$ in the remainder of this paper when we have a significant result.

[35] In addition to Altman's 'Z', we also use interest coverage ratios to proxy firm distress. Our results are essentially the same and are available from the authors.

## 4.3 Results Relating to Managerial Decisions

We next examine the market responses to early retirements and layoffs in conjunction with firm announcements of asset changes, financial changes, focus changes, offshoring and technological changes (Table 6). As before, we use a six month window on either side of the work force reduction announcement to identify the announcement of other potentially significant firm events that may be associated with the early retirement, layoff or job-cut.

For the total sample, asset changes occur in 248 firms (64%) involving 1261 announcements of asset decisions. For neither the total sample nor the subsample of firms with a negative response is the coefficient associated with the asset change statistically significant. Nonetheless, there is some evidence of a positive market response when there is a layoff and a simultaneous asset change. The coefficient associated with asset change is statistically significant at the 5% level. We interpret this as evidence that firms with positive responses to human capital restructuring events are viewed favorably by the market as they also adjust their asset structure to optimize their profit potential. For the total sample, financial changes occur in 180 firms (47%) involving 490 announcements of financing decisions. Only for the negative market response subsample is the coefficient associated with finance changes negative and significant at the 5% level.[36] That is, the negative market response associated with the early retirement or layoff announcement is exacerbated when the firm simultaneously changes its financial position.

Table 5. Human Capital Restructuring Results: Market reaction based on *Firm Attributes* for the Total Sample and Negative and Positive CARs Subsamples

| | Total CARs | | | | Negative CARs | | | | Positive CARs | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hypothesis | 4 | 5 | 6 | 7 | 4 | 5 | 6 | 7 | 4 | 5 | 6 | 7 |
| Size | 0.0025** (2.59) | 0.0035*** (2.70) | 0.0035*** (2.72) | 0.0025*** (2.60) | 0.0067*** (6.47) | 0.0089*** (6.49) | 0.0086*** (6.38) | 0.0068*** (6.56) | -0.0040*** (-3.61) | -0.0045*** (-2.84) | -0.0042*** (-2.74) | -0.0040*** (-3.62) |
| Altman 'Z' | | 0.0010 (0.34) | | | | 0.0012 (0.39) | | | | -0.0009 (-0.26) | | |
| Intermediate Altman 'Z' | | | 0.0148 (1.11) | | | | 0.0126 (0.87) | | | | 0.0170 (1.11) | |
| Low Altman 'Z' | | | 0.0104 (0.88) | | | | 0.0170 (1.32) | | | | 0.0098 (0.71) | |
| Tech Intensity | | | | -0.0047 (-1.21) | | | | -0.0160*** (-3.75) | | | | 0.0085* (1.89) |
| Intercept | -0.0270*** (-3.09) | -0.0372*** (-2.91) | -0.0462*** (-2.94) | -0.0260*** (-2.96) | -0.0997*** (-10.58) | -0.1191*** (-8.90) | -0.1311*** (-7.78) | -0.0965*** (-10.28) | 0.0734*** (7.18) | 0.0779*** (5.08) | 0.0644*** (3.53) | 0.0715*** (6.97) |
| Adjusted $R^2$ | 0.0043 | 0.0042 | 0.0043 | 0.0039 | -0.0159 | -0.0201 | -0.0210 | -0.0214 | -0.0058 | -0.0048 | -0.0056 | -0.0074 |
| F-Statistic | 6.72 | 3.70 | 2.85 | 4.09 | | | | | | | | |
| Chi-Squared | | | | | 40.87 | 42.43 | 44.30 | 54.79 | 12.93 | 8.28 | 9.66 | 16.49 |
| Number of Observations‡ | 1561 | 1272 | 1272 | 1561 | 849 | 704 | 704 | 849 | 712 | 568 | 568 | 712 |

In Table 5 we present evidence of regressions of the cumulative abnormal returns against various firm attributes for the total sample and the negative and positive CARs subsamples. Data for inclusion in this table come from firms with multiple work force reductions that are a minimum of six months apart and the news reporting did not indicate that this reduction was the next step in an on-going layoff plan. We show results for t = (-1 to +1). Results for t = (0 to +1) and t = (-5 to +5) are directionally the same but with lower explanatory power. We use the firm's total assets as proxies for firm size. (Note we also use firm sales and market capitalization as proxies for firm size and achieve similar results). Each model considers abnormal returns based on value weighted (VW) market returns. . (Results based on equally weighted returns and those in the alternative event windows are available from the authors). t-statistics are in parentheses below the parameter estimates. For the total sample, we use ordinary least squares to estimate the parameters. For the positive and negative subsamples we use a Tobit model. ‡ Number of observations is dependent on the availability of CRSP and Compustat data.
\*     significant at 10%
\*\*    significant at 5%
\*\*\*   significant at 1%

---

[36] Note that several of our alternative regression models use total assets or sales as proxies for size and were significant at the 1% level but are not reported above because we are reporting only the regressions with market capitalization as the size variable. Other results are available from the authors.

Table 6. Human Capital Restructuring Results: Market reaction associated with *Firm Specific Decisions* for the Total Sample and Negative and Positive CARs Subsamples

| Hypothesis | Total CARs | | | | Negative CARs | | | | | | Positive CARs | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 | 11 | 12 | Joint Hypotheses (8,9,12) | 8 | 9 | 10 | 11 | 12 | Joint Hypotheses (8,9,12) | 8 | 9 | 10 | 11 | 12 | Joint Hypotheses (8,9,12) |
| Size | 0.0022** (2.27) | 0.0025*** (2.61) | 0.0028*** (2.93) | 0.0026*** (2.62) | 0.0066*** (6.22) | 0.0068*** (6.55) | 0.0068*** (6.46) | 0.0067*** (6.47) | 0.0071*** (6.79) | 0.0069*** (6.53) | -0.0043*** (-3.86) | -0.0041*** (-3.63) | -0.0040*** (-3.63) | -0.004*** (-3.51) | -0.0040*** (-3.55) | -0.0043*** (-3.77) |
| Asset Change | 0.0067* (1.84) | | | 0.0080** (2.14) | 0.0023 (0.58) | | | | | 0.0042 (1.04) | 0.0100** (2.38) | | | | | 0.0099** (2.32) |
| Financing Change | | | | -0.0024 (-0.63) | | -0.0104** (-2.54) | | | | -0.0101** (-2.49) | | 0.0041 (0.97) | | | | 0.0029 (0.68) |
| Focus Change | | | | | | | -0.0027 (-0.59) | | | | | | 0.0039 (0.81) | | | |
| Technological Change | | -0.0025 (-0.41) | | | | | | -0.0009 (-0.13) | | | | | | -0.0050 (-0.71) | | |
| Offshoring | | | -0.0095** (-2.53) | -0.0102*** (-2.72) | | | | | -0.0102** (-2.45) | -0.0104** (-2.50) | | | | | -0.0009 (-0.20) | -0.0022 (-0.51) |
| Intercept | -0.0293*** (-3.33) | -0.0270*** (-3.09) | -0.0232*** (-2.62) | -0.0252*** (-2.82) | -0.100*** (-10.64) | -0.0978*** (-10.35) | -0.1001*** (-10.56) | -0.0997*** (-10.57) | -0.0954*** (-9.99) | -0.0942*** (-9.87) | 0.0691*** (6.63) | 0.0725*** (7.06) | 0.0728*** (7.10) | 0.0732*** (7.16) | 0.0738*** (7.12) | 0.0693*** (6.59) |
| Adjusted $R^2$ | 0.0053 | 0.0031 | 0.0084 | 0.0090 | -0.0162 | -0.0183 | -0.0161 | -0.0159 | -0.0183 | -0.0208 | -0.0084 | -0.0062 | -0.0061 | -0.006 | -0.0058 | -0.0087 |
| F-Statistic | 5.13 | 3.44 | 6.58 | 4.54 | | | | | | | | | | | | |
| Chi-Squared | | | | | 41.71 | 46.81 | 40.93 | 40.89 | 46.85 | 53.34 | 18.49 | 13.87 | 13.59 | 13.44 | 12.98 | 19.24 |
| Number of Observations‡ | 1555 | 1561 | 1560 | 1552 | 847 | 847 | 844 | 849 | 849 | 845 | 708 | 712 | 712 | 712 | 711 | 707 |

In Table 6 we present evidence of the cumulative abnormal returns associated with firm specific decisions for the total sample and the negative and positive CARs subsamples. Data for inclusion in this table come from firms with multiple work force reductions that are a minimum of six months apart and the news reporting did not indicate that this reduction was the next step in an on-going layoff plan for t = (-1 to +1). Results for t = (0 to +1) and t = (-5 to +5) were directionally the same but with lower explanatory power. We use firm assets as proxies for firm size. (Note we use firm sales and market capitalization as proxies for firm size and achieve similar results). Each model considers abnormal returns based on a value weighted (VW) market proxy. (Results based on equally weighted returns and those in the alternative event windows are available from the authors). t-statistics are in parentheses below the estimated parameters. For the total sample, we use ordinary least squares to estimate the parameters. For the positive and negative samples we use a Tobit model. We use dummy variables for announcements of asset change, financing change, focus change, technological change, and offshoring.
‡ Number of observations is dependent on the availability of CRSP and Compustat data.
\* significant at 10%
\*\* significant at 5%
\*\*\* significant at 1%

Next we examine the simultaneous announcement of human capital changes and the announcements of focus changes, the firm's self-report of technological changes or offshoring. We do not identify any significant market impact of the announcement of a human capital change and of the simultaneous announcement of the focus change or technological change. However, for the total sample and the negative CARs subsample, the offshoring coefficient is statistically significant at the 5% level.[37] As firms expand their operations abroad this might lead to a downsizing of the domestic workforce. Indeed a subset of our announcements indicated this. We interpret this as consistent with the market's belief that firms are moving to lower cost environments because they are doing poorly. Whereas for the positive CARs subsample the market is responding to human capital restructuring favorably and the managerial decision to move operations abroad is viewed as consistent with its otherwise good management practices.

Next, for a joint examination of asset changes, financing changes and offshoring we construct a multivariate regression which includes all of these firm-level decisions and their potential interaction effects in our examination of market responses to human capital restructuring announcements.[38] The coefficients associated with asset changes and offshoring are statistically significant at the 5% level and the 1% level, respectively. The coefficient for financing changes is not significant for the total sample. Examining the negative market response subsample, both financing and offshoring coefficients are negative and significant at the 5% level, but the asset change coefficient is not significant. For the positive CARs subsample, the asset change coefficient is significant at the 5% level; however, neither financing change nor offshoring is significant. These results support the findings from the simpler standalone models. However, the joint examination econometrically does increase the

---

[37] At the total sample level, our model is statistically significant with the F-statistic of 6.58 which is greater than the critical value { $F_{critical,1\%} = 4.61$ }. Although the adjusted R-squared is low and the intercept continues to be large and significant, adding offshoring improves the explanatory power of the regressions.

[38] For the full sample our model is statistically significant with an F of 4.54 at the 5% level { $F_{critical,5\%} = 3.0$ }.

statistical significance of asset change and offshoring coefficients.

## 5. Summary and Conclusions

Table 7 provides a tabular summary of our hypotheses, our ex-ante expectations based on theoretical underpinnings and previous literature, as well as our empirical findings. In general, the market response to human capital reorganizations, employee-layoffs, and downsizing appears complex. Many potential firm attributes and managerial decisions may impact how the investment community views the decision to restructure human capital. Assuming firm decisions are intended to benefit the shareholder and the announcement of them sends a signal about the potential to do so, one can see that in general they do not; the average market response is negative and strong for firms that engage in human capital restructuring multiple times. Consistent with some previous literature, nearly half the sample experiences a positive market response. This empirical examination has attempted to differentiate those factors that impact the markets' interpretation of the signal and subsequent human capital event from those that do not.

We examine twelve hypotheses concerning employee restructuring in two areas related to firm attributes and managerial decision making. Along with firm size, technological intensity matters, especially for those firms with negative abnormal returns in response to the job cut announcement. We deduce that the market views technologically intense firms that layoff human capital as a negative indicator as knowledge workers are cut. Perhaps surprisingly and certainly in contrast to the popular media, bankruptcy potential and financial distress do not appear to be a significant driver of the market response.

Considering decisions made by management simultaneously with human capital reductions, offshoring worsens the negative market response. Financing changes also seem to intensify the effect. Firms that lay off workers, offshore production, and restructure their capital structure are seen by the investment community as particularly troubling. On the other hand, for firms with a positive market response to the layoff announcement, simultaneous asset changes seem to have a reinforcing role. Neither the firm decision to change business focus, nor to change product or process technology seems to have much of an impact on the market response to human capital reductions.

Overall, this paper adds to the extant empirical research on announcements of human capital restructuring by examining obvious firm attributes and management decisions that might influence the market interpretation to these events. Although the empirical findings are significant, both the contradictory sign of the market response and the continuing unexplained variation in the above regression results suggest that overall this area is ripe for continuing research. Future research will look to enhance the results by including a measure of risk in the analysis, giving consideration to alternative measures for abnormal returns, and by extending the analysis by examining the relationship between human capital restructurings and innovation.

Table 7. Human Capital Hypotheses, Theoretical Expectations and Results

| Hypothesis Number | Hypotheses | Theoretical Expectations | Results | | |
|---|---|---|---|---|---|
| | | | Total Sample | Negative Sample | Positive Sample |
| Impacts of Work Force Reductions | | | | | |
| 1 | No Abnormal Response | Positive Response: Create shareholder value | Negative | NA | NA |
| 2 | Positive & negative proportions are the same | Previous literature suggested equal proportions | More negative than positive | NA | NA |
| 3 | Single event and multi-event impact the same | Stronger results with multi-event sample | Single insignificant; multiple significant | NA | NA |
| Impacts of Firm Attributes | | | | | |
| 4 | Firm size has no effect | Previous literature suggests size should matter[39] | + (5%) | + (1%) | - (1%) |
| 5, 6 | Financial distress measures are not relevant | Expect financial distress to matter[40] | 0 | 0 | 0 |
| 7 | Technology Intensity does not matter | Expect technology intensity to matter[41] | 0 | - (1%) | + (10%) |
| Impacts of Management Decisions | | | | | |
| 8 | No impact of simultaneous announcement of asset change | Positive impact | + (5%) Joint Hypothesis | 0 | + (5%) |
| 9 | No impact of simultaneous announcement of financing change | Positive impact | 0 | - (5%) | 0 |
| 10 | No impact of simultaneous announcement of focus change | Positive impact | 0 | 0 | 0 |
| 11 | No impact of simultaneous announcement of self-report of technological change | Positive impact | 0 | 0 | 0 |
| 12 | No impact of simultaneous announcement of offshoring change | Positive impact | + (1%) Joint Hypothesis | - (5%) | 0 |
| Direction of impact is indicated by a plus (+) or minus (-). Statistical significance is reported in the parentheses at the 1% or 5% level. | | | | | |

[39] Hallock (1998)
[40] Chen, P., Mehrotra, V., Sivakumar, R. and Yu, W. (2001) and Lin and Rozeff (1993).
[41] Elayan, F., Swales, G., Maris, B. and Scott, J. (1998).

## References

Agrawal, V., & Farrell, D. (2003). Who wins in Offshoring, *McKinsey Quarterly*. 2003 Special Addition, 36-53.

Altman, E. (1968). Financial Ratios, Discriminant Analysis & the Prediction of Corporate Bankruptcy. *Journal of Finance*. *23*, 189-209. http://dx.doi.org/10.1111/j.1540-6261.1968.tb00843.x

Altman, E. (1984). A Further Investigation of the Bankruptcy Cost Question. *Journal of Finance*. *39*. 1067-1089. http://dx.doi.org/10.2307/2327613

Altman, E. (2014a). Revisiting the Recidivism -- Chapter 22 Phenomenon in the U.S. Bankruptcy System. Brooklyn Journal of Corporate, Financial & Commercial Law, *8 Brook. J. Corp. Fin. & Com. L.* 253.

Altman, E. (2014b). Revisiting the Recidivism – Chapter 22 Phenomenon in the U.S. Bankruptcy System. Keynote Speech at the Eastern Finance Association Annual Meeting in Pittsburgh, PA. April 9-12, 2014.

Baldwin, C., & Kim, S. (2010). GM IPO raises $20.1 Billion. Reuters, 17 Nov 2010, downloaded 18 June 2013 from http://www.reuters.com/article/2010/11/17/us-gm-ipo-idUSTRE6AB43H20101117

Blackwell, D. W., Marr, W. M., & Spivey, M. F. (1990). Plant-closing Decisions and the Market Value of the Firm. *Journal of Financial Economics*. *26*, 277-288. http://dx.doi.org/10.1016/0304-405X(90)90006-L

Blinder, A. (2006). Offshoring the next Industrial Revolution? *Foreign Affairs*, 1 Mar 2006, downloaded June 14, 2014 from http://www.foreignaffairs.com/articles/61514/alan-s-blinder/offshoring-the-next-industrial-revolution.

Brookman, J., Chang S., & Rennie, C. (2007a). CEO cash and stock-based compensation changes, layoff decisions, and shareholder value, *Financial Review*. *42*, 99-119. http://dx.doi.org/10.1111/j.1540-6288.2007.00163.x

Brookman, J., Chang, S., & Rennie, C. (2007b). CEO equity portfolio incentives and layoff decisions. *Journal of Financial Research*. 30, 259-81. http://dx.doi.org/10.1111/j.1475-6803.2007.00213.x

Brown, S., & Warner, J. (1985). Using Daily Stock Returns: The Case of Event Studies. *Journal of Financial Economics*. *14*, 3-31. http://dx.doi.org/10.1016/0304-405X(85)90042-X

Chen, P., Mehrotra, V., Sivakumar, R., & Yu, W. (2001). Layoffs, shareholders' wealth and corporate performance. *Journal of Empirical Finance*. *8*, 171-99. http://dx.doi.org/10.1016/S0927-5398(01)00024-X

Chow, K. V. & Denning, K. C. (2005). A Correlation-Ratio Test for Closed-End Country Funds. *International Review of Economics and Business*. 52(4): 515-536.

Chow, K. V., & Denning, K. C. (1993). A Simple Multiple Variance Ratio Test. *Journal of Econometrics*. *58*, 385-401 http://dx.doi.org/10.1016/0304-4076(93)90051-6

Dacin, M. T., Hitt, M. A., & Levitas, E. (1997). Selecting Partners for International Alliances: Examination of U.S. and Korean Firms. *Journal of World Business*. *32*(1), 3-16.

Davidson, W. III, Worrell, D., & Fox, J. (1996). Early Retirement Programs and Firm Performance. *Academy of Management Journal*. *39*, 970-984.

De La Merced, M. (2012). Eastman Kodak Files for Bankruptcy, *New York Times*, 19 January 2012, downloaded June *13*, 2013 from http://dealbook.nytimes.com/2012/01/19/eastman-kodak-files-for-bankruptcy .

Denis, D., & Kruse, T. (2000). Managerial Discipline and Corporate Restructuring Performance Declines. *Journal of Financial Economics. 55*, 391-424. http://dx.doi.org/10.1016/S0304-405X(99)00055-0

Denning, K., & Shastri, K. (2011). Human Capital Restructuring and Firm Performance: Are Operating Objectives Achieved? *Journal of Current Issues in Finance, Business and Economics*. *4*, 207-220.

Dossani, R., & Kenney, M. (2003). Lift and Shift: Moving the back office to India. *The Massachusetts Institute of Technology Information Technologies and International Development*. *1*, 21-37.

Duysters, G., Kok, G., & Vaandrager, M. (1999). Crafting Successful Strategic Technology Partnerships. *R&D Management*. *29*(4), 343-351.

Elayan, F., Swales, G., Maris, B. & Scott, J. (1998). Market reactions, characteristics, and the effectiveness of corporate layoffs. *Journal of Business, Finance, and Accounting*. *25*, 329-51. http://dx.doi.org/ 10.1111/1468-5957.00190

Farber, H. & Hallock, K. (2009). The changing relationship between job loss announcements and stock prices: 1970-1999. *Labour Economics*, 16, 1-11. http://dx.doi.org/10.1016/j.labeco.2008.04.002

Gombola, M. I., & Tsetsekos, G. P. (1992). The Information Content of Plant Closing Announcements: Evidence from Financial Profiles and Stock Price Reaction. *Financial Management. 21*(2), 31-40. http://dx.doi.org/10.2307/3665662

Hallock, K. (1998). Layoffs, top executive pay, and firm performance. *American Economic Review*. *88*, 711-23.

Hillier, D., Marshall, A., McColgan, P., & Werema, S. (2007). Employee Layoffs, Shareholder Wealth and Firm Performance: Evidence from the UK. *Journal of Business Finance and Accounting*. *34*, 467-494. http://dx.doi.org/10.1111/j.1468-5957.2007.02042.x

John, K.., Lang, L., & Netter, J. (1992). The Voluntary Restructuring of Large Firms in Response to Performance Decline. *The Journal of Finance*. *47*, 891-917. http://dx.doi.org/10.2307/2328971

Johnson, R., Davidoff, A., & Perese, K. (2003). Health Insurance Costs and Early Retirement Decisions. *Industrial and Labor Relations Review*. *56*, 716-729. http://dx.doi.org/10.2307/3590965

Kalra, R., Henderson, G. V, Jr., & Walker, M. C. (1994). Share Price Reaction to Plant-Closing Announcements. *Journal of Economics and Business*. *46*(5), 381-95. http://dx.doi.org/10.1016/0148-6195(94)90026-4

Keasler, T., & Denning, K. (2009a). Corporate Joint Ventures: Market Evidence. In James Tobin & Lawrence Parker (Eds.), *Joint Venture, Mergers and Acquisitions, and Capital Flow* (1:4, 1-26). Nova Sciences Publishers.

Keasler, T., & Denning, K. (2009b). A Reexamination of Corporate Strategic Alliances. *Quarterly Journal of Finance and Accounting*. *43*(1), 21-47.

Lasfer, M. A., Sudarsanam, P. S., & Taffler, R. J. (1996). Financial Distress, Asset Sales, and Lender Monitoring. *Financial Management*, *25*(3). Special Issue: European Corporate Finance: 57-66.

Lin, J-C., & Rozeff, M. S. (1993). Capital Market Behavior and Operational Announcements of Layoffs, Operation Closings, and Pay Cuts. *Review of Quantitative Finance and Accounting*. *3*, 29-45.

Lopez, T. J., Regier, P. R., & Holder-Webb, L. (2005). Do Restructurings Improve http://dx.doi.org/Operating Performance? *Review of Quantitative Finance and Accounting*. *25*, 319-339. http://dx.doi.org/10.1007/s11156-005-5458-7

Marshall, A., McColgan, P., & McLeish, S. (2012). Why do stock prices decline in response to employee layoffs? UK evidence from the 2008 global financial crisis. *Journal of Financial Research*. *35*, 375-396. http://dx.doi.org/10.1111/j.1475-6803.2012.01321.x

North American Industry Classification System (1996-2012). U.S. Census.

Palmon, O., Sun, H., & Tang, A. (1997). Layoff announcements: stock market impact and financial performance. *Financial Management*. 26(3), 54-68.

Park, S. H. & Ungson, G. R. (2001). Interfirm Rivalry and Managerial Complexity: A Conceptual Framework of Alliance Failure, *Organizational Science*. 12:1, 37-53.

Paytas, J., & Berglund, D. (2004).Technology Industries and Occupations for NAICS Industry Data. State Science and Technology Institute, 1-7.

Queen, M., & Roll, R. (1987). Firm Mortality: Using Market Indicators to Predict Survival. *Financial Analysts Journal*. *43*(3), 9-26.

Roll, R. (1983). Vas ist Das? The Turn-of-the-Year Effect and the Return Premia of Small Firms. *Journal of Portfolio Management*. *9*(2), 18-28.

Roll, R. (1984). A Simple Implicit Measure of the Effective Bid-Ask Spread in an Efficient Market. *Journal of Finance*. *39*, 1127-1139. http://dx.doi.org/10.2307/2327617

Standard & Poor's Dow Jones Indices (2013). McGraw-Hill Financial, downloaded June 4, 2014 from https://us.spindices.com/documents/factsheets/fs-sp-500-ltr.pdf?force_download=true.

Stoline, M. R., & Ury, H. K. (1979). Tables of the Studentized Maximum Modulus Distribution and an Application to Multiple Comparisons among Means. *Technometrics*. *21*(1), 87-93. http://dx.doi.org/10.2307/1268584

Tobin, J. (1958). Estimation of relationships for limited dependent variables. *Econometrica*. *26*(1), 24-36. http://dx.doi.org/10.2307/1907382

Worrell, D. I., Davidson W. N., & Sharma, V. M. (1991). Layoff Announcements and Shareholder Wealth. *Academy of Management Journal*. *34*, 662-678.

**Copyright Disclaimer**