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THE MARKET ASSESSMENT OF THE ANNOUNCEMENTS OF  
CORPORATE SELL-OFFS

Kevin J. Powers

A Thesis in the Faculty of Commerce and Administration

Presented in Partial Fulfilment  
of the Requirements for the Degree of  
Master of Science  
at Concordia University  
Montreal, Quebec, Canada

March 31, 1994

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**Canada**

**THE MARKET ASSESSMENT OF THE ANNOUNCEMENTS OF  
CORPORATE SELL-OFFS****Kevin J. Powers**

In this paper, a two beta market model is used to study the impact of announcements of sell-offs for 164 firms using daily returns available on the CRSP files. This is done for the period January 1, 1985 to December 31, 1989. Eight subsamples are formed to examine the effect of firm-specific characteristics on any potential abnormal returns. The significance of the Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR) generated by the model are examined. The positive and statistically significant CAARs for the [-1, +1] time period appear to be consistent with the Good News Information hypothesis for the total sample, and for the untimely, insecure, good bond rating, poor bond rating, small and large sell-off subsamples. Information leakage appears to have occurred prior to the announcements, and contributes to the positive abnormal returns. A second set of regressions are estimated using the CAARs as the dependent variable, and dummy variables representing the firm-specific characteristics as independent variables. These variables are tested separately and in various combinations. The results appear to suggest that the relative size of a sell-off is the most significant firm specific variable. The Value Line timeliness rating is also significant but not as strong an explanatory variable as relative size.

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# THE MARKET ASSESSMENT OF THE ANNOUNCEMENTS OF CORPORATE SELL-OFFS

## 1.0 Introduction

Voluntary corporate divestitures of business segments has become an accepted alternative growth strategy. In the 1960's and early 1970's, size and diversity were perceived as strong indicators of corporate vitality. In the more competitive economic environment of the 1980's, profit margins have been reduced and expense control has become increasingly important. In a diversified business, resource allocation becomes an important consideration. To keep management from being overextended, priorities must be set and adhered to. If management finds itself spending a disproportionate amount of its time and energy on one part of the corporate entity, that segment may be a candidate for divestiture. To determine such candidates, a thorough cost/benefit analysis has to be conducted.

Studies dealing with spin-offs find evidence of positive announcement day and pre-announcement day stock price effects (examples include Hite and Owers (1983), Miles and Rosenfeld (1983), and Schipper and Smith (1983)). However, empirical studies on voluntary sell-offs do not find uniform positive or negative price movements. Boudreaux (1975), Hearth and Zaima (1984), Hirschey and Zaima (1989), Hite, Owers and Rogers

(1987), Jain (1985), Klein (1986), Sicherman and Pettway (1992) and Rosenfeld (1984) find positive and significant (at the 0.05 level) CAR results for a narrow band around the announcement day (the so-called event window). In contrast, Alexander, Benson and Kampmeyer (1984) find insignificant CAR results for the event window (see Appendix 1). Denning and Shastri (1990) also find insignificant returns to shareholders, but they examine market adjusted mean and variance of stockholder returns.

Jain (1985) and Rosenfeld (1987) also study the CARs of individual days as well as event windows. Jain finds days "-110", "-90", "-30", "-20", "-7", "+20" and "+90" to be significant and positive at the 0.05 level. Days "-2" and "-1" are also significant but negative at the 0.05 level. Rosenfeld finds only the event date to be positive and significant at the 0.01 level.

While an abundance of empirical research exists on mergers and acquisitions, this thesis deals with voluntary corporate sell-offs. A sell-off occurs when divested assets are purchased and become part of another firm. This thesis analyzes whether company-specific variables of the divesting firm explain abnormal returns (if any) generated by the divesting companies studied herein.

This study differs from the literature in that it concentrates on the joint effects of company-specific variables in order to determine which variables are relatively more important determinants of abnormal returns. This information would help a CEO better understand the potential abnormal return effects of mixed divestitures such as a relatively large sell-off with a poor bond rating.

The empirical work tests for a shift in beta around such sell-offs. Past sell-off literature has neglected this possibility which is extremely important when testing any abnormal returns around such announcements. While the Value Line rating service issues a monthly publication that rates companies on timeliness<sup>1</sup> and safety<sup>2</sup>, these ratings have never been used in past sell-off research. These ratings are used in this study.

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<sup>1</sup> The Value Line rating of timeliness attempts to capture expected stock price performance over the next twelve months

<sup>2</sup> The Value Line rating of safety attempts to capture long-term growth prospects

## **2.0 Literature Review:**

### **2.1 Hypotheses for divestitures:**

A number of hypotheses have been advanced to help explain any real or potential abnormal returns associated with the divestiture of a business unit. Six of the more popular and intuitive hypotheses are advanced by Denning (1988). Two additional hypotheses are added to the list which is presented below:

According to the **No Effect Hypothesis**, Klein (1986) argues that no real change in stockholder's wealth occurs in a divestment. She states that since it is a simple pro-rata division of equity, no real change should occur. Therefore no excess returns for buyers or sellers are expected.

**The Wealth Transfer Hypothesis** assumes firms are shareholder wealth maximizing entities, and that the value of stock can be enhanced at the expense of debtholders by divesting the firm of some of its assets. Galai and Masulis (1976) explain this by pointing out that after divestment, bondholder collateral has been reduced since they no longer have claim on the assets of the new firm. Also, if a stock is viewed as an option on a firm, riskier operations increase the value of the stock. Therefore, a wealth transfer (excess

return) could occur if the variance of the stock changes. The net effect on the risk of the portfolio, given the divestment of the asset(s), influences the direction and magnitude of the potential variance change.

**The Losing Operations Hypothesis** presumes that costly bankruptcy proceedings or financial distress is a motivation for divestiture (Denning (1988)). This is the most intuitive of the motives, since it simply states that if the asset is unprofitable, get rid of it. Since the funds received in the sale can be used to meet debt service payments, bankruptcy probability is reduced. This decrease in the variance of the firm's assets leads to an increase in the value of debt that is exactly offset by a decline in the value of equity.

Jensen and Meckling (1976) advance the hypothesis of **Agency Problem Resolution**. They are among the first to write extensively about the agency problems of a firm. They investigate issues such as "moral hazard" with respect to managers. Myers (1977) presents a theoretical argument which suggests that the presence of debt in firms that are otherwise value maximizing can cause firms to forego profitable investments because the benefits go to bondholders. This implies that a spin-off enables shareholders to benefit from growth opportunities without enabling bondholders to do so. This also implies that sell-offs can be used to generate cash,

which the managers can use to attain performance related bonus levels. This is not necessarily in the best interests of the shareholders if the investments have negative NPVs.

The **Good News Information** hypothesis implies that managers do not divest unless the resulting NPVs are positive. Thus divestments are a good news signal since they are value-enhancing to the firm. This implies that the market perceives divestitures in a positive light.

The **Bad News Information** hypothesis states that divestments are a bad news signal, since they indicate managements' negative perceptions of the firms' situations. Since divestments foretell managements' perceptions of poor liquidity, losing operations or inefficiencies, stock values are expected to decline with divestiture news.

The **Synergies** hypothesis states that some divestitures result in an increase in real economic value. This occurs when the acquiring management team is better suited and/or equipped to fulfil the asset's most cost effective productivity capabilities.

The **Streamlining** hypothesis is one of the more popular reasons for divesting. Management simply sticks to its strengths (such as product line or industry). By divesting areas with low comfort, management concentrate on what they do best. In some cases, this may increase future returns. However, the loss of diversification can increase risk.

These potential motives for divestment provide insight into the analysis of stock valuation after sell-offs or spin-offs. Since these hypotheses are not mutually exclusive, various combinations of motives may result in different empirical results. For instance, combining the losing operations and wealth transfer motivations might lead to empirical results which are consistent with the no-effect hypothesis. This makes it difficult for researchers to interpret empirical findings.

## **2.2 Different Variables Used in Sell-Off Research:**

In this section, some of the different variables used in sell-off research are analyzed. The underlying hypotheses of why abnormal returns may be present given these variables is also presented.

### **2.2.1 Relative Size:**

Hypothesis: The larger the size of the divesting asset relative to the divesting firm, the larger the positive excess returns to the shareholders of the divesting firm.

The relative size of the sell-off is examined by a number of researchers. Hearth and Zaima (1984), Klein (1986), Hirschey and Zaima (1989) find that the larger the size of the divesting asset relative to the divesting firm, the larger the positive excess returns to the shareholders of the divesting firm. The method of calculating relative size varies among the studies. Hearth and Zaima (1984) use the ratio of announced value to the total assets of the seller. They find that 8% is a natural cut off between large and small sell-offs. Klein (1986) uses the announced transaction price divided by the market value of the divesting firm's common shares, taken on the last trading day of the month prior to



the announcement. She finds significantly positive average abnormal returns for sell-offs with a market value of at least 10% of the divesting firm's equity value. Hirschey and Zaima (1989) use the ratio of announced value to the market value of common shares.

### **2.2.2 Financial condition of the seller:**

Hypothesis: The stronger the financial status of the seller, the larger the positive excess returns to the shareholder.

This hypothesis appears to make sense intuitively, since if the seller is in a precarious position he may not be able to hold out for a better deal. Therefore, if the parent is in a financially distressed situation, the buyer may extract higher gains from the seller due to the seller's weakened negotiating position.

Hearth and Zaima (1984) use the Standard & Poors bond rankings, ranking firms with A+, A, or A- as good and the others as poor. They find that the cumulative abnormal returns for firms in good standing are statistically higher than those for firms in poor standing. Sicherman and Pettway (1987) find that purchases from weak sellers result in greater CARs than acquisitions from nonweak sellers. However, the

difference is not statistically significant. Their grading of financial condition relies on Moody's and/or S&P's investment service. A firm is considered weak if it has been downgraded during the two years prior to the announcement. Sichernman and Pettway (1992) also look at the effect of firms being downgraded in the past two years. They find that the two day announcement CARs are greater for firms that did not experience credit downgrades.

In this thesis, the rating of the firm at the time of the announcement is used based on the methodology employed by Hearth and Zaima.

### **2.2.3 Publicly Stated Reason:**

Although Denning (1988) analyses the publicly stated managerial motivation she does not study the different types of divestment separately (e.g., sell-offs vs spin-offs). Her sample of 133 divestitures is broken down into six hypotheses: No Effect; Wealth Transfer; Losing Operations; Agency Problem Resolution; Good News; and Bad News.

Statistically significant results (at  $\alpha=0.05$ ) are found for the post-announcement period of +7 to +259 and the announcement period of -6 to +6 for the divestitures with stated rationales. Surprisingly, the 50 divestitures with no

stated rationale is found to be significant at the 0.05 level over the announcement period.

#### **2.2.4 Relatedness:**

**Hypothesis:** Specialists buy assets in which they can create the highest relative value. Therefore, a related buyer and seller transaction produces positive abnormal returns.

The SIC level can be used to evaluate the degree of relatedness. Both buyers and sellers may be able to split the extra economic value among themselves.

Sicherman and Pettway (1987) analyze the returns of the buying firm to see if relatedness at the two-digit SIC influences abnormal returns. They find that the acquisition of related divested assets enhances the shareholder wealth of acquiring firms, and that the acquisition of unrelated divested assets affects shareholder wealth negatively.

### **2.2.5 Insider Trading:**

**Hypothesis:** Sell-off decisions by closely held firms with recent insider net-buy activity are viewed by the market as likely to be compatible with stockholder interests.

Hirschey and Zaima (1989) find statistically significant positive market reaction at the 0.05 level to sell-offs by firms with net-buy insider activity in the six month period immediately preceding the sell-off announcements. Similarly, they find that the market seems to regard the sell-off decisions of closely held firms with net-buy insider activity more favourably.

### **2.2.6 Other Sell-off Studies:**

Denning and Shastri (1990) look at the effect on shareholders and bondholders of firms selling assets. They find that the announcements of corporate divestitures are unimportant events for all of the firms' security holders. Trifts, Sicherman, Roenfeld, and de Cossio (1990) study the effect of selling units to management. They find positive and significant abnormal returns. Tehranian, Travlos, and Wagelein (1987) find that divesting companies with long-term performance plans experience more favourable returns than

firms without long-term plans. Hite, Owers, and Rogers (1987) make the distinction between successful sell-offs, sell-offs actually accomplished after announcement, and sell-offs never materializing after announcement. They find that successful sellers and buyers experience positive and significant returns. Unsuccessful sellers realize positive and significant gains at the announcement dates that are later lost after bid terminations.

### **3.0 Sampling procedure and description of the data:**

Candidates for the sample of sell-off events were identified by searching through the "Roster of Mergers and Acquisitions" and "Sell-offs" sections of *Mergers and Acquisitions* over the 1985-1990 period. Any restructuring that was termed a sell-off of assets or a division was identified as a potentially appropriate sell-off candidate. To be retained in the sample, a sell-off had to satisfy the following criteria: (1) a public announcement dealing with the sell-off occurred within eight months of the effective sell-off date;<sup>3</sup> (2) no significant firm-specific events occurred in the 60 days before and 30 days after the announcement (i.e. other acquisitions or divestitures); (3) daily return data for 60 days before and 30 days after the announcement are available on the *Center for Research on Stock Prices* (CRSP)

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<sup>3</sup> The I & S index was used in order to identify the first public announcement

tapes; (4) no missing returns were found for the 10 days before and 10 days after the announcement; and (5) no more than two of the 91 daily returns around the announcement date were missing. A list of the eliminated events due to the above criteria are given in Appendices 2, 3 and 4. The final sample of corporate sell-offs consists of 164 announcement dates.<sup>4</sup> Based on table 1, the event dates are spread out somewhat evenly over time.

**Table 1:** Time Series of the Number of Sell-off Announcements by Year for the Period 1985-1989.

<u>Year</u>	<u>Number of Events</u>
1985	35
1986	36
1987	20
1988	39
1989	34
Total	164

The total sample of divestitures is stratified using the following four variables: the selling firm's Value Line rating of timeliness,<sup>5</sup> the selling firm's Value Line safety rating,<sup>6</sup> the financial status (bond rating) of the selling firm, and

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<sup>4</sup> The size of the sample is comparable to the existing research, namely: Heath and Zama (1984) 55 events; Alexander, Benson and Kampmeier (1984) 53 events; Hite, Owers, Rogers (1987) 55 events; Rosenfeld (1984) 62 events; Tehranian, Travlos and Wagenen (1987) 146 events; Hirschey and Zama (1989) 170 events; and Klein (1986) 202 events.

<sup>5</sup> The Value Line Rating Service rates a number of stocks on the basis of timeliness. These ratings, which range from 1 (being the best rating) to 5 (being the worst rating) are reported in a monthly publication.

<sup>6</sup> Same rating scheme as timeliness is used for safety.

the relative size of the divestiture. A summary of such information for all 164 announcements is given in Appendix 5. Sellers are classified as having "timely" investment appeal if their Value Line timeliness rating is 1 or 2, and as having "untimely" investment appeal otherwise. There are 33 and 65 firms classified as having timely and untimely investment appeal, respectively. The sample has a preponderance of Value Line ratings of 2 or 3, as is shown in Panel A of Appendix 6. These Value line ratings are collected manually using the last published rating prior to announcement.

Sellers are classified as being "secure" if their Value Line security rating is 1 or 2, and as being "insecure" otherwise. There are 36 and 71 firms classified as secure and insecure, respectively. Again, the sample has a preponderance of Value Line ratings of 2 or 3, as is shown in Panel B of Appendix 6. These Value line ratings are collected in the same manner as the timeliness ratings.

Sellers are classified as having a "good" financial status if their Standard & Poors bond rating is A+, A or A-, and as having "poor" financial status otherwise. There are 49 and 89 firms classified as having good and poor financial status, respectively. The S & P ratings are distributed somewhat evenly over the rating scale, as shown in Panel C of Appendix 6. These S & P ratings are collected manually using the last

published Standard & Poors rating prior to the studied announcements.

Divestitures are classified as "large" if the ratio of the announced value of the divestiture to the value of the total common equity outstanding of the seller exceeds 50%, and as "small" otherwise.<sup>7</sup> There are 31 and 60 large and small divestitures, respectively. The majority of sell-offs have ratios of less than 25%, as is shown in Panel D of Appendix 6. To be used, the dollar value of the proposed sale has to be included in the announcements of the sales published in the articles referenced in the F & S index. The equity component of the ratio is determined using the total common equity figure published in Standard & Poors most recent and prior to each announcement. A summary of the above variables by category is given below in table 2.

**Table 2: Data Breakdown of Events by Variable**

VARIABLE	CATEGORY	
	HIGH	LOW
TIMELINESS RANKING	33	65
SECURITY RANKING	36	71
FINANCIAL RATING	49	89
SIZE RATIO	31	60

<sup>7</sup> The 8% ratio used in Heath and Zama (1984) was necessary due to the small size of their sample.



The F & S Index is used to ascertain the closest trading date to the first public announcement of each divestiture. Daily common stock returns (assuming dividend reinvestment) and value weighted NYSE market returns are obtained from the CRSP tapes. As noted above, 91 daily market and firm returns are used for each firm in the sample (namely, 60 days prior to the announcement date, the announcement date itself, and 30 days following the announcement date).

#### 4.0 Methodology:

Abnormal returns are calculated using a version of a two-beta market model with dummy variables. The model allows for a shift in beta by using a dummy variable with a value of 0 prior to the event date and a value of 1 on and after the event date. Other variables in the model include dummy variables for the ten days preceding the event (potential leakage), dummy variables for the ten days after the event (delayed reaction), and an event dummy variable.

The first model, which is used to test the market reaction to sell-off announcements, is:

$$R_{it} = \alpha_{it} + \beta_{i1}R_{mt} + \beta_{i2}R_{mt}D_1 + \sum \tau_{it}D_{it} + e_i$$

where

$R_{it}$  = Daily return on stock  $i$  (divesting firm) on day  $t$ ;

$\alpha_{it}$  = the intercept of the model;

$R_{mt}$  = the daily return on the CRSP equally-weighted index;

$\beta_{i1}$  = The beta for firm  $i$  prior to the announcement date;

$\beta_{i2}$  = The change in beta for firm  $i$  on and subsequent to the announcement date;

$D_1$  = a dummy variable with zeros prior to the announcement date and ones on and after the announcement date;

$\gamma_{it}$  = The parameter (measure of abnormal return) for time  $t$  in the event window and zeros elsewhere;

$D_{it}$  = A dummy variable that is equal to one for time  $t$  in the event window and zeros elsewhere; and

$e_{it}$  = an error term assumed to be normally distributed with zero mean, constant variance and serially uncorrelated.

The daily returns are extracted from the CRSP tapes for a period of 60 days before the event and 30 days after the event date. The event date is defined as the nearest trading day to the actual date of the event. If the event occurs on a non-trading date, the next trading day is identified as the

announcement date.

The following null hypotheses are tested:

$$H_{0a} : \frac{\sum_{i=1}^{N_j} (\sum \tau_{it}) / N_j}{N_j} = 0 \quad \text{for the } N \text{ firms in group } j \text{ for each day } t \text{ in the event window,}$$

$$H_{0b} : \sum_{t=t_1}^{t_2} \left( \frac{\sum_{i=1}^{N_j} (\sum \tau_{it})}{N_j} \right) = 0 \quad \text{for the } N \text{ firms in group } j \text{ for the multi-day period from } t_1 \text{ through } t_2,$$

where  $[t_1, t_2]$  equals  $[-10, -1]$ ,  $[-5, -1]$ ,  $[-1, +1]$ ,  $[+1, +5]$ ,  $[+1, +10]$ ,  $[+2, +5]$ ,  $[+2, +10]$ , and  $[-10, +10]$ . Portfolios are formed for all  $N_j$  securities included in each grouping  $j$  as described in the previous section.

Specifically:

$$AAR_{jt} = \frac{\sum_{i=1}^{N_j} (\sum \tau_{it})}{N_j}$$

To test for the significance of these average abnormal returns (AAR) for group  $j$  and day  $t$  in the pre-specified event periods, the following T-statistic is used:

$$T = AAR_{jt} / \sigma(AAR_{jt})$$

where

$$\sigma^2(AAR_{jt}) = 1/(t-1) \sum_t (AAR_{jt} - \overline{AAR_{jt}})^2$$

The above test allows for a determination of the significance of individual days within the event window (-60 to +30).

To test the second null hypothesis,  $H_{ob}$ , for each of the multi-day intervals, the cumulative average abnormal return (CAAR) over the interval  $[t_1, t_2]$  for group  $j$  is calculated as:

$$CAAR_{j,t_1,t_2} = (1/T) \sum_{t=t_1}^{t_2} AAR_{j,t}$$

where  $T = t_2 - t_1 + 1$ . Estimates of  $\sigma$  using the pre-window period (pre- $\sigma$ ), day -60 to day -11, the post-window period (post- $\sigma$ ), day +11 to day +30, and the pre- and post-window period (pre- and post- $\sigma$ ), day -60 to day -11 and day +11 to day +30 are used herein. To test the significance of each  $CAAR_{j,t_1,t_2}$ , the following T-statistic is used:

$$T = CAAR_{j,t_1,t_2} / \sigma(CAAR_{j,t_1,t_2})$$

where  $\sigma(CAAR_{j,t_1,t_2}) = \sqrt{t} \sigma(AAR_{j,t})$ , and the  $\sigma(AAR_{j,t})$  are as defined above. The non-parametric Sign and Wilcoxon tests are conducted also because they do not require the assumption of normality.

The following beta shift hypothesis is tested for each stock in the sample:

$$H_{oc} \quad : \quad \beta_{i2} = 0 \quad \text{for all } i.$$

Diagnostic tests for homoscedasticity, normality, and autocorrelation are performed on the residuals of all stocks. White's test is performed by testing the following null hypothesis:

$H_{od}$  : All error variances are equal.

None of the 164 tests are able to reject the null hypothesis, as is shown in Appendix 7.

The Kolmogorov Smirnov test is performed by testing the following null hypothesis:

$H_{oc}$  : All error terms are normally distributed.

None of the 164 tests exceed the maximum differential of 0.1426 ( $1.36/\sqrt{91}$ ). Therefore, the assumption of normality, as is shown in Appendix 7, cannot be rejected.

The Durbin Watson test is performed by testing the following null hypothesis:

$H_{of}$  : All error terms are independent

None of the 164 tests exhibit a Durbin Watson value below the lower limit of 1.16 (conclusively autocorrelated), 6 of the

test were in the inconclusive range, and 158 test are near or above the upper limit of 2.21 (conclusively not autocorrelated), as is shown in Appendix 7.

The second model used to test the market reaction to sell-off announcements is in its most general form given by:

$$CAAR_{t1,t2} = \alpha_{it} + \beta_t D_t + \beta_s D_s + \beta_b D_b + \beta_r D_r + e_t$$

where

$CAAR_{j,t1,t2}$  = The cumulative average abnormal return over the interval  $t1, t2$  on group  $j$  (divesting firms) on day  $t$ ;

$\alpha_{it}$  = The intercept of the model;

$D_t$  = A dummy variable that is equal to one if the firm's Value Line rating of Timeliness is either 1 or 2 and 0 if rated above 2;

$\beta_t$  = The parameter (measure of abnormal returns) for the dummy variable  $D_t$ ;

$D_s$  = A dummy variable that is equal to one if the firm's Value Line rating of Security is either 1 or 2 and 0 if rated above 2;

$\beta_s$  = The parameter (measure of abnormal returns) for the dummy variable  $D_s$ ;

$D_b$  = A dummy variable that is equal to one if the firm's Standard & Poors bond rating is A-, A or A+ and 0 if rated below A-;

$\beta_b$  = The parameter (measure of abnormal returns) for the dummy variable  $D_b$ ;

$D_r$  = A dummy variable that is equal to one if the relative size (based on purchase price divided by total common equity) of the sell-off is below 50% and 0 if above 50%;

$\beta_r$  = The parameter (measure of abnormal returns) for the dummy variable  $D_r$ ; and

$e_{it}$  = an error term assumed to be normally distributed with zero mean and constant variance.

Using this particular version of the model, the most significant variable within the model can be determined. It should be noted that this is not a predictive model, but merely a means to determine the relative significance of the explanatory variables. The same  $H_{ob}$  null hypothesis as described above is tested on  $[t_1, t_2]$  equalling  $[-5, -1]$  and  $[-1, +1]$  for the four individual variables, as well as for various combinations of the four variables.

## **5.0 Empirical Results:**

### **5.1 Average Abnormal Returns for the Total Sample and the Eight Subsamples:**

Appendices 8 through 16 summarize the results of the analyses of the average abnormal returns (AARs) for each day in the event window  $[-10,+10]$ , the intercept, the beta, and the change in beta for the total sample and for the eight subsamples. T-tests and two non-parametric statistical tests (Wilcoxon and sign tests) are performed on the AARs. No significant shift in the systematic risk (beta) for the total sample or for any of the eight subsamples is found. Therefore, it would appear that sell-off announcements do not have a material impact on the systematic risks of divesting firms.

For the total sample of 164 firms, the beta and day "-1" AAR are both positive and significant at the 0.05 level for the T, Wilcoxon and sign tests. The AAR for day "+4" is significant and negative for only the Wilcoxon test at the 0.05 level. The AARs for day "-2" is significant and negative for only the t-test at the 0.05 level. The intercept is significant and negative for only the sign test at the 0.05 level, a summary of variables significant at the 0.05 level is shown in table 3.



**Table 3:** List of Variables in the Total Sample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1" Negative: day "+4"
Sign test	Positive: beta, day "-1" Negative: intercept
t-test	Positive: beta, day "-1" Negative: day "-2"

For the 33 firms in the timeliness subsample, the beta is positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. The AAR for day "+2" is significant and negative for the t- and Wilcoxon tests at the 0.05 level. For the 65 firms in the untimeliness subsample, the beta is positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. The AAR for day "-1" is positive and significant at the 0.05 level for the t- and Wilcoxon tests. The AAR for day "+4" is negative and significant at the 0.05 level for the t- and Wilcoxon tests. The AAR for day "+3" is negative and significant at the 0.05 level for only the Wilcoxon test, summaries of variables significant at the 0.05 level are shown in tables 4 and 5.

**Table 4:** List of Variables in the Timeliness Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, Negative: day "+2"
Sign test	Positive: beta Negative: none
t-test	Positive: beta Negative: day "+2"

**Table 5:** List of Variables in the Untimeliness Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1" Negative: day "+4", day "+3"
Sign test	Positive: beta Negative: none
t-test	Positive: beta, day "-1" Negative: day "+4"

For the 36 firms in the secure subsample, the beta is positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. None of the AARs are significant at the 0.05 level. For the 71 firms in the insecure subsample, the beta and day "-1" AAR are both positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. The AAR for day "+3" is negative and significant at the 0.05 level for the Wilcoxon test, summaries of variables significant at the 0.05 level are shown in tables 6 and 7.

**Table 6:** List of Variables in the Secure Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta Negative: none
Sign test	Positive: beta Negative: none
t-test	Positive: beta Negative: none

**Table 7:** List of Variables in the Insecure Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1" Negative: day "+3"
Sign test	Positive: beta, day "-1" Negative: none
t-test	Positive: beta, day "-1" Negative: none

For the 49 firms in the good bond rating subsample, the beta and day "-1" AAR are both positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. For the 89 firms in the poor bond rating subsample, the beta is positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. The AARs for days "-1" and "-8" are positive and significant at the 0.05 level for both the t- and Wilcoxon tests. The AAR for day "+7" is negative and significant at the 0.05 level for both the Wilcoxon and sign tests. The AAR for day "+2" is negative and significant at the 0.05 level for the sign test. The AAR for day "-2" is positive and significant at the 0.05 level for the t-test, summaries of variables significant at the 0.05 level are shown in tables 8 and 9.

**Table 8:** List of Variables in the Good Bond Rating Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1" Negative: none
Sign test	Positive: beta, day "-1" Negative: none
t-test	Positive: beta, day "-1" Negative: none

**Table 9:** List of Variables in the Poor Bond Rating Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1", day "-8" Negative: day "+7"
Sign-test	Positive: beta, Negative: day "+7", day "+2"
t-test	Positive: beta, day "-1", day "-8" day "-2" Negative: none

For the 60 firms in the small sell-off subsample, the beta is positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. The AAR for day "-1" is positive and significant at the 0.05 level for the t- and Wilcoxon tests. For the 31 firms in the large sell-offs subsample, the beta is positive and significant at the 0.05 level for the t-, Wilcoxon and sign tests. The AAR for day "-9" is negative and significant at the 0.05 level for the t- and Wilcoxon tests. The AAR for day "-1" is positive and significant at the 0.05 level for the t- and Wilcoxon tests. The AAR for day "+9" is negative and significant at the 0.05 level for the sign test, summaries of variables significant at the 0.05 level are shown in tables 10 and 11.

**Table 10:** List of Variables in the Small Sell-off Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1" Negative: none
Sign test	Positive: beta, Negative: none
t-test	Positive: beta, day "-1" Negative: none

**Table 11:** List of Variables in the Large Sell-off Subsample Significant at the 0.05 Level.

Test	Significant Variables
Wilcoxon test	Positive: beta, day "-1", Negative: day "-9"
Sign test	Positive: beta, Negative: day "+9"
t-test	Positive: beta, day "-1", Negative: day "-9"

## 5.2 Cumulative Average Abnormal Returns:

The cumulative average abnormal returns (CAARs) are tested for eight time intervals in the event window; namely, [-1,-10], [-1,-5], [-1,+1], [+1,+5], [+1,+10], [-10,+10], [+2,+5] and [+2,+10]. The results for the total sample are summarized in Appendix 17. The CAARs are tested using a t-test which uses standard deviations estimated using non-window returns before the event date (pre-t), after the event date (post-t), and for the entire non-window period (prepost-t).

### 5.2.1 Total Sample:

For the 164 firms in the total sample, all event window CAARs are significant at the 0.01 level. The CAARs are positive in the multi-day periods prior to the announcement, and negative in those after the announcement. The positive CAARs prior to the announcement outweigh the negative post-announcement CAARs. These positive and significant pre-announcement results are consistent with most of the literature (Hearth and Zaima (1984), Hirschey and Zaima (1989), Jain (1985), Hite, Owers and Rogers (1987), Rosenfeld (1984), and Sicherman and Pettway (1992)). Of course, they differ from Alexander, Benson and Kampmeyer (1984) and Klein (1986) who obtain insignificant results. Similarly, the positive and significant CAARs around the announcement date are consistent with most of the literature (Hearth and Zaima (1984), Hirschey and Zaima (1989), Hite, Owers and Rogers (1987), Rosenfeld (1984), Klein (1986), and Sicherman and Pettway (1992)), and are inconsistent with the insignificant CAAR results obtained by Alexander, Benson and Kampmeyer (1984). However, the negative and significant post-announcement results are inconsistent with studies by Hearth and Zaima (1984), Alexander, Benson and Kampmeyer (1984), Rosenfeld (1984), Jain (1985), Klein (1986), and Sicherman and Pettway (1992) who obtain insignificant results. The positive and significant total window results are consistent with



studies by Hearth and Zaima (1984), Rosenfeld (1984), and Sichernan and Pettway (1992), and inconsistent with Alexander, Benson and Kampmeyer (1984) who find insignificant results.

Sample differences probably cause these apparent inconsistencies. Our sample, which is drawn from the 1985 to 1989 time period, differs from that used by the other studies.<sup>8</sup> A significant portion of the sell-off activity studied herein is influenced by the early eighties LBO mania. The heavy debt loads and significant interest payments may have forced companies to sell-off profitable parts of their operations to maintain solvency. While most of the other studies restrict their sell-offs to announcements made in the Wall Street Journal, this study uses the F & S index which also includes announcements from publications other than the Wall Street Journal.

The negative then positive pattern of the CAARs may be caused by market over-reaction prior to the announcement. Speculation and/or leaked information may have influenced the stock price prior to the announcement. This is consistent with the old saying that "investors buy on rumour and sell on news". The results suggest that once the announcement of a

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<sup>8</sup> Hearth and Zaima (1984) use from 1979 to 1981. Hirschey and Zaima (1989) use from 1975 - 1982. Alexander, Benson and Kampmeyer (1984) use from 1964 to 1973. Rosenfeld (1984) uses from 1969 to 1981. Jan (1985) uses from 1976 to 1978. Klein (1986) uses from 1970 to 1979. Hite, Owens and Rogers (1987) use from 1963 to 1983 and Sichernan and Pettway (1992) use from 1981 to 1987.

sell-off is published, the market pushes the stock price down.

To further analyze the announcements, the sell-offs were categorized by certain firm specific variables; namely: (1) Value Line ratings of timeliness, (2) Value Line rating of safety, (3) Standard and Poors bond rating of the selling firm and (4) the relative size of the sell-off. A more complete description of how these variables are classified is given in section 3.0, titled "sampling procedure and description of the data".

#### **5.2.2 Subsamples:**

The Value Line rating of timeliness CAAR results are derived for the sample of 98 firms which have such ratings. The first sample consists of the 33 firms with a rating of 1 or 2, which indicates a high level of timeliness. The second sample consists of 65 firms with ratings ranging from 3 to 5, which indicates a low level of timeliness. The results, which are summarized in Appendix 18, suggest a difference in the way the market analyses firms with respect to this variable. The results for the higher rated firms are all insignificant at the 0.05 level, with the exception of the multi-day (1, 5) window in the post-announcement period. The lower rated firms exhibit the same return patterns as the full sample. These return patterns indicate that higher rated firms are not

subject to the same negative post announcement market reactions.

The Value Line rating of safety CAAR results are derived for the sample of 107 firms which have such ratings. The first sample consists of 36 firms with a rating of 1 or 2, which indicates a high level of safety. The second sample consists of 71 firms with ratings ranging from 3 to 5, which indicates a low level of safety. The results, which are summarized in Appendix 19, indicate a difference in the way the market analyzes firms with respect to this variable. Similar to the findings for the timeliness variable, the higher rated firm results are insignificant at the 0.05 level; with the exception of the (-1, -5) and (-1, -10) multi-day periods. Only the CAAR for the (1, 5) multi-day period are significant for the firms with high timeliness ratings. The lower rated firms exhibit the same CAAR patterns as for the full sample. The CAARs for the low timeliness rated firms, with the exception of the (-10, 10) multi-day period, are insignificant at the 0.05 level.

The similar CAAR results based on timeliness and security may be caused by firms having similar ratings for both measures. This is not the case since 61 of the 98 firms have different ratings for security and timeliness (for greater detail, see Appendix 20).

The CAAR results are obtained for a total sample of 138 firms which have bond ratings reported in Standard & Poors. The first sample consists of 49 firms with a relatively high rating of A- or better, the second sample consists of 89 firms with a relatively low rating of B+ or worse. The CAARs for various multi-day periods are summarized in Appendix 21. The significant (0.05 level) and positive pre-announcement CAARs are consistent with those reported in the literature by Hearth and Zaima (1984) and Sicherman and Pettway (1987). The levels of the CAARs do not support the hypothesis that lower rated firms have smaller CAARs than higher rated firms. The CAARs of the two subsamples follow a pattern similar to that of the total sample, with the exception of the CAARs for the multi-day period (-10, 10) for the higher rated firms and the CAARs for the multi-day period (1, 5) for the lower rated firms.

The relative size CAARs are obtained for a total sample of 91 firms which have the proposed purchase price published. The common equity component of each firm was valued using data from Standard & Poors. The first sample consists of 31 firms with a ratio of 50% or less of sales price to common equity. The second sample consists of 60 firms with a ratio of over 50%. The CAARs, which are summarized in Appendix 22, exhibit different patterns. The pre and post announcement CAARs for the larger sell-offs are bigger, which is consistent with studies by Hearth and Zaima (1984), Klein (1986), Hirschey and

Zaima (1989). These CAARs differ from those for the total sample. The CAARs for the period (-10, 10) for the small sell-off sample is insignificant, and the CAARs for the periods (2, 5) and (-10, 10) are insignificant for the large sell-off sample. Since the CAARs for the period (-10, 10) are insignificant for both subsamples, no excess returns are realizable based on knowledge about the relative size of the sell-offs.

### **5.3 Relative Significance of the Explanatory Variables:**

The cumulative average abnormal returns (CAARs) are tested against the variables for two time intervals in the event window; namely, [-1,-5] and [-1,+1]. For these tests, dummy variables are used to isolate the effect of the various variables. A value of 1 is assigned for a high value line rating of 1 or 2 for timeliness (or security), and a value of 0 is assigned if the rating is 3 or higher. A value of 1 is given to a firm with a bond rating of A- or higher, and a value of 0 is assigned otherwise. A value of 1 is given to a firm with a relative sell-off size smaller than 50%, and a value of 0 otherwise. The tests are first conducted on individual variables, and then on each possible combination of the four variables. The results for all the possible combinations are reported in Appendices 23 and 24.

Of the total sample of 164 firms, 98 firms have Value Line timeliness ratings, 107 firms have Value Line security ratings, 138 firms have Standard & Poors bond ratings and 91 firms have announced sell-off values. The only variables with significant dummy variables based on the t-tests are the Value Line rating of timeliness and the relative size of the sell-off. Therefore, these two variables are significant explanatory variables of the CAAR differences for the sample of sell-offs.

The power of various pairs of variables to explain the variability in the CAARs is also tested. These tests are conducted using the 98 firms with both timeliness and safety ratings, the 94 firms with both timeliness and bond ratings, the 63 firms with both timeliness ratings and announced values, the 99 firms with both safety ratings and bond ratings, the 65 firms with both safety ratings and announced values, and the 88 firms with both bond ratings and announced values. These regression results, which are summarized in Appendices 23 and 24, appear to demonstrate the dominance of the announced values of sell-offs as an explanatory variable. The coefficient of the announced value of the sell-off dummy is positive and significant at the 0.05 level for virtually all the subsamples for both cumulation periods. The only exception is for the (-1, -5) period with the safety rating, where the coefficient is significant at the 0.1 level. The

estimated coefficient of the timeliness rating dummy is positive and significant at the 0.1 level for all the regressions, except for the (-1, +1) period where the other explanatory variable is announced value. The estimated coefficient of all the other variables are insignificant for all paired combinations of the variables.

When variables are grouped in combinations of three, 94 firms have timeliness ratings, safety ratings, and bond ratings, 59 firms have timeliness ratings, bond ratings and announced values, 63 firms have timeliness ratings, safety ratings and announced values, and 61 firms have safety ratings, bond ratings and announced values. These regression results, which are summarized in Appendices 23 and 24, appear to support the previous results. The coefficient of the announced value of the sell-off dummy is positive and significant at the 0.05 level for virtually all the subsamples for both cumulation periods. The only exception is for the (-1, -5) period with the safety and timeliness ratings, where the coefficient is significant at the 0.1 level. The estimated coefficient of the timeliness rating dummy with announced value and safety rating is positive and significant at the 0.1 level and insignificant with all the other variable combinations. The other variables are insignificant for all combinations of the three variables.

The subsample including all four variables consists of 58 firms with timeliness ratings, safety ratings, bond ratings and announced values. The coefficient of the announced value dummy is positive and significant at the 0.05 level. The coefficient for no other variable is significant.

These results appear logical given that the larger the relative size of the sell-off, the greater the impact on the operations of the selling firm. This may also explain the market over-reaction prior to the announcement.



## 6.0 Concluding Remarks

In this paper, two versions of a two beta market model are used to study the impact of announcements of sell-offs for 164 firms using daily returns available on the CRSP files. The statistical significances of the daily Average Abnormal Returns (AARs) and the Cumulative Average Abnormal Returns (CAARs) for various multi-day periods in the event window are tested for. The positive and statistically significant CAARs for the [-1, +1] time period appear to be consistent with the Good News Information hypothesis for the total sample, and for the untimely, insecure, good bond rating, poor bond rating, small and large sell-off subsamples. Information leakage appears to have occurred prior to the announcements, and contributes to the positive abnormal returns. The positive and then negative returns throughout the event window appear to support the old saying that "people buy on rumour and sell on news". Changes in the systematic risk of divesting firms is tested for and no significant shifts in beta are found.

When the individual explanatory variables are tested separately and in various combinations, the most significant variable is the relative size of the sell-off, which is a measure of the relative significance of the divested division. The Value Line timeliness rating is also a significant but weaker explanatory variable than relative size.

Average Abnormal Returns are found for day -1 in the total sample. This appears to be consistent with either information leakage or of a misstating of the true announcement date due to possible lags in newspaper reporting. Although other days in the event window are significant for the total sample and subsamples, no real patterns are evident.

Future research on this topic could examine other methods of calculating increased or decreased value. For example, accounting information could be used to assess future changes in returns on assets, returns on equity and price/earnings ratios. To better assess the wealth transfer hypothesis, the bond ratings of the companies could be monitored for the next year in order to determine the possibility of future upgrades or downgrades. Similarly, the betas of the firms could be monitored for some period after the divestments in order to assess the probability of future market adjustments. Also, the longer-term (one to five year) risk adjusted return performances of the sell-offs could be studied.

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APPENDIX 1

SUMMARY OF TOTAL SAMPLE RESULTS FOR SELECTED SELL-OFF STUDIES

Study	Event Dates	Method	TOTAL		
			Results	t-statistic	Sample size
Hearth and Zaima (1984)	[-40, -11]	CAAR (1)	0.048	2.2326**	58
	[-10, -1]		0.0396	3.6667**	
	[-5, +5]		0.0355	3.1416**	
	[+1, +30]		0.0183	0.2404	
Hirschey and Zaima (1989)	[-15, 0]	APE (2)	0.03	3.57**	64
	[-15, -11]		0.0034	0.94	
	[-10, -6]		0.0058	1.22	
	[-5, -2]		0.0044	1.31	
	[-1, 0]		0.0164	4.02**	
Alexander, Benson and Kampmeyer (1984)	[-1, 0]	CASR (3)	0.0019	0.4334	53
	[-30, +30] excl [-1, 0]		-0.0502	-1.9854	
	[-30, -2]		-0.0226	-1.2508	
	[+1, +30]		-0.0276	-1.5546	
Rosenfeld (1984)	[-30, +30]	CAAR (1)	0.0525	1.98**	62
	[-30, -11]		-0.0092	-0.61	
	[-10, -2]		0.0205	2.01**	
	[-1, 0]		0.0233	4.6**	
	[+1, +10]		0.0039	0.36	
	[+11, +30]		0.0141	0.93	

\*\* = 0.05 Level

Study	Event Dates	Method	Results	t-statistic	Sample size	Sample dates
Jain (1985)	[-120, -61] [-120, -11] [-60, -11] [-10, -6] [-5, -1] [+1, +5] [+6, +10] [+11, +60] [+61, +120] [+11, +120]	CAAR (1)	-0.013	-2.23**	1064	1976-1978
			-0.035	-4.54**		
			-0.022	-4.29**		
			-0.004	-2.4**		
			0.007	4.04**		
			-0.002	-1.03		
			0.001	0.4		
			-0.006	-1.13		
			-0.002	-0.28		
			-0.007	-0.97		
Klein (1986)	[-40, -3] [+1, +40] [-10, -3] [+1, +10] [-2, 0]	CAAR (1)	0.0184	1.81	202	1970-1979
			0.0129	1.31		
			0.0019	insig		
			0.0045	insig		
			0.0112	2.83**		
Hite, Owers, and Rogers (1987)	[-50, -5] [-4, 0] [-1, 0]	CAAR (1)	<i>z</i> stat		55	1963-1983
			0.0069	0.51		
			0.0405	6.14**		
			0.0166	4.08**		
Sicherman and Pettway (1992)	[-30, -2] [-10, -2] [-1, 0] [-10, +10] [-30, +15] [+1, +15]	CAAR (1)	0.0167	2.02**	278	1981-1987
			0.0094	2.37**		
			0.0092	6.33**		
			0.0154	3.2**		
			0.0277	3.4**		
			0.0018	1.15		

(1) CAAR = Cumulative Average Abnormal Returns

(2) APE = Average Market Model Prediction Errors

(3) CASR = Cumulative Average Standardized Residuals

APPENDIX 2

LIST OF EVENTS  
DELETED DUE TO OTHER INFLUENTIAL EVENTS  
OR NOT LISTED IN F&S INDEX  
EFFECTIVE DATES FROM M & A

Date	Seller	Buyer
05/03/85	Upjohn Co.	Dow Chemical Co.
07/18/85	Snyder General Corp.	Cronus Industries Inc.
08/17/85	Armco Inc.	Owens Corning Fiberglass
10/14/85	Kiddo Inc.	L.B Foster Co.
12/14/85	Union Carbide Corp.	Eurodyne Industries
03/24/86	Kendall Co.	Gerber Products Co.
04/02/86	Sterling Software Inc.	Baron Data Systems
04/22/86	Celanese Corp.	Rio Tinto-Zinc Corp PLC
05/13/86	Singer Co.	Eaton Corp.
06/03/86	Crown Zellerbach Corp.	Mead Corp.
07/01/86	Ryder System Inc.	American Express Co.
07/01/86	Chromalloy American Corp.	Private
07/01/86	TRW Inc.	Precision Castparts Inc.
07/01/86	Bally Manufacturing Corp.	Methode Electronics Inc.
07/01/86	Lear Siegler Inc.	Nortek Inc.
07/03/86	Whittaker Corp.	Private
07/07/86	Textron Inc.	Bridgeport Machines Inc.
07/08/86	RJR Nabisco	Burns Philip & Co.
07/21/86	Square D Company	Hubbell Inc.
07/25/86	Zale Corp.	Land and Sea Distributors Inc.
07/28/86	Polymer Corp.	Morton Theokol Inc.
07/28/86	American Cyanamid Inc.	Occidental Petroleum Inc.
08/01/86	Georgia-Pacific Corp.	Grow Group Inc.
08/04/86	Lear Siegler Inc.	Zentec Corp.
08/04/86	Georgia-Pacific Corp.	Stewart-Walker Co
08/04/86	Hospital Corp of America	National Healthcare Inc.
08/06/86	Koppers Co. Inc.	Combustion Engineering Inc.
08/22/86	Litton Industries Inc.	PPG Industries Inc.
08/26/86	Marathon Manufacturing Co.	Carey McFall Corp.
08/27/86	General Mills Inc.	Chicago Pacific Corp.
08/29/86	TRW Inc.	Ex-Cell-O
09/02/86	Bethlehem Steel Corp.	Buffalo Tank Co.
09/02/86	National Medical Enterprises	Community Health Systems Inc.
09/03/86	Towle Manufacturing Co.	Blyth Industries Inc.
09/03/86	Kennecott Corp.	Private
09/08/86	IPCO Corp.	W. Canning PLC.
09/15/86	Parker-Hannifin Corp.	Standard Motor Products Inc.
09/16/86	International Multifoods Corp.	General Mills Inc.
09/18/86	Continental Steel Corp.	HMK Industries Inc.
09/25/86	Varian Associates Inc.	Oppenheimer Group Inc.
09/25/86	Allis-Chalmers Corp.	J.M Vorth Gmbh
09/29/86	International Multifoods Corp.	Hubbard Milling Co.
09/30/86	Monsanto Co.	Akzo NV
10/01/86	Borden Inc.	Aluminum Co. of America
12/18/86	Boise Cascade Corp.	Sonoco Products Co.
12/31/86	National Gypsum Inc.	Private



01/16/87	Unisys Corp.	Nu-Kote International Inc.
02/27/87	Joy Manufacturing Co.	Cooper Industries Inc.
03/24/87	Minnesota Mining & Manuf. Co.	Kirschner Medical Corp.
04/01/87	Ausimont Compo NV	Private
04/01/87	Bank of America National Trust	Wells Fargo & Co.
04/20/87	Trinity Living Centers	Health Vest
04/21/87	Wilson Brothers	Enro Acquisitions Corp.
05/06/87	MCM Products Inc.	Marcliff Corp.
05/29/87	Royal Business Group Inc.	Unified Data Products Corp.
06/09/87	E.I. duPont de Nemours & Co.	Cain Chemical Inc.
06/23/87	Digitech Communications Inc.	American Credit Card Telephone
06/24/87	GTE Communication Systems	California Micro Devices Corp.
07/01/87	Ecolab Inc.	Joh.A. Benckiser Grubh
07/08/87	National Healthcare Inc.	Healthcorp.
07/13/87	CBS Inc.	Diamandis Communications Inc.
07/13/87	Sammons Communications Inc.	Adams-Russell Co. Inc.
07/22/87	Deker Industries Corp.	Freeport-McMoran Resource
07/31/87	American Hoist & Derrick Co.	Ohio Locomotive Crane Co.
08/20/87	Stouffer Chemical Co.	AKZO NV
08/31/87	Owens-Illinois Inc.	Great Northern Nagoosa Corp.
09/01/87	Britoil U.S Holding's Inc.	Amereda Hess Corp.
09/02/87	ACCO World Corp.	Hunt Manufacturing Co.
09/04/87	R.R Donneley & Sons Co.	Adams-Russell Co. Inc.
09/25/87	Executive Telecommunications	Finance of Business dev.
09/28/87	Fairchild Industries Inc.	Pacific Precision Metals Inc.
09/30/87	Conquest Exploration Co.	Snyder Operating Partnership
10/01/87	Page America Group Inc.	Omni Communications Inc.
10/01/87	Ellis & Robertson Inc.	Morgan's Foods Inc.
10/08/87	Fairchild Semiconductor Corp.	Intergraph Corp.
10/16/87	Lear Siegler Holdings Corp.	BFM Aerospace Corp.
10/27/87	Horizon Healthcare Corp.	Omega Healthcare Partners.
11/03/87	Joy Technologies Inc.	Cooper Industries Inc.
11/11/87	Corning Glass Works	AVX Corp.
11/12/87	Jostens Inc.	American Trading & Production
11/24/87	Joy Technologies Inc.	Cooper Industries Inc.
11/25/87	Burlington Industries Inc.	Deminion Textile Inc.
11/25/87	Safeway Stores Inc.	SWO Acquisitions Corp.
12/03/87	Stouffer Chemical Co.	Rhone Poulenc SA
12/07/87	Summa Medical Corp.	F Hoffman - LaRoche & Co. Ltd.
12/07/87	Bell & Howell Co.	Trans Technology Corp.
12/18/87	Cooper Cos. Inc.	American Brands Inc.
12/29/87	Stone Container Corp.	Stone Forest Industries Inc.
12/29/87	Eli Lilly & Co.	Rapid American Corp.
01/05/88	Mark Controls Corp.	Rockwell Int'l Corp.
01/12/88	Ducommun Inc.	Arrow Electronics Inc.
01/12/88	General Motors Corp.	Detroit Diesel Corp.
01/13/88	Colt Industries Inc.	FWD Purchasing Corp.
01/14/88	IGI Inc.	Agrogenics Inc.
01/15/88	Bell Atlantic Corp.	MAI Basic Four Inc.
01/25/88	National Healthcorp LP	Private
02/02/88	Texaco Inc.	Occidental Petroleum Corp.
02/18/88	Burlington Industries Inc.	Precision Fabrics Group Inc.
02/20/88	Dravo Corp.	Private
02/29/88	Peny Drug Stores Inc.	Northern Pacific Corp.

02/29/88	McKesson Corp.	SDC Distributing Corp.
03/08/88	Masada	Insight Communications
03/15/88	General Instruments Corp.	Quality Technologies Corp.
03/15/88	Dresser Industries Inc.	Power Tech International Inc.
03/18/88	Gottschalks Inc.	Parnelli Jones
03/21/88	Beebe Cablevision & County Cable	Falcon Cable Media
04/18/88	Pullman Co.	Parker Hannifin Corp.
04/21/88	Qualcorp Inc.	Staveley Industries PLC
04/28/88	Healthcare International Inc.	HealthVest
05/04/88	Amfac Supply Co.	Lucas Industries PLC
05/06/88	Kraft Inc.	KKR
05/11/88	John J. Rigas	Adelphia Communications Corp.
05/13/88	Minstar Inc.	Tuboscope Holding Corp.
05/18/88	Harnischfeger Industries	Century II Inc.
06/10/88	BSN Corp.	Cheerleader Group Inc.
06/20/88	Penwalt Corp.	Fisons PLC
06/29/88	Pay'n Save Inc.	Pacific Enterprises
06/29/88	Ingredient Technology Corp.	Pernod Richard Group.
06/30/88	Houdaille Industries Inc.	KKR
07/01/88	Gould Inc.	AEG AG
07/14/88	Rhodes Inc.	Heilig Myers Co.
07/15/88	TRW Inc.	Optek Technology Inc.
07/26/88	Kaisertech Ltd.	LaRoche Holdings Inc.
07/28/88	Ralston Purina Co.	Van Camp Seafood Holdings Inc.
07/29/88	Burlington Industries Inc.	Private
07/29/88	Jackplastic Inc.	Buffton Corp.
08/01/88	Staley Continental Inc.	SYSCO Corp.
08/01/88	Georgia-Pacific Corp.	Pope Stalbot Inc.
08/03/88	Tesoro Petroleum Corp.	American Exploration Co.
08/12/88	Lucky Stores Inc.	ABCO Markets
08/12/88	Adage Inc.	National Computer Systems Inc.
08/16/88	Penn Central Corp.	Private
09/07/88	Singer Co.	Ryobi Ltd.
09/08/88	Edgington Oil Company	Atlantic Richfield Co.
09/14/88	OXOCO Inc.	American National Petroleum.
09/19/88	Cooper Cos. Inc.	Schering-Plough Corp.
09/26/88	Allied-Signal Inc.	RTZ Corp. PLC
10/01/88	Pyroil Co.	Ashland Oil Inc.
10/03/88	Exxon Chemical Co.	American Western Corp.
10/06/88	AGS Computers Inc.	NYNEX Corp.
10/17/88	Litton Industries Inc.	Group Jean Michel Tivoli
10/21/88	NEOAX Inc.	Landstar System Inc.
10/31/88	Federal-Mogul Corp.	International Products Inc.
11/02/88	W.R Grace & Co.	Seminole Fertilizer Corp.
11/08/88	Hanson Industries Inc.	Allied Acquisitions Inc.
11/11/88	Sysco Corp.	Private
11/15/88	USG	Kohler Co.
11/16/88	FPL Group Inc.	Elsevier NV
11/17/88	Allis-Chalmers Corp.	Snyder General Corp.
11/21/88	Imo Delaval Inc.	Cooper Industries Inc.
11/30/88	Eaton Corp.	Instrument Systems Corp.
11/30/88	Random House Inc.	McGraw Hill Inc.
12/01/88	Kellam Energy Inc.	Chesapeake Utilities Corp.
12/15/88	Penwalt Corp.	Alfa-Laval AB

12/15/88	Tenneco Inc.	Diamond Shamrock R & M Inc.
12/19/88	Proctor & Gamble Co.	Aarhus Oliefabrik A/S
12/23/88	Lafayette Pharmacal Inc.	E-Z-EM Inc.
12/28/88	USX Corp.	Transtar Inc.
12/28/88	Raytheon Co.	Summit World Trade Inc.
12/28/88	CIGNA Corp.	International Life Corp.
12/29/88	DeSoto Inc.	Witco Corp.
12/29/88	Aluminium Co. of America	Formosa Plastics Corp.
12/29/88	Lorimar Telepictures Corp.	Private
12/30/88	Hubbell Inc.	ENERTEC Petroleum Inc.
12/30/88	Safety-Kleen Corp.	S.C. Johnson & Son Inc.
12/31/88	American Cyanamid Co.	BASF AG
01/01/89	General Motors Corp.	Peske Transportation Inc.
01/04/89	Teradyne Inc.	General Scanning Inc.
01/06/89	Everest & Jennings Int'l	GC International Inc.
01/11/89	American Midland Corp.	Private
01/16/89	Pepsi Co. Inc.	Whitman Corp.
01/17/89	Holland America Line NV	Carnival Cruise Lines Inc.
01/18/89	Federated Natural Resources	Mobil Corp.
01/20/89	Owens-Illinois Inc.	Newell Co.
01/25/89	Kroger Co.	Save Mart Supermarkets
01/26/89	Total Petroleum Ltd.	Coastal-Grenbrier 1988
01/27/89	Triangle Industries Inc.	Private
02/08/89	Cyprus Minerals Inc.	Hecla Mining Co.
02/21/89	Coca-Cola Bottling Co.	Whitman Corp.
02/27/89	NEOAX Inc.	(multiple acquirers)
03/03/89	USX Corp.	China National Chemicals
03/14/89	Quantum Chemical Corp.	Lenkel KGA
03/16/89	Coated Sales Inc.	Hallwood Group Inc.
03/27/89	Nuclear Data Inc.	Canberra Industries Inc.
04/03/89	Mentor Corp.	Carter Wallace Inc.
04/03/89	Alco Standard Corp.	CA Holdings Corp.
04/03/89	Cluett Peabody & Co.	RPM Clothing Inc.
04/04/89	Crescent Foods	McCormick & Co. Inc.
04/04/89	Cincinnati Bell Inc.	Subscriber Systems Inc.
04/12/89	General Electric Co.	Comband Technologies
04/18/89	Weiman Co.	Private
04/21/89	Southland Corp.	National Convenience Stores
04/24/89	Alliance Operating Corp.	Energy Ventures Inc.
05/01/89	Genigraphics Inc.	Pansophic Systems Inc.
05/01/89	Foxboro Co.	Private
05/01/89	Milton Roy Co.	Thermo Electron Corp.
05/04/89	Texas Eastern Corp.	Enterprise Oil PLC
05/15/89	M-A Com Inc.	Regency Electronics Inc.
05/24/89	Honeywell Inc.	Group Financial Partners Inc.
05/30/89	McDonnell Douglas Corp.	Trinova Corp.
05/30/89	Safeguard Scientifics Inc.	Pitcusin Group LP.
06/01/89	Knight Ridder Inc.	Pasadena Newspapers
06/07/89	Dravo Corp.	Rangaire Corp.
06/13/89	SPS Technologies Inc.	S.I Handling Systems Inc.
06/26/89	Rivendell of America Inc.	Private
06/28/89	Horvitz Enterprises Inc.	Private
06/28/89	Electronic Data Systems Corp.	Diebold Inc.
06/28/89	Koppers Co.	Domtar

06/28/89	Hendries Inc.	Agway
06/29/89	Leaf Inc.	Phoenix Confections Inc.
06/30/89	Information Services Co.	Candata Holdings Corp.
07/14/89	Fruehauf Corp.	Terex Corp.
07/24/89	JPS Converter & Industrial Corp.	CCX Inc.
07/24/89	AMCA International Ltd.	Jason Inc.
08/29/89	Parker & Parsley Devl Prog.	Anadarko Petroleum Corp.
08/31/89	NL Industries Inc.	Dunnippon Ink. & Chemicals
10/06/89	National Realty LP	American Realty Trust Inc.
10/26/89	Kmart Corp.	Private
10/31/89	Clorox Co.	PPG Industries Inc.
10/31/89	RJR Nabisco Inc.	Private
11/02/89	Parfums Stern	Valentino Group
11/29/89	LTV Steel Co.	Republic Engineered Steels
11/30/89	Paramount Communications Inc.	Maxwell Communications Corp.
12/05/89	WH Smith	Jim Pattison Group.
12/11/89	National Intergroup Inc.	Noranda Inc.
12/17/89	Cabot Petroleum Corp.	Public Service Enterprise
12/26/89	Southland Corp.	Seven Eleven Japan Co.
12/28/89	Rospatch Corp.	Flightline Electronics Inc.

APPENDIX 3

LIST OF EVENTS AND SELLER COMPANIES  
DELETED DUE TO INCOMPLETE CRSP DATA

Date	Seller	CUSIP	Buyer
07/01/86	Metromedia Inc.	59169010	Southwestern Bell Corp.
11/10/86	Union Texas Petroleum	90864010	American Exploration Co.
01/15/87	Clevite Industries Inc.	18679210	J.P Industries Inc.
02/23/87	Petro-Lewis Corp.	71645110	Santa Fe Southern Pacific
03/05/87	Flexi-Van Leasing Inc.	33937610	Itel Corp.
04/21/87	United Energy Resources Inc.	91021010	Lasalle Energy Corp.
07/17/87	General Portland Inc.	37051410	Vicat SA
08/03/87	Celeron Oil & Gas Corp.	15100910	International Paper Co.
08/07/87	Kelsey-Hayes Co. (Fruehauf)	48818810	Grabill Aerospace Industries
09/11/87	General Defense Corp.	36949110	Private
10/14/87	Harte Hanks Communications	41619410	Gannett Co.
12/11/87	Ludlow Corp.	54966210	Triangle Industries Inc.
12/28/87	Southland Corp.	84443610	Chief Auto Parts Inc.
01/21/88	Babcock & Wilcox Co.	05614710	Morgan Co. PLC.
04/28/88	Lorillard Inc.	54414610	National Tobacco CO. LP
05/10/88	International Controls Corp.	45936210	Private
06/17/88	Borg-Warner Corp.	09972510	General Electric Co.
08/04/88	Rexham Corp.	76168610	Precision Acrotech Inc.
09/06/88	Windmere Corp.	97341110	Alberto Culver Co.
11/01/88	Enron Oil & Gas Company	29356210	American Exploration Co.
01/04/89	American Standard Inc.	02971710	Masco Industries Inc.
01/09/89	Owens-Illinois Group Inc.	69076810	Metro Airlines Inc.
03/06/89	Minstar Inc.	60444210	HTM Sports Holding
08/03/89	Sheller-Globe Corp.	82273720	CH Industrials
10/02/89	Fort Howard Corp.	34746010	Sweetheart Holdings Inc.
10/23/89	Felmont Oil Corp.	31438710	Torchmark Corp.
12/11/89	Thomas Industries Inc.	88442510	Applied Power Inc.

#### APPENDIX 4

#### LIST OF EVENTS DELETED DUE TO LACK OF CUSIP NUMBERS FOR SELLING FIRMS

	Seller	Buyer
07/01/86	First Security Corp.	Crossland Savings Inc.
07/01/86	Firestone Tire & Rubber Co.	Pro-Tread Corp.
07/01/86	Webb Co.	Harcourt Brace Jovanovich
07/03/86	MCI Communications Corp.	McCaw Communications Cos.
07/07/86	Maxcell Telecom	McCaw Communications Cos.
07/08/86	Sieracin Corp.	Master Images Inc.
07/09/86	Backe Communications Inc.	Young Broadcasting
07/18/86	Hubbard Broadcasting Inc.	Price Communications Corp.
07/18/86	Philips Medical Systems Inc.	AFP Imaging Corp.
07/21/86	Esvell Inc.	Cullinet Software Inc.
07/23/86	Amherst Associates Inc.	Private
07/28/86	Intergraphics Corp.	PPG Industries Inc.
07/28/86	Delaware National Life	Robert C. Browne & Co. Inc.
07/28/86	Rotron Inc.	KL Industries Inc.
07/31/86	Westinghouse Credit Corp.	Chrysler Corp.
08/01/86	Tribune Publishing Co.	McClatchy Newspapers
08/04/86	Novo Communications Inc.	National Film Services
08/07/86	Radiation Dynamics Inc.	Sumitomo Heavy Industries Inc.
08/08/86	St-Philip Towing and Trans.	TECO Energy Inc.
08/11/86	Katz Communications Inc.	Private
08/12/86	Gill Savings Association	Banc Plus Savings Association
08/19/86	Trilogy Ltd.	Digital Equipment Corp.
08/20/86	Chein Industries	Advanced Professional Sales
08/20/86	Franklin Electric Co.	Kenilworth Electric Co.
08/29/86	Georgetown Steel Corp.	Exposaic Industries Inc.
08/30/86	Beekman Paper Co. Inc.	Brown Paper Co. Inc.
09/03/86	Tribune Publishing Co.	Viacom International Inc.
09/03/86	Baxter Travenol Laboratories	Boots Co. PLC
09/09/86	Astro Security International	National Guardian Corp.
09/09/86	Interconics Inc.	Kidde Inc.
09/11/86	CFC Cos.	USX Corp.
09/16/86	Josephson International Inc.	Saga Communications Inc.
09/17/86	National Service Industries	NV AMEV
09/18/86	Hayden Publishing Co. Inc.	MacMillan Inc.
09/19/86	VICORP Restaurants Inc.	Private
09/22/86	Rossi Corp.	Private
09/24/86	Costar Corp.	Beres Industries Inc.
09/26/86	Zandervan Corp.	Guideposts Associates Inc.
09/29/86	Specialty Chemicals Inc.	Merck & Co. Inc.
09/30/86	National Data Corp.	General Motors Corp.
10/28/86	Cherry Central Cooperative	Curtis-Burns Inc.
10/28/86	Dietrich Corp.	Hershey Foods Corp.
11/10/86	Good Stuff Food Co.	Interstate Bakeries Corp.
11/20/86	Forest Oil Corp.	Helmerich & Payne Inc.
12/08/86	Davis Oil Co.	Apache Corp.
12/19/86	Squirt & Co.	A & W Brands Holding Co.
12/30/86	Ozark Lead Co.	ASARCO Inc.
02/14/87	Mott's Super Markets Inc.	Wakefern Food Corp.

02/23/87	Orange Julius International	International Dairy Queen Inc.
04/03/87	Kaiser Francis Oil Co.	Swift Energy Co.
04/13/87	Fortune Systems Corp.	SCI Systems Corp.
06/04/87	May Petroleum Inc.	Energy Petroleum Partners Ltd.
06/06/87	Britoil	American Exploration
06/09/87	Genstar Land-USA	American General Corp.
06/12/87	Allegheny Beverage Corp.	Private
06/22/87	Trailways Corp.	GLI Holdings Inc.
07/01/87	Life Technologies Inc.	Becton Dickinson & Co.
07/30/87	Diamond Crystal Salt Co.	AKZO NV
08/10/87	Minnetonka Corp.	Colgate-Palmolive Co.
09/09/87	Genesis Health Ventures Inc.	Healthcare Property Investors
09/10/87	Quest Medical Inc.	Colgate-Palmolive Co.
09/15/87	Neslemur Co.	American International Ind.
09/21/87	Exploration Co. of Louisiana	Petrofina SA
10/03/87	Pullman-Peabody	Investor Group
10/06/87	Mediplex Group Inc.	Meditrust
10/12/87	Dynascan Corp.	Maxtec International Corp.
10/16/87	Diamandis Communications Inc.	Times Mirror Inc.
10/29/87	Waynesboro Textiles Inc.	Dominion Textile Inc.
11/12/87	Magicsilk Inc.	Private
11/17/87	Crown Central Petroleum Corp.	(multiple acquirers)
12/08/87	Tandon Corp.	Western Digital Corp.
12/09/87	News America Publishing Inc.	McGraw-Hill Inc.
01/07/88	USG Industries Inc.	Nortek Inc.
01/07/88	Ameritrust Corp.	Barry & Lloyd
01/11/88	GNI Group Inc.	Amersham International PLC
01/12/88	Chase Chemical Co.	Private
01/13/88	Cambridge Instruments Inc.	Optical Specialties Inc.
01/14/88	Sheller-Globe Corp.	Global Technology Systems Inc.
01/14/88	Nutrapack Inc.	Thermo Electron Corp.
01/14/88	Sheller-Globe Corp.	Echlin Corp.
01/19/88	S. Taylor Cos.	Private
01/20/88	Investors Savings Bank	Rochester Comm. Savings Bank
01/22/88	Simon & Shuster Inc.	MacMillan Inc.
01/22/88	Cooper Lasersonics Inc.	Pfizer Inc.
01/27/88	E.I Dupont de Nemours & Co.	Canadian Investment Capital
01/28/88	Essex Group Inc.	MS-Essex Holdings Inc.
01/28/88	Hoechst Celanese Corp.	Sterling Group Inc.
02/01/88	Sealed Power Corp.	Private
02/02/88	Elkhart Products Corp.	Vanguard Plastics Inc.
02/08/88	Bredero Price Inc.	Lukens Inc.
02/17/88	Nabisco Brands Inc.	Burns, Philip & Co. Ltd.
02/17/88	Reckitt & Coleman, North Amer	Campbell Soup Co.
02/22/88	American City Business Jour.	MCP Inc.
02/24/88	Comair Inc.	Windmere Corp.
02/26/88	Sealed Power Corp.	Counciller Inc.
02/26/88	Corning Glass Works	Didier-Werke AG
02/29/88	Rand McNally & Co.	Gulf & Western Inc.
02/29/88	Diamandis Communications Inc.	Kutztown Publishing Co.
03/01/88	Wolverine Exploration Co.	Geodyne Resources Inc.
03/03/88	Sheshumoff & Co. Inc.	International Thomson
03/11/88	Enron Gas Processing Inc.	Parker Drilling Co.
03/15/88	Tetra Tech Inc.	Private

03/20/88	North Atlantic Industries Inc.	CMS Enhancements Inc.
03/21/88	Cambridge General Inc.	W.R Bonsal Co. Inc.
03/26/88	Brooks Drug Co. Inc.	Hook SuperRx Inc.
03/28/88	Cardinal Distribution Inc.	Roundy's Inc.
03/29/88	Dartco Manufacturing	Amoco Corp.
04/15/88	United Telespectrum Inc.	Centel Corp.
04/18/88	Avantek Inc.	Telesciences Co. Systems Inc.
04/29/88	Wellesley Group	Prime Motor Inns Inc.
05/03/88	Uniroyal Plastics Co. Inc.	W.R. Grace & Co.
05/10/88	Leede Exploration Co.	Exxon Corp.
05/16/88	Scientific Micro Systems Inc.	SMC Acquisition Corp.
05/19/88	Texstyrene Corp.	Scott Paper Co.
05/24/88	Pall Pneumatic Products Corp	Private
06/06/88	Amphenol Corp.	LPL Investment Group Inc.
06/23/88	Grand Metropolitan Inc.	PepsiCo Inc.
07/05/88	Premier Systems Inc.	National Computer Systems Inc.
07/06/88	Adambank Savings Association	Century Communications Corp.
07/06/88	Oil City Petroleum Inc.	Sabine Resources Group
07/12/88	Fiber-Resin Corp.	H.B. Fuller Co.
07/12/88	Rand Information Systems Inc.	SHL Systemhouse Inc.
07/20/88	RCI Corp.	Williams Cos. Inc.
07/28/88	Henley Group Inc.	Itel Corp.
08/01/88	Perfect Parts Inc.	Wickes Cos. Inc.
08/03/88	Master-Craft Corp.	Metal Box PLC
08/09/88	Sheldahl	Dover Corp.
08/16/88	Communications & Cable Inc.	Tele-Media Corp.
08/19/88	Widger Chemical Corp.	H.B Fuller Co.
09/02/88	National Technologies Corp.	SPS technologies
09/08/88	Forum Group Inc.	Angell Real Estate Co.
09/16/88	Zayre Corp.	Ames Department Store Inc.
09/19/88	TXL Corp.	On-Line Business Systems Inc.
09/19/88	McCormick & Co. Inc.	Unilever NV.
09/26/88	ICI Americas Inc.	Knogo Corp.
09/28/88	Di Giorgio Corp.	Borden Inc.
09/29/88	Modine Manufacturing Co.	Friction Inc.
10/25/88	Alaska Northwest Publishing	GTE Corp.
10/28/88	Altai Inc.	North Star Universal Inc.
11/11/88	Southland Communications Inc.	Time Inc.
11/14/88	Chattanooga Group Inc.	Cabot Corp.
11/18/88	Alliance Imaging Inc.	American Shared Hospital
11/29/88	Weisser Eyecare Inc.	American Vision Centres Inc.
12/01/88	Handy Things	EAC Industries Inc.
12/02/88	Multicom Inc.	Bell Atlantic Corp.
12/06/88	Microdot Inc.	Everlock Fastening Systems Inc.
12/27/88	Red Owl Stories Inc.	Super Valu Stores Inc.
12/27/88	Tri-Scan Inc.	CGF Industries Inc.
12/29/88	Pegasus Holding Corp.	Questar Corp.
12/29/88	Aubrey Manufacturing Inc.	Nortek inc.
12/30/88	Walker Corp.	Pancontinental mining
12/30/88	Pilgrim Exploration	Pancontinental mining
01/04/89	Jeffries Banknote Co.	U.S Banknote Co.
01/05/89	Jones Metal Products	LSI Lighting Systems Inc.
01/06/89	Pactel Products	Private
01/09/89	CPS Corp.	Chesapeak Corp.



01/09/89	Andersen Group Inc.	Private
01/19/89	Van de Camp Frozen Foods	Curtice-Burns Foods Inc.
01/23/89	Walter Industries Inc.	Multiple buyers
02/06/89	Alford Industries Inc.	Engraph Inc.
02/07/89	Numerica Financial Services	Home Group Inc.
02/08/89	Hercules Inc.	Cape Industries Inc.
02/21/89	Atcon Corp.	Low Country Cablevision LP
02/22/89	Blount Agri Industrial Corp.	TIC United Corp.
02/23/89	Morton Thiokol Inc.	Johnson Matthey PLC
02/27/89	Amerigas Inc.	BOC Group PLC
03/01/89	Grossman's Inc.	G.N.W Partners LP
03/02/89	David S. Lake Publishers	Gulf & Western Inc.
03/06/89	Molecular Genetics Inc.	Biotechnica Int'l Inc.
03/08/89	Schiffenhaus Industries	Chesapeak Corp.
03/13/89	Federal Broadcasting Co.	CBS
03/14/89	U.S Exploration Co.	Texas Meridian Ressources
03/20/89	March Industries Inc.	Chevron Corp.
03/20/89	Vendex Technologies Inc.	Philips NV
03/24/89	CVN Cos. Inc.	Private
03/27/89	AST Research Inc.	Private
03/28/89	Seagate Technology Inc.	NMB (USA) Inc.
04/01/89	Sunnyhurst	Dairy Mart Convenience Stores
04/03/89	Greenwich Intl'	BTR PLC
04/03/89	Hana Biologics Inc.	Nippon Mining Co. Inc.
04/04/89	Osborne Communications Corp.	Keymarket of Nepa Inc.
04/04/89	Crescent Foods	McCormick & Co. Inc.
04/07/89	Aeronca Electronics Inc.	Private
04/10/89	Gould Computer Systems Inc.	AEG AG
04/13/89	Prompt Care Inc.	Micro Bio Medics
04/19/89	Paper Corp of America	James River Corp.
04/19/89	Marion Laboratories Inc.	Beckson, Dickinson & Co.
04/21/89	Genus Inc.	Hyde Park Partners Inc.
04/24/89	Alliance Operating Corp.	Energy Ventures Inc.
04/28/89	Montgomery Ward Insurance Co.	Capital Holding Corp.
05/08/89	Ziff Co.	Rykoff-Sexton Inc.
05/08/89	Kearns & Melloy Associates Inc.	Computer Horizons Inc.
05/11/89	WearEver-Proctor Silex Inc.	Newell Co.
05/18/89	Casa Lupita Mexican Rest.	Famous Restaurants Inc.
05/19/89	GMI Group Inc.	Quantex Corp.
05/29/89	Winners Corp.	RTM Inc.
05/30/89	Drexel Burnham Lambert Inc.	Prudential Insurance Co.
06/01/89	E.I Dupont de Nemours & Co.	Akzo NV
06/07/89	Hartzell Manufacturing Inc.	Asset Growth Partners
06/08/89	Rangaire Corp.	Private
06/09/89	National Guardian Corp.	Mayne Nickless Ltd.
06/13/89	Interlink Communication Co.	US West Inc.
06/26/89	KCS Group Inc.	UGI Corp.
06/26/89	Central Bank	ABQ Corp.
06/26/89	Amaray International Corp.	Hunt Manufacturing Co.
06/28/89	Horvitz Enterprises Inc.	Private
06/28/89	Hendrie's Inc.	Agway
06/29/89	Leaf Inc.	Phoenix Confections Inc.
06/30/89	Essex Specialty Products	Lilly Industrial Coatings Inc.
06/30/89	Quincy Technologies Inc.	Private

07/01/89 Bachow & Elkin Co.  
07/11/89 Hussman Corp.  
08/10/89 BRIntec Corp.  
08/11/89 West Florida Gas  
08/15/89 Tetley Inc.  
08/28/89 WORKplace  
08/31/89 Penn Dairies Inc.  
09/04/89 Carlin Communications Inc.  
09/29/89 Goldome  
10/01/89 Action Auto Stores Inc.  
10/17/89 Sterile Products Corp.  
10/19/89 Central Diagnostics Lab.  
11/29/89 NTI

Adelphia Communications Corp.  
Middleby Corp.  
LPL Investment Group Inc.  
UGI Corp.  
Chuck Full O'Nuts Corp.  
HQ Office Supplies Warehouse  
Getty Petroleum Corp.  
Topaz Telecom Group Ltd.  
Manufacturers Hanover Corp.  
One Liberty Properties Inc.  
Omnicare Inc.  
Unilab Corp  
Diceon Electronics Inc.

## APPENDIX 5

LIST OF EVENTS AND SELLER'S  
FIRM-SPECIFIC CHARACTERISTICS

Date	Seller	Buyer	(1)	VL	T	S	rat	\$(Mil)	Equity	Ratio
01/11/85	RTC Transportation Inc.	/ Embarcadaire Investment Group.	N	-	-	B	7	4.4	1.59	
01/17/85	ITT Corp.	/ Forstman Little & Co.	N	-	-	A-	400	4103	0.1	
01/21/85	Crystal Oil Co.	/ Trafalgar House	N	-	-	C	6.6	68	0.1	
01/30/85	Midland-Ross Corp.	/ National Casting Inc.	N	-	-	B+	35	232	0.15	
02/06/85	Allis Chalmers Corp.	/ Kloeckner & Co.	N	-	-	C	130	110	1.18	
03/12/85	Champion International Corp.	/ American Can	Y	2	2	B	-	-	-	
04/13/85	Macmillan Inc.	/ Private	Y	1	2	B+	-	-	-	
04/15/85	Bausch & Lomb Inc.	/ Milton Roy Co.	Y	3	2	A-	15	770	0.02	
04/16/85	Marriott Corp.	/ W.R. Grace & Co.	Y	2	3	A-	-	-	-	
05/06/85	Mark Controls Inc.	/ Crane Co.	N	-	-	B-	-	-	-	
05/22/85	Coachmen Industries Inc.	/ Coast R.V Inc.	Y	4	4	B	23	115	0.2	
05/23/85	Kaneb Services Inc.	/ Transco Energy Co.	Y	5	3	B+	237	316	0.75	
05/28/85	Witco Chemical Corp.	/ Monsanto Co.	Y	4	2	A-	-	-	-	
07/04/85	Barry Wright Corp.	/ ASEA AB	N	-	-	A-	12	171	0.07	
07/15/85	Kysor Industrial Corp.	/ Lyons Integrated Systems	Y	3	3	B	-	-	-	
07/26/85	General Mills Inc.	/ W.R. Grace & Co.	Y	-	1	A+	-	-	-	
07/30/85	Penn Central Corp.	/ Holden Energy Co.	Y	2	2	-	130	-	-	
08/19/85	GCA Corp.	/ Nareski Group Inc.	N	-	-	B	-	-	-	
08/19/85	Colt Industries Inc.	/ FMPD Purchasing Corp.	N	-	-	B+	-	-	-	
08/28/85	Johnson Controls Inc.	/ Citicorp	Y	3	3	A	-	-	-	
09/09/85	Allegheny International Inc.	/ Emhart Corp.	N	-	-	B-	125	248	0.51	
09/19/85	Wendy's International Inc.	/ Private	Y	2	2	A-	-	-	-	
10/01/85	Bausch & Lomb	/ AMETEK Inc.	Y	2	2	A-	46	847	0.05	
10/08/85	Kysor Industrial Corp.	/ American Brands Inc.	Y	3	3	B	-	-	-	
10/08/85	Hershey Foods Corp.	/ ARA Holding Co.	Y	2	2	A	-	-	-	
10/10/85	CompuDyne Corp.	/ Private	N	-	-	B	-	-	-	
10/11/85	Fluor Corp.	/ Houston Industries Inc.	Y	4	3	B+	190	1107	0.17	
10/17/85	Cabot Corp.	/ Private	Y	4	3	A-	-	-	-	
10/22/85	United Foods Inc.	/ James Crean PLC	N	-	-	B	35	19	1.84	
11/26/85	Monsanto Oil Co.	/ Broken Hill Proprietary Co.	Y	4	3	A-	-	-	-	
11/27/85	TIE/Communications Inc.	/ Bartex Export Co.	N	-	-	-	-	-	-	
12/11/85	Tribune Co.	/ Jones Intercable Inc.	Y	-	3	-	195	-	-	
12/19/85	Tenneco Polymers Inc.	/ Occidental Petroleum Inc.	Y	4	3	A	100	5977	0.02	
12/24/85	Delmed Inc.	/ W.R. Grace & Co.	N	-	-	C	14	21	0.67	
12/30/85	Borden Inc.	/ Curtice-Burns Inc.	Y	2	1	A+	-	-	-	
01/14/86	Burlington Industries Inc.	/ J.P. Stevens & Co.	N	-	-	B	110	874	0.13	
01/28/86	Allied Signal Inc.	/ Ausimont Compo NV	Y	3	2	A-	-	-	-	
02/04/86	Owens-Illinois Inc.	/ Temple Inland Inc.	N	-	-	B+	228	1774	0.13	
02/04/86	Reichold Chemicals Inc.	/ BTL Inc.	N	-	-	B	-	-	-	
02/06/86	Southland Corp.	/ Red Apple Cos.	N	-	-	A+	-	-	-	
02/08/86	Bethlehem Steel Corp.	/ American Banaco Inc.	Y	3	4	C	-	-	-	
02/17/86	TRW Inc.	/ Harbour Group Inc.	Y	4	2	A+	-	-	-	
02/18/86	National Gypsum Co.	/ Binning's Building Products	N	-	-	B+	-	-	-	
02/26/86	CTS Corp.	/ Syndicate Systems Inc.	Y	4	3	B+	28	185	0.15	
02/26/86	Westinghouse Electric Corp.	/ A.O. Smith Corp	Y	1	2	A+	50	7838	0.01	
03/03/86	Emhart Corp.	/ Private	Y	4	2	A-	-	-	-	
03/05/86	National Intergroup Inc.	/ Traxxon Inc.	N	-	-	B-	65	558	0.12	
03/17/86	Tribune Co.	/ Cablevision Industries Inc.	Y	2	3	-	53	2713	0.02	
04/03/86	GCA Corp.	/ Precision Scientific Inc.	N	-	-	B	9	75	0.12	
04/10/86	Johnson & Johnson	/ General Electric Co.	Y	2	1	A+	-	-	-	
04/11/86	Intermedics Inc.	/ First Chicago Corp.	N	-	-	B-	35	105	0.33	
04/14/86	Rubbermaid Inc.	/ Lancaster Colony Corp.	Y	1	2	A	-	-	-	
04/14/86	Easco Corp.	/ Harsco Corp.	N	-	-	B-	13.5	1.8	0.11	
05/06/86	Oak Industries Inc.	/ Allied Signal Inc.	N	-	-	C	167	46	3.63	
06/04/86	Trans-Lux Corp.	/ Gulf & Western Inc.	N	-	-	B+	15	16	0.94	
06/13/86	Allis Chalmers Inc.	/ AC Material Handling Corp.	N	-	-	C	-	-	-	
06/13/86	Richardson-Vicks Inc.	/ Sterling Drug	N	-	-	-	66	-	-	
06/14/86	Genesco Inc.	/ Union Underwear	Y	5	5	C	21	40	0.52	
06/16/86	Beatrice Cos Inc.	/ Coca-Cola Co.	N	-	-	-	1000	-	-	
07/01/86	AMR Energy Corp.	/ Total Petroleum	Y	3	4	B-	-	-	-	
07/02/86	Borden Inc.	/ Ralston Purina Inc.	Y	2	1	A+	-	-	-	
07/03/86	National Gypsum Co.	/ Decorative Coverings Inc.	N	-	-	-	-	-	-	
08/07/86	M/A Com Inc.	/ General Instrument Corp.	N	-	-	A-	220	645	0.34	
08/08/86	UCCEL Corp.	/ Convergent Technologies Inc.	N	-	-	B-	28	321	0.09	
09/02/86	Trane Co.	/ Brunswick Corp.	N	-	-	-	-	-	-	

09/05/86	BMC Industries Inc.	/	Sheldahl Inc.	N	-	-	B+	-	-	-	-
10/13/86	Conwood Co. LP	/	Curtis-Burns Inc.	N	-	-	-	-	-	-	-
10/16/86	Emhart Corp.	/	Ablekind Ltd.	Y	3	2	A-	115	988	0.12	
10/18/86	Purolator Courier Corp.	/	Facet Enterprises Inc.	N	-	-	B	67	126	0.53	
11/17/86	Katy Industries Inc.	/	Union Pacific	Y	3	5	C	110	85	1.29	
11/17/86	Unisys	/	Honeywell	N	-	-	-	1030	-	-	
01/07/87	Apache Corp.	/	Institutional Investor	Y	3	4	B+	65	184	0.35	
01/19/87	United Medical Corp.	/	Health and Rehab prop. trust	N	-	-	B+	25	27	0.93	
02/06/87	Dow Chemical Co.	/	Ethyl Corp.	Y	3	2	B	55	1380	0.04	
02/10/87	Household Manufacturing	/	Private	Y	2	2	A-	75	2204	0.03	
04/20/87	Bell & Howell	/	Keller Graduate School of Mgmt.	N	-	-	A-	147	410	0.36	
04/22/87	Vulcan Materials Co.	/	AMG Industries Ltd.	Y	3	1	A-	-	-	-	
05/04/87	Foote Mineral Co.	/	Gedrem SA	N	-	-	C	13	45	0.29	
05/28/87	Carson Pirie Scott & Co.	/	Greyhound Corp.	Y	3	3	B+	390	397	0.98	
06/02/87	First City Industries Inc.	/	Valor PLC	N	-	-	-	470	-	-	
06/08/87	Avon Products Inc.	/	New Hampton Inc.	Y	3	3	B	151	2056	0.07	
06/22/87	Washington Post Co.	/	Cablevision Systems Corp.	Y	2	1	A	56	2533	0.02	
06/26/87	Beverly Enterprises	/	Medserve Corp.	Y	4	4	A-	67	935	0.07	
07/03/87	Phillips-Van Heusen Corp.	/	TJFC Inc.	Y	2	2	B+	44	548	0.08	
07/07/87	Communications Satellite Corp./	/	Contel Corp.	Y	4	3	B+	38	429	0.09	
07/13/87	Fairchild Industries	/	Private	Y	4	5	B-	150	168	0.89	
07/15/87	Alco Standard Corp.	/	M.R Berlin Co. Inc.	N	-	-	-	-	-	-	
07/27/87	Household Manufacturing	/	Regal-Beloit Corp.	Y	3	2	A	25	1986	0.01	
07/28/87	Jones Intercable Inc.	/	Falcon Cable Television	N	-	-	B	106	145	0.73	
08/26/87	Fluor Corp.	/	Dalhold Investments Pty. Ltd	Y	3	3	C	500	1576	0.32	
09/30/87	Mead Corp.	/	Rock-Tenn Co.	Y	3	3	B	-	-	-	
01/11/88	Everest & Jennings Int'l	/	Private	N	-	-	B-	-	-	-	
01/13/88	Security Capital Corp.	/	Private	N	-	-	-	51	-	-	
01/25/88	Lorimar Telepictures Corp.	/	Bozell Inc.	N	-	-	-	125	-	-	
02/04/88	Western Union Corp.	/	General Motors Corp.	N	-	-	C	35	92	0.38	
02/15/88	Transco Exploration Partners	/	American Exploration Co.	Y	-	4	-	54	-	-	
02/18/88	Charter Co.	/	Circle K Corp.	N	-	-	C	120	190	0.63	
02/25/88	Wurltech Industries Inc.	/	Baldwin Piano & Organ Co.	N	-	-	-	17	-	-	
03/24/88	KN Energy Inc.	/	USX Corp.	Y	-	3	-	28	-	-	
03/25/88	MacGregor Sporting Goods Inc./	/	Private	N	-	-	-	30	-	-	
04/05/88	Champion International Corp./	/	E.I DuPont deNemours & Co.	Y	2	2	B	-	-	-	
04/11/88	Bell Industries Inc.	/	Furukawa Electric Co. Ltd.	Y	4	3	B	15	93	0.16	
04/18/88	Van Dorn Co.	/	Milton Can Co.	Y	3	3	B+	-	-	-	
04/26/88	Kirby Exploration Co. Inc.	/	American Exploration Co.	N	-	-	C	-	99	0.63	
05/03/88	Viacom Inc.	/	Cablevision Systems Corp.	N	-	-	-	550	-	-	
05/12/88	American Medical Int'l Inc.	/	EPIC Healthcare Group	Y	3	3	A-	873	1372	0.64	
05/25/88	GTE Products Corp.	/	Technitrol Inc.	Y	3	2	A-	24	11476	0.01	
05/27/88	Kaneb Services	/	Amax Inc.	Y	4	5	C	68.5	67	1.02	
06/02/88	Cluett Peabody & Co. Inc	/	RPM Clothing Inc.	N	-	-	-	-	-	-	
06/07/88	Texas Eastern Corp.	/	Enterprise Oil PLC	Y	4	3	A-	276	1414	0.2	
06/07/88	Varian Associates Inc.	/	Tosoh Corp	Y	3	3	B	33	587	0.06	
06/08/88	Mckesson Corp.	/	Sunbelt Beverage	Y	3	2	A	-	-	-	
06/13/88	Phillips-Van Heusen Corp.	/	SB Acquisition Inc.	Y	3	3	A	-	-	-	
07/01/88	United Merchants & Manuf. Inc/	/	Private	Y	5	4	C	80	36	2.22	
07/07/88	Union Carbide Corp.	/	American Vicarb Corp.	Y	-	4	B-	-	-	-	
07/29/88	Eaton Corp.	/	Contel Corp.	Y	4	3	B	58	2091	0.03	
08/15/88	Rogers Communications Inc.	/	Houston Industries Inc.	Y	2	3	-	1365	650	2.1	
08/17/88	Textron Inc.	/	Dansk International Designs	Y	3	3	A-	75	2161	0.03	
08/26/88	Reading & Bates	/	Private	Y	5	5	C	21.9	40	0.55	
09/06/88	Kerr Mcgee Corp.	/	RTZ Corp. PLC	Y	2	2	B	28.5	1677	0.02	
09/07/88	Lamson & Session Co.	/	Private	Y	1	5	C	-	-	-	
09/21/88	TRW Inc.	/	Pearson PLC	Y	4	2	A	300	2813	0.11	
09/28/88	Toys "R" Us Inc	/	Private	Y	2	3	A-	-	-	-	
09/30/88	Transco Energy Co.	/	James River Coal Co.	Y	3	3	B	75	970	0.08	
10/20/88	Ashland Oil	/	Degussa AG	Y	3	3	B+	60	2071	0.03	
10/31/88	Harsco Corp.	/	Private	Y	3	1	B+	14	839	0.02	
11/14/88	Eagle-Picher Industries Inc./	/	Private	Y	3	4	B	-	-	-	
12/02/88	Carter-Wallace Inc.	/	Rikkis Family Corp.	N	-	-	A+	-	-	-	
12/03/88	Pillsbury Co.	/	Conagra Inc.	Y	2	2	A	-	-	-	
12/26/88	Deere & Co.	/	Oshkosh Truck Corp.	Y	2	3	B-	-	-	-	
01/10/89	Merck & Co. Inc.	/	Marine Magnesium Co.	Y	2	1	A+	-	-	-	
01/16/89	Titan Corp.	/	Nippon Iron Powder Co. Ltd	Y	3	4	B	-	-	-	
03/01/89	Dallas Corp.	/	DiGiorgio Corp.	Y	2	2	B-	28	115	0.24	
03/13/89	American Standard Inc.	/	Mannesman AG	N	-	-	-	-	-	-	
03/20/89	Loral Corp.	/	Opus Acquisitions Corp.	Y	2	3	A+	455	896	0.51	
04/01/89	Manville Corp.	/	Raebarn Corp.	Y	5	5	B+	102	915	0.11	
04/07/89	Whittaker Corp.	/	Combrex Corp.	Y	-	4	B	-	-	-	

04/18/89	Alco Standard Corp.	/	CA Holdings Corp.	Y	3	2	A	-	-	-
04/26/89	Interco Inc.	/	Yank Holdings Inc.	Y	-	1	A-	57	111	0.51
04/27/89	Gleason Corp.	/	Diesel Kiki Ltd.	Y	3	4	C	20	76	0.26
05/01/89	International Technology Corp.	/	Laidlaw Transportation Ltd.	Y	2	5	C	85	126	0.67
05/18/89	Ametek	/	Carsonite Int'l Corp.	Y	4	3	A-	11	589	0.02
05/18/89	Nortek Inc.	/	Vestar Capital Partners Inc.	Y	3	4	B	85	126	0.67
05/19/89	IPCO Corp.	/	RLG Investments Inc.	Y	4	4	B	12	51	0.24
05/23/89	International Proteins Corp.	/	Private	N	-	-	C	6.25	44	0.14
05/23/89	Transco Exploration Partners	/	Amereda Hess Corp.	N	-	-	-	911	-	-
06/02/89	Maytag Corp.	/	LADD Furniture Inc.	Y	4	3	A	213	2351	0.09
06/05/89	Honeywell Inc.	/	Atmel	Y	3	3	B	-	-	-
06/18/89	Lehman Management Co.	/	Lehman Ark Holdings Inc.	Y	3	2	-	100	808	0.12
06/23/89	Sundstrand Data Control Inc.	/	Sony Corp.	Y	2	3	B-	60	1207	0.05
06/30/89	Price Communications Inc.	/	NTG Holdings Inc.	Y	2	3	C	120	59	2.03
07/07/89	Cabot Corp.	/	Maple Gas Corp.	Y	3	3	B	58	978	0.06
07/12/89	Marriott Corp.	/	Caterair Holdings Corp.	Y	2	3	A+	650	3694	0.18
08/07/89	Fairchild Industries Inc.	/	Matra SA	Y	-	4	B-	261	261	1.0
08/09/89	Dravo Corp.	/	Phibro Refining	Y	3	3	C	-	-	-
08/10/89	Millipore Corp.	/	Eastern Enterprises	Y	3	3	A	54	900	0.06
08/16/89	Rexham Corp.	/	Hargro Associates	N	-	-	-	26	-	-
08/24/89	Diasonics Inc.	/	Toshiba Corp.	Y	2	4	B-	168	201	0.84
09/11/89	Amcast Industrial Corp.	/	Advanced Cast Products Inc.	Y	3	3	B-	11.3	91	0.12
09/29/89	Harcourt Brace Jovanovich Inc.	/	Anheuser-Busch Cos. Inc.	Y	-	5	-	1100	-	-
09/30/89	Flow General Inc.	/	ICN Pharmaceuticals Inc.	Y	2	5	B-	66	51	1.29
10/03/89	Zenith Electronics Corp.	/	Cie Machines des Bull	Y	3	3	C	635	388	1.64
10/25/89	Bard-EMS Inc.	/	Birtcher Corp.	Y	1	3	A+	11	1226	0.01
10/26/89	Parker-Hannifin Corp.	/	EPICOR Industries Inc.	Y	4	3	B+	80	1428	0.06

- (1) VL = Existence of Value Line Ratings, N = no, Y = Yes  
T = Value Line timeliness rating, where - = unrated  
S = Value Line security rating, where - = unrated  
Rat = Standard and Poors bond rating, where - = unrated  
\$(Mil) = Announced value of sell-off in \$millions  
Equity = Market value of common shares in \$millions  
Ratio = \$(Mil)/Equity

## APPENDIX 6

### Distribution of Firm Specific Characteristics

**Panel A:** Distribution of Value Line ratings of timeliness, where 1 is the highest rating and 5 is the lowest rating.

TIMELINESS					
RATING	1	2	3	4	5
NUMBER OF FIRMS	5	28	39	21	5

**Panel B:** Distribution of Value Line ratings of safety, where 1 is the highest rating and 5 is the lowest rating.

SECURITY					
RATING	1	2	3	4	5
NUMBER OF FIRMS	9	27	45	16	10

**Panel C:** Distribution of Standard & Poors bond ratings, where A+ is the highest rating and C is the lowest rating.

STANDARD & POORS BOND RATING							
RATING	A+	A	A-	B+	B	B-	C
NUMBER OF FIRMS	12	11	26	19	28	19	23

**Panel D:** Distribution of the ratio of the announced value to the total common equity outstanding.

RELATIVE SIZE				
RATIO	>75%	<50% - 75%	<25% - 50%	<25%
NUMBER OF FIRMS	16	15	8	52

## APPENDIX 7

### Diagnostic Analysis of the Residuals

Company	p. value White's Test	Durbin Watson (1)	KS test (2)
1	0.9557	2.473	0.1002
2	0.9357	2.171	0.0985
3	0.9666	2.015	0.1111
4	0.9273	2.247	0.1016
5	0.9937	2.229	0.0857
6	0.9581	1.99	0.0789
7	0.8608	2.259	0.0953
8	0.9069	2.478	0.1256
9	0.8913	2.236	0.1354
10	0.9617	2.412	0.0985
11	0.9015	2.347	0.0654
12	0.9881	2.459	0.0748
13	0.9725	2.136	0.0985
14	0.9625	2.167	0.0859
15	0.968	2.4	0.0548
16	0.9797	2.314	0.0958
17	0.8575	1.624	0.0784
18	0.8644	2.225	0.0958
19	0.8159	2.41	0.135
20	0.8646	2.064	0.0524
21	0.9906	2.498	0.0758
22	0.9662	2.369	0.0789
23	0.8682	2.147	0.0865
24	0.9716	2.319	0.1154
25	0.9403	2.296	0.0579
26	0.9475	2.246	0.0752
27	0.6357	2.26	0.0986
28	0.8867	2.221	0.1258
29	0.7644	1.524	0.1354
30	0.9201	2.31	0.0785
31	0.9988	2.183	0.1024
32	0.97	2.359	0.0985
33	0.9165	2.085	0.1354
34	0.5849	2.467	0.1254
35	0.9376	2.268	0.1014
36	0.8461	2.167	0.0847
37	0.9132	2.094	0.0547
38	0.9275	2.275	0.0659
39	0.9911	2.273	0.0748

Company	p. value		
	White's Test	Durbin Watson (1)	KS test (2)
40	0.8484	2.096	0.1325
41	0.8081	2.066	0.0743
42	0.9607	2.145	0.0921
43	0.9309	2.136	0.1111
44	0.9289	2.036	0.0748
45	0.9999	2.457	0.1126
46	0.9999	2.25	0.1023
47	0.9383	2.365	0.0748
48	0.9271	2.19	0.0857
49	0.9415	2.279	0.0998
50	0.9709	2.381	0.0558
51	0.8513	2.138	0.1247
52	0.8919	2.245	0.0857
53	0.9264	2.134	0.1014
54	0.8837	2.268	0.0689
55	0.9764	2.055	0.0954
56	0.9648	2.017	0.1123
57	0.9121	2.083	0.1098
58	0.8595	2.234	0.1246
59	0.9137	2.1	0.0879
60	0.9999	1.967	0.1068
61	0.957	1.755	0.0549
62	0.995	2.168	0.1169
63	0.9271	2.263	0.0852
64	0.9045	2.106	0.0512
65	0.9618	2.359	0.0971
66	0.9748	2.133	0.0997
67	0.9726	2.103	0.1124
68	0.9205	2	0.1235
69	0.858	2.432	0.0785
70	0.9614	2.362	0.1147
71	0.9428	1.986	0.1095
72	0.9854	2.18	0.1354
73	0.8749	2.486	0.0849
74	0.6544	2.036	0.0473
75	0.9937	1.986	0.0987
76	0.7161	2.024	0.0478
77	0.9927	2.061	0.0698
78	0.9787	2.19	0.1047
79	0.9901	2.234	0.0247
80	0.9435	2.354	0.1024
81	0.9936	2.224	0.0497
82	0.9314	2.287	0.0845
83	0.9701	2.18	0.0974



Company	p. value		
	White's Test	Durbin Watson (1)	KS test (2)
84	0.9156	2.349	0.0724
85	0.7993	1.723	0.1125
86	0.8943	2.262	0.0871
87	0.8778	2.167	0.0841
88	0.7831	2.364	0.065
89	0.8855	2.33	0.1198
90	0.9597	2.086	0.0598
91	0.9458	1.986	0.074
92	0.8963	2.088	0.0417
93	0.9873	2.134	0.0685
94	0.964	2.21	0.1249
95	0.8335	1.655	0.0985
96	0.9955	2.024	0.1257
97	0.9434	2.043	0.087
98	0.836	2.046	0.0359
99	0.8959	2.185	0.0875
100	0.8853	2.17	0.0958
101	0.9316	2.034	0.0732
102	0.9489	2.049	0.1247
103	0.9823	2.132	0.0845
104	0.9003	2.192	0.0857
105	0.8705	2.003	0.0963
106	0.9641	2.306	0.1073
107	0.8866	2.468	0.0586
108	0.9194	2.368	0.0895
109	0.9999	2.268	0.0457
110	0.9012	2.22	0.0706
111	0.9736	2.368	0.1198
112	0.9426	2.258	0.0726
113	0.9185	1.998	0.0862
114	0.8235	2.008	0.1358
115	0.992	2.067	0.076
116	0.9952	2.073	0.0854
117	0.8995	2.538	0.0986
118	0.9905	1.576	0.0658
119	0.9999	2.135	0.0549
120	0.8574	2.202	0.0724
121	0.9884	2.338	0.0903
122	0.9999	1.932	0.1049
123	0.9087	2.794	0.082
124	0.8893	2.082	0.0457
125	0.9529	2.272	0.0758
126	0.9742	2.369	0.0894
127	0.9457	2.354	0.0531

Company	p. value White's Test	Durbin Watson (1)	KS test (2)
128	0.9352	2.066	0.0806
129	0.9723	2.066	0.1325
130	0.9999	2.247	0.1193
131	0.8924	2.425	0.1024
132	0.9934	1.985	0.0657
133	0.9921	2.2	0.0489
134	0.8424	2.369	0.0891
135	0.9227	2.269	0.0502
136	0.9728	2.293	0.1189
137	0.9156	1.952	0.0732
138	0.9896	2.459	0.1196
139	0.931	2.37	0.0852
140	0.8451	2.758	0.0954
141	0.8722	1.968	0.1049
142	0.9723	2.188	0.0732
143	0.9028	2.359	0.053
144	0.9951	2.105	0.1067
145	0.883	2.424	0.1194
146	0.966	1.985	0.0852
147	0.9897	2.202	0.0635
148	0.972	2.156	0.0784
149	0.9936	2.369	0.0852
150	0.8604	2.214	0.0971
151	0.7439	2.598	0.1025
152	0.9443	2.841	0.1162
153	0.9588	2.271	0.0472
154	0.9907	2.54	0.0613
155	0.8889	2.247	0.0789
156	0.9218	1.999	0.0711
157	0.8182	2.349	0.0894
158	0.8347	2.102	0.1147
159	0.6738	2.036	0.1085
160	0.9999	2.052	0.1236
161	0.9307	2.298	0.0748
162	0.9997	2.084	0.0864
163	0.9978	2.273	0.0877
164	0.967	2.416	0.0986

(1) Number outlined by a box signifies a Durbin Watson value in the inconclusive region.

(2) Values are the maximum differential calculated by the KS test and compared to the critical value of 0.1426.

APPENDIX 8

DAILY AVERAGE ABNORMAL RETURNS FOR THE TOTAL SAMPLE

WILCOXON STATISTIC Total Sample = 164 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	5816	13207	6739	6294	6246	6991	6306	6383	6021	6504.5	6279	7257
p-value	0.119	0	0.967	0.44	0.395	0.711	0.452	0.531	0.222	0.669	0.425	0.42
Median	-0.0003	0.967	-0.0047	-0.001	-0.0012	0.00049	-0.001	-0.0006	-0.0015	-0.0006	-0.0011	0.00108
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	9679	6253	6154.5	5925	5667.5	5417	5997	6395	6339	6086	6401	6921
p-value	0	0.692	0.317	0.168	0.072	0.027	0.208	0.544	0.485	0.265	0.551	0.798
Median	0.00853	-0.0007	-0.0013	-0.002	-0.002	-0.0029	-0.0018	-0.0007	-0.0008	-0.0016	-0.0008	0.00035

SIGN TEST Total Sample = 164 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	96	6	87	85	93	84	83	88	93	88	89	81
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	68	158	77	79	71	80	81	76	71	76	75	83
p-value	0.035	0	0.4822	0.6962	0.101	0.8148	0.9378	0.3904	0.101	0.3904	0.31	0.9378
Median	-0.0004	1.19	-0.0791	-0.0008	-0.0012	-0.0001	-9E-05	-0.0008	-0.0014	-0.0009	-0.0011	0.00026
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	60	82	86	93	92	95	91	88	86	83	92	82
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	104	82	78	71	72	69	73	76	78	81	72	82
p-value	0.0008	1	0.5846	0.101	0.1379	0.0509	0.1844	0.3904	0.5846	0.9378	0.1379	1
Median	0.00546	-9E-05	-0.0008	-0.0021	-0.0012	-0.0025	-0.0017	-0.001	-0.0008	-8E-05	-0.0019	0.00017

T-TEST Total Sample = 164 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	-0.0002	1.2088	-0.0572	0.0014	-0.0024	-0.0017	0.00074	-0.0006	-0.0009	0.00023	-0.0022	0.0045
p-value	0.3921	0.0001	0.5879	0.6122	0.2994	0.6062	0.7391	0.7294	0.6623	0.9024	0.2743	0.0255
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.02184	-0.0004	-0.0027	-0.0002	-0.0019	-0.0026	-0.0001	-0.0005	0.00034	-0.001	-0.0018	0.00069
p-value	0.0001	0.8803	0.1731	0.9178	0.3076	0.3195	0.9631	0.758	0.8321	0.6562	0.4542	0.7488

(1) Market model beta  
 (2) Dummy variable capturing beta non-stationarity

APPENDIX 9

DAILY AVERAGE ABNORMAL RETURNS FOR THE TIMELINESS SUBSAMPLE

WILCOXON STATISTIC Timeliness = 33 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	260	528	293	286	241	235	257	294	230	176	250	300
p-value	0.752	0	0.594	0.688	0.674	0.594	0.903	0.581	0.531	0.102	0.801	0.507
Median	-0.0007	1.361	0.1035	0.00179	-0.00019	-0.00017	-0.0004	0.00148	-0.0017	-0.0045	-0.0006	0.00239
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	342	234	253	154	254	245	286	305	180	270	292	252
p-value	0.147	0.581	0.844	0.041	0.859	0.729	0.688	0.449	0.118	0.918	0.607	0.83
Median	0.0036	-0.0013	-0.0004	-0.0047	-0.0004	-0.001	0.00109	0.00285	-0.0038	0.00035	0.00167	-0.0007

SIGN TEST Timeliness = 33 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	18	0	17	14	17	19	15	15	18	18	17	14
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	15	33	16	19	16	14	18	18	15	15	16	19
p-value	0.571	0	1	0.5966	0.8601	0.3771	0.8601	0.8601	0.5966	0.5966	0.8601	0.5966
Median	-0.0007	1.341	-0.0238	0.00324	-0.0015	-0.0015	0.007	0.00037	-0.0017	-0.0047	-0.0013	0.00216
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	14	15	16	20	17	18	15	15	20	12	17	17
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	19	18	17	13	16	15	18	18	13	21	16	16
p-value	0.5966	0.861	0.8601	0.2153	0.8601	0.5966	0.8601	0.8601	0.2153	0.2153	0.8601	0.8601
Median	0.00188	0.00032	0.00012	-0.0051	-0.0004	-0.0021	0.00344	0.00076	-0.0042	0.00115	-0.002	-0.0007

T-TEST Timeliness = 33 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	-0.0007	1.3461	0.1251	0.0012	-0.0032	-0.0008	0.0021	0.0021	-0.0025	-0.0046	-0.0019	0.00277
p-value	0.9006	0.0001	0.4575	0.7357	0.3818	0.8411	0.4743	0.5933	0.3598	0.0978	0.6677	0.4661
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.00464	-0.0025	-0.0021	-0.005	0.00013	-0.0002	0.0019	0.00387	-0.0035	-0.0023	0.0037	-0.0003
p-value	0.0822	0.3748	0.4433	0.0324	0.9503	0.9688	0.5359	0.2438	0.276	0.4801	0.3374	0.9066

(1) Market model beta  
 (2) Dummy variable capturing beta non-stationarity

APPENDIX 10

DAILY AVERAGE ABNORMAL RETURNS FOR THE UNTIMELINESS SUBSAMPLE

WILCOXON STATISTIC      Untimeliness =      65 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	1252	2249	1137	990.5	1148	1350	1064	1139	1082	1071	1088	1275
p-value	0.895	0	0.993	0.355	0.958	0.189	0.642	1	0.724	0.673	0.752	0.397
Median	0.00025	1.234	-0.0015	-0.0018	0.00007	0.00222	0.00077	31.-06	0.00073	0.00091	0.0006	0.00183
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	1644	1175	1195	1080	754.5	695	941	946	1176	980	1007	1165
p-value	0.002	0.825	0.726	0.715	0.016	0.006	0.217	0.229	0.82	0.322	0.411	0.873
Median	0.00058	0.00065	0.00073	-0.0009	-0.0039	-0.0047	-0.0025	-0.0021	0.00033	-0.0021	-0.0014	0.00028

SIGN TEST      Untimeliness =      65 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	34	1	33	35	37	31	36	35	36	37	38	33
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	31	64	32	30	28	34	29	30	29	28	27	32
p-value	0.8756	0	0.907	0.807	0.4635	0.6251	0.6251	0.807	0.4635	0.4635	0.3284	0.907
Median	0.00032	1.155	0.0044	-0.0009	-0.0008	0.0021	-0.001	-0.0004	-0.0014	-0.0009	-0.0011	0.00052
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	25	32	32	39	41	42	39	39	35	39	37	33
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	40	33	33	26	24	23	26	26	30	26	28	32
p-value	0.0506	0.907	0.907	0.2218	0.0872	0.0506	0.2218	0.2218	0.807	0.2218	0.4635	0.907
Median	0.00063	0.00058	0.00035	-0.0023	-0.0043	-0.0028	-0.0024	-0.0021	-0.0002	-0.0042	-0.0023	-3E-05

T-TEST      Untimeliness =      65 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	-0.0003	1.29402	-0.1011	0.00086	0.00083	-0.0038	0.00301	-0.0007	0.00175	-0.0015	0.00012	0.00397
p-value	0.8495	0.0001	0.5388	0.8315	0.8238	0.6064	0.4163	0.8015	0.5908	0.6332	0.9608	0.1547
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.02433	0.00264	0.0015	0.0005	-0.0042	-0.0063	-0.001	-0.0021	0.00178	-0.0002	-0.0003	-0.0002
p-value	0.0028	0.4614	0.5872	0.8495	0.1032	0.0226	0.7579	0.2925	0.3565	0.9574	0.3095	0.9515

(1) Market model beta  
 (2) Dummy variable capturing beta non-stationarity

APPENDIX 11

DAILY AVERAGE ABNORMAL RETURNS FOR THE SECURE SUBSAMPLE

WILCOXON STATISTIC      Secure =      36 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	307	528	306	307	225	313	203	263	267	178	330	254
p-value	0.524	0	0.438	0.427	0.472	0.364	0.258	0.993	0.963	0.11	0.221	0.859
Median	0.00153	1.213	0.1365	0.0024	-0.0017	0.00203	-0.0024	-0.00024	0.00021	-0.0044	0.00274	-0.00005
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	305	214	331	176	259	225	286	300	165	224	289	296
p-value	0.449	0.355	0.214	0.102	0.933	0.472	0.688	0.507	0.065	0.46	0.647	0.556
Median	0.00225	-0.0024	0.00268	-0.0045	-0.0002	-0.0019	0.00107	0.00147	-0.0038	-0.0015	0.00125	0.00167

SIGN TEST

Secure =      36 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	17	0	18	15	19	17	19	18	19	22	15	20
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	19	36	18	21	17	19	17	18	17	14	21	16
p-value	0.8601	0	1	0.3771	0.8601	0.8601	0.8601	1	0.8601	0.2153	0.3771	0.5966
Median	0.00026	1.267	-0.0016	0.00241	-0.0002	0.00178	-0.0003	0.0002	-0.0004	-0.0041	0.00202	-0.0023

	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	18	18	13	22	19	19	18	17	23	20	17	16
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	18	18	23	14	17	17	18	19	13	16	19	20
p-value	1	1	0.1102	0.2153	0.8601	0.8601	1	0.8601	0.1102	0.5966	0.8601	0.5966
Median	-0.0002	-0.0009	0.00269	-0.0058	-0.0003	-0.0014	0.00192	0.00023	-0.0041	-0.0014	0.00056	0.00184

T-TEST

Secure =      36 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	0.00025	1.2549	0.1648	0.0033	-0.0022	0.00206	-0.0031	-0.0004	0.00084	-0.0035	0.00293	0.00205
p-value	0.8804	0.0001	0.4118	0.2727	0.4392	0.3229	0.1952	0.8634	0.7634	0.2485	0.2308	0.4911
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.00492	-0.0039	0.00218	-0.0017	-0.0003	-0.0009	0.00171	0.00319	-0.0051	0.00053	-0.0015	0.00103
p-value	0.1486	0.2912	0.3611	0.6235	0.9105	0.726	0.5837	0.2407	0.0696	0.8804	0.7664	0.7611

(1) Market model beta

(2) Dummy variable capturing beta non-stationarity

APPENDIX 12

DAILY AVERAGE ABNORMAL RETURNS FOR THE INSECURE SUBSAMPLE

WILCOXON STATISTIC		Insecure = 71 firms													
		-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10		
Wilcoxon	Alpha	1.52	Beta(1)	2.90	Change (2)	12.95	14.55	14.27	15.39	13.86	13.85	12.81	13.97	13.05	17.38
	p-value	0.418		0	0.969	0.386	0.854	0.696	0.692	0.688	0.347	0.735	0.415	0.155	
	Median	-0.0009	1.303	-0.0006	-0.0018	-0.0004	0.0006	-0.0007	-0.0006	-0.0016	-0.0008	-0.0015	0.00284		
Wilcoxon	Event	-1		+1	+2	+3	+4	+5	+6	+7	+8	+9	+10		
	p-value	2.07	1.439	1.223	1.331	1.075	1.091	1.206	1.371	1.483	1.281	1.212	1.298		
	Median	0	0.903	0.216	0.496	0.045	-0.054	0.184	0.636	0.00015	-0.0023	-0.0028	-0.0018		

SIGN TEST

Insecure = 71 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	43	1	38	39	41	37	38	39	42	38	43	30
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	28	70	33	32	30	34	33	32	29	33	28	41
p-value	0.1359	0	0.7308	0.5663	0.3019	0.9087	0.7308	0.5663	0.207	0.7308	0.1359	0.207
Median	-0.0025	1.267	-0.0431	-0.0011	-0.001	-0.0001	-0.0008	-0.001	-0.0016	-0.0006	-0.0021	0.00335

T-TEST

Insecure = 71 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	22	34	41	41	43	43	41	39	38	37	44	41
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	49	37	30	30	28	28	30	32	33	34	27	30
p-value	0.002	0.7308	0.3019	0.3019	0.1359	0.1359	0.3019	0.5663	0.7308	0.9087	0.0853	0.3019
Median	0.01036	0.00058	-0.0015	-0.001	-0.0027	-0.0021	-0.0024	-0.0016	-0.0009	-0.0008	-0.0033	-0.002

T-TEST

Insecure = 71 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	-0.0003	1.3575	-0.0686	0.00037	-0.0004	-0.0042	0.00343	-0.0008	-0.0001	-0.0015	-0.0009	0.004
p-value	0.7581	0.0001	0.6542	0.9219	0.9031	0.5319	0.3186	0.7793	0.9655	0.5993	0.7581	0.1336
Mean	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
p-value	0.0227	-0.0014	-0.0039	-0.0016	-0.0031	-0.0048	-0.002	-0.0003	0.00193	-0.0016	-0.0037	-0.0024
	0.0015	0.7654	0.2511	0.4884	0.1833	0.0889	0.5304	0.8806	0.3682	0.6027	0.2447	0.5127

(1) Market model beta

(2) Dummy variable capturing beta non-stationarity

APPENDIX 13

DAILY AVERAGE ABNORMAL RETURNS FOR THE GOOD BOND RATING SUBSAMPLE

WILCOXON STATISTIC Good bond rating = 49 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	1206	2139	1063	1000	844	1079	1114	961	871	1050	939	1170
p-value	0.659	0	0.788	0.502	0.095	0.868	0.959	0.358	0.135	0.725	0.289	0.683
Median	0.0002	1.166	-0.0424	-0.0019	-0.0039	-0.0003	0.00014	-0.0018	-0.0033	-0.001	-0.0027	0.0009
	-1	F-vent	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	1559	1177	907.5	998	840	797	950	1078	1250	973	1119	1182
p-value	0.004	0.65	0.207	0.494	0.09	0.049	0.322	0.863	0.358	0.399	0.934	0.627
Median	0.00801	0.00144	-0.0026	-0.0017	-0.0033	-0.004	-0.0024	-0.0004	0.00211	-0.0023	0.0005	0.00137

SIGN TEST Good bond rating = 49 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	28	5	28	30	32	30	21	28	32	31	28	24
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	21	44	21	19	17	19	28	21	17	18	21	25
p-value	0.3889	0	0.5383	0.2679	0.1096	0.2679	0.3889	0.3889	0.1096	0.1757	0.5383	0.902
Median	-0.001	1.116	-0.0682	-0.0016	-0.002	-0.0012	0.0012	-0.0017	-0.003	-0.0018	-0.0028	0.0006
	-1	F-vent	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	16	21	30	28	33	32	32	27	21	24	31	24
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	33	28	19	21	16	17	17	22	28	25	18	25
p-value	0.0364	0.5383	0.2679	0.3889	0.0648	0.1096	0.1096	0.7119	0.3889	1	0.1757	0.902
Median	0.00487	0.00089	-0.0025	-0.001	-0.0026	-0.0034	-0.0024	-0.0006	0.00121	0.00031	-0.0024	0.00035

T-TEST Good bond rating = 49 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	-0.0003	1.2135	-0.1535	0.00288	-0.0075	-0.0058	0.00273	-0.0025	-0.0029	-0.0004	-0.0037	0.0055
p-value	0.9103	0.0001	0.4459	0.6233	0.1284	0.4497	0.51	0.4833	0.4363	0.9103	0.3448	0.1593
	-1	F-vent	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.0189	0.00328	-0.0022	-0.001	-0.0034	-0.005	0.00271	0.00011	0.00309	-0.0044	-0.0011	0.00142
p-value	0.0074	0.4543	0.4255	0.7643	0.3663	0.1329	0.5683	0.9768	0.2785	0.1657	0.7923	0.7566

(1) Market model beta

(2) Dummy variable capturing beta non-stationarity



APPENDIX 14

DAILY AVERAGE ABNORMAL RETURNS FOR THE POOR BOND RATING SUBSAMPLE

WILCOXON STATISTIC Poor bond rating = 89 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	1555	2775	1399	1393.5	1405	1773	1102	1395	1391	1260	1426	1586
p-value	0.862	0	0.953	0.972	0.927	0.038	0.125	0.97	0.987	0.494	0.838	0.286
Median	0.0002	1.227	0.00427	0.00009	0.00015	0.00307	-0.0025	0.00009	0.00011	-0.0013	0.00029	0.00184
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	1820	1102	1741	1029	1329	1048	1391	1363	930	1169	1213	1450
p-value	0.02	0.125	0.057	0.054	0.755	0.068	0.987	0.897	0.014	0.24	0.349	0.738
Median	0.00561	-0.0031	0.00295	-0.0074	-0.0004	-0.0032	0.00006	-0.0002	-0.0033	-0.0019	-0.0015	0.00065

SIGN TEST Poor bond rating = 89 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	45	0	45	40	47	37	48	44	45	47	46	44
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	44	89	44	49	42	52	41	45	44	42	43	45
p-value	0.9075	0	0.9075	0.4158	0.5611	0.1307	0.4158	0.9075	0.9075	0.5611	0.7273	0.9075
Median	-0.0002	1.221	-0.0446	0.00103	-0.0004	0.00313	-0.0011	-0.0006	-0.0007	-0.0008	-0.0006	0.00055
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	39	47	36	55	45	52	45	49	55	46	47	44
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	50	42	53	34	44	37	44	40	34	43	42	45
p-value	0.2955	0.5611	0.0812	0.0481	0.9075	0.1307	0.9075	0.4158	0.0481	0.7273	0.5611	0.9075
Median	0.00359	-0.0023	0.00286	-0.0043	-0.0003	-0.0027	-0.0016	-0.0019	-0.0032	-0.0014	-0.0017	0.00038

T-TEST Poor bond rating = 89 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	-0.0003	1.24506	0.02257	0.00071	0.00027	0.0038	-0.002	0.00062	0.00239	-0.0005	0.00044	0.00477
p-value	0.7467	0.0001	0.8479	0.671	0.8726	0.0259	0.2739	0.7043	0.3179	0.8157	0.7929	0.045
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.01565	-0.0033	0.00281	-0.0024	0.00069	-0.002	0.00039	0.00051	-0.0036	0.00032	-0.0023	0.00673
p-value	0.0052	0.1615	0.0931	0.2455	0.7121	0.3137	0.8367	0.7467	0.0601	0.9076	0.366	0.7272

(1) Market model beta  
 (2) Dummy variable capturing beta non-stationarity

APPENDIX 15

DAILY AVERAGE ABNORMAL RETURNS FOR THE SMALL SELL-OFF SUBSAMPLE

WILCOXON STATISTIC Small sell-off = 60 firms

Alpha	Beta(1)	Change (2)	-10	-9	-7	-6	-5	-4	-3	-2	
1200	2414	1247	1129	1196	1098	1038	1294	1040	1021	1115	
p-value	0	0.816	0.641	0.948	0.797	0.312	0.607	0.318	0.266	0.582	
Median	0.00002	1.236	0.02277	-0.00009	-0.0001	-0.0013	0.00089	-0.0015	0.00205	-0.00008	
-1	I-vent	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
1687	953	1155	975	921	987	889	1207	891	1266	1188	1228
p-value	0.004	0.129	0.756	0.165	0.087	0.057	1	0.059	0.729	0.91	0.905
Median	0.00041	-0.00032	-0.0006	-0.0032	-0.0025	-0.0035	-5E-06	-0.0029	0.00086	-0.0002	0.00018

SIGN TEST Small sell-off = 60 firms

Alpha	Beta(1)	Change (2)	-10	-9	-7	-6	-5	-4	-3	-2	
31	30	30	33	30	30	38	30	35	38	31	
I-vent	0	0	0	0	0	0	0	0	0	0	
29	59	30	27	30	27	22	30	25	22	29	
p-value	0.6301	0	1	0.3355	0.3355	0.0919	1	0.2286	0.0919	0.6301	
Median	-0.0002	1.193	-0.0114	-0.0004	-0.0011	-0.0017	0.00027	-0.0001	-0.0025	-0.0014	
-1	I-vent	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
52	33	31	38	37	31	37	35	38	29	32	32
I-vent	0	0	0	0	0	0	0	0	0	0	0
38	27	29	22	23	29	23	25	22	31	28	28
p-value	0.0919	0.3355	0.6301	0.0919	0.1486	0.1486	0.2286	0.0919	0.6301	0.4701	0.4701
Median	0.00461	-0.0055	-0.0011	-0.0043	-0.0025	-0.0002	-0.0002	-0.0032	0.00113	-0.0002	-0.0008

T-TEST Small sell-off = 60 firms

Alpha	Beta(1)	Change (2)	-10	-9	-7	-6	-5	-4	-3	-2	
-0.0002	1.2983	0.10667	-0.0019	0.1946	-0.0014	0.00005	0.00502	-0.0015	-0.0002	0.00019	
p-value	0.7401	0.0001	0.434	0.4661	0.4566	0.98	0.122	0.4556	0.3837	0.9268	
-1	I-vent	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
0.01037	-0.0002	-0.0008	-0.0036	-0.0017	-0.0038	-0.0021	0.00067	-0.0035	0.00294	-0.0001	0.00115
p-value	0.0108	0.5588	0.6525	0.2135	0.1974	0.4753	0.7401	0.0638	0.3446	0.9623	0.6402

(1) Market model beta  
 (2) Dummy variable capturing beta non-stationarity

APPENDIX 16

DAILY AVERAGE ABNORMAL RETURNS FOR THE LARGE SE.I.-OFF SUBSAMPLE

WILCOXON STATISTIC Large sell-off = 31 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Wilcoxon	126	268	120	97	71	161	135	87	100	195	79	148
p-value	0.354	0	0.595	0.218	0.043	0.494	0.939	0.125	0.254	0.086	0.075	0.773
Median	-0.0001	1.216	-0.1638	0.00782	-0.0116	0.00223	-0.0001	-0.0072	-0.0045	0.01173	-0.0106	0.00276
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Wilcoxon	214	160	127.5	174	115	89	107	146	127	89	93	101
p-value	0.022	0.513	0.761	0.28	0.494	0.14	0.354	0.82	0.749	0.14	0.176	0.267
Median	0.04356	0.00446	-0.0008	0.00366	-0.0025	-0.0059	-0.0142	0.0022	-0.0014	-0.0068	-0.0055	-0.0097

SIGN TEST Large sell-off = 31 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Below	13	7	15	20	21	15	15	19	19	17	20	15
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	18	24	16	11	10	16	16	12	12	14	11	16
p-value	0.6776	0.0001	1	0.21	0.0931	1	1	0.4049	0.4049	0.6776	0.21	1
Median	0.0025	1.2	-0.016	-0.0076	-0.0081	0.0021	-0.0006	-0.0005	-0.0034	0.101	-0.0067	0.00075
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Below	9	11	15	11	15	20	17	13	15	20	23	17
Equal	0	0	0	0	0	0	0	0	0	0	0	0
Above	22	20	16	20	16	11	14	18	16	11	8	14
p-value	0.0931	0.4049	1	0.4049	1	0.21	0.6776	0.6776	0.4049	0.21	0.0347	0.6776
Median	0.01835	0.00381	-0.0002	0.00214	-0.0003	-0.0062	-0.0048	0.00234	-0.0002	-0.0056	-0.0055	-0.0037

T-TEST Large sell-off = 31 firms

	Alpha	Beta(1)	Change (2)	-10	-9	-8	-7	-6	-5	-4	-3	-2
Mean	0.00035	1.28131	-0.6603	0.00577	-0.0223	0.00322	0.00543	-0.0124	-0.0078	0.01309	-0.0127	0.01235
p-value	0.8873	0.0001	0.188	0.6869	0.0279	0.4431	0.4288	0.0754	0.2532	0.0383	0.1372	0.1869
	-1	Event	+1	+2	+3	+4	+5	+6	+7	+8	+9	+10
Mean	0.05051	0.00457	0.00202	0.00917	0.00061	-0.0048	-0.0002	0.02609	-0.001	-0.0102	-0.0158	-0.0142
p-value	0.0123	0.6188	0.7599	0.1211	0.9448	0.3337	0.9784	0.6336	0.8873	0.1282	0.0939	0.1846

(1) Market model beta  
 (2) Dummy variable capturing beta non-stationarity

## APPENDIX 17

### Cumulative Average Abnormal Returns for the Total Sample of 164 Firms

WINDOW (1)	CAAR	PRE-T (2)	POST-T (3)	PREPOST-T (4)
(-1,-10)	0.0209	8.9643***	12.1586***	9.6328***
(-1,-5)	0.02354	14.2735***	19.3596***	15.3378***
(-1, 1)	0.0187	14.6517***	19.8726***	15.7443***
(1, 5)	-0.0075	-4.5393***	-6.1567***	-4.8778***
(1, 10)	-0.0097	-4.1462***	-5.6237***	-4.4554***
(-10, 10)	0.0108	3.2001***	4.3404***	3.4387***
(2, 5)	-0.0048	-3.2498***	-4.4078***	-3.4921***
(2, 10)	-0.007	-3.1537***	-4.2775***	-3.3889***

Level of significance:

1.00%        =        \*\*\*  
 5.00%       =        \*\*  
 10.00%      =        \*

- (1) Window of days before or after event day 0
- (2)  $\sigma$  estimated using the pre-window period
- (3)  $\sigma$  estimated using the post-window period
- (4)  $\sigma$  estimated using the pre- and post-window period

## APPENDIX 18

### Cumulative Average Abnormal Returns for the Subsample of Timeliness

**Panel A: Ratings of 1 or 2 (n = 33 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	-0.0001	-0.0274	-0.0281	-0.0277
(-1,-5)	-0.0016	-0.6295	-0.6453	-0.6366
(-1, 1)	0	-0.0014	-0.0014	-0.0014
(1, 5)	-0.0052	-2.0493**	-2.1008**	-2.0724**
(1, 10)	-0.0037	-1.0286	-1.0544	-1.0401
(-10, 10)	-0.0063	-1.2082	-1.2386	-1.2218
(2, 5)	-0.0031	-1.3578	-1.3919	-1.3731
(2, 10)	-0.0016	-0.462	-0.4736	-0.4672

**Panel B: Ratings of 3 to 5 (n = 65 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0289	7.8189***	8.441***	8.0368***
(-1,-5)	0.0287	10.9833***	11.857***	11.2892***
(-1, 1)	0.0285	14.0671***	15.1861***	14.4589***
(1, 5)	-0.0095	-3.6515***	-3.942***	-3.7535***
(1, 10)	-0.0133	-3.5879***	-3.8733***	-3.6878***
(-10, 10)	0.0183	3.4131***	3.6846***	3.5082***
(2, 5)	-0.011	-4.7253***	-5.1012***	-4.857***
(2, 10)	-0.0148	-4.2104***	-4.5454***	-4.3278***

Level of significance:

1.00%        =        \*\*\*  
 5.00%       =        \*\*  
 10.00%      =        \*

## APPENDIX 19

### Cumulative Average Abnormal Returns for the Subsample of Security

**Panel A: Ratings of 1 or 2 (n = 36 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0069	1.6308	2.2014**	1.6619*
(-1,-5)	0.0072	2.4089**	3.2518***	2.4549**
(-1, 1)	0.0032	1.3781	1.8604*	1.4045
(1, 5)	0.0011	0.3716	0.5016	0.3786
(1, 10)	-0.0007	-0.1635	-0.2208	-0.1667
(-10, 10)	0.0023	0.3765	0.5082	0.3836
(2, 5)	-0.0011	-0.4	-0.54	-0.4077
(2, 10)	-0.0029	-0.716	-0.9666	-0.7297

**Panel B: Ratings of 3 to 5 (n = 71 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0265	9.6913***	7.3836***	8.7739***
(-1,-5)	0.0243	12.5566***	9.5666***	11.368***
(-1, 1)	0.0175	11.6988***	8.913***	10.5913***
(1, 5)	-0.0153	-7.9407***	-6.0498***	-7.189***
(1, 10)	-0.0214	-7.8212***	-5.9588***	-7.0808***
(-10, 10)	0.0037	0.9358	0.713	0.8472
(2, 5)	-0.0115	-6.6376***	-5.057***	-6.0092***
(2, 10)	-0.0175	-6.7507***	-5.1236***	-6.1117***

Level of significance:

1.00%        =        \*\*\*  
5.00%        =        \*\*  
10.00%       =        \*

## APPENDIX 20

VALUE LINE RATINGS OF SAFETY AND TIMELINESS FOR THE SAMPLE OF SELL-OFFS WHICH HAVE COMPLETE DATA FOR BOTH MEASURES

		TIMELINESS					Total
		1	2	3	4	5	
SAFETY	1	0	5	2	0	0	7
	2	3	11	9	4	0	27
	3	1	9	20	12	1	43
	4	0	1	7	3	1	12
	5	1	2	1	2	3	9
Total		5	28	39	21	5	98

## APPENDIX 21

### Cumulative Average Abnormal Returns for the Subsample of Financial Rating

**Panel A: Ratings of A- or better (n = 49 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0073	2.7471***	2.2465**	2.3041**
(-1,-5)	0.0175	9.2409***	7.5568***	7.7507***
(-1, 1)	0.02	13.6535***	11.1653***	11.4518***
(1, 5)	-0.0089	-4.7211***	-3.8607***	-3.9597***
(1, 10)	-0.0098	-3.6658***	-2.9977***	-3.0746***
(-10, 10)	0.0008	0.2119	0.1733	0.1777
(2, 5)	-0.0067	-3.9886***	-3.2617***	-3.3454***
(2, 10)	-0.0076	-3.0043***	-2.4568**	-2.5198**

**Panel B: Rating of B+ or Worse (n = 89 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0262	9.3492***	13.4747***	9.4137***
(-1,-5)	0.0228	11.5131***	16.5935***	11.5926***
(-1, 1)	0.0151	9.8816***	14.242***	9.9498***
(1, 5)	-0.0005	-0.2761	-0.3979	-0.278
(1, 10)	-0.0049	-1.7596*	-2.5361**	-1.7718*
(-10, 10)	0.0179	4.4166***	6.3655***	4.4471***
(2, 5)	-0.0034	-1.9003*	-2.7388***	-1.9134*
(2, 10)	-0.0078	-2.942***	-4.2403***	-2.9624***

Level of significance:

1.00%        =     \*\*\*  
5.00%        =     \*\*  
10.00%       =     \*



## APPENDIX 22

### Cumulative Average Abnormal Returns for the Subsample of Relative Size

**Panel A: Under 50% of Common Equity (n = 60 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0102	3.5872***	2.8601***	3.3299***
(-1,-5)	0.01207	5.9883***	4.7746***	5.5588***
(-1, 1)	0.0076	4.8472***	3.8648***	4.4955***
(1, 5)	-0.0121	-6.0007***	-4.7845***	-5.5703***
(1, 10)	-0.011	-3.8441***	-3.065***	-3.5683***
(-10, 10)	-0.0027	-0.6537	-0.5212	-0.6068
(2, 5)	-0.0078	-4.3148***	-3.4432***	-4.0087***
(2, 10)	-0.0066	-2.4583**	-1.96**	-2.2818**

**Panel B: Over 50% of Common Equity (n = 31 firms)**

WINDOW	CAAR	PRE-T	POST-T	PREPOST-T
(-1,-10)	0.0351	6.6342***	5.3172***	6.0698***
(-1,-5)	0.0554	14.7943***	11.8574***	13.5357***
(-1, 1)	0.0571	19.686***	15.7781***	18.0112***
(1, 5)	0.0068	1.8182*	1.4573	1.6635*
(1, 10)	-0.0318	-6.0005***	-4.8094***	-5.4901***
(-10, 10)	0.0079	1.0331	0.0828	0.9452
(2, 5)	0.0048	1.4284	1.1448	1.3069
(2, 10)	-0.0338	-6.7281***	-5.3925***	-6.1557***

Level of significance:

1.00%        =        \*\*\*  
 5.00%       =        \*\*  
 10.00%      =        \*

APPENDIX 23

REGRESSION RESULTS FOR COMPANY-SPECIFIC EXPLANATORY VARIABLES

10% Level of significance = \*      5% Level of significance = \*\*      1% Level of significance = \*\*\*

CAAR FOR (-1, -5)

REGRESSIONS ON INDIVIDUAL VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	98	(0.0016)	0.8922	0.0438	0.0376
Time	98	0.0303	0.0376**		
Intercept	107	0.0072	0.5462	0.0133	0.2338
Safety	107	0.0170	0.2338		
Intercept	138	0.0175	0.0449**	0.0014	0.6559
Rate	138	0.0053	0.6559		
Intercept	91	0.0121	0.1664	0.0652	0.0141
Ratio	91	0.0172	0.0141**		

REGRESSIONS ON GROUPS OF THREE VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	94	(0.0232)	0.2891	0.0555	0.1523
Time	94	0.0229	0.1374		
Safety	94	0.0257	0.1433		
Rate	94	0.0166	0.3043		
Intercept	59	(0.0171)	0.4684	0.1311	0.0474
Time	59	0.0298	0.1635		
Rate	59	0.0137	0.4723		
Ratio	59	0.0579	0.0132**		

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	63	(0.0209)	0.3404	0.1286	0.0450
Time	63	0.0370	0.078*		
Safety	63	0.0092	0.6783		
Ratio	63	0.0442	0.0519*		
Intercept	61	(0.0080)	0.7419	0.1050	0.0857
Safety	61	0.0174	0.4291		
Rate	61	0.0189	0.3380		
Ratio	61	0.0527	0.0276**		

REGRESSIONS ON GROUPS OF TWO VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	98	(0.0099)	0.5048	0.0524	0.0756
Time	98	0.0280	0.0585*		
Safety	98	0.0140	0.3534		
Intercept	94	(0.0012)	0.9392	0.0331	0.2088
Time	94	0.0269	0.0789*		
Rate	94	0.0053	0.7095		
Intercept	63	(0.0159)	0.3807	0.1259	0.0189
Time	63	0.0387	0.0581*		
Ratio	63	0.0471	0.0283**		

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	99	(0.0067)	0.7200	0.0261	0.2700
Safety	99	0.0263	0.1103		
Rate	99	0.0149	0.3368		
Intercept	65	0.0087	0.6166	0.0670	0.1166
Safety	65	0.0085	0.6879		
Ratio	65	0.0416	0.0703*		
Intercept	88	(0.0019)	0.8818	0.1058	0.0077
Rate	88	0.0256	0.1004		
Ratio	88	0.0555	0.0027***		

REGRESSION ON ALL FOUR VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	58	(0.0327)	0.2627	0.1443	0.0684
Time	58	0.0252	0.2504		
Safety	58	0.0219	0.3604		
Rate	58	0.0202	0.3229		
Ratio	58	0.0532	0.0257**		

APPENDIX 24

REGRESSION RESULTS FOR COMPANY-SPECIFIC EXPLANATORY VARIABLES

10% Level of significance = \*      5% Level of significance = \*\*      1% Level of significance = \*\*\*

CAAR FOR (-1, +1)

REGRESSIONS ON INDIVIDUAL VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F	Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	98	(0.0000)	0.9998	0.0437	0.0378	Intercept	98	(0.0094)	0.5022	0.0560	0.0628
Time	98	0.0285	0.0378**			Time	98	0.0258	0.0625*		
Safety	107	0.0032	0.8061	0.0080	0.3585	Safety	98	0.0158	0.2658		
Intercept	107	0.0143	0.3585			Intercept	94	0.0072	0.6322	0.0487	0.0963
Time	138	0.0200	0.0095***	0.0016	0.6430	Time	94	0.0275	0.0585*		
Safety	138	(0.0049)	0.6430			Rate	94	(0.0109)	0.4172		
Intercept	91	0.0076	0.3304	0.1023	0.0019	Intercept	63	(0.0110)	0.5488	0.1088	0.0334
Time	91	0.0495	0.0019***			Time	63	0.0302	0.1399		
Safety						Ratio	63	0.0481	0.0263**		
Rate						Intercept	99	0.0086	0.6281	0.0266	0.2628
Ratio						Safety	99	0.0188	0.2225		
						Rate	99	(0.0057)	0.6942		
						Intercept	65	0.0024	0.8880	0.0849	0.0640
						Safety	65	0.0114	0.5822		
						Ratio	65	0.0450	0.0452**		
						Intercept	88	0.0031	0.7866	0.1113	0.0059
						Time	88	0.0076	0.5955		
						Rate	88	0.0543	0.0015***		
						Ratio					

2 TOGETHER

REGRESSIONS ON GROUPS OF THREE VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	94	(0.0042)	0.8396	0.0554	0.1532
Time	94	0.0254	0.0853*		
Safety	94	0.0134	0.4213		
Rate	94	(0.0050)	0.7412		
Intercept	59	(0.0110)	0.6497	0.1118	0.0821
Time	59	0.0292	0.1860		
Rate	59	0.0008	0.9694		
Ratio	59	0.0513	0.0321**		
Intercept	63	(0.0131)	0.5525	0.1093	0.0795
Time	63	0.0295	0.1620		
Safety	63	0.0040	0.8583		
Ratio	63	0.0469	0.0414**		
Intercept	61	0.0020	0.9346	0.0935	0.1197
Safety	61	0.0118	0.5975		
Rate	61	0.0004	0.9636		
Ratio	61	0.0490	0.0422**		

REGRESSION ON ALL FOUR VARIABLES

Variable	# of firms	Coefficient	Prob > T	R square	Prob > F
Intercept	58	(0.0144)	0.6346	0.1124	0.1541
Time	58	0.0282	0.2171		
Safety	58	0.0047	0.8501		
Rate	58	0.0021	0.9194		
Ratio	58	0.0503	0.0418**		