

Research on the Influence of Media Attention on Annual Stock Returns

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Abstract. With the rapid development of information technology, media attention not only affects investors' information acquisition and cognition, but also further affects stock returns by changing market sentiment and corporate governance mechanisms. This paper explores the influence of media attention on the annual stock returns of enterprises and tests the robustness of enterprises' samples with different regions and equity properties, which increases the richness of relevant literature and provides a useful reference for investors, regulators and media, so as to better understand the influence of media attention on the stock market and its potential effects.

Keywords: Media Attention; Annual Stock Returns; Equity Nature.

1. Introduction

With the rapid development of information technology, media, as a vital channel of information dissemination, has a profound impact on investors' decision-making. Media attention not only affects investors' information acquisition and cognition, but also further affects the stock returns by changing market sentiment and corporate governance mechanism. For example, improving media attention can significantly enhance the stock liquidity, and then improve the stock returns. This is because the improvement of media attention can drive the attention of investors, and then increase the trading volume and market activity of the stock. However, although some research has made some achievements, is there any difference in the impact of different types of media attention (such as online media, newspaper media, etc.) on the stock returns? Is there any difference in the impact of media attention on different industries and companies of various sizes? All these problems need in-depth study and discussion.

The purpose of this study is to explore the influence mechanism of media attention on the annual stock returns through empirical analysis. By constructing a scientific analysis model, using massive data resources and designing reasonable control variables, it aims to reveal the internal relationship between media attention and stock returns through different regions, equity properties and enterprise properties. At the same time, we also hope to provide investors with a more scientific decision-making basis, and provide more targeted policy suggestions for listed companies and regulatory agencies.

2. Literature Review

2.1. Research on Media Attention

Media attention will play a positive role in the corporate economy. If it can be in a good social environment, enterprises will be more inclined to share information, which will promote the investment and financing behavior of enterprises. Social media can also form group wisdom by gathering small and medium-sized investors, and utilize public opinion to affect the M&A decisions of listed companies [1]. Meanwhile, the strength of social media connection and stock price spillover effect is causal with a large proportion of individual investors in the market. Hence, relevant research mentioned that the regulatory authorities should carefully use regulatory tools to properly protect the media public opinion environment of enterprises [2]. For example, the social media voice of small

and medium shareholders will affect the M&A preferences of enterprises [3]. Small and medium shareholders use social media to effectively improve the enterprises' investment efficiency [4].

2.2. Research on the Annual Stock Returns

Some investors may get higher returns in the market through their knowledge and skills, while others may have different results [5]. Various stages of economic development and the macroeconomic environment will affect the overall performance of the stock market, thus affecting the return rate of investors [6]. If investors choose stocks that perform well, their annual returns may be higher. On the contrary, the return rate will be lower [7]. Long-term holding of stocks is usually considered to bring relatively stable returns, while short-term speculation may lead to higher volatility and uncertain returns. The economic policy uncertainty decreases the pricing efficiency in the capital market, thus reducing the market information supply, stock price information content and the pricing efficiency [8].

In addition, most scholars have found a positive correlation between stock returns and financial performance. In other words, enterprises with good financial performance usually get higher returns. For example, Apple has maintained excellent financial performance in the past few years and its share price has continued to rise accordingly, which has become one of the most valuable companies in the world. However, this relationship is not absolute. According to Jin Fengming, sometimes the stock price of enterprises will be affected by market sentiment, investor expectations, industry trends and other factors, which will deviate from financial performance [9].

2.3. Research on the Relationship Between Media Attention and Annual Stock Returns

As crucial indicators that affect the annual stock returns, the fluctuation of enterprise stock price reflects the market expectation of enterprise future value and investors' confidence in enterprise performance. Through the analysis of enterprise stock price fluctuation, the market's evaluation of enterprise management status and future development prospects as well as the degree of investors' recognition of enterprise investment value can be understood. For example, after an enterprise releases its financial report, its stock price rises sharply, which may indicate that the market is optimistic about the financial performance and future development of the enterprise, thus improving its market value. Media attention can help investors better grasp the business conditions and enterprises' market value, providing an important reference for investment decisions.

No matter the positive or negative information about enterprises released by the media, it will have a great impact on the enterprises' market cognition, thus changing the economic benefits of enterprises [10]. The disclosure information and quantity of social media on corporate financial performance will largely affect the stock price synchronicity, and then affect the stock price and annual stock returns [11] [12]. The positive emotions of retail investors have a very positive effect on stock market returns [13] and enterprises' excellent financial performance will also encourage the positive emotions of investors [14]. On the contrary, if the negative emotions of investors are widely spread, it may lead to a stock price collapse [15].

2.4. Literature Review

After sorting out many similar studies on media attention or annual stock returns and their relationship, there is a vital conclusion. Media attention, public opinion and information disclosure have a great impact on the enterprises' stock price and financial performance, and then on the annual stock returns. This study focuses on the impact of media attention on the annual stock returns to make a more specific study.

3. Theoretical Analysis and Research Hypotheses

Based on the principal-agent theory, when an enterprise is widely concerned by the media, the principal will fulfill his obligations more dutifully, such as disclosing effective information to the

public and performing well in management, so as to improve the operational efficiency and corporate profitability, thus increasing the annual stock returns. Based on the reputation theory, enterprises tend to strive for a good public reputation to promote corporate profitability and annual stock returns.

Therefore, when a stock or enterprise is widely reported by the media, this information will be quickly transmitted to investors, thus affecting their investment decisions. This effect is not only reflected in the number of reports, but also in their quality and content. On this basis, the hypotheses are put forward:

H1: Media attention positively affects the annual stock returns of enterprises.

H1a: The content of media attention positively affects the annual stock returns of enterprises.

H1b: The amount and type of media attention will positively affect the annual stock returns.

4. Analysis of Empirical Results

4.1. Sample Selection

The data of media attention, location, enterprise property and equity nature of different listed enterprises from 2009 to 2023 with corresponding annual stock returns are collected from CSMAR as shown in Table 1. After screening and analyzing these data, it is found that there is a significant positive correlation between media attention and annual stock returns.

Table 1. Explanation of Variables

Variable	Symbol	Definition
Media Attention	Media (1-6)	Media1: The total number of headlines reported by newspapers and online media Media2: The total number of contents reported by newspapers and online media Media3: The number of online media reports plus one for natural logarithm Media4: The number of newspapers and media reports plus one for natural logarithm Media5: Total media coverage/1000 Media6: Total media coverage plus one for natural logarithm
Annual Stock Returns	Yretwd	Annual stock returns considering reinvestment of cash dividends
Enterprise Scale	Size	Natural logarithm of total assets at the end of the year
Liabilities to Assets	Lev	Total liabilities/assets
Return of Assets	ROA	Average balance of net profit/total assets
Cash Flow Ratio	Cashflow	The denominator of net cash flow from operating activities/total current liabilities is total current liabilities
Growth Rate of Operating Income	Growth	(Operating income in the current year-Operating income in the same period of last year)/operating income in the same period of last year)
Board Size	Board	Number of directors on the board of directors
Proportion of Independent Directors	Indep	Ratio of the number of independent directors to the size of directors
Shareholding Ratio of Top Ten Shareholders	Top 10	Shareholding ratio of top ten shareholders (%)

4.2. Descriptive Statistics

Table 2. Descriptive Statistics

Variable	N	mean	sd	min	p50	max
Yretwd	25484	0.116	0.475	-0.566	0.00900	2.087
Media 1	25998	128.2	141.8	1	82	847
Media 2	25998	358.1	613.4	23	170	4364
Media 3	26599	5.058	1.014	2.890	4.977	8.061
Media 4	26001	3.186	1.368	0.693	3.091	7.130
Media 5	25998	0.364	0.617	0.0240	0.174	4.374
Media 6	25998	5.269	1.027	3.219	5.165	8.384
Size	25959	22.44	1.329	19.81	22.26	26.43
Lev	25959	0.449	0.205	0.0660	0.441	0.937
ROA	25958	0.0390	0.0640	-0.225	0.0360	0.227
Cashflow	25958	0.0500	0.0690	-0.161	0.0490	0.248
Growth	25941	0.149	0.424	-0.586	0.0870	2.791
Board	25956	2.133	0.196	1.609	2.197	2.708
Indep	25956	0.375	0.0540	0.333	0.364	0.571
Top 10	25959	0.585	0.158	0.231	0.591	0.911
Area	26602	1.538	0.881	1	1	4
EquityNature	26423	0.405	0.491	0	0	1

It can be seen that the media attention and reports are active, with a maximum of 4364 times and a minimum of more than 30 times. The average value and standard deviation are within a reasonable range, and the value of Media is within a reasonable expectation, so regression analysis can be conducted.

4.3. Correlation Analysis

Table 3. Correlation Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) Yretwd	1.000														
(2) Media_1	0.210***	1.000													
(3) Media_2	0.073***	0.721***	1.000												
(4) Media_3	0.182***	0.763***	0.748***	1.000											
(5) Media_4	0.060***	0.567***	0.679***	0.752***	1.000										
(6) Media_5	0.076***	0.726***	1.000***	0.752***	0.681***	1.000									
(7) Media_6	0.164***	0.747***	0.771***	0.985***	0.841***	0.775***	1.000								
(8) Size	-0.038***	0.306***	0.391***	0.425***	0.409***	0.392***	0.435***	1.000							
(9) Lev	-0.003	0.136***	0.144***	0.192***	0.172***	0.144***	0.196***	0.440***	1.000						
(10) ROA	0.139***	0.048***	0.059***	0.078***	0.098***	0.060***	0.078***	0.022***	-0.390***	1.000					
(11) Cashflow	0.078***	0.043***	0.062***	0.078***	0.078***	0.062***	0.080***	0.081***	-0.185***	0.426***	1.000				
(12) Growth	0.102***	0.027***	0.003	0.026***	0.009	0.003	0.020***	0.046***	0.033***	0.226***	0.037***	1.000			
(13) Board	-0.005	0.091***	0.117***	0.135***	0.171***	0.118***	0.147***	0.248***	0.123***	0.004	0.045***	-0.017***	1.000		
(14) Indep	0.001	0.051***	0.063***	0.045***	0.030***	0.062***	0.044***	0.023***	0.005	-0.010*	-0.004	-0.004	-0.531***	1.000	
(15) Top 10	-0.001	0.033***	0.112***	0.093***	0.107***	0.112***	0.095***	0.183***	-0.095***	0.247***	0.155***	0.074***	0.027***	0.033***	1.000

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

According to correlation analysis, the correlation coefficients between independent variables and dependent variables are positive and significant, which initially verifies the hypotheses, while other correlation coefficients are within a reasonable range without serious contribution.

4.4. Baseline Regression

First of all, the influence of different types of media attention on the annual stock returns is analyzed. According to Table 4, during the empirical research, the regression coefficient of Column (1) is 0.001, which is significant at the significance level of 1%, indicating that media attention positively affects the annual stock returns. Column (2) adopts a multiple linear regression model, taking the annual stock returns as the dependent variable and media attention as the independent variable. Meanwhile, it controls the potential impacts such as enterprise scale, leverage ratio, return on assets and cash flow.

Table 4. Media Attention and Annual Stock Returns

	(1)	(2)
	Yretwd	Yretnd
Media_1	0.001^{***}	
	(39.62)	
Media_2		0.000^{***}
		(15.09)
Size	-0.105 ^{***}	-0.137 ^{***}
	(-16.66)	(-18.78)
Lev	0.356 ^{***}	0.474 ^{***}
	(10.73)	(12.29)
ROA	1.197 ^{***}	1.366 ^{***}
	(16.93)	(16.56)
Cashflow	0.411 ^{***}	0.410 ^{***}
	(7.30)	(6.23)
Growth	0.051 ^{***}	0.063 ^{***}
	(6.57)	(7.02)
Board	-0.092 ^{**}	-0.077 [*]
	(-2.52)	(-1.82)
Indep	-0.128	-0.061
	(-1.15)	(-0.47)
Top 10	0.074 [*]	0.129 ^{***}
	(1.74)	(2.59)
_ cons	2.279 ^{***}	2.958 ^{***}
	(13.16)	(14.68)
N	24257.000	24257.000
r ²	0.110	0.052
r ² _a	-0.009	-0.075

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Through the analysis of abundant sample data, we find a significant positive correlation between media attention and annual stock returns. This result shows that the improvement of media attention can effectively promote the market performance of individual stocks, which verifies the hypothesis.

When making investment decisions, investors should fully consider the change in media attention and the information transmission, sentimental influence and governance effect. At the same time, listed companies should actively respond to media attention, strengthen communication and cooperation with the media, and improve the transparency and quality of information disclosure, so as to maintain the enterprises' market image and stock price stability.

4.5. Heterogeneity Test

In recent years, with the development of the equity market, enterprises with different equity properties have been paid more attention by the media. This paper will explore the influence of media attention on annual stock returns based on samples of various equity properties.

Firstly, for state-owned enterprises, media attention often gives them a positive impact. Most state-owned enterprises have huge financial strength and government support, and media reports can further increase their popularity and image, attracting more investors' attention and recognition. This positive attention helps to increase the market value of state-owned enterprises and raise their stock prices, which in turn improves their stock returns. However, for private enterprises, the impact of media attention on them may be different.

Table 5. Heterogeneity Analysis-Equity Nature

	(1)	(2)
	Yretwd (state-owned)	Yretwd (non-state-owned)
Media_1	0.001***	0.001***
	(30.98)	(24.42)
Size	-0.119***	-0.078***
	(-13.22)	(-7.83)
Lev	0.406***	0.292***
	(8.78)	(5.67)
ROA	1.394***	0.832***
	(14.70)	(7.25)
Cashflow	0.541***	0.283***
	(6.71)	(3.56)
Growth	0.060***	0.027**
	(5.50)	(2.40)
Board	-0.107*	-0.096**
	(-1.93)	(-1.97)
Indep	-0.278	-0.111
	(-1.58)	(-0.79)
Top 10	0.064	0.019
	(1.09)	(0.28)
_ cons	2.598***	1.794***
	(10.13)	(6.99)
N	13834.000	10245.000
r ²	0.126	0.086
r ² _a	-0.015	-0.033

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

According to the samples of listed state-owned enterprises in Column (1) of Table 5, the regression coefficient of media attention to the annual stock returns is positively significant at the significance level of 1%, with the regression coefficient greater than that of non-state-owned enterprises. It indicates that media attention to the annual stock returns is positively significant in both state-owned enterprises and non-state-owned enterprises. However, private enterprises lack the financial strength and government support that state-owned enterprises have, so the effect of media reports to enhance their popularity is slightly weak. Hence, media attention should be taken into account in investment decisions to better grasp the investment opportunities of different equity samples.

Table 6. Heterogeneity Analysis-Regional Samples

	(1)	(2)	(3)	(4)
	Yretwd	Yretwd	Yretwd	Yretwd
Media_1	0.001***	0.001***	0.001***	0.001***
	(32.31)	(16.21)	(14.41)	(6.38)
Size	-0.124***	-0.064***	-0.058***	-0.107***
	(-15.42)	(-3.46)	(-3.38)	(-3.12)
Lev	0.402***	0.399***	0.178**	0.312*
	(9.60)	(4.07)	(2.26)	(1.88)
ROA	1.299***	1.139***	0.917***	0.680**
	(14.80)	(5.85)	(5.21)	(1.99)
Cashflow	0.395***	0.577***	0.253*	0.437
	(5.74)	(3.71)	(1.69)	(1.59)
Growth	0.058***	0.042**	0.030*	0.026
	(5.86)	(1.99)	(1.69)	(0.78)
Board	-0.069	-0.100	-0.207**	-0.129
	(-1.47)	(-1.14)	(-2.12)	(-0.83)
Indep	-0.055	0.041	-0.564**	-0.173
	(-0.39)	(0.14)	(-2.09)	(-0.34)
Top 10	0.071	0.037	-0.058	0.181
	(1.32)	(0.32)	(-0.52)	(0.81)
_ cons	2.603***	1.277***	1.825***	2.456***
	(11.73)	(2.69)	(3.95)	(2.83)
N	16455.000	3346.000	3461.000	985.000
r ²	0.119	0.116	0.083	0.065
r ² _a	-0.008	-0.002	-0.038	-0.063

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

According to different regions, the positive impact of media attention on stock returns also varies. Samples from various regions are grouped and analyzed to further test the robustness of media attention. By classifying the samples according to regions and estimating the models of various regions, regression results with more regional differences can be obtained.

According to the regression results in Table 6, the regression coefficients of media attention to the annual stock returns in different regions are all positive and significant at the significance level of 1%. To sum up, media attention in different regions will have different impacts on stock returns. The eastern region pays attention to the financial situation and market performance of enterprises, the central region potential and future growth space, the western region business strategy and innovation ability, and the northeast region production capacity and market competitiveness. All these factors need to be considered by investors when making investment decisions.

4.6. Robustness Test

Table 7. Robustness Test-Substituting Explanatory Variables

	(1)	(2)	(3)	(4)
	SYN_Mdeq	SYN_Mdeq	SYN_Mdeq	SYN_Mdeq
Media_3	0.001			
	(0.47)			
Media_4		0.007***		
		(4.01)		
Media_5			0.000	
			(0.03)	
Media_6				0.002
				(1.07)
Size	-0.018***	-0.016***	-0.018***	-0.018***
	(-7.49)	(-6.38)	(-7.59)	(-7.31)
Lev	-0.076***	-0.083***	-0.079***	-0.080***
	(-6.04)	(-6.45)	(-6.15)	(-6.22)
ROA	-0.181***	-0.204***	-0.192***	-0.195***
	(-6.74)	(-7.40)	(-7.00)	(-7.07)
Cashflow	0.058**	0.058**	0.054**	0.054**
	(2.71)	(2.67)	(2.50)	(2.51)
Growth	-0.027***	-0.026***	-0.026***	-0.026***
	(-9.06)	(-8.69)	(-8.55)	(-8.57)
Board	0.069***	0.062***	0.066***	0.065***
	(5.05)	(4.48)	(4.73)	(4.68)
Indep	0.051	0.044	0.045	0.045
	(1.23)	(1.05)	(1.07)	(1.06)
Top 10	0.015	-0.002	0.005	0.004
	(0.95)	(-0.12)	(0.31)	(0.26)
_ cons	0.700***	0.666***	0.731***	0.712***
	(10.42)	(9.77)	(10.98)	(10.36)
N	24849.000	24270.000	24268.000	24268.000
r2	0.015	0.015	0.015	0.015
r2_a	-0.115	-0.117	-0.118	-0.118

t statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

To ensure the robustness of the results, the analysis of substituting explanatory variables is conducted to test the positive impact of media attention on the stock returns. In this case, we need to select other indicators that can reflect media attention as alternative variables to cross-verify the results.

The number of media reports and the total amount of media reports are chosen as alternative variables to explore the impact of media attention on stock returns. According to Table 7, the regression results are the same as the benchmark regression, indicating that the original hypothesis is relatively robust and can be verified again.

5. Conclusion and Recommendations

5.1. Conclusion

Media attention has a significant positive impact on annual stock returns, which usually arouses investors' attention and interest, prompting them to pay more attention to the enterprises and stocks involved. Such concern and interest positively affect the trading volume and stock price, and then increases the stock returns. This research also tests the robustness of samples from different regions and gets largely significant results. This means that the impact of media attention on individual stock returns is stable and consistent across regions. After analyzing samples from the eastern, central, western and northeastern regions respectively, it is found that the positive impact of media attention on stock returns has been statistically significant in these regions, which further supports the robustness of the relationship between media attention and stock returns. These findings not only enrich the relevant literature, but also provide useful reference for investors, regulators and media to better understand the impact of media attention on the stock market and its potential effects.

5.2. Recommendations

From the macro perspective, the government should support, encourage and guide enterprises to recognize the importance of media attention. The government can formulate relevant policies to encourage enterprises to interact with the media and provide accurate and timely information. The government can strengthen the supervision of the media to ensure that media reports are in the public interest without misleading investors and consumers.

From the micro perspective, in addition to disclosing correct and beneficial news for consumers, the media should adhere to objective, true and responsible reporting and avoid inaccurate or misleading ones. When reporting on enterprises, the media should pay attention to balanced and multi-angle reporting, so that investors and consumers can get comprehensive information, which helps to establish a fair investment environment and consumer trust.

Enterprises should welcome media attention with a positive attitude and be aware of the opportunities and positive effects of media attention. When an enterprise receives media attention, its popularity and image will be enhanced, increasing its attractiveness to investors and consumers. This may drive higher annual stock returns. Hence, enterprises should interact with the media, share relevant information and stories, and establish constructive cooperative relations with the media.

However, enterprises need to realize that media attention may be accompanied by some challenges and negative comments. High media attention may attract criticism and negative coverage. Enterprises should learn to deal with these challenges in a transparent and positive manner and provide explanations in time, so as to maintain public trust in enterprises.

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