3. THE IMPACT OF FINANCIAL NEWS AND PRESS FREEDOM ON ABNORMAL RETURNS AROUND EARNINGS ANNOUNCEMENT PERIODS IN THE SHANGHAI, SHENZHEN AND TAIWAN STOCK MARKETS[1]

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Abstract

We set out in this study to examine the impact of news sentiment and press freedom on cumulative abnormal returns (CARs) around earnings announcement periods; our focus is on the stock markets of Greater China, comprising of the Shanghai, Shenzhen and Taiwan stock markets. The news sentiment ratio is calculated using content analysis under the semantic orientation approach, with our empirical results revealing that news reports released prior to the earnings announcements made by firms have significant negative impacts on the CARs of the stocks of such firms following their announcements. We also find that press freedom may reduce the explanatory power of news reports on positive abnormal returns. The greater (lesser) the level of press freedom in a particular market, then the weaker (stronger) the level of information asymmetry, which can lead to a reduction (increase) in the risk premium, ultimately resulting in lower (higher) CARs.

Keywords: news sentiment; press freedom; Greater China; abnormal returns; earnings announcements.

JEL Classification: G14, D82

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1. Introduction

Several previous studies have provided discussions on whether the information, or the lack of any such information, released on firms through public news reports has explanatory power on the 'cumulative abnormal returns' (*CARs*) of the firms and the price reactions within the stock markets, particularly when such information is released immediately prior to their earnings announcements. The findings of these studies provide general support for the view that information which is inherent in the news reports may influence the trading behavior of investors and will ultimately be reflected in market returns and volatility, as well as various other factors.[5]

In the present study, we attempt to identify investor sentiment from the Chinese financial news content by extending the framework in the earlier studies, where such public news sentiment is quantified through the use of linguistic analysis. The news sentiment ratio is calculated in the present study using both linguistic analysis and semantic orientation. Differences in the level of press freedom between the Greater China markets, comprising the Shanghai, Shenzhen and Taiwan stock exchanges, are also taken into consideration to facilitate our examination of whether the news reports and level of press freedom may combine to improve informational efficiency and reduce abnormal returns following such earnings announcement.

The primary issue to be investigated in the present study is the relationships that may be found to exist between *CARs* and the information contained in news reports across the three markets of Greater China during the earnings announcement periods of the related firms; however, we also provide a further examination of the relationship between the *CARs* of the firms' stocks and the level of press freedom within the associated stock markets, relating to the differences between the three markets in terms of policies, politics and the economic environment.

The 2013 Global Press Freedom Rankings report published by Freedom House showed that when countries were placed in the order of their level of press freedom, Taiwan was ranked 47th and China was ranked 179th; this clearly demonstrates that press freedom is much higher in Taiwan than in China.[6] The Freedom Rankings are based on the freedom of speech, freedom of association, freedom of religious beliefs and freedom from government interference in the operation of the press. The results show not only that Taiwan has much more press freedom than China, but also that there are major differences between the two political systems. Consequently, we set out in this study to examine the relationships between the differences in press freedom and the reaction by the press to abnormal returns in the stock market.

We begin with a discussion on whether firms with news reports released prior to their earnings announcements have different abnormal returns at the event date to those firms with no news reports. We then go on to examine whether the news sentiment in

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[5] *Examples include Tetlock (2007), Tetlock, Saar-Tsechansky and Macskassy (2008), Tetlock (2010), Engelberg and Parsons (2011) and Demers and Vega (2014).*

[6] *Freedom House (http://www.freedomhouse.org/) is an independent watchdog organization dedicated to the expansion of freedom around the world. The complete freedom house report on Global and Regional Rankings in 2013 is available at: http://www.freedomhouse.org/ sites/default/files/Global%20and%20regional%20tables.pdf.*

regular financial reports has any significant influence on the *CARs* of the stocks of firms around their earnings announcement periods. Finally, we compare the differences between the levels of press freedom in the stock markets in Greater China in an attempt to identify whether greater press freedom equates to greater abnormal returns.

The remainder of the paper is organized as follows. A review of the extant literature is provided in Section 2, followed in Section 3 by a description of the study sample and the data adopted for this study. An introduction to our research design is subsequently provided in Section 4, along with details of our hypothesis development. The empirical results are presented and discussed in Section 5. Finally, the conclusions drawn from this study are presented in Section 6.

2. Literature Review

Earnings announcements, as regular financial events, have motivated numerous scholars to carry out event studies on such announcements, including examinations of the information contained in related media reports and the subsequent level of abnormal returns. Ball and Brown (1968) found that the information contained in news reports had a positive impact on abnormal returns during earnings announcement periods, while Barber and Odean (2008) indicated that media coverage affecting stock trading tended to attract the attention of other investors in the market.

From their examination of the levels of optimism and uncertainty in managerial communications related to a firm's quarterly earnings, Demers and Vega (2014) found that unexpected managerial textual net optimism was priced by the market. Lu and Wei (2014) further suggested that media coverage prior to earnings announcements had impacts on the trading behavior of different types of investors. The focus in these studies was on identifying the factors potentially explaining the level of abnormal returns following an earnings announcement event, since the information contained in news reports is a dimension that may have unexpected impacts on abnormal returns.

Robinson and Levy (1996) suggested that newspapers constituted the majority of media coverage, and that as such, newspapers were likely to have a significant influence on investors within the related market. From an investigation of the trading behavior of institutional and individual investors around news release, Nofsinger (2001) found that reports reflecting good news had a positive impact on abnormal trading by individual investors. Fang and Peress (2009) identified a strong correlation between media coverage and stock market reaction, whilse the results reported by Lu and Wei (2013) revealed a positive (negative) relationship between the sentiment in news information and CARs during pre- (post-) earnings announcement periods, thereby confirming that the response by the market takes into consideration all of the relevant information on the related firms.

Thus, numerous studies have shown that media coverage has significant impacts on both the behavior of investors and the reaction by the stock market; these prior studies indicate that the information contained in news reports can explain the impact of abnormal returns on stock prices within the related stock markets, and indeed, there are methods already available for analyzing the information content inherent in news reports.

For example, the idea of 'term frequency' proposed by Luhn (1958) places the emphasis on the number of times a word appears in an article, which means that if the word appears with higher frequency, then this usually indicates its importance within the article. Furthermore, the concept of 'semantic orientation', which has evolved from the initial work of Hatzivassiloglou and McKeown (1997), proposes that the paragraphs and sentences in an article not only transmit objective facts, but also express subjective sentiment and opinion; they concluded that adjectives separated by the word 'and' contained the same sentiment, whereas adjectives separated by the word 'but' had the opposite sentiment. Turney (2002) further indicated that semantic orientation was similarly useful for summarizing reviews.

Given that terms in the Chinese language are mainly expressed as adjectives, within Chinese content, the characteristic terms are changed when meeting negative words. Gong and Gul (2011) investigated the effect that media coverage has on the stock markets in China and found that those stocks with higher media coverage tended to have a positive impact on both stock turnover and daily return variance; thus, they identified some strong similarities between the markets of the US and China with regard to the factors influencing media coverage, and that the important differences between the two countries may be attributable to their institutional environments.

Griffin, Hirschey and Kelly (2008) systematically examined over 33 cross-country variables relating to their hypotheses and found that two main variables emerged, 'press freedom' and the 'perception of insider trading'; they found that a stronger and freer press was associated with more rapid information dissemination and incorporation into prices. We therefore follow Griffin *et al.* (2008) to include the issue of press freedom in our examination of abnormal return levels during earnings announcement periods in the Greater China stock markets.

Chen, Cheng and Gao (2005) examined abnormal volume and price reactions to the timing of earnings announcements, with their results showing that early announcements received higher abnormal volume and return reactions. Wang, Liao and Chih (2009) subsequently found that prior to any earnings announcements there was some influence between media coverage and stock market prices, and that if a firm received good reports prior to its earnings announcement the stock price reaction would be positive, particularly when the market response was related to positive quantitative news. Finally, Berkman and McKenzie (2012) demonstrated that changes in institutional holdings and short interest prior to earnings announcements had significant explanatory power on abnormal returns following earnings announcements, with most of this explanatory power stemming from institutions and short sellers closing their positions in order to avoid losses.

To summarize, the findings of the prior studies reveal that the information provided by news releases has significant impacts on both volume and price reactions in the stock markets around periods of earnings announcements. Accordingly, the sentiment ratio relating to news content is constructed in the present study by referring to semantic orientation. We then proceed with an event study methodology to identify the relationship existing between the information contained in news reports and abnormal returns around earnings announcement periods in the Greater China stock markets.

3. Sample and Data Descriptions

3.1 Sample Description

The China stock market was established in January 1984, followed by the establishment of the Shanghai Stock Exchange (SSE) in December 1990, and the opening of the Shenzhen Stock Exchange (SZSE) in July 1991. By the end of March 2013, a total of 2,342 companies had been listed on the two exchanges (931 on the Shanghai Exchange and 1,411 on the Shenzhen Exchanges). The Taiwan Stock Exchange (TSE) was established in October 1961, and by the end of March 2013, there were a total of 705 companies listed on the exchange.

The focus of this study, which is based upon the authority of news reports, is placed on corporate earnings announcements made from January 2013 to March 2013. The financial data were obtained primarily from the quarterly financial statements of all listed companies contained in the Taiwan Economic Journal (TEJ) database; the news information on China was obtained from Hexun, which is the financial network leader in China; and the news information on Taiwan was obtained from both the Infotimes database and the United Daily News Group.[7]

Infotimes, which was founded in 1989, was the first company to provide a value-added network services license in Taiwan; Infotimes also simultaneously cooperated with the professional financial newspaper, the 'Commercial Times', a newspaper which has the largest circulation in Taiwan. The other main publisher in Taiwan is the United Daily News Group which was founded in 1951 and publishes two major daily products, the general newspaper, 'United Evening News', and the professional financial newspaper, 'Economic Daily News'.

Our study includes these two newspaper groups from Taiwan, along with the financial newspaper reports on China provided by Hexun (including New Economics, Beijing News, China News and Shanghai Securities News). The proxy variables for public information are measured using the sentiment ratio, which is constructed based upon the semantic orientation *(SRSO)* approach.

3.2 Cumulative Abnormal Return Measures

Abnormal returns are calculated in this study using an ordinary least-squares (OLS) risk-adjusted returns model, with the quarterly earnings announcement date being set as the event date. $CAR_{[-T,-1]}$ ($CAR_{[1,T]}$) are the cumulative abnormal returns at T days before (after) the event date. Based upon our OLS risk-adjusted returns model, the expected return of firm i is the market return on day t:

$$E(R_{i,t}) = \hat{\alpha}_i + \beta_i R_{mt} \tag{1}$$

The abnormal returns (*AR*s) and cumulative abnormal returns (*CAR*s) of firm i on day t are estimated as follows:

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[7] *The respective data sources are: (i) TEJ: http://www.tej.com.tw/twsite/; (ii) Hexun: http://www. hexun.com/; (iii) Infotimes: http://www. infotimes.com.tw/new2/index.htm; and (iv) United Daily News Group: http://www.udngroup.com/2c/index.jsp.*

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$
(2)

$$CAR_{i,t} = \sum_{t=1}^{T} AR_{i,t}$$
(3)

We calculate the *CARs* for the one-week prior to, and the one-month period after, a firm's earnings announcement, and then go on to classify the study sample periods accordingly.

3.3 Standardized Unexpected Returns (SUE)

Following Tetlock *et al*. (2008) and Demers and Vega (2014), we employ a random walk model to measure the standardized unexpected earnings (*SUE*), as follows:

$$SUE_{iq} = \frac{UE_{iq} - \mu_{UE_{iq}}}{\sigma_{UE_{iq}}}, UE_{iq} = A_{iq} - A_{iq-4}$$
(4)

where: UE_{iq} refers to unexpected earnings, which are defined as the earnings per share of firm *i* for fiscal quarter *q* (A_{iq}) minus the market expectation of earnings (A_{iq-4}); since there no comprehensive analyst database available in Taiwan, this can be measured based upon the same quarter earnings per share for the previous year.

The earnings data are obtained from the TEJ database. The trend and volatility of unexpected earnings (*UE*) are equal to the mean (μ) and standard deviation (σ) of the unexpected earnings data of the firms for the previous twenty quarters. By referring to Bernard and Thomas (1989) and Tetlock *et al*. (2008), we can obtain all non-missing earnings data for the most recent ten quarters, with the trend being assumed to be zero for all firms with fewer than four years of earnings data. The net income growth rate is not taken into consideration in our analysis, since it could give rise to estimation bias.

3.4 Sentiment Ratio Calculated by Semantic Orientation

Since there is no representative system for revealing or constructing the sentiment of news content for either traditional or simplified Chinese documents, we collected the financial news from the Taiwan and China stock markets and carried out the process of information quantification, with 'sentiment words' representing the key component for quantifying the news reports.

The representative sentiment words were collected by applying a content analysis methodology, with the process beginning with the use of 'word segmentation' as the means of structuring the text;[8] we then calculated both the term frequency and the Chi-square tests as the means of collecting the representative words for 'optimism' and 'pessimism'. Finally, news sentiment was quantified through the use of semantic orientation. The English translations of the words for the selected optimism and pessimism characteristics and negative adjective terms are listed in Table 1.

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[8] *We would like to express our sincere appreciation to Professor Keh-Jiann Chen of the Institute of Information Science at Academia Sinica for the provision of the Chinese Word Segmentation System in support of our study: http://ckipsvr.iis.sinica.edu.tw/.*

Table 1

Optimism, Pessimism and Negative Adjective Vocabulary Characteristic Terms

Panel A: Characteristic Terms for Optimism (Opt)					
Abundant	Active	Advantage	Amazing	Upgrade	Upturn
Benefit	Best	Breakthrough	Conduce	Success	Transcend
Exceed	Excellent	Explode	Favor	Steady	Stimulate
Fluency	Growth	Increase	Influx	Rebound	Rise
Lead	New Height	Optimistic	Overbought	Profit	Prospect
Panel B: Characteristic Terms for Pessimism (Pes)					
Bankruptcy	Capital-Reducing	Cheapen	Crisis	Serious	Weak
Decline	Decrease	Deficit	Depreciate	Plunge	Reverse
Depression	Deteriorate	Dispirit	Down	Pessimistic	Over-Fall
Downgrade	Downward Price Limit	Encumber	Fail	One Disaster After Another	Not Good Enough
Fall	Impact	Involve	Loss	New Low	Mournful
Panel C: Negative Adjective Vocabulary (Neg)					
No	Not Necessarily	Unlikely	Not	None	Don't
Not	Don't	Don't	Without	None	Negate

Note: The characteristic terms describe the characteristics of the optimism and pessimism groups and negative adjective vocabulary. A complete list of special terms in each group is available from the authors upon request.

The semantic orientation rules are presented in Table 2, which shows that an optimistic state is represented by S_0, a pessimistic state is represented by S_1 and a neutral state is represented by S_2; the initial state is neutral. The news content can be dissected by individual words using the segmentation system, which involves each word being compared with the optimism, pessimism and negative terms collected in Table 1 and then assigned '+', '–' and '~' symbols, respectively.

Table 2

Semantic Orientation Rules

States[a]	Inputs[b]			
	+ (Optimism)	– (Pessimism)	~ (Negative)	? (Neutral)
S_0	S_0	S_1	S_1	S_0
S_1	S_1	S_1	S_0	S_1
S_2	S_0	S_1	S_1	S_2

Notes: [a] S_0 refers to an optimistic state, S1 refers to a pessimistic state, and S2 refers to a neutral state. [b] + refers to optimistic vocabulary, – refers to pessimistic vocabulary, ~ refers to negative adjective vocabulary and ? refers to neutral vocabulary.

Those words that are not included in the optimism, pessimism and negative terms can be classified as neutral words and assigned the '?' symbol. For example, given that the semantic orientation starts at neutral (S_2), if the next word is positive (+), then the state shifts from S_2 to S_0. This process is then repeated for each sentence and paragraph, with each of the optimistic, pessimistic and neutral states then being summarized to calculate the sentiment ratio.

The structured process of application of semantic orientation is described in Table 3. News is initially collected from the representative database and is then segmented from the full content down to individual words; the state of each word is subsequently defined in accordance with the rules stated in Table 3. The percentage of each of the three (optimistic, pessimistic and neutral) states is calculated for each paragraph following the rules shown in Panel A, with the percentage for a single paragraph in each state then being calculated following the rules shown in Panel B.

Table 3

The Process from States to Percentages

Paragraphs	States			
	Opt (j=1)	Pes (j=2)	Neu (j=3)	Sum
Panel A: Percentage of states in each paragraph				
1	C_{11}	C_{12}	C_{13}	C_{11}+ C_{12}+ C_{13}=1
…	C_{i1}	C_{i2}	C_{i3}	C_{i1}+ C_{i2}+ C_{i3}=1
m	C_{m1}	C_{m2}	C_{m3}	C_{m1}+ C_{m2}+ C_{m3}=1
Sum	$W_1 = \sum_{i=1}^{m} C_{i1}$	$W_2 = \sum_{i=1}^{m} C_{i2}$	$W_3 = \sum_{i=1}^{m} C_{i3}$	–
Panel B: Standardized percentage of paragraphs in each state				
1	$P_{11}= C_{11} / W_1$	$P_{12}= C_{12}/ W_2$	$P_{13}= C_{13}/ W_3$	–
…	$P_{i1}= C_{i1}/ W_1$	$P_{i2}= C_{i2}/ W_2$	$P_{i3}= C_{i3}/ W_3$	–
m	$P_{m1}= C_{m1}/ W_1$	$P_{m2}= C_{m2}/ W_2$	$P_{m3}= C_{m3}/ W_3$	–
Sum	$P_1 = \sum_{i=1}^{m} P_{i1} = 1$	$P_2 = \sum_{i=1}^{m} P_{i2} = 1$	$P_3 = \sum_{i=1}^{m} P_{i3} = 1$	–

Notes: Panel A presents the percentages of the states in each paragraph; the summation of the percentage in each paragraph is equal to 1. Panel B presents the standardized percentages of the paragraphs in each state; the summation of the standardized percentage is equal to 1.

Finally, the degree of optimism and pessimism within the news report is calculated using entropy, with the equation being expressed as follows:

$$e_j = -k\sum_{i=1}^{m} P_{ij} \ln P_{ij}, k = 1/\ln m \tag{5}$$

where: e_j is the entropy of the jth sentiment state; P_{ij} is the percentage of the ith paragraph in the jth sentiment state; and m refers to the number of paragraphs in the news report. The level of optimism and pessimism in the news report is calculated using equation (6); the measurement of the news sentiment for each listed stock can then be carried out using equation (7):

$$SRSO_{i,p,d,m} = eo_{i,p,d,m} - ep_{i,p,d,m} \tag{6}$$

$$SRSO_{i,t-1}^{m} = mean(\sum_{p=1}^{P} \sum_{d=1}^{D} \sum_{m=1}^{M} SRSO_{i,p,d,m}) \tag{7}$$

where: $SRSO_{i,p,d,m}$ is the news sentiment of the ith firm for the mth news of the p publisher on day d; $eo_{i,p,d,m}$ ($ep_{i,p,d,m}$) is the optimism (pessimism) entropy of the ith firm for the mth

news of the p publisher on day d. $SRSO^m_{it-1}$ is the average news sentiment relating to the ith firm prior to the tth earnings announcement. By referring to the news content quantification process, the higher the news sentiment, the more net optimism that is inherent in the news reports relating to the listed stock.

4. Research Design and Hypothesis Development

Numerous previous studies have discussed the potential explanatory effects of news information content on the reactions of both stock prices and abnormal returns around earnings announcement periods.[9] We begin by creating a news dummy to investigate whether news releases on firms prior to their earnings announcements has any significant impact on the *CARs* of the firm's stocks around their earnings announcement periods, as compared to the firms with no news releases.

We also examine the relationship between the degree of sentiment in the news information content and the *CARs* of the firm during the earnings announcement periods. The proxy variable is the sentiment ratio calculated by semantic orientation (*SRSO*). We investigate whether the degree of sentiment in the news content could explain the stock market reaction during earnings announcement periods by referring to Lu and Wei (2013). Finally, we use *PFDummy* to identify the level of press freedom so as to compare the impacts of news on abnormal returns in different stock markets. The hypotheses are illustrated as below:

Hypotheses 1: *CARs around earnings announcement are significant different from zero. News releases on firms or the absence of such new releases prior to their earnings announcement present significantly different patterns of CARs in the Greater China stock markets.*

Hypotheses 2: *News releases on firms prior to earnings announcements have significant impacts on CARs around earnings announcement periods in the Greater China stock markets.*

We construct a news dummy variable, *NDummy*, in order to capture the news impact in terms of whether there are differences in the *CARs* of stocks with and without news releases one week prior to their earnings announcement in the Greater China stock markets. *NDummy* is equal to 1 if there are any news releases relating to firm i one week prior to their earnings announcement, otherwise is 0. Other control variables also included in the regression analysis comprise the market value (*SIZE*), market turnover (*TURN*) and standardized unexpected earnings (*SUE*), with the regression models being expressed as follows:

$$CAR^m_{i,[T_1,T_2]} = \alpha_0 + \alpha_1 NDummy^m_{i,t-1} + \sum \beta_i X_{i,t-1} + \varepsilon_{i,t}$$

(8)

where: X_i includes *SIZE*, *TURN* and *SUE*.

SIZE is the natural logarithm of the market capitalization of the firm; *TURN* is the market

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[9] *Examples include Vega (2006),* Griffin et al. *(2008), Lu and Wei (2013), Lu, Wei, Yan and Lin (2013) and Demers and Vega (2014).*

turnover; *SUE* is the standardized unexpected earnings; and the $t{-}1$ subscript indicates that the variable was estimated during a pre-announcement period. $CAR_{i,[T1,T2]}$ are the cumulative abnormal returns estimated during the specific periods during $T1$ to $T2$.

Hypotheses 3:   *The sentiment in the content of news releases prior to earnings announcements will have a significant impact on cumulative abnormal returns around earnings announcement periods in the Greater China stock markets.*

In the present study, we carry out our examination of the news sentiment ratio using semantic orientation (*SRSO*) based upon the content of the news releases and the subsequent *CARs* during the earnings announcement periods in the Greater China stock markets. The explanatory power of the news information relating to the level of *CARs* in the pre- and post-earnings announcement periods can be investigated by using the following equations:

$$CAR^{m}_{i,[T_1,T_2]} = \alpha_0 + \alpha_1 SRSO^{m}_{i,t-1} \times NDummy^{m}_{i,t-1} + \sum \beta_i X_{i,t-1} + \varepsilon_{i,t} \qquad (9)$$

where: X_i includes *SIZE*, *TURN* and *SUE*.

SIZE is the natural logarithm of the market capitalization of the firm; *TURN* is the market turnover; *SUE* is the standardized unexpected earnings; and the $t{-}1$ subscript indicates that the variable was estimated during a pre-announcement period. $CAR_{i,[T1,T2]}$ are the cumulative abnormal returns estimated during the specific periods during $T1$ to $T2$.

Hypotheses 4:   *Press freedom has significant impacts on CARs around earnings announcement periods in the Greater China stock markets.*

We include the *PFDummy* variable as the means of capturing the impact of press freedom; that is, we examine whether there are any significant differences between the impacts of level of press freedom on *CARs* in the stock markets of the Greater China region. The *PFDummy* variable is equal to 1 if the stock is traded by investors in Taiwan; otherwise is 0.

$$CAR^{m}_{i,[T_1,T_2]} = \alpha_0 + +\alpha_1 SRSO^{m}_{i,t-1} \times NDummy^{m}_{i,t-1} + \alpha_2 PFDummy^{m} + \sum \beta_i X_{i,t-1} + \varepsilon_{i,t} \quad (10)$$

where: X_i includes *SIZE, TURN* and *SUE*.

SIZE is the natural logarithm of the market capitalization of the firm; *TURN* is the market turnover; *SUE* is the standardized unexpected earnings; and the $t{-}1$ subscript indicates that the variable was estimated during a pre-announcement period. $CAR_{i,[-T1,-1]}$ are the cumulative abnormal returns estimated during the pre-announcement period and $CAR_{i,[1,T2]}$ are the cumulative abnormal returns estimated during the post-announcement period. $CAR_{i,[T1,T2]}$ are the cumulative abnormal returns estimated during the specific periods during $T1$ to $T2$.

5. Empirical Results

5.1 Descriptive Statistics

The samples for the present study are taken from the stock markets of the Greater China region, comprising the Shanghai, Shenzhen and Taiwan stock exchanges. The summary statistics on the cumulative abnormal returns (*CARs*) news information proxy (*SRSO*) and the control variables comprising of market turnover (*TURN*), market size (*SIZE*) and standardized unexpected earnings (*SUE*) are shown in Table 4. The statistics on the full sample in the Greater China region are presented in Panel A, while the statistics for those firms with (without) news releases prior to their earnings announcement are presented in Panel B (Panel C). The results reveal that the stocks of firms with (without) news releases prior to their earnings announcements have lower (higher) *CARs* of 0.0137 (0.0240).

A correlation analysis of the variables is presented in Table 5, from which we can then distinguish between our study the sample of firms in Greater China with and without news releases prior to their earnings announcements. Especially the proxy variables of news information, which are obtained from the news sentiment calculated by semantic orientation, reveal significantly positive correlations with *SIZE* and negative correlations with *TURN* for all firms no matter there is news releases prior to their earnings announcements or not. Firms with higher optimistic news present the properties of large size and lower turnover.

Table 4

Descriptive Statistics of the Study Samples

Measures	Variables				
	CAR	*SUE*	*SIZE*	*TURN*	*SRSO*
Panel A: Full sample for Greater China					
Mean	0.0162	0.1792	11.5758	0.3592	0.0367
S.D.	0.1133	1.5224	3.2531	0.7097	0.0513
CV	6.9839	8.4963	0.2810	1.9758	1.3964
Max	0.8033	22.0722	21.0474	6.1042	0.3932
Min	−0.3309	−6.3753	4.9819	−2.6046	−0.0604
Skewness	0.7474	2.0161	0.0588	1.7186	2.7694
Kurtosis	5.5140	37.1526	1.6061	11.7472	13.5496
Panel B: Sample with news releases preceding their earnings announcements					
Mean	0.0137	0.1606	11.8200	0.3642	0.0446
S.D.	0.1138	1.3898	3.0499	0.7383	0.0558
CV	8.2927	8.6528	0.2580	2.0269	1.2515
Max	0.8033	6.8970	18.5171	6.1042	0.3932
Min	−0.3309	−6.3753	4.9819	−2.6046	−0.0604
Skewness	0.8954	−0.2773	−0.0075	1.8118	2.4768
Kurtosis	6.2751	7.1392	1.6034	12.3169	11.2467
Panel C: Sample with no news releases preceding their earnings announcements					
Mean	0.0240	0.2371	10.8143	0.3434	0.0123
S.D.	0.1115	1.8780	3.7216	0.6126	0.0186
CV	4.6442	7.9219	0.3441	1.7840	1.5140
Max	0.3613	22.0722	21.0474	2.9923	0.0935

Measures	Variables				
	CAR	*SUE*	*SIZE*	*TURN*	*SRSO*
Min	−0.2795	−5.3503	5.1228	−1.3920	−0.0299
Skewness	0.2716	4.7483	0.3840	1.0854	1.4694
Kurtosis	3.1518	59.0699	1.6251	5.9420	5.0899

Note: CAR is the cumulative abnormal returns; *SUE* is the standardized unexpected earnings; *SIZE* refers to the natural logarithm of the market capitalization of the firm; *TURN* denotes market turnover; and *SRSO* is the sentiment ratio based upon the application of semantic orientation.

Table 5

Correlation Analysis

Variables	*CAR*	*SUE*	*SIZE*	*TURN*	*SRSO*
Panel A: Full sample for Greater China					
CAR	1				
SUE	0.0975***	1			
SIZE	0.3418***	0.0969***	1		
TURN	−0.0776***	−0.1513***	−0.2546***	1	
SRSO	0.0452	0.0330	0.1723***	−0.1354***	1
Panel B: Sample with news releases preceding their earnings announcements					
CAR	1				
SUE	0.0859***	1			
SIZE	0.3389***	0.1131***	1		
TURN	−0.0810***	−0.1621***	−0.3104***	1	
SRSO	0.0635	0.0501	0.1829***	−0.1707***	1
Panel C: Sample with no news releases preceding their earnings announcements					
CAR	1				
SUE	0.1260***	1			
SIZE	0.3607***	0.0615***	1		
TURN	−0.0540***	−0.1268***	−0.1130***	1	
SRSO	0.0370	0.0111	0.1616***	−0.3919***	1

Notes: This table reports the correlations between *CAR*, *SUE*, *SIZE*, *TURN* and *SRSO*, with the data period running from January 2013 to March 2013; the variables are as described in Table 4. Panel A presents the full study sample in the stock markets of Greater China, including the Shanghai, Shenzhen and Taiwan stock exchanges, whilst Panels B and C respectively report the samples of firms with and without news releases preceding their earnings announcements. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level.

A 40-day period around the earnings announcements is used in this study as the event window; this is illustrated in Figure 1. As the figure clearly shows, news releases (the absence of news releases) prior to earnings announcement periods, *NDummy* (*nonNDummy*) have significantly different impacts on *CARs* around earnings announcement periods in the stock markets of Greater China. In the two-week period prior to earnings announcements, the stocks of firms with news releases are found to have higher *CARs* than those with no news releases though it presents a down trend; conversely, in the two-month period after the event date, the stocks of those firms without news releases are found to have higher *CARs* than those with news releases.

Figure 1

Cumulative Abnormal Return Patterns
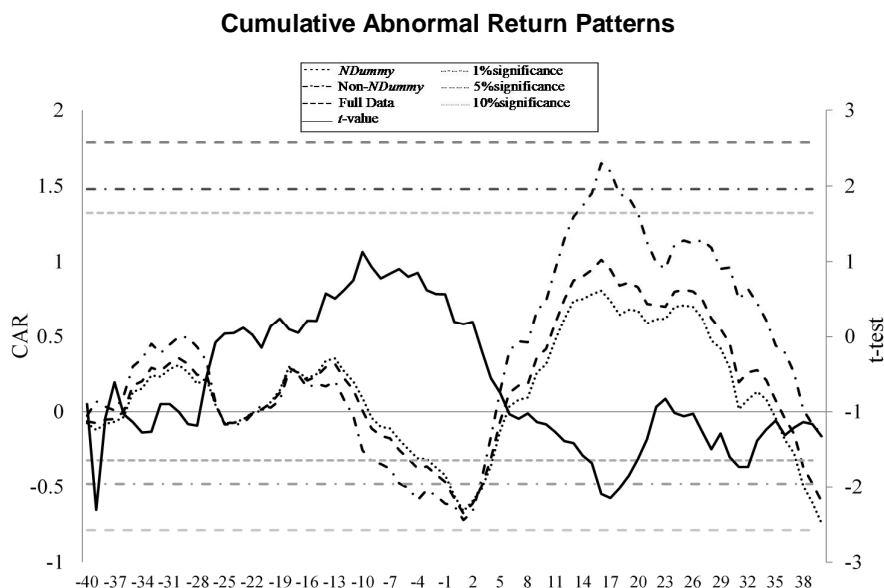
Note: The figure shows the cumulative abnormal return (CAR) *t*-values for firms in Greater China with (*NDummy*) or without (*non-NDummy*) news releases preceding their earnings announcements.

We consequently go on to investigate whether there are any significant differences in *CARs* in the Greater China stock markets around earnings announcement periods, with the results of our analysis being presented in Table 6. Hypothesis 1, which is based upon a *t*-test, proposes that the *CARs* will be equal to zero; however, as Table 6 shows, *CARs* in the Greater China stock markets are found to be significantly different from zero during earnings announcement periods. In specific terms, prior to their earnings announcements, $CAR_{[-5,0]}$, $CAR_{[-1,0]}$ and $CAR_{[0,1]}$ for those firms without news releases (*non-NDummy*) are found to be insignificantly different from zero. Thereby, it implies the existence of Hypothesis 1 during the periods after earnings announcement.

Table 6

Cumulative Abnormal Return Levels during Earnings Announcement Periods

CAR Horizons	Full Sample		With News Releases		Without News Releases	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.	Coeff.	*t*-stat.
Panel A: Greater China Markets						
$CAR_{[-15,-1]}$	−0.673**	−5.3958	−0.643**	−3.3330	−0.769**	−3.1538
$CAR_{[-10,-1]}$	−0.612**	−6.0397	−0.622**	−3.9262	−0.581**	−3.0621
$CAR_{[-5,-1]}$	−0.211**	−2.7975	−0.236*	−1.9869	−0.135	−0.9744
$CAR_{[-1,0]}$	−0.158**	−2.9111	−0.187*	−2.2437	−0.067	−0.6268
$CAR_{[0,1]}$	−0.209**	−3.4608	−0.240**	−2.6038	−0.109	−0.9042
$CAR_{[1,5]}$	0.509**	5.5798	0.428**	3.1885	0.761**	3.7342

CAR Horizons	Full Sample		With News Releases		Without News Releases	
	Coeff.	*t*-stat.	Coeff.	*t*-stat.	Coeff.	*t*-stat.
$CAR_{[1,10]}$	0.993**	8.3296	0.873**	5.0156	1.368**	5.0438
$CAR_{[1,15]}$	1.520**	10.5436	1.341**	6.3133	2.078**	6.5051
$CAR_{[1,20]}$	1.406**	9.3698	1.232**	5.6228	1.948**	5.7269
$CAR_{[1,22]}$	1.285**	8.4076	1.177**	5.2605	1.618**	4.6780
Panel B: Shanghai Stock Exchange (SSE)						
$CAR_{[-15,-1]}$	−0.802**	−7.1267	−0.730**	−4.2965	−1.047**	−4.4031
$CAR_{[-10,-1]}$	−0.570**	−6.3586	−0.594**	−4.3520	−0.487**	−2.6450
$CAR_{[-5,-1]}$	−0.245**	−3.5673	−0.270**	−2.5880	−0.159	−1.1239
$CAR_{[-1,0]}$	−0.422**	−7.3000	−0.461**	−5.4719	−0.292*	−2.1682
$CAR_{[0,1]}$	−0.332**	−4.9229	−0.327**	−3.1255	−0.349**	−2.6857
$CAR_{[1,5]}$	0.537**	7.2099	0.489**	4.7845	0.702**	3.5879
$CAR_{[1,10]}$	1.467**	13.8764	1.376**	10.4058	1.778**	5.6740
$CAR_{[1,15]}$	2.177**	18.9141	2.088**	13.9131	2.478**	7.6313
$CAR_{[1,20]}$	2.787**	21.4323	2.632**	15.4061	3.311**	9.1597
$CAR_{[1,22]}$	2.944**	22.1144	2.850**	15.9912	3.258**	8.9992
Panel C: Shenzhen Stock Exchange (SZSE)						
$CAR_{[-15,-1]}$	−0.399**	−2.8698	−0.487*	−2.3945	−0.032	−0.1000
$CAR_{[-10,-1]}$	−0.533**	−4.7613	−0.602**	−3.6664	−0.247	−0.9401
$CAR_{[-5,-1]}$	−0.152	−1.9022	−0.137	−1.1221	−0.213	−1.3146
$CAR_{[-1,0]}$	−0.331**	−5.2902	−0.378**	−4.0517	−0.136	−0.9761
$CAR_{[0,1]}$	−0.479**	−7.8008	−0.585**	−6.2538	−0.039	−0.3269
$CAR_{[1,5]}$	−0.625**	−8.1298	−0.697**	−5.9802	−0.324*	−2.0301
$CAR_{[1,10]}$	−0.761**	−7.3255	−0.762**	−4.7609	−0.759**	−3.6910
$CAR_{[1,15]}$	−0.812**	−6.3900	−0.976**	−5.2715	−0.130	−0.4345
$CAR_{[1,20]}$	−0.778**	−5.2716	−0.997**	−4.5695	0.131	0.3981
$CAR_{[1,22]}$	−0.508**	−3.4064	−0.642**	−2.8892	0.045	0.1374
Panel D: Taiwan Stock Exchange (TWSE)						
$CAR_{[-15,-1]}$	−0.683**	−5.3557	−0.621**	−3.0628	−0.860**	−3.8241
$CAR_{[-10,-1]}$	−0.656**	−6.2653	−0.642**	−3.7949	−0.697**	−4.0325
$CAR_{[-5,-1]}$	−0.218**	−2.8057	−0.250*	−1.9997	−0.125	−0.9669
$CAR_{[-1,0]}$	0.051	1.0512	0.027	0.3530	0.120	1.4090
$CAR_{[0,1]}$	−0.052	−0.9363	−0.063	−0.7529	−0.018	−0.1623
$CAR_{[1,5]}$	0.869**	8.8007	0.816**	5.5774	1.020**	4.7083
$CAR_{[1,10]}$	1.296**	10.4760	1.178**	6.3013	1.636**	6.3491
$CAR_{[1,15]}$	1.897**	12.3639	1.769**	7.6051	2.266**	7.1430
$CAR_{[1,20]}$	1.330**	8.8404	1.252**	5.5687	1.553**	4.7996
$CAR_{[1,22]}$	0.925**	6.0547	0.890**	3.8989	1.026**	3.1130

Notes: This table reports the cumulative abnormal returns of firms with and without news releases preceding their earnings announcement in the Greater China stock markets, comprising of the Shanghai, Shenzhen and Taiwan stock exchanges. $CAR_{[-5,-1]}$ and $CAR_{[-1,0]}$ are the respective cumulative abnormal returns for the 5- and 1-day periods prior to the earnings announcements, and $CAR_{[1,5]}$, $CAR_{[1,10]}$, $CAR_{[1,15]}$ and $CAR_{[1,22]}$ are the respective cumulative abnormal returns for the 5-,10-,15- and 22-day periods after the earnings announcements. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level.

5.2 Regression Analysis Incorporating News Dummy

We carry out a regression analysis on *CARs* around earnings announcement periods based upon equation (8) with the incorporation of a news dummy (*NDummy*) and market turnover (*TURN*), market size (*SIZE*) and standardized unexpected earnings (*SUE*) control variables; the results are summarized in Table 7. The results reveal that regardless of whether or not there are news reports on firms prior to their earnings announcements, the overall impact of *NDummy* on the *CARs* of their stocks prior to the event date is insignificant. We therefore go on to examine whether the information contained in such news reports may effectively forecast the stock market price reaction and *CARs* following such earnings announcements. The results reveal that the stocks of firms in the Greater China stock markets with news releases prior to their earnings announcement tend to have lower *CARs*. Some investors may be in possession of non-public (private) information, which thereby enables them to trade on the prior earnings announcements, ultimately leading to higher abnormal returns after the event date. The results support the Hypothesis 2.

5.3 Regression Analysis Incorporating News Dummy and News Sentiment

We go on to examine Hypothesis 3 based upon equation (9) This regression analysis is undertaken with the incorporation of a news dummy (*NDummy*), with the sentiment ratio being calculated by semantic orientation (*SRSO*); the results are reported in Table 8.

In this sub-section, we carry out an examination of the relationship between the news sentiment ratio obtained from the news content prior to earnings announcements and subsequent *CARs* around earnings announcement periods in the Greater China stock markets. The results shown in Table 8 reveal that the higher the sentiment contained in the news content, the higher the overall *CARs* prior to (after) the earnings announcements only within one week (one month). The effect of news information content does not consistently have a strong impact on *CARs* calculated in different periods around earnings announcement in the stock markets of Greater China.

Our finding of significant impacts of public information content on *CARs* one week prior to earnings announcement periods is stronger than that during one month after event date. Our empirical results indicate that the sentiment from information contained in news reports can effectively forecast abnormal returns and stock price reactions and the findings are consistent with the results of several prior studies.[10] Hypothesis 3 exists around specific periods around earnings announcement date. We now go on to discuss the differences between the level of press freedom in the various stock markets and the effects on *CARs*.

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[10] *See Ball and Brown (1968), Fang and Peress (2009) and Pritamani and Singal (2001).*

Table 7

Regression Analysis Incorporating News Dummy

CAR Horizons	Variables												Adj.R^2
	Constant		SUE		SIZE		TURN		NDummy		CAR[-5,-1]		
	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	
CAR[-15,-1]	−1.367**	−3.9025	0.136	2.2852	0.407**	6.8793	0.051	1.9351	0.035	0.1689	–	–	0.0377
CAR[-10,-1]	−1.147**	−4.0613	0.113	2.3395	0.284**	6.6014	0.043	2.0470	−0.060	−0.3562	–	–	0.0347
CAR[-5,-1]	−0.433*	−2.1534	0.010	0.3146	0.394**	12.4873	0.014	0.9669	−0.174	−1.4177	–	–	0.1043
CAR[-1,0]	0.130	0.9199	0.076**	3.1707	0.277**	14.1611	−0.019	−1.8036	−0.111	−1.2973	–	–	0.1537
CAR[0,1]	0.223	1.3345	0.119**	4.1262	−0.011	−0.4207	−0.033**	−2.6167	−0.096	−0.9440	−0.077**	−3.3647	0.0278
CAR[1,5]	2.085**	8.2467	0.024	0.5629	0.017	0.4248	−0.120**	−6.3140	−0.222	−1.4424	−0.031	−0.9077	0.0316
CAR[1,10]	2.697**	8.1123	0.027	0.4699	0.024	0.4512	−0.121**	−4.8313	−0.385	−1.8983	−0.033	−0.7340	0.0198
CAR[1,15]	3.994**	9.9748	−0.090	−1.3098	0.017	0.2622	−0.171**	−5.6760	−0.587	−2.4039	−0.048	−0.8880	0.0278
CAR[1,20]	2.418**	5.7468	−0.137	−1.8921	−0.035	−0.5089	−0.039	−1.2437	−0.692*	−2.6982	−0.098	−1.7047	0.0089
CAR[1,22]	1.102*	2.5698	−0.115	−1.5649	−0.044	−0.6195	0.048	1.5000	−0.501	−1.9148	−0.112	−1.9117	0.0068

Notes: SUE is the standardized unexpected earnings; SIZE refers to the natural logarithm of the market capitalization of the firm; and TURN denotes market turnover. The NDummy variable, which measures whether there are any related news reports on the firm prior to its earnings announcement (the event date), takes the value of 1 if there are news reports on the firm prior to the event date, otherwise 0. CAR[-5,-1] and CAR[-1,0] are the respective cumulative abnormal returns for the 5- and 1-day periods prior to the earnings announcements, and CAR[1,5], CAR[1,10], CAR[1,15] and CAR[1,22] are the respective cumulative abnormal returns for the 5-,10-,15- and 22-day periods after the earnings announcements. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level.

Table 8

Regression Analysis Incorporating News Dummy and News Sentiment

CAR Horizons	Variables													Adj.R^2
	Constant			SUE		SIZE		TURN		SRSO*NDummy		$CAR_{[-5,-1]}$		
	Coeff.	t-stat.		Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	Coeff.	t-stat.	
$CAR_{[-15,-1]}$	−1.328	−0.7286		0.145*	2.1160	0.340**	5.3094	0.054	0.4591	−1.051	−0.4809	−	−	0.0479
$CAR_{[-10,-1]}$	−0.726	−0.5067		0.138*	2.5528	0.275**	6.4541	0.012	0.1370	1.793	1.0406	−	−	0.0716
$CAR_{[-5,-1]}$	−1.445	−1.4435		0.054	1.4464	0.372**	12.0163	0.069	1.0616	2.268	1.7782	−	−	0.1964
$CAR_{[-1,0]}$	−1.554*	−1.9607		0.106**	3.5353	0.275**	12.5051	0.084	1.6430	−0.62	−0.6079	−	−	0.2162
$CAR_{[0,1]}$	0.181	1.1555		0.119**	4.1312	−0.014	−0.5238	−0.035**	−2.8165	0.029	1.1274	−0.075*	−3.2931	0.0280
$CAR_{[1,5]}$	1.986**	8.3742		0.024	0.5698	0.011	0.2719	−0.125**	−6.6246	0.064	1.6352	−0.027	−0.7996	0.0321
$CAR_{[1,10]}$	2.498**	7.9957		0.027	0.4796	0.016	0.3061	−0.128**	−5.1349	0.049	0.9482	−0.028	−0.6291	0.0178
$CAR_{[1,15]}$	3.701**	9.8338		−0.089	−1.2956	0.004	0.0618	−0.183**	−6.0820	0.097	1.5599	−0.040	−0.7435	0.0253
$CAR_{[1,20]}$	2.078**	5.2555		−0.136	−1.8758	−0.051	−0.7429	−0.053	−1.6973	0.129	1.9611	−0.088	−1.5350	0.0064
$CAR_{[1,22]}$	0.863*	2.1431		−0.115	−1.5547	−0.056	−0.7961	0.038	1.1822	0.107	1.6054	−0.104	−1.7854	0.0060

Notes: SUE is the standardized unexpected earnings; *SIZE* refers to the natural logarithm of the market capitalization of the firm; *TURN* denotes market turnover; and *SRSO* is the sentiment ratio based upon the application of semantic orientation. The *NDummy* variable, which measures whether there are any related news reports on the firm prior to its earnings announcement (the event date), takes the value of 1 if there are news reports on the firm prior to the event date, otherwise 0. $CAR_{[-5,-1]}$ and $CAR_{[-1,0]}$ are the respective cumulative abnormal returns for the 5- and 1-day periods prior to the earnings announcements, and $CAR_{[1,5]}$, $CAR_{[1,10]}$, $CAR_{[1,15]}$ and $CAR_{[1,22]}$ are the respective cumulative abnormal returns for the 5-,10-,15- and 22-day periods after the earnings announcements. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level.

Table 9

Regression Analysis Incorporating News Dummy, News Sentiment and Press Freedom

CAR Horizons	Variables							Adj.R^2
	Constant	SUE	SIZE	TURN	SRSO*NDummy	PFDummy	CAR[-5,-1]	
CAR[-15,-1]	0.322	0.142*	0.422**	-0.052	0.003	-0.809	–	0.0547
	(0.308	(2.381	(7.068	(-0.772	(0.036	(-1.683	–	
CAR[-10,-1]	-0.497	0.116*	0.286**	-0.000	0.031	-0.324	–	0.0909
	(-0.586	(2.398	(6.628	(-0.005	(0.565	(-0.836	–	
CAR[-5,-1]	-0.780	0.010	0.393**	0.027	-0.036	0.110	–	0.2021
	(-1.280	(0.295	(12.450	(0.704	(-1.14	(0.395	–	
CAR[-1,0]	-0.191	0.077**	0.272**	-0.005	-0.035	0.124	–	0.2276
	(-0.464	(3.188	(13.835	(-0.192	(-1.872	(0.654	–	
CAR[0,1]	-0.604	0.116	-0.015	0.014	0.031	0.377	-0.075**	0.0293
	(-1.192	(-0.015	(-0.563	(0.427	(1.197	(1.631	(-3.312	
CAR[1,5]	2.610**	0.027	0.012	-0.164**	0.063	-0.299	-0.027	0.0319
	(3.412	(0.012	(0.292	(-3.330	(1.596	(-0.857	(-0.790	
CAR[1,10]	5.263**	0.039	0.020	-0.302**	0.042	-1.326**	-0.027	0.0233
	(5.239	(0.020	(0.376	(-4.647	(0.825	(-2.895	(-0.599	
CAR[1,15]	8.293**	-0.070	0.010	-0.471**	0.087	-2.203**	-0.038	0.0363
	(6.872	(0.010	(0.158	(-6.040	(1.395	(-4.002	(-0.704	
CAR[1,20]	8.03**	-0.111	-0.043	-0.428**	0.115	-2.857**	-0.085	0.0238
	(6.355	(-0.043	(-0.629	(-5.233	(1.763	(-4.955	(-1.494	
CAR[1,22]	7.212**	-0.088	-0.047	-0.361**	0.092	-3.046**	-0.101	0.0252
	(5.608	(-0.047	(-0.678	(-4.339	(1.396	(-5.192	(-1.746	

Notes: SUE are the standardized unexpected earnings; SIZE refers to the natural logarithm of the market capitalization of the firm; TURN denotes market turnover; and SRSO is the sentiment ratio based upon the application of semantic orientation. The NDummy variable, which measures whether there are any related news reports on the firm prior to its earnings announcement (the event date), takes the value of 1 if there are news reports on the firm prior to the event date, otherwise 0. The press freedom dummy variable, PFDummy, which measures whether there is more press freedom for the firm in the Greater China stock markets, takes the value of 1 if there is more press freedom in the Shenzhen Stock Exchange, otherwise 0. CAR[-5,-1] and CAR[-1,0] are the respective cumulative abnormal returns for the 5- and 1-day periods prior to the earnings announcements, and CAR[1,5], CAR[1,10], CAR[1,15] and CAR[1,22] are the respective cumulative abnormal returns for the 5-,10-,15- and 22-day periods after the earnings announcements. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level. Figures in parentheses are t-statistics.

5.4 Regression Analysis Incorporating News Dummy, News Sentiment and Press Freedom

Hypothesis 4 is examined based upon equation (10) with the incorporation of a news dummy (*NDummy*), press freedom dummy (*PFDummy*), sentiment ratio (*SRSO*), market turnover (*TURN*), market size (*SIZE*), standardized unexpected earnings (*SUE*) and *CARs* around earnings announcement periods in the Greater China stock markets; the results are reported in Table 9.

Our investigation aims to determine whether the level of press freedom in the Chinese stock exchanges and the Taiwan Stock Exchange has diverse impacts on abnormal returns within these markets. The results reported in Table 9 clearly indicate that the press freedom dummy (*PFDummy*) has significant negative impacts on *CARs* after earnings announcement periods in the Greater China markets. When complete information is released to the public there will obviously be greater information transparency, but when investors do not receive such public information on which to trade means they will be even unable to get private information to enjoy excess stock market returns.

The release of news reports on listed firms is intended to promote stock market efficiency. If certain investors are in possession of non-public (private) information, they can earn greater abnormal returns and stock market prices will react better. The different factors coming into play include policies, politics and the economic environment, all of which can have considerable impacts on the trading behavior of investors and the reaction to prices within the stock market.

6. Conclusions

We set out in this study to examine the relationships between several issues, including news releases relating to listed firms prior to their earnings announcements, the degree of sentiment inherent in the news content, the cumulative abnormal returns of the stocks of these firms and press freedom in the greater China stock markets, comprising of the Shanghai, Shenzhen and Taiwan stock exchanges.

Our empirical results reveal that the stocks of firms with no news releases prior to their earnings announcements have higher abnormal returns than those with related news. Since investors may be in receipt of only limited public information on which to trade prior to earnings announcements, following such announcements, the stocks of firms on which there were no news releases will accumulate better abnormal returns than those with news releases.

We further show that *SRSO* has significant impacts on *CARs* during earnings announcements periods in these markets, thereby implying that the more positive the news content, the better the performance prior to such announcements. Furthermore, the sentiment in the news content is found to have a significantly positive impact on *CAR*s for roughly one month after the earnings announcements. This finding that the news may enhance the forecasting of the price effects and abnormal returns is consistent with that of Fang and Peress (2009).

We measured press freedom levels to take into consideration the different policies, politics and economic environment across the Greater China stock markets. The finding that stock markets with better press freedom have lower *CARs* provides support for the study of Griffin *et al.* (2008). We suggest that diverse public information in markets with better press freedom promotes better market efficiency and reduces excess returns. By contrast, there should be a risk premium for the information asymmetry in markets with poorer press freedom levels, which suggests that *CARs* in these markets may be higher relative to those markets with better levels of press freedom.

The main contribution of this study is our examination of press coverage, including the news published by multiple reporters in markets with simplified Chinese or traditional Chinese news releases, and the quantification of news sentiment. We also contribute to policy application by demonstrating that press freedom improves information asymmetry, which may well result in better market efficiency.

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