Stock Price Reactions to Regional *Wall Street Journal* Securities Recommendations

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This paper examines the impact of articles in regional Wall Street Journal *publications on stock prices. These regional publications include* Texas Journal, Florida Journal, Southeast Journal, Wall Street Journal/California, *and* New England Journal *Results indicate that articles in regional publications have a statistically significant impact on stock prices on the day of publication. We observe significant abnormal returns for both single-company and multi-company articles The abnormal return is smaller for multi-company articles than for single-company articles*

Introduction

Numerous studies have investigated the stock price reaction to secondary information disseminated through national newspapers and magazines, but little has been done on stock price reaction to regional publications. Information from the *Wall Street Journal* (WSJ) has been used for a number of secondary information dissemination studies. One of the first was Lloyd-Davies and Canes (1978). They find a statistically significant stock price reaction on the publication date of the *Wall Street Journal's* "Heard on the Street" (HOTS) column.

More recent papers also have used HOTS articles as the basis for event studies. Liu, Smith, and Syed (1990) examine stock price reaction to HOTS articles from 1982-1985, and they find that prices have a statistically significant reaction on the two days prior to publication and on the publication date. Liu, Smith, and Syed (1992) also show that there are abnormal returns associated with HOTS articles both prior to and after an insider trading scandal. Similarly, Beneish (1991) finds significant abnormal returns on the publication date for buy and sell recommendations in HOTS articles from 1978 and 1979. Beneish's study also finds abnormal returns on the two days prior to and one day after the publication date.

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Bauman, Datta, and Iskandar-Datta (1995) find abnormal returns associated with the two days prior to the publication date and with the publication date of HOTS articles from 1987 (pre-Crash and post-Crash).

All of these studies used HOTS articles as the basis for event studies because HOTS is considered an important and potentially valuable source for dissemination of secondary information to the public. Just how potentially valuable the information can be is evident in the fact that the Securities and Exchange Commission (SEC) filed charges against an author of HOTS in 1984 for illegally disclosing information about forthcoming columns to stock traders. Conviction in a lower court was appealed to the Supreme Court where the conviction was upheld in 1987. Syed, Liu, and Smith (1989) look specifically at the HOTS stocks involved in the case. They find an abnormal return of 6.25 percent between days $t = -2$ and $t = 0$, and they speculate that even greater profits could be made by trading stock options on the information. This suggests that stock market participants and observers believe that secondary information can be valuable.

To see if the market reacts similarly to articles from other secondary sources of information, Mathur and Waheed (1995) look at stock price reaction to the "Inside Wall Street" (IWS) columns from 1981-1989 in *Business Week* magazine. The results of their study are consistent with the HOTS articles studies. They find significant abnormal returns for one day prior to and two days after publication, as well as on the publication date.

There are other secondary sources of information. Some of these include regional publications associated with the WSJ. The *Texas Journal* (TJ), *Florida Journal* (FJ), *Southeast Journal* (SJ), *Wall Street Journal/California* (WSJC), and *New England Journal* (NEJ) are all published every Wednesday in that region's version of the WSJ.[1] These regional publications discuss economic issues and companies that are relevant to that region of the country. Each publication also includes a "Heard in (the region)"column that is modeled after HOTS. These columns are called "Heard in Texas" (HIT), "Heard in Florida" (HIF), "Heard in the Southeast" (HISE), "Heard in California" (HIC), and "Heard in New England" (HINE). In this paper, these articles as a group are referred to as HI. HI usually makes a recommendation about a company (or companies) that is located in that region. The majority (80 percent) of these recommendations are positive. This is consistent with Womack's (1996) analysis of brokerage firm recommendations. He finds that new buy recommendations outnumbered new sell recommendations by 7:1 (87.5 percent buy).

The purpose of this paper is to examine the price behavior of stocks that are mentioned in HI columns. This study differs from previous studies on secondary

[1] The authors would like to thank Anne Reifenberg at *The Texas Journal* for providing information about the other WSJ regional publications.

dissemination of information in that it utilizes stocks mentioned in HI rather than HOTS or IWS. This is an important difference for two reasons.

First, printed copies of HI are only available in their respective regions. As such, the number of potential investors having exposure to the articles in HI is much smaller than for the nationally published HOTS and IWS. Additionally, HI articles tend to focus on smaller less well-known regional companies, while HOTS and IWS articles are usually about larger, nationally recognized firms. In fact, some HI articles say that the companies in the columns are so small that the companies are not followed by any brokerage firm analysts. This lack of institutional attention means that there may be more information conveyed to investors in HI articles about smaller companies than in HI articles about more widely followed companies. The data collected for this paper allow us to test the hypothesis that there is more information revealed to the market in an HI article about a small company than there is in an HI article about a larger, more widely followed company. This hypothesis will be referred to as *the revealed information hypothesis*.

The revealed information hypothesis can be tested in two ways. One way to test the hypothesis is to see if increases in event day trading volume are positively related to abnormal returns. The hypothesis also can be tested by determining whether company size and abnormal return are inversely related. Both tests are done, and the results are given in the revealed information hypothesis testing section. In brief, the results are consistent with the revealed information hypothesis.

Another difference between this study and previous studies is that this study uses more recent data than other studies. The HI articles are from 1993 to 1996, while the latest data in any of the other references are from 1991.

The results of this study show that there is a significant abnormal return on the day of publication for both single-company and multi-company HI articles. In contrast to previous HOTS and IWS papers, however, we find no significant abnormal return on the days immediately preceding or following the publication date for either the single- or multi-company HI articles.

Data and Methodology

Data

Regional publications are relatively recent additions to the WSJ. TJ, the first regional, was introduced on September 8, 1993.[2] The available data from the Center for Research on Securities Prices (CRSP) end on December 31, 1996. Therefore, the analysis in this paper is based on data provided in weekly HI articles from September 8,1993 through December 31, 1996. This precludes the use of any data from NEJ, and only three months worth of WSJC data could be used.

[2] FJ and SJ both began on October 12, 1994. WSJC started on October 2, 1996, and NEJ was introduced on October 1, 1997.

We use the Dow Jones News Retrieval Service to collect all of the HI columns that met the date requirements mentioned above. This procedure results in a total of 394 HI columns that initially were sorted by separating the columns into single company articles and multiple company articles. Each column was examined to determine if the general tone of each column was favorable, unfavorable, or not applicable. Articles that were not clearly favorable or unfavorable were considered not applicable. Examples of other not applicable columns included articles about general macroeconomic conditions and comparisons of the performance of a regional index to a national index. We did not screen for firm-specific events during the event window.

Only 20 percent of the applicable HI articles were clearly unfavorable. The low percentage of unfavorable articles, combined with the relatively small overall sample size, fails to yield sufficient unfavorable columns to give statistically meaningful results. Therefore, unfavorable columns are not analyzed in this paper.

In addition to the above restrictions, the sample is restricted to firms that had CRSP data available for 270 trading days (approximately one year's worth of data) prior to the relevant HI article. This restriction is necessary because some of the firms in the HI articles had not been listed with a stock exchange for a full year prior to the article.

These restrictions reduce the number of usable companies from HIT and HIF single-company articles to 63 and 38, respectively. HISE and WSJC are combined to give a total of 28 companies from single-company articles. The numbers of usable companies from multi-company articles are 80, 40, and 62 for HIT, HIF, and HISE/WSJC, respectively. The final sample contains 129 companies that were mentioned in 175 single-company HI articles and 182 companies that were mentioned in 55 multi-company HI articles. A breakdown of all HI articles examined for the study is shown in Panel A of Table 1. Panel B of Table 1 summarizes how many companies came from each HI regional publication.

Methodology

Stock price reactions to positive HI articles are examined by employing event study methodology first suggested by Fama *et al.* (1969). In accordance with Brown and Warner (1980, 1985), the standard market model is employed to calculate abnormal returns. The abnormal return for security j on event day t, AR_{jt}, is calculated as

$$(1)\ AR_{jt} = R_{jt} - (\alpha_j + \beta_j R_{mt})$$

where,

R_{jt} = The return on security j for day t;

R_{mt} = The return on the CRSP equally weighted index for day t; and

α_j and β_j = The ordinary least squares estimates for firm j's market model parameters.

Table 1—The Numbers of HI Articles and Companies Used in the Study

Panel A Breakdown of All 'Heard in (the region)' Articles Examined for Potential Use in the Study

Source	Number of Articles	# of Positive Single-Company Articles	# of Negative Single-Company Articles	# of Positive Multi-Company Articles	# of Negative Multi-Company Articles	# of Not Applicable Articles
HIT	162	81	8	22	6	45
HIF	110	51	9	16	2	32
HISE	110	37	19	17	10	27
HIC	12	6	3	0	0	3
Totals	394	175	39	55	18	107

Panel B Number of Companies Used in the Study Mentioned in 'Heard in (the region)' Articles

Source	Number of Companies Mentioned in a Single-Company Article	Number of Companies Mentioned in a Multi-Company Article
HIT	63	80
HIF	38	40
HISE	20	40
HIC	8	22
Totals	129	182

The market model is estimated over 270 days beginning t = -281 through t = -11, where t = 0 is the publication day of HI

For a sample of N securities, the average abnormal return, AAR_t, for the N securities on event day t, is calculated as

$$(2)\ AAR_t = \left(\frac{1}{N}\right)\left(\sum_{j=1}^{N} AR_{jt}\right)$$

and the standardized abnormal return, SAR_j, for security j on day t is given by

$$(3)\ SAR_{jt} = \frac{AAR_j}{S_j}$$

where:

S_j = The pre-event standard deviation for security j estimated from the market model regression.

The average standardized abnormal return, $ASAR_t$, is then given by

$$(4)\ ASAR_t = \left(\frac{1}{N}\right)\left(\sum_{j=1}^{N} SAR_{jt}\right)$$

The cumulative average abnormal return from day T1 to day T2, $CAAR_{T1,T2}$ is given by

$$(5)\ CAAR_{T1,T2} = \left(\frac{1}{N}\right)\left(\sum_{j=1}^{N} AAR_{jt}\right)$$

The statistical significance of the average abnormal returns for each day can be tested assuming that the abnormal returns are independent and identically distributed with finite variance. The test statistic, T-AAR$_t$ is given by[3]

(6) T-AAR$_t$ = ASAR$_t$ * (N) $^{.5}$.

To test the statistical significance of CAAR$_{t1,t2}$ we first calculate the standardized cumulative average abnormal return, SCAAR$_t$

$$(7)\ SCAAR_t = \frac{\left(\sum_{t=t1}^{t2} SAR_{it}\right)}{(T2 - t1 + 1)^{1/2}}$$

and the average standardized cumulative average abnormal return, ASCAAR,

$$(8)\ ASCAAR = \left(\frac{1}{N}\right)\left(\sum_{i=}^{N} SCAAR_i\right)$$

and use these results to calculate T-CAAR$_{t1,t2}$ by

(9) T-CAAR$_{T\ T2}$ = ASCAAR * (N)$^{.5}$.

Empirical Results

Portfolio Analysis Results

The sample sets of each regional publication are combined to give one overall sample set for all HI articles. Table 2 presents the results for the combined portfolio of 129 companies from single-company HI articles and the combined portfolio of 182 companies from multi-company HI articles.[4]

The results for the combined portfolios indicate that publication of the HI column has a statistically significant impact on stock price on the day of publication for both the single- and multi-company portfolios. The average publication day abnormal return for single-company articles is 2.48 percent (t-statistic = 8.20). This is slightly higher than the 2.35 percent abnormal return that Liu, Smith, and Syed (1990) find for single-company HOTS articles and is consistent with results from other studies. Additionally, Table 2 shows that the T-CAARs for the single-company portfolio are statistically significant on the publication date and event window days +1 through +10. The average publication day abnormal return for multi-company articles is 0.48 percent (t-statistic = 1.96). Although this is lower than the 1.47 percent abnormal return that Liu, Smith, and Syed (1990) find, it is statistically signifi-

[3] This methodology follows the methodology used by Liu, Smith, and Syed (1990). The authors would like to thank an anonymous referee for pointing out a major flaw in the write-up in the methodology section of an earlier version of the paper.

[4] Results of regional portfolios are not shown for space considerations but are in line with combined results.

Table 2— Average Abnormal Return (AAR), Cumulative Average Abnormal Return (CAAR) and Associated Test Statistics (T-AAR,T-CAAR) For All HI Articles From September 8,1993 - December 31, 1996

	Single-Company Portfolio 129 Companies				Multi-Company Portfolio 182 Companies			
Day	AAR	T-AAR	CAAR	T-CAAR	AAR	T-AAR	CAAR	T-CAAR
-10	0 00257	0 85	0 00257	0 85	-0 00069	-0 28	-0 00069	-0 28
-9	-0 00348	-1 15	- 00091	-0 21	-0 00104	-0 42	-0 00173	-0 50
-8	0 00006	0 02	- 00084	-0 16	0 00407	1 65	0 00234	0 55
-7	0 00353	1 16	0 00268	0 44	-0 00202	-0 82	0 00032	0 06
-6	0 00156	0 51	0 00424	0 63	0 00101	0 41	0 00133	0 24
-5	0 00070	0 23	0 00494	0 67	0 00171	0 69	0 00304	0 50
-4	0 00033	0 11	0 00527	0 66	-0 00131	-0 53	0 00173	0 26
-3	-0 00226	-0 75	0 00301	0 35	-0 00428	-1 74	-0 00255	-0 37
-2	0 00538	1 78	0 00840	0 92	-0 00072	-0 29	-0 00327	-0 44
-1	-0 00183	-0 60	0 00657	0 69	0 00194	0 79	-0 00133	-0 17
0	0 02484	8 20**	0 03140	3 13**	0 00484	1 96*	0 00351	0 43
1	0 00194	0 64	0 03335	3 18**	0 00103	0 42	0 00454	0 53
2	-0 00073	-0 24	0 03261	2 99**	0 00172	0 70	0 00626	0 70
3	0 00340	1 12	0 03602	3 18**	-0 00068	-0 28	0 00558	0 60
4	0 00090	0 30	0 03692	3 15**	0 00673	2 73**	0 01231	1 29
5	-0 00088	-0 29	0 03604	2 98**	0 00082	0 33	0 01313	1 33
6	-0 00411	-1 36	0 03193	2 56**	-0 00122	-0 50	0 01191	1 17
7	-0 00005	-0 02	0 03188	2 48*	-0 00155	-0 63	0 01036	0 99
8	-0 00440	-1 45	0 02748	2 08*	-0 00103	-0 42	0 00933	0 87
9	0 00188	0 62	0 02936	2 17*	-0 00151	-0 61	0 00782	0 71
10	-0 00105	-0 35	0 02830	2 04*	-0 00224	-0 91	0 00558	0 49

* Significant at the 5 percent level (two-tailed test)

** Significant at the 1 percent level (two tailed test)

cant at the 5 percent level. None of the T-CAARs associated with the multi-company portfolio are statistically significant. Liu, Smith, and Syed (1990) suggest that single-company articles have more impact than multi-company articles because information in a multi-company article may have a stronger effect on some companies than others. Therefore, the average impact of a multi-company article would be less than for a single-company article

In contrast to previous studies, however, this study finds no significant abnormal return for days -2, -1, +1, or −2 for either the single-company or multi-company HI portfolios. The lack of reaction both prior to and after publication date may be because the articles are only published regionally. Previous studies have speculated that the pre-publication reaction is due to insider trading because a fairly large number of persons may have received word of the impending HOTS or IWS article. As discussed earlier, the number of individuals who receive advance word about a regional article is smaller than those who might obtain advance word about an article to be published nationally. The results of this study indicate that few of those persons actually trade on the information because there is no statistically significant abnormal return prior to the publication date.

Revealed Information Hypothesis Testing Results

The hypothesis that more information is revealed to the market in HI articles about smaller companies is tested as follows. Company size is measured by market capitalization where market capitalization is defined to be the number of shares outstanding multiplied by share price (both measured on the publication date). The combined sample of 129 companies mentioned in single-company articles and the combined sample of 182 companies mentioned in multi-company articles are sorted in ascending order of size. Each group is divided into approximate thirds, and the event study methodology described above is applied to each third. The results of this procedure are shown in Table 3.

Table 3—Event Day Average Abnormal Return (AAR) and Test Statistics (T-AAR) Associated with all HI Articles Sorted by Size and Divided into Thirds

Group	AAR	T-AAR	T-Statistic***
Single-Company Articles, Smallest Size Third	0 03328	5 41**	5 34**
Single-Company Articles, Middle Size Third	0 02679	5 30**	12 54**
Single-Company Articles, Largest Size Third	0 01445	3 61**	
Multi-Company Articles, Smallest Size Third	0 01894	4 88**	14 82**
Multi-Company Articles, Middle Size Third	0 00932	2 76**	14 39**
Multi-Company Articles, Largest Size Third	0 00061	0 18	

* Significant at the 5 percent level (two-tailed test)

** Significant at the 1 percent level (two tailed test)

*** T-statistic associated with a test of the hypothesis that the AAR for adjacent thirds is the same See Dixon and Massey (1983) chapter 8

The results of the size sort accord with the revealed information hypothesis. Average abnormal return and t-statistics for both the single- and multi-company size sorted thirds decrease with increasing size. A test of the hypothesis that the average abnormal returns for consecutive thirds is the same shows that the differences in average abnormal return between each third are statistically significant at the 1 percent level. Additionally, the abnormal returns and t-statistics associated with each third are higher for the single-company articles than they are for the multi-company articles. This is consistent with the results from Table 2 where the overall abnormal return for single-company articles is higher than it is for multi-company articles

The revealed information hypothesis is also examined using a test based on trading volume. For this test, the ratio of event day trading volume to the average trading volume over the previous ten days is calculated for the combined sample of 129 companies mentioned in single-company articles and the combined sample of 182 companies mentioned in multi-company articles. This ratio is referred to as *the volume ratio*. The higher the volume ratio, the greater the impact that publication of the HI article has had on the increase in event day volume compared to average volume. If the revealed information hypothesis is correct, then the volume ratio should

be the largest for articles that have revealed the most information. Therefore, we expect to see the largest volume ratios associated with the largest abnormal returns.

The single- and multi-company groups of stocks are sorted in ascending order of volume ratio. Each group is then divided into approximate thirds and, as with the size sort, the event study methodology is applied to each third. The results of this procedure are shown in Table 4.

Table 4—Event Day Average Abnormal Return (AAR) and Test Statistics (T-AAR) Associated With All HI Articles Sorted by Volume Ratio (Event Day Volume/Previous Ten Day Average Volume) and Divided into Thirds

Group	AAR	T-AAR	F-Statistic***
Single-Company Articles, Smallest Volume Ratio Third	0.01163	2.36*	6.51**
Single-Company Articles, Middle Volume Ratio Third	0.01919	3.31**	21.59**
Single-Company Articles, Largest Volume Ratio Third	0.04382	9.26**	
Multi-Company Articles, Smallest Volume Ratio Third	0.00146	0.43	6.41**
Multi-Company Articles, Middle Volume Ratio Third	0.00534	1.57	27.11**
Multi-Company Articles, Largest Volume Ratio Third	0.02241	6.17**	

* Significant at the 5 percent level (two-tailed test)

** Significant at the 1 percent level (two tailed test)

*** T-statistic associated with a test of the hypothesis that the AAR for adjacent thirds is the same. See Dixon and Massey (1983) chapter 8

As with the size sort results, the volume ratio sort results are also accord with the revealed information hypothesis. For both the single- and multi-company articles, the abnormal return and t-statistic increase with increasing volume ratio. And, as with the size sorted average abnormal return results, a test of the hypothesis that the average abnormal returns for consecutive thirds of the volume sorted results shows that the differences in average abnormal return between each third are statistically significant at the 1 percent level. For both groups of stocks, there is a dramatic increase in abnormal return between the middle third and largest third. These results conform to the size sort results. The size sort shows that the smallest companies have the largest abnormal returns. The volume ratio sort shows that abnormal return increases with volume ratio. These results indicate that HI articles about the smallest companies reveal the most information to the market, with the amount of revealed information being proportional to the volume ratio on the event day.

We formally test the observations in the previous paragraph by examining event-day abnormal return and event-day volume ratio cross-sectionally across the single- and multi-company groups. We run a regression with event-day abnormal return as the dependent variable and event-day volume ratio as the independent variable. Regression results are shown below.

Combined Single-Company Group:
E-day Abnormal Return = 0.0107 + 0.0063(E-day Volume Ratio)
t = 2.346 t = 4.231
Prob < = 0.0206 Prob < = 0.0001

Combined Multi-Company Group:
E-day Abnormal Return = 0.0036 + 0.0011(E-day Volume Ratio)
t = 1.211 t = 0.707
Prob < = 0.2276 Prob < = 0.4804

These results show that there is a positive and statistically significant relationship between event-day volume ratio and event-day abnormal return for the single-company group. This is consistent with the results in Table 4 where the t-statistics increase with volume ratio for both groups of stocks The relationship between these two variables is not statistically significant for the multi-company group. This is also consistent with Table 4 results where each third in the single-company group has a higher t-statistic than the corresponding third in the multi-company group.

The relationship between event day abnormal return and company size is explored by running a regression with event-day abnormal return as the dependent variable and market capitalization as the independent variable. Regression results are shown below.

Combined Single-Company Group:
E-day Abnormal Return = 0.0295 - 0.0086(Market Capitalization)
t = 7 97 t = -2.568
Prob < = 0.0001 Prob < = 0.0114

Combined Multi-Company Group:
E-day Abnormal Return = 0.0059 - 0.000556 (Market Capitalization)
t = 2.366 t = -0.961
Prob < = 0.0190 Prob < = 0.3376

These results show that there is a negative and statistically significant relationship between event-day abnormal return and market capitalization for the single-company group. This is consistent with the results in Table 3 where the t-statistics decrease with increasing company size for the single-company columns. The relationship between these two variables is not statistically significant for the multi-company group. This is most likely because (as Table 3 shows) the abnormal return for the largest third of multi-company articles is not statistically significant.

The previous regressions examine the relationship between abnormal return and either company size or volume ratio. The results of those regressions, however, do not reveal anything about the relationship between company size and event day volume ratio. We hypothesize a significant, negative relationship between company size and volume ratio if the revealed information hypothesis is correct.

The relationship between size and volume ratio is examined by regressing event day volume ratio against market capitalization for the combined single- and multi-company groups. Regression equation results are shown below.

Combined Single-Company Group:

Volume Ratio = 2.4687 - 0.4060(Market Capitalization)

t = 11.66 t = -2.114

Prob < = 0.0001 Prob < = 0.0366

Combined Multi-Company Group:

Volume Ratio = 1.2987 - 0.0131(Market Capitalization)

t = 10.41 t = -0.455

Prob < = 0.0001 Prob < = 0.6493

The results show that there is a statistically significant relationship between these two variables for the combined single-company group while the relationship is not significant for the combined multi-company groups. This is consistent with the results from Tables 3 and 4 where we saw that the t-statistics associated with both the size and volume ratio sorts are higher for the single-company group then they are for the multi-company group. These results accord with the revealed information hypothesis.

Conclusion

The results of this study on market reaction to the dissemination of positive secondary information in the HI column of regional WSJ publications indicate significant, positive abnormal returns on the day of publication of single-company and multi-company HI articles. The impact of single-company articles, however, is greater than the impact of multi-company articles. The study shows no significant abnormal reaction on the days immediately prior to or immediately after publication for both single-company and multi-company articles. Additionally, regression analysis shows that there is a statistically significant, positive relationship between event-day abnormal return and event-day volume ratio and a statistically significant, negative relationship between event-day abnormal return and company size for the single-company group. There is also a statistically significant negative relationship between event-day volume ratio and company size for the single-company group.

These findings indicate that the dissemination of secondary information, even in a regional publication, has an impact on stock price. This result is consistent with results from previous studies. In contrast to other papers, however, when information is released regionally rather than nationally, we find price reaction to be restricted to the day of publication with neither pre-publication nor post-publication abnormal returns

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