Intra-Industry Effects of Corrective Disclosures: Is Mistrust Contagious?

By Ido Gonen

I Introduction

According to estimates[1], earnings restatements that took place between January 1997 and June 2002 caused at least $100 billion erosion in shareholders' value. The number of earnings restatements increased dramatically in the past few years, and this trend is expected to continue. Wu (2002) reports 220 restatements between 1994- 1997, and 616 between 1998- 2001. The increasing number and the magnitude of earnings restatements cause significant concerns among investors, as well as among litigators. In a Senate floor statement Senator Paul S. Sarbanes addressed the issue[2]: "It is becoming increasingly clear that something has gone wrong, seriously wrong, with respect to our capital markets. We confront an increasing crisis of confidence that is eroding the public's trust in those markets. I frankly believe that, if it continues, this erosion of trust poses a real threat to our economic health. Let me begin with one of the most obvious symptoms of this problem: the extraordinary increase in restatements of corporate earnings."

Restating financial data often results in adverse consequences for the restating firm. The information revealed may dramatically change the profile of the firm in the eyes of investors, and indeed a number of studies report significant negative abnormal stock reaction to the announcement of earnings restatements. In addition, restating firms can be faced with costly litigation expenses as they are sued for falsifying their statements and misleading their shareholders, and with the loss of investors' confidence, which may affect their stock prices long after the actual restatement.

The information revealed in a variety of corporate announcements has been shown to trigger abnormal returns not only for the announcing firm, but also for industry

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[1] Matt Krantz in USA Today (10/24/2002) sites a study by the US General Accounting Office
2 Senator Sarbanes initiated the public company accounting reform and investor protection act of 2002. The speech was given in front of the president on July 8th, 2002.

rival firms. An abnormal movement in the stock price of non-announcing firms which is in the same direction as the movement in the stock price of the announcing firm is usually referred to as a 'contagion effect', while a price movement in the opposite direction is called a 'competitive effect'. The contagion effect is usually explained by the fact that the information revealed by a firm contains previously unavailable information on the firm's industry as a whole, thus eliciting the same direction price movement. The existence of a competitive effect can be explained by the fact that the information revealed is firm specific but investors believe that rival firms stand to loose ground or gain, depending upon whether the announcing firm has revealed favorable or unfavorable news. The effect of an announcement on competitors can be viewed as the sum of the contagion and competitive effects.

Announcements of reduced earning restatements can be viewed as firm specific, revealing the truth about the firm's financials, weakening its ability to compete and exposing it to liability charges. If, however, earnings restatements are a symptom of a wider problem, either a crisis of confidence in the industry or an industry wide fundamental problem, there may also be a negative reaction in competitors' stock prices. The negative reaction might be particularly large for restatements which are viewed as conveying fraudulent behavior, i.e., when there is potential for a class action lawsuit.

In this paper, we examine whether the information conveyed by corrective disclosures transfers to other firms within the same industry, thereby eliciting abnormal price movements in industry-wide stock prices. We specifically choose restatements that later led to a lawsuit to ensure the significance of the event. To test this "contagion hypothesis", we measure abnormal returns on industry portfolios around the day of the

announcement, and perform a multivariate regression in order to identify some of the factors that explain the magnitude of the portfolios abnormal return.

Our results indicate that, in the case of allegedly fraudulent restatements, there is, on average, a significant negative abnormal return for industry rivals of the announcing firm around the announcement day. This result may indicate that the confidence in the industry is harmed due to the suspicion of fraudulent behavior in the announcing firm. We find that the magnitude of the abnormal return can partially be explained by the magnitude of the consequences of the announcement – represented by the size of the settlement fund agreed upon by the court, and by the number of firms in the industry portfolio. Also, we find that the magnitude of the negative abnormal returns declines as a function of time, indicating that similar restatements affect industry rivals less in later years. This is a particularly interesting finding. It may be that as investors get used to more earnings restatements, the expectations for additional revelations are factored into stock prices, thus making an actual announcement less of a shock. Last, we find that in cases in which the announcing firm is less dominant in its industry, and the industry is not concentrated, the contagion effect is smaller than in other cases.

II Prior Research

II.1 **Earnings Restatements**

Prior research on earnings restatements is limited (Palmrose et al, 2002). In recent years, however, probably due to the growing number of restatements and their magnitude, and the rising concerns around them, the body of literature was enriched by several papers. Most papers find earnings restatements to be a costly event for the restating firm. A negative stock price reaction on or around the announcement day is

reported, for example, by Palmrose, Richardson and Scholz (2002), who find a mean decline of 9.2% over a two day window, and by Richardson et al. (2002), who record an 11% decline over a three day period. In addition, restating firms are more likely to be subject to costly class action suits (Jones and Weingram, 1997).

A significant portion of the restatement literature is related to fraud and class action lawsuits. This is understandable, since restatements that lead to litigation are usually the ones that have a bigger impact on shareholders' value. When a restatement of earnings does lead to litigation, the market's reaction is harsher. Ferris and Pritchard (2001) report a negative reaction on the order of 25% over a three-day period surrounding the revelation of restatements that led to class action suits, and Francis et al. (1994) similarly find a 17.2% decline on the announcement day. These results, however, are not surprising. It is reasonable to assume that the cause for the later litigation is the magnitude of the negative stock reaction, implying that these results may be due to reverse causation. Griffin et al. (2000) find a smaller, but still significant, negative reaction to the announcement that the restating firm is subject to a class action lawsuit, and a negative drift between the two announcements.

II.2 Contagion Effect and Competitive Effect

The existence of a 'contagion effect' has been well documented around a variety of corporate events such as bankruptcy announcements (Lang and Stulz, 1992); dividend announcements (Laux, Starks and Yoon, 1998); earnings releases (Foster, 1981), and stock split announcements (Tawatnuntachai and D'Mello, 2002). The common explanation for contagion effect is that homogeneity of firms within an industry causes

the market to revise the value of non-announcing firms in the same direction as the announcing firm's stock movement[3].

The 'competitive effect' has also been found in relation to several corporate events. Depending on the degree of industry concentration and on leverage, Lang and Stulz (1992) found evidence of abnormal positive returns for rival industry firms in the case of bankruptcy announcements. They argue that new information released by a company may cause investors to re-evaluate the competitive landscape of the industry.

III Sample and Data Selection

A proprietary database of settlements in class action suit cases is the source for the earnings restatement cases. The cases had to satisfy three criteria: the lawsuit was a result of an earnings restatement; the database has complete filings of the class action suit; and CRSP has the stock price for the filing firm. My final data consists of 34 cases of earnings restatements which led to class action suits that were settled between1996 – 2001. Using the class action settlements database insures that each of the earnings restatements was significant enough to elicit a class action lawsuit. The reason for the focus on these cases is twofold: the first reason is that, presumably[4], only a significant firm specific event will potentially have an industry wide effect. The second reason for using the settlements database is that it raises the issue of whether mistrust in disclosure practices is contagious.

Consistent with prior research, I find a significant mean abnormal return of -17.75% on the announcement day, -11.55% on the day following the announcement, and -33.51% over a five-day window (days -2 to 2). The existence of a large negative

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[3] See, for instance, Szewczyk (1992).
[4] See, for instance, Lang and Stulz (1992).

abnormal return on the day following the announcement can be explained by the fact that in some cases the announcement is made at the end of the trading day, in which case the market's reaction will be delayed until the next business day. In some cases, after an earnings restatement announcement is made, trading is suspended in the announcing firm's stock, sometimes for more then a day. Since the focus of this paper is the industry portfolios' reaction to the announcements rather than to the movement of the announcing firm's stock, we include all cases in our research. Table 1 summarizes the characteristics of the restatement announcement events used in this study.

For each case, industry portfolios are constructed from all firms with the same six-digit NAICS code that are listed in Compustat and have stock prices in CRSP. In 1997, The North American Industry Classification System (NAICS) has replaced the U.S. Standard Industrial Classification (SIC) system as the major system of classifying industries. According to the U.S Census Bureau, it responds to increasing and serious criticism about the former SIC system, and better reflects the structure of today's economy in the United States. The 34 cases represent only 25 different NAICS classifications, since 9 of the cases occurred within the same industry, and 2 cases occurred in another industry. Returns on announcing firm securities, industry portfolios and market portfolios were collected from CRSP.

Table 1: Announcing firms' abnormal returns around announcement day *(data in percentage, a bold figure indicates statistical significance at the 0.05% level, a star (*) indicates no return for the stock, usually the result of trading halt).*

Case	Ticker	Restatement date	Abnormal Return					Cumulative
			-2	-1	0	1	2	
ADAC Laboratories	ADAC	1-Mar-99	2.63	1.73	**-20.36**	**-9.57**	-2.8	-26.91
BT Office Products	BTF	28-Mar-96	-1.22	-1.02	-1.41	**-26.37**	**-6.55**	-33.67
Centennial Technologies, Inc.	CENL	11-Feb-97	**-8.84**	**-12.17**	*	*	*	-19.93
CHS Electronics	CHSEHS	22-Mar-99	**-17.43**	3.32	**-33.5**	3.53	-1.74	-42.29
Craig Consumer Electronics	CREG	10-Mar-97	0.35	-0.09	**-26**	0.45	**-26.55**	-45.26
Datastream Systems	DSTM	20-Oct-98	-2.34	0.09	-1.57	**-31.62**	0.07	-34.16
Del Global Technologies	DGTC	6-Nov-00	-0.76	-1.01	0.67	*	*	-1.10
Dollar General Corporation	DG	30-Apr-01	-1.03	4.13	**-31.67**	**-5.28**	-1.88	-34.55
Donnkenny, Inc.	DNKY	7-Nov-96	-2.84	-1.76	**-29.34**	**11.01**	-0.16	-25.25
Health Management, Inc	HMIS	27-Feb-96	**-34.39**	**-15.38**	**-45.46**	**8.61**	-0.59	-67.31
Identix, Inc.	IDX	26-Aug-96	0.68	-4.99	5.64	**-6.95**	-0.52	-6.46
Indus International	IINT	27-Jan-00	-2.39	2.82	4.75	**-19.8**	0.38	-15.37
Informix Corp.	IFMX	1-Apr-97	1.58	2.92	**-32.53**	-6.38	0.12	-33.88
Insignia Solutions	INSGY	27-Feb-97	1.31	-1.72	**-33.6**	4.49	-6.55	-35.44
Inso Corporation	INSO	1-Feb-99	-0.89	-1.84	**-62.26**	**-13.48**	6.85	-66.06
Mercury Finance	MFN	29-Jan-97	-1.84	-1.9	1.93	-0.166	**-32.328**	-33.69
Micro Warehouse, Inc.	MWHS	30-Sep-96	0.97	-2.08	**-18.65**	**-7.83**	-3.04	-28.12
Motorcar Parts & Accessories,	MPAA	1-Aug-99	-3.13	-1.81	*	*	*	-4.88
Network Associates, Inc.	NETA	6-Apr-99	-0.08	-4.43	**-24.74**	**-27.08**	**-8.68**	-52.14
Network Computing Devices, In	NCDI	31-Jan-96	1.04	4.08	-3.52	**-18.7**	-2.88	-19.89
Nuko Information Systems	NUKO	21-May-97	1.34	-7.94	**-32.53**	-5.21	-3.28	-42.29
Pegasystems I	PEGA	29-Oct-97	4.41	4.64	-3.69	**-30.5**	-3.38	-29.34
Peoplesoft, Inc	PSFT	28-Jan-99	0.82	-5.3	-1.5	**-12.9**	-4.91	-22.11
Pepsi-Cola P.R. Bottling Co.	PPO	12-Aug-96	-1.73	**-7.52**	**-18.39**	**-6.67**	**10.88**	-23.25
Photran Corporation	PTRN	5-May-97	-8.6	-1.12	6.22	-6.28	**-13.56**	-22.23
Raster Graphics	RGFX	3-Feb-98	-0.19	0.59	-1.36	**-43.21**	13.6	-36.11
Rite Aid Corporation	RAD	12-Mar-99	**-4.01**	-3.03	**-39.03**	**8.92**	0.61	-37.81
SCB Computer Technology, Inc.	SCBI	14-Apr-00	-5	-2.61	0.93	*	*	-6.62
Southwall Technologies	SWTX	6-Aug-00	-1.1	-6.87	-9.18	*	*	-16.35
Sybase	SYBS	21-Jan-98	-3.68	3.55	3.53	**-18.47**	-1.03	-16.68
Unify Corporation	UNFY	21-Jul-99	-3.72	-4.3	*	*	*	-7.86
Unison Healthcare Corporation	UNHC	11-Mar-97	-1.78	-1.78	**-45.48**	**-13.28**	**-6.85**	-57.51
Vesta Insurance Group, Inc.	VTA	1-Jun-98	0.19	0.06	*	**-46.32**	2.89	-44.63
Vista 2000, Inc.	VIST	8-Apr-96	5.19	**-28.01**	**-40.45**	-4.34	**-10.41**	-61.35
Average			**-2.54**	**-2.67**	**-17.75**	**-11.55**	**-3.6531**	**-33.51**

IV Hypothesis and Methodology

IV.1 **Event Study**

Research has shown that some firm specific events elicit abnormal price movements not only in the stock of the firm itself, but also in the price of its industry peers. In order to investigate whether this is the case when firms announce earnings restatements, we confirm, first, that announcing firms experience negative abnormal returns around the day of the announcement. That is a prerequisite for any contagion effect, but in the case of our sample it was almost redundant, since it is unlikely that our sample firms would have been sued unless they had experienced significant negative returns in their stock prices.

Next, we compute the abnormal returns for the industry portfolios around the event day, after removing the announcing firm from the portfolio. Since we expect the contagion effect to be greater than any competitive effect there might be, the overall effect on the industry portfolios should be negative. Our hypothesis, thus, is:

H1: the return of the industry portfolio around the announcement day is abnormally negative.

Betas and Alphas for firms and portfolios are estimated in a standard OLS regression against the CRSP equally weighted portfolio (a proxy for the market portfolio), using 255 daily returns, ending 35 days prior to the event day. Firms that have less then 14 useable daily returns are dropped from the sample. Abnormal returns are then estimated according to standard market adjusted method: The abnormal return on a given day t, for security or portfolio j, is calculated in the following way:

$$A_{jt} = R_{jt} - (\hat{\alpha}_j + \hat{\beta}_j * R_{mt})$$

The average abnormal return is the sample mean:

$$AAR_t = \frac{\sum_{j=1}^{N} A_{jt}}{N},$$

where t is defined as trading days relative to the event day.

The time series standard deviation method, which calculates a single variance estimate for the entire portfolio, is used to compute the test statistic. The estimated variance of AAR is:

$$\hat{\sigma}^2_{AAR} = \frac{\sum_{t=T_{D_b}}^{T_{D_e}} \left(AAR_t - \overline{AAR} \right)^2}{D-2},$$

Where the market model parameters have been estimated over the estimation period of

$$D = T_{D_e} - T_{D_b} + 1 \text{ days, and}$$

$$\overline{AAR} = \frac{\sum_{t=T_{D_b}}^{T_{D_e}} AAR_t}{D}$$

The portfolio test statistic for day t in event time is

$$t = \frac{AAR_t}{\hat{\sigma}_{AAR}}$$

IV.2 Abnormal Returns and Industry and Firm Characteristics

To assess industry and firm specific factors that influence the magnitude of industry portfolios' abnormal return, we divide our sample according to the following variables:

1) Settlement Fund (log fund): We use the log of the settlement fund as a proxy for the estimated damage inflicted by the earnings restatement to the announcing firm's shareholders. According to Simmons (2002), the estimate of plaintiff-style

damages is the single most powerful predictor of settlement value. Estimate of damages, presumably, should be correlated with the magnitude of the industry portfolios' abnormal returns. According to Lang and Stulz (1992), in cases of bankruptcies the total value lost by the industry rivals is highly correlated to the value lost by the bankrupt firm. We expect higher settlement funds to be correlated with higher negative returns for the industry portfolios.

2) HHI: the Herfindahl-Hirschman index is an accepted measure of industry concentration level. We calculate HHI by summing the squared market share, approximated by market capitalization, of all portfolio firms. The degree of concentration is higher for industries with higher HHI. Tawathuntachai and D'Mello (2002) find the intra-industry contagion effect in cases of stock split announcements to be smaller for industries with higher HHI. Lang and Stulz (1992) argue that in highly concentrated industries the competition between firms is more intense, and thus the competitive effect is more dominant than the contagion effect. Accordingly, we expect lower HHI to be correlated with lower abnormal returns for the industry portfolio.

3) Dominance of announcing firm (% market cap): we use the size of the announcing firm, in terms of market capitalization, and as a percent of the total market capitalization of the industry portfolio, as a proxy for its dominance its industry. An announcement from a more dominant firm that implies irregularities in the accounting standards may arguably signal to investors that the accounting practices of the industry are flawed. We expect firms which constitute a higher percentage of the industry to have more influence over the industry portfolio.

We perform a series of weighted least squares regressions to further analyze the effect of the factors which determine the magnitude of the industry portfolios' abnormal returns. The dependent variable is the cumulative abnormal return on a portfolio over a three day period (days -1, 0, and 1), while the independent variables, in addition to the factors mentioned above, are the logged number of firms in a portfolio and the date.

The number of firms is a control variable that ensures the same treatment for different portfolios. It is likely that larger portfolios will experience smaller returns, albeit as significant, than smaller portfolios. The 'number of firms' variable is logged, to cap the influence of very large portfolios. We expect higher negative abnormal returns to be correlated with a smaller number of firms in a portfolio.

For the date variable, we list the announcement days on a time scale, where the first event is 1, and the number generated for each subsequent event is the number of days that elapsed since the first event. As earnings restatements become more prevalent, we expect their impact on industry portfolios (and on the market as a whole) to decrease in magnitude, since supposedly investors factor into their valuations the increased risk of fraud or accounting irregularities. This trend was demonstrated in October 2002, when shares of AOL Time Warner, Bristol-Myers Squibb and Tyco rose after earnings were restated. We expect, thus, to find the magnitude of abnormal returns for industry rivals smaller as time passes.

Following Lang and Stulz (1992) we use weights equal to reciprocal of the standard deviation of the market model residual for the industry portfolios. Weighting by residual standard deviation of portfolio returns means we are down-weighting portfolios that have higher percentage variability. That helps to eliminate the non-constant variance we encounter when dealing with portfolios of different sizes and different variances.

V Empirical Results

V.1 **Event Study**

We find a highly significant (at the 0.1% level) abnormal negative return for the industry of -0.75% (t = -3.226) on the day of the restatement, and of -0.79% (t = -3.418) on the following day. Figure 1 portrays daily average abnormal returns on the 11day window surrounding the announcement, and table 2 summarizes the daily average results. The cumulative abnormal return for those two days is -1.54% (t = -4.698), while the cumulative abnormal return for the three-day window (day -1 to 1) is -1.74% (t = -4.335). The cumulative mean abnormal returns for the 11day window are shown in figure 2. Twenty-eight of the 34 portfolios experience a negative return on the day of the announcement (a generalized sign Z test proves this to be statistically significant (z = -3.877)), and 25 experience a negative cumulative return on the 3 day window consisting of days -1, 0 and 1 (z = -2.848). In 12 portfolios, the negative abnormal return is statistically significant on day 0, the 2 day window (0 and 1) and/or the 3 day window (-1, 0, 1). The results are summarized in tables 2 and 3, and shown graphically in figures 1 and 2.

Table 2: Industry portfolios' mean abnormal returns around announcement day *(the generalized sign Z tests the significance of the difference between positive and negative returns on a certain day).*

Market Model, Equally Weighted Index

Day	N	Mean Return	Positive/ Negative	t	Generalized Sign Z
-10	34	0.16%	14:20	0.685	-1.133
-9	34	0.24%	15:19	1.054	-0.790
-8	34	0.12%	14:20	0.518	-1.133
-7	34	-0.05%	20:14	-0.232	0.926
-6	34	-0.30%	14:20	-1.282	-1.133
-5	34	-0.12%	16:18	-0.523	-0.447
-4	34	0.40%	18:16	1.709*	0.240
-3	34	-0.34%	18:16	-1.460$	0.240
-2	34	0.35%	17:17	1.503$	-0.104
-1	34	-0.20%	17:17	-0.864	-0.104
0	34	-0.75%	6:28	-3.226***	-3.877***
+1	34	-0.79%	11:23	-3.418***	-2.162*
+2	34	-0.14%	17:17	-0.614	-0.104
+3	34	-0.02%	17:17	-0.065	-0.104
+4	34	-0.03%	19:15	-0.119	0.583
+5	34	0.35%	16:18	1.513$	-0.447
+6	34	-0.22%	11:23	-0.953	-2.162*
+7	34	0.00%	17:17	0.003	-0.104
+8	34	0.44%	24:10	1.893*	2.298*
+9	34	0.02%	17:17	0.078	-0.104
+10	34	0.11%	18:16	0.470	0.240

The symbols $,*,**, and *** denote statistical significance at the 10%, 5%, 1% and 0.1% levels, respectively, using a 1-tail test.

Figure 1: Mean daily industry portfolios' abnormal returns around announcement day *(data in percentage, 0 is announcement day).*
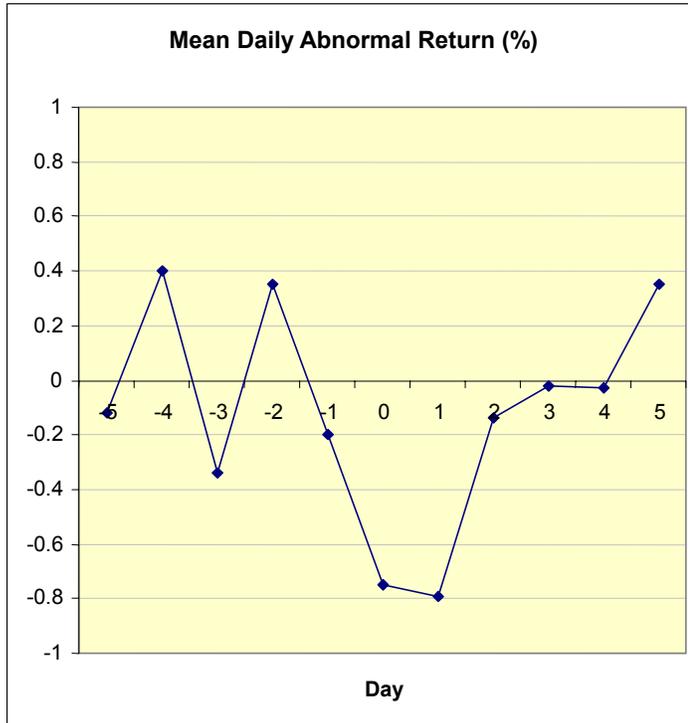

Figure 2: Mean daily industry portfolios' abnormal returns around announcement day *(data in percentage, 0 is announcement day).*
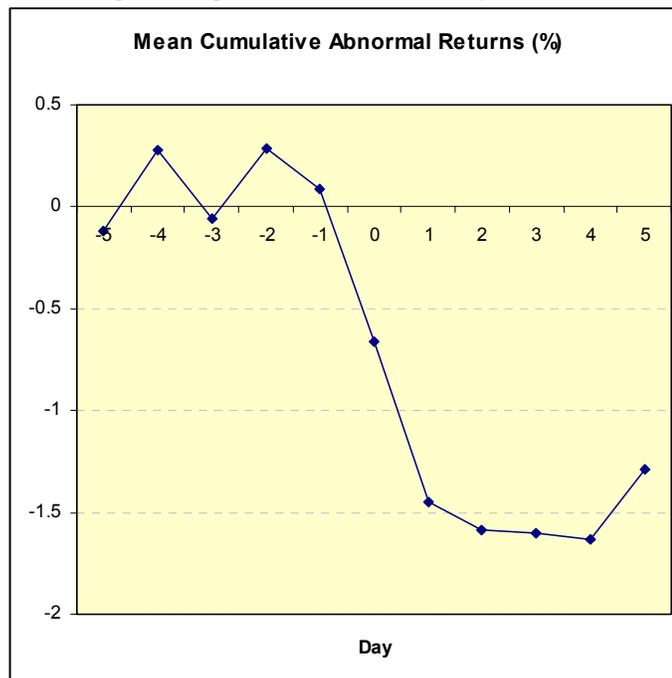
Table 3: Industry portfolios' mean abnormal returns around announcement day *(the generalized sign Z tests the significance of the difference between positive and negative returns on a certain day).*

Case	No. Firms	Abnormal Return					Cum 0,1	Cum -1, 0, 1
		-2	-1	0	1	2		
ADAC LABORATORIES	13	1.53	0.23	-1.52	0.98	1.17	-0.54	-0.32
B T OFFICE PRODUCTS INTL	6	-1.3	-1.3	-0.01	-0.75	-1.5	-0.76	-2.07
C H S ELECTRONICS	27	-1.44	-1.49	-1.31	0.95	0.5	-0.36	-1.85
CENTENNIAL	57	0.03	-1.1	-3.19	-0.32	-0.9	**-3.51**	**-4.61**
CRAIG CONSUMER ELECTR	23	-0.78	-0.71	-0.45	0.07	-0.061	-0.38	-1.09
DATASTREAM SYSTEMS INC	281	0.9	-0.25	-0.33	0.46	0.12	0.13	-0.12
DEL GLOBAL TECHNOLOGIES CORP	10	-0.41	2.02	-0.11	-0.84	1.84	-0.95	1.06
DOLLAR GENERAL CORP	16	2.06	0.13	-0.45	0.78	1.2	0.33	0.46
DONNKENNY INC	4	-3.38	-0.96	0.99	-2.05	-1.46	-1.06	-2.01
HEALTH MANAGEMENT INC DEL	19	-0.55	-0.57	0.65	-0.42	-1.74	0.23	-0.034
IDENTIX INC	105	-0.28	-1.31	-0.38	0.03	0.55	-0.446	**-1.566**
INDUS INTERNATIONAL	324	0.55	-0.75	-0.27	-1.81	-1.89	**-2.11**	**-2.87**
INFORMIX CORP	286	0.71	0.91	-0.45	-0.35	-0.04	-0.78	0.14
INSIGNIA SOLUTIONS PLC	5	-0.99	0.02	-1.18	-2.99	-1.49	-4.16	-4.14
INSO CORP	279	-0.18	-1.42	0.04	-0.89	1.63	-0.85	**-2.195**
Mercury Finance	24	1.16	-1.04	-2.8	-6.44	0.55	**-9.24**	**-10.28**
MICRO WAREHOUSE INC	30	-0.36	0.46	-0.96	0.15	-0.3	-0.53	-0.17
MOTORCAR PARTS & ACCESSORIES	5	0.19	3.02	-2.05	0.04	0.04	-2	1.01
NETWORK COMPUTING DEVICES	7	-0.62	-2.78	0.38	-1.33	0.43	-0.9	**-3.69**
NETWORKS ASSOCIATES	284	6.53	3.34	-4.05	-3.8	-1.97	**-7.85**	-4.52
NUKO INFORMATION SYSTEMS	76	-0.19	0.26	-0.18	0.05	-0.22	-0.12	0.13
PEGASYSTEMS INC	300	2.02	1.29	-0.24	-0.05	-0.23	-0.3	1.02
PEOPLESOFT INC	278	0.14	-0.18	-1.37	0.06	-0.9	**-1.31**	**-1.49**
PEPSI COLA P R BOTTLING CO	10	-0.2	-2.72	-1.68	-1.08	0.86	**-2.76**	**-5.53**
PHOTRAN CORP	3	2.4	-5.02	-0.5	-2.86	0.57	-3.36	**-8.38**
RASTER GRAPHICS INC	55	-0.36	0.28	-0.61	-0.35	-0.28	-1.037	-0.596
RITE AID CORP	12	-0.84	0.95	-2.63	-4.43	0.65	**-7.06**	**-6.1**
S C B COMPUTER TECHNOLOGY	30	1.63	0.92	0.32	1.49	-1.36	1.81	**2.73**
SOUTHWALL TECHNOLOGIES	5	0.22	0.37	-0.62	-1.06	0.47	-1.68	-1.31
SYBASE INC	297	-1.14	0.22	-0.16	0.71	-0.1	0.5	0.72
UNIFY CORP	341	0.14	-0.75	-1.09	-0.17	0.61	-1.18	-1.99
UNISON HEALTHCARE CORP	17	-0.62	1.23	1.3	-0.06	0.01	1.24	2.47
VESTA INSURANCE GROUP	105	0.49	0.27	-0.37	-0.07	-0.09	-0.45	-0.18
VISTA	2	4.22	-0.1	-0.25	-0.66	-1.1	-0.91	-1.02
Average	98.12	0.33	-0.19	**-0.75**	**-0.79**	-0.13	**-1.54**	**-1.72**

V.2 Abnormal Returns and Industry and Firm Characteristics

We find industry portfolios' abnormal return to be more negative for announcements that result in large settlement funds. The average abnormal return for the subsample of 'large fund' is -2.38%, which is significantly larger in absolute value than the average for 'small fund' sub sample, which is -0.86 (T = -1.77, p = 0.085).

The average abnormal return for industries in which the announcing firm constitutes a large percentage of the market share is more negative than for other firms (-2.49% as opposed to -1.15%), but this difference is not statistically significant.

We find no significant difference between abnormal returns when dividing the sample by small and large HHI values.

We find a significant interaction effect for two smaller sub samples: the average abnormal returns for a sub sample that consists of cases with 'low percentage market cap' and 'low HHI' is -0.27%, while the average for the rest of the sample is -2.43% (T = 2.51, p = 0.017). The average for a sub sample that consists of cases with 'low percentage' and 'low fund" is -2.27%, while the average for the rest of the sample is -0.56% (T = 1.92, p = 0.064).

These results are summarized in table 5.

Table 5: Industry portfolios' mean abnormal returns for different subsamples around announcement day *(cumulative return on days -1, 0, 1)*

Industry and Firm Characteristics	Average abnormal returns for subsample	Average abnormal returns for rest of sample	T statistic of two sample T test	p value
Settlement fund above mean	-2.38%	-0.86%	-1.77	0.085
Firm dominance (% market share of portfolio) above median	-2.21%	-1.12%	-1.25	0.221
Fund high, dominance high	-2.27%	-0.56%	1.92	0.064
Dominance low, HHI low	-2.43%	-0.27%	2.51	0.017

A weighted least squares regression analysis containing all variables shows two of the variables as significant. The adjusted R-Sq of the regression is 14.3%, and the model has statistical significance (p = 0.095, F = 2.1). Figure 3 shows the regression output.

According to the model, portfolio returns will be more negative the larger the settlement fund size is (p = 0.054, T = -2.01). Since the size of the fund is highly correlated with the estimated dollar loss to shareholders, it is safe to assume that the portfolio loss is affected by the value loss of the restating firm. The result is consistent with the finding by Lang and Stulz (1992), who studied contagion effect in cases of bankruptcy announcement. They found the dollar loss of the bankrupt firm to be roughly equivalent on average to the dollar loss of the industry portfolio.

The second statistically significant variable is the date variable (p = 0.017, t = -2.55). The coefficient for the date variable is positive, which means that a later date is associated with a smaller abnormal negative return for a portfolio. The result implies that as the occurrence of restatement announcements becomes more frequent, the effect of each of them on its respective industry portfolio becomes smaller. The remaining variables - number of firms in a portfolio, HHI scores of the industry and dominance level of the announcing firm - are not statistically significant.

We get a more robust model when we incorporate a dummy variable which distinguishes between the subsample of cases where the HHI score and the dominance of the announcing firm are both low (see figure 4 for regression results). The fund and date variables have the same signs as they had in the previous models; the sign for the new dummy variable is positive, confirming that the abnormal return is less negative for less dominant firms in industries that are not concentrated.

Figure 3: Weighted Least Squares Regression Analysis *(dependent variable is cumulative abnormal returns on industry portfolios. Independent variables are fund size of the class action suit settlement, date, number of firms in the portfolio (logged), percentage of market capitalization of the announcing firm, and the Herfindahl-Hirschmanindex score of the industry. The weights are the residual standard deviations of industry portfolios during estimation period).*

```
Weighted analysis using weights in Stdev

The regression equation is
Portfolio -1,0 1 = 0.86 + 0.00188 Date - 0.94 log HHI - 0.0176 %marketcap
           - 0.0191 Fund - 0.257 log firms

Predictor         Coef      SE Coef          T         P
Constant         0.864        7.853        0.11     0.913
Date         0.0018822    0.0007384        2.55     0.017
log HHI         -0.943        2.156       -0.44     0.665
%marketc       -0.01757      0.05006       -0.35     0.728
Fund          -0.019111     0.009508       -2.01     0.054
log firm       -0.2573       0.7064        -0.36     0.718

S = 2.670       R-Sq = 27.3%      R-Sq(adj) = 14.3%

Analysis of Variance

Source             DF           SS           MS          F         P
Regression          5       74.838       14.968       2.10     0.095
Residual Error     28      199.535        7.126
Total              33      274.373
```

Figure 4: Weighted Least Squares Regression Analysis *(dependent variable is cumulative abnormal returns on industry portfolios. Independent variables are fund size of the class action suit settlement, date, and a 1/0 variable that distinguishes between a subsample of cases in which the HHI scores and the dominance of the announcing firm are both low, and the rest of the sample. The weights are the residual standard deviations of industry portfolios during estimation period).*

```
Weighted analysis using weights in Stdev

The regression equation is
Portfolio -1,0 1 = - 3.29 + 1.98 small HHI small % + 0.00186 Date - 0.0176 Fund

Predictor         Coef      SE Coef          T         P
Constant       -3.2878       0.6333       -5.19     0.000
small hh        1.9809       0.8871        2.23     0.033
Date         0.0018553    0.0006429        2.89     0.007
Fund          -0.017620     0.008191       -2.15     0.040

S = 2.400       R-Sq = 37.0%      R-Sq(adj) = 30.7%

Analysis of Variance

Source             DF           SS           MS          F         P
Regression          3      101.558       33.853       5.88     0.003
Residual Error     30      172.815        5.760
Total              33      274.373
```

VI Summary and Conclusion

We provide empirical evidence of intra-industry information transfer in cases of earnings restatements. On average, industry peers of announcing firms experience significant negative abnormal returns around the announcement day. The sample used, however, consists of cases in which the announcing firm was later sued, and settled the claim. This implies that a contagion effect occurs in earnings restatement cases which are significant enough to elicit a law suit. Further research is needed to determine whether other earnings restatements also cause a contagion effect.

Our analysis of industry and firm characteristics shows that the dollar loss to the announcing firm's shareholders, represented by the size of the settlement fund, has an important contribution to the contagion effect. We further find that for the period of our sample, the contagion effect became smaller with time, indicating that such events become less surprising. Finally, the contagion effect is smaller when the industry concentration level is small and the announcing firm constitutes a smaller percentage of the industry.

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