Is the Social Responsibility Information Disclosed by the Companies really Valuable?—Evidence from Chinese Stock Price Synchronicity

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Abstract: Social responsibility information disclosed by listed companies is an important way to transfer non-financial information to the stock market, which affects the level of stock price synchronicity. In order to explore whether Corporate Social Responsibility (CSR) information is valuable in improving capital market pricing efficiency, this paper conducted empirical research based on a sample of China Shanghai and Shenzhen A-share listed companies in years 2010–2015. The results showed that: (1) Overall, there is a significant positive correlation between CSR information and stock price synchronicity; (2) under different disclosure motives, there is no significant difference in the impact of CSR on stock price synchronicity; (3) Securities analysts and institutional investors can negatively regulate the positive relationship between CSR and stock price synchronicity, while the media will intensify the positive effect of CSR on stock price synchronicity. This research is of great significance in promoting the fulfillment of CSR and improving capital market pricing efficiency.

Keywords: Corporate Social Responsibility (CSR); stock price synchronicity; securities analyst; media; institutional investor

1. Introduction

Corporate Social Responsibility (CSR) is a necessary way to safeguard the interests of corporate stakeholders and to promote the sustainable development of society. Specifically, CSR can be defined as the pursuit of social welfare maximization and sustainable development through effective management and operation of enterprises to actively assume responsibility for society, stakeholders, and environmental protection [1–3]. It is emphasized in CSR that companies should take the lead in protecting the rights and interests of employees, consumers, and shareholders, participating in environmental protection and social welfare, and taking responsibility for the sustainable and healthy development of society as a whole [4]. As an important method of non-financial information disclosure, the fulfillment and disclosure of CSR information is of great significance to the development of listed companies and capital markets. Non-financial information is an important piece of evidence for investors to make decisions. Disclosure of CSR information not only helps companies to foster sustainable competitiveness, but also helps to provide more information for capital market pricing. Nowadays, as sustainable development has increasingly attracted the attention of various countries, the idea that listed companies should increase non-financial information disclosure has been widely recognized by both theoretical and practical circles [5,6]. In 2006, China's Shenzhen Stock Exchange issued the *Guidelines on Social Responsibility of Listed Companies of the Shenzhen Stock Exchange*, which made the first stipulation on disclosure of CSR reports. In May 2008, Shanghai Stock Exchange also issued a notice to encourage listed companies to disclose their social responsibility

reports. In December 2008, the China Securities Regulatory Commission (CSRC) required some listed companies of Shanghai Stock Exchange and Shenzhen Stock Exchange to issue social responsibility reports, and other types of listed companies may voluntarily disclose the same. The promulgation of these regulations marks the coexistence of mandatory disclosure and voluntary disclosure in China's social responsibility reports, which is also the main classification method for existing domestic scholars to study this issue.

In addition, central enterprises are a relatively special group. They are affiliated with the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and are the backbone and pillar of the state-owned economy. In addition to undertaking their due economic responsibilities, central enterprises also bear more social and political responsibilities [7]. In January 2008, the SASAC issued the document about *The Guidance for the Central Enterprises to Disclose Their Social Responsibilities Information*, clearly stating that "the central enterprises must strengthen their sense of social responsibility, actively carry out their social responsibilities", which encourages central enterprises to issue social responsibility reports voluntarily. In fact, the leaders of the central enterprises have responded positively to the SASAC's call for their reputation and promotion, and generally choose to publish social responsibility reports voluntarily. According to statistics, in 2014, 85 out of 112 central enterprises in China issued CSR reports; in 2015, 61 out of 106 central enterprises issued CSR reports. On the whole, central enterprises mainly choose to disclose social responsibility information under the guidance of existing rules. Due to its special state-owned status and responsibility for economic, political, and social aspects, the disclosure motivation of central enterprises is between compulsory and voluntary disclosure. Based on this, this paper defines the CSR reports of the central enterprise controlled by the SASAC as semi-mandatory disclosure, examines the role of CSR information disclosure on the pricing efficiency of the capital market in detail, and explores whether CSR information disclosure can provide more information about the corporate management and future performance for investors, and then inject more effectiveness into the formation of asset prices.

As a representation of the pricing efficiency of the capital market, stock price synchronism measures the degree of stock prices "rise or fall together", that is, the degree of simultaneous rise or fall of most stock prices during a certain period of time. Higher stock price synchronicity means less firm-specific information on stock price, but more information shared by the market and industry. Stock price reflects more information shared by the market and industry, thus reducing the pricing efficiency of the capital market [8]. In an effective capital market, the stock price signal mechanism can guide the optimal allocation of resources and form the basic function of the capital market. However, stock prices in emerging markets reflect more market and industry factors, showing higher stock price synchronicity, which means that investors use less specific information in asset pricing decisions. That is, the corporate financial status, growth stage, and executive behavior and other signals do not play an effective role in pricing. Morck et al. studied the stock price synchronicity of multiple countries in the world in 1995 and found that the stock price synchronicity of Chinese listed companies ranked second in the world [9]. According to the latest statistics of Eun et al., even if the time window is expanded forward or backward, the synchronicity of China's stock market is still undisputed as the highest of the 47 countries and regions compared [10]. The cross-border discoveries are also consistent with the intuitive feelings of investors. The most direct examples are the irrational rise and fall of the "thousand shares" in the A-share market in 2015, which seriously disrupted the stability of the financial market and caused huge losses to investors. Therefore, it has become an urgent task to explore and control the factors that influence stock price synchronicity. Essentially, stock price synchronicity reflects the content of firm-specific information incorporated into stock price. As the main body of disclosing firm-specific information at the source, in addition to regularly publishing basic financial information in accordance with the law, listed companies should also increase disclosure of the non-financial information, such as the CSR related information, which has become an important strategic channel to improve their competitive advantage. However, it remains to be studied whether the disclosure of CSR can provide investors with more firm-specific information to improve market pricing efficiency.

In the past, the research on the economic effects of CSR reports mainly focused on the impact on stock prices, stock returns, and corporate performance, and generally classified the disclosure of CSR information as mandatory disclosure and voluntary disclosure at home and abroad, without paying attention to semi-mandatory disclosure [5,11,12]. Therefore, this paper takes a total of 2300 Shanghai and Shenzhen A-share listed companies in years 2010–2015 as samples and more precisely distinguishes the motives of CSR information disclosure into mandatory, semi-mandatory, and voluntary. We explore whether CSR information under different disclosure motives is valuable for reducing stock price synchronicity and further investigate whether the analyst, the media, or institutional investor are concerned about such non-financial information. The innovation and contribution of this paper mainly are: (1) This paper not only explores the value of different CSR disclosure motives on market pricing efficiency, but also examines the role of institutional investors, the media, and securities analysts in regulating the relationship between the two. The research will broaden the theoretical study on the economic consequences of CSR, enrich existing literature research from the new perspective of external information concern subjects, and fill a gap in previous studies on the impact of non-financial information disclosure on the pricing efficiency of capital market; (2) the definition and measurement of CSR disclosure motives are more meticulous and accurate in this paper. The separate differentiation of semi-mandatory information disclosure is more in line with the reality of the disclosure of CSR information in China, which is an innovation based on existing research. This paper can provide an empirical reference for the implementation and management of CSR information disclosure in China; (3) this paper will provide a reference for improving market pricing efficiency and corporate governance quality, and protecting the interests of small and medium-sized investors in China. Meanwhile, it provides direction for improving the quality of non-financial information disclosure from the perspectives of institutional investors, the media, and securities analysts. Additionally, the decision-making reference for policy makers and regulators in the normative and quality management of CSR information disclosure is provided in this paper, which is of great practical significance.

The rest of this paper is organized as follows: The second part is the literature review and research hypothesis. Based on the literature research both at home and abroad, this paper puts forward research hypotheses to discuss the impact of CSR on stock price synchronicity under different disclosure motives and the impact of different external information concern subjects on the above relationships. The third part is the empirical study design, including a description of the sample and data, variables, and models. The fourth part is the analysis of empirical results for each research hypothesis. The fifth part summarizes the empirical results and proposes policy recommendations based on the status quo of corporate governance and capital market environment in China.

2. Literature Review and Research Hypothesis

As the sustainable development of society draws more and more attention, the research on CSR has been increasing. In the early days, scholars' research on CSR mainly focused on its connotation and definition. In 1953, Bowen clearly defined CSR as making decisions based on social values and expectations in the book *Social Responsibility of Entrepreneurs*. Dahlsrud believes that CSR mainly covers five major aspects: Environment, society, economy, stakeholders, and voluntary behavior [13]. Afterwards, scholars focused on the economic consequences of CSR, mainly involving the impact of CSR on stock price performance [14,15], corporate performance and value [16–19], earnings management, and so on. In addition, a few studies have examined the impact of CSR on analysts' earnings forecasts [11], stock price crash risk [5,20,21], stock price synchronicity [22], and insider trading [23,24]. Although various aspects of research are involved, there is a lack of in-depth and detailed discussion on CSR.

As the source of information of listed companies, the disclosure of CSR information directly affects market pricing efficiency based on the information and is reflected in stock price synchronicity. In 1966, scholars began to study stock price synchronicity. King applied the capital asset pricing model and

found that only the market and industry level information cannot fully account for stock price changes. What is more important is company-level information. The research of Roll has also provided support for this opinion [25]. At present, there are two main points of view on stock price synchronicity: "Information efficiency view" and "noise base view", but most studies support the former, which says that stock price synchronicity reflects the level of firm-specific information integrated into the stock price [8]. When stock price fluctuation is mainly caused by the information of the company level, market pricing efficiency is higher [26]. Since Morck et al. proposed using the fitting coefficient R^2 of the pricing model to measure stock price synchronicity [9], many scholars discussed the factors and mechanisms affecting stock price synchronicity, including internal corporate governance aspects, such as financial transparency [27] and control power [28], and external corporate governance aspects, such as the judicial system [9], institutional investors [29], the media [30], analysts [31], and so on. Stock price synchronicity actually measures the firm-specific information content in the stock price, and is closely related to non-financial information disclosure. On the whole, the existing literature pays less attention to the relationship between CSR and stock price synchronicity and there is not a unanimous conclusion on the quality of CSR disclosure and information validity. Therefore, whether information disclosure of CSR can improve the pricing efficiency of China's capital market has become the key study point in the paper.

2.1. CSR and Stock Price Synchronicity

CSR influences the content of firm-specific information integrated in the stock price through information disclosure, which in turn affects capital market pricing efficiency. On the one hand, if companies actively fulfill their social responsibilities and disclose relevant information in a timely manner, more high-quality firm-specific information will be passed on to investors [32]. As an important supplement to non-financial information, CSR reporting helps to improve information transparency, reduce information hoarding activities of management [5,20] and insider trading activities [33], and finally form sustainable competitiveness for enterprises. Also, the disclosure of CSR information is of great value in helping external information users to understand corporate performance in various aspects, such as business strategy, social welfare, and sustainable development. In order to achieve a higher performance and shape the corporate image, listed companies have an incentive to fulfill CSR and disclose relevant information in a timely manner [17]. Based on the "information efficiency view", when CSR reports make investors have a more company-level information basis for decision-making, the stock price formed by investors' trading decision-making behavior has more content of firm-specific information, and thus stock price synchronicity is lower [8].

On the other hand, even if a company does not disclose true and detailed firm-specific information, it may enlarge its popularity through obscure, general, and low-quality CSR reports, and gain a reputation through the help of other media to attract the market and investors [34,35]. Especially in emerging markets where market mechanisms are not sound, companies are more likely to adopt speculative acts [36]. They will use CSR reports as a self-interest tool [37] and are more likely to be involved in corruption [38]. At this time, the disclosure of CSR reports may hide a problem of adverse selection. Enterprises with poor performance need to cover up their negative operating conditions by publishing CSR reports [39,40]. Based on the self-interest tool view, the quality of CSR information disclosure is poor [41], and it is likely to include more insignificant market and industry public information, or the annual disclosure reports are almost the same [22], which leads to the increase of stock price synchronicity. In this situation, the paper proposes the first set of hypotheses:

Hypothesis 1a (H1a). *A firm's CSR information disclosure is negatively related to stock price synchronicity.*

Hypothesis 1b (H1b). *A firm's CSR information disclosure is positively related to stock price synchronicity.*

2.2. CSR, Disclosure Motivation, and Stock Price Synchronicity

Generally speaking, the disclosure of CSR information is mainly motivated by legal system requirements, economic benefits [36], and moral incentives [42]. According to different disclosure motives, the paper classifies CSR disclosure into mandatory disclosure, semi-mandatory disclosure, and voluntary disclosure. There is a typical mandatory disclosure system in China's securities market. Mandatory disclosure mainly refers to the fact that listed companies must conduct standardized information disclosure in accordance with the law, which leads to the fact that mandatory disclosure of non-financial information is a formality to a great degree. Although mandatory disclosure can solve the problem of information adequacy, CSR reports are difficult to be supervised carefully and rigorously due to their subjectivity. Therefore, the content and quality of firm-specific information contained in CSR reports cannot be guaranteed. By contrast, voluntary disclosure is to proactively disclose CSR reports based on corporate culture, such as ethics and morality, and altruistic tendencies are greater [6]. By voluntarily disclosing non-financial information, enterprises show their good image and reputation to fulfill their social responsibilities [43], maintain relationships with investors and resolve possible legal risks, and accumulate resources for profit and sustainable competitiveness [44]. In particular, companies with a good performance will voluntarily disclose more firm-specific information, including duties in serving society, protecting the interests of investors and the ecological environment, which distinguishes the corporate from other enterprises with average or poor performance [45]. Semi-mandatory information disclosure is between mandatory and voluntary disclosure. Enterprises choose to publish CSR reports in order to maintain their reputation and undertake economic, political, and social responsibilities under the guidance of existing rules. In the paper, the disclosure of CSR information of central enterprises is classified as semi-mandatory disclosure. For the consideration of careers and corporate reputations, most of the central enterprises choose to publish their CSR reports under the guidance of the SASAC to meet the expectations of society and contribute to the sustainable development of society. Unlike mandatory and voluntary disclosure, semi-mandatory disclosure is deficient in timeliness and standardization. The proportion of voluntary authentication is relatively low, so its information content is lower than that of voluntary disclosure, and the role of reducing stock price synchronicity is not so obvious.

In summary, the different disclosure motives make the CSR reports different in the content and quality of the firm-specific information, and then the impact on stock price synchronicity is inconsistent. Therefore, we propose the following hypothesis:

Hypothesis 2 (H2). *The impact of CSR information disclosure on stock price synchronicity is different under different disclosure motives.*

2.3. CSR, External Information Concern Subject, and Stock Price Synchronicity

As the three major external information concern subjects in the capital market, institutional investors, securities analysts, and the media will capture, transfer, or use the information in the market, directly or indirectly affecting investors' trading decisions. Compared with individual investors, institutional investors have more abundant information resources, more professional researchers and financial advantages, and are more likely to effectively play the role of stock value discovery. As an important information user, institutional investors mainly influence the firm-specific information content in the stock price through their professional investment and transaction behavior, and then affect the pricing efficiency of the capital market. At the same time, as an important shareholder, institutional investors can participate in corporate governance and supervision, guide listed companies to actively perform and disclose CSR information, create a good image of enterprises in environmental protection [46], and improve corporate information disclosure quality. Wang et al. found that there is a positive correlation between stock price synchronicity and corporate information transparency due to the noise in China's stock market, but as the proportion of institutional investors increases, this positive correlation will weaken [47]. It can be inferred that institutional investors will explore the

information in the CSR reports and reflect the firm-specific information on the stock price through their own trading behavior and influence on ordinary investors.

As the two most important information transmission channels and interpretation mediators, securities analysts and the media directly affect the stock price information content. Securities analysts usually issue reports through research and analysis, which mainly rely on exclusive information obtained through communication with the internal staff [48]. The reports issued by securities analysts help to provide investors with a reference in market transactions. Due to pressure from investors or securities companies and their own reputation, analysts will be more active in mining corporate information. When companies disclose CSR information, analysts will play the role of information mediators to dig out the information contained therein, so that more firm-specific information is reflected in stock price fluctuations and the degree of simultaneous changes in stock prices is reduced [8]. With the rise of the Internet, the role of new media has also become increasingly prominent. In the capital market, the media, as an information intermediary between enterprises and investors, will exert corporate governance functions by means of information mining, dissemination, and processing to mitigate information asymmetry [49]. Meanwhile, media reports can lead to social echo and supervision by public opinions, urge companies to actively undertake the due social obligations, and improve information quality [50]. A company may also actively disclose information through the media in order to shape its reputation. In the process, media reports can enhance the stakeholders' ability to supervise the company and restrict corporate behaviors, thus affecting the quality of CSR information disclosure.

In conclusion, as important external information concern subjects in the capital market, institutional investors, securities analysts, and the media will dig, convey, and use corporate information, and will pay more attention to CSR information quality under the effects of professional advantages, reputation incentives, and supervision by public opinions. Therefore, they will affect the firm-specific information content contained in CSR reports, and then have an impact on stock price synchronicity. Moreover, the above effects will be different under different disclosure motives of CSR reports. Based on this, the following hypothesis is put forward:

Hypothesis 3 (H3). *As important external information concern subjects, institutional investors, securities analysts, and the media will affect the relationship between CSR information disclosure and stock price synchronicity. And the above effects will vary with different disclosure motives of CSR information.*

3. Empirical Study Design

3.1. Sample Selection and Data Sources

This paper selected all A-shares in years 2010–2015 as the initial sample and conducted the following screening processes for research needs: (1) Eliminate data with less than one year listing and less than 100 days of annual transaction in order to calculate the index of stock price synchronicity; (2) exclude financial listed companies in the light of the particularity of financial index in financial companies; (3) exclude ST, *ST companies; (4) exclude companies that have undergone major asset restructuring and overall listing during the sample period; (5) eliminate companies that lack of or miss data. Finally, the effective sample of the study included 2300 listed companies, with a total of 11,550 sample points. Among them, corporate data and institutional shareholding data were from the Wind database, securities analysts and media data from the CSMAR database, and CSR reports score from the Rankins CSR Ratings (RKS) database.

3.2. Definition of Main Variables

The dependent variable of this paper is stock price synchronicity. According to the methods of Morck et al. [9], Durnev et al. [51], Gul et al. [28], the following Equation (1) was established to measure R^2:

$$RET_{i,t} = \alpha_0 + \alpha_1 R_{M,t} + \alpha_2 R_{I,t} + \varepsilon_{i,t} \tag{1}$$

Among them, $RET_{i,t}$ denotes the stock returns of the *i*-th company on the *t*-th trading day; $R_{M,t}$ denotes the market-weighted average market return rate for the *t*-th trading day; $R_{I,t}$ denotes the industry-weighted average market return rate for the *t*-th trading day. The industry classification of this paper adopts the first level industry classification standard of the CSRC. We used adjustment R^2 of Equation (1) to measure stock price synchronicity, that is, the part of the individual stock returns explained by market and industry factors. To overcome the limitation of R^2 range between 0 and 1, we performed logarithmic processing to obtain stock price synchronicity (*SYNCH*) (see Equation (2)):

$$SYNCH_i = \ln\left(\frac{R_i^2}{1 - R_i^2}\right) \tag{2}$$

The main independent variable of this paper is CSR. With the methods of existing literature for reference [4], the paper used the following indicators to measure CSR: (1) Set dummy variable CSR1 to measure whether the company discloses CSR information. If the listed company publishes CSR reports in the corresponding year, the value CSR1 is 1, and vice versa 0; (2) CSR disclosure level (CSR2) is measured by the logarithm of the CSR report score by RKS. The higher the value of CSR2 is, the higher the information disclosure level of the CSR report is; (3) CSR disclosure is divided into three categories: Voluntary disclosure (CSRVOL), semi-mandatory disclosure (CSRSEMI), and mandatory disclosure (CSRMAN), as the disclosure motives are distinguished. Specifically, for the listed companies of "Shanghai Corporate Governance Sector" and companies issuing foreign listed foreign shares in the Shanghai Stock Exchange, as well as companies of "Shenzhen Stock Exchange Index 100", which are required to disclose CSR reports by the CSRC, the CSR reports disclosed were defined as mandatory disclosure. The CSR reports of the central enterprise controlled by the SASAC were denoted as semi-mandatory disclosure. The rest were classified as voluntary disclosure.

The three regulatory variables are institutional ownership, analyst coverage, and media coverage. Referring to the method of Wang et al. [47], since institutional investors mainly include funds, securities traders, brokerage of financial products, QFIIs, insurance companies, social insurance funds, supplementary pension, trust companies, finance companies, banks, and non-financial listed companies, the ratio of the number of institutional ownership (excluding general corporate shareholdings) to the number of shares in circulation is used to measure institutional ownership (INST). Referring to the method of Chan and Hameed [31], this paper used the natural logarithm of the annual number of analysts who issued earnings forecasts for a company plus 1 to measure analyst coverage (ANALYST). Additionally, there are two main methods for measuring media coverage of listed companies [30,52]. One is to use a few representative paper newspapers as media sources, and the other is to use the Internet news search engine as media sources. Considering the advantages and disadvantages of the two methods, this paper selected Baidu News search engine (http://news.baidu.com/) as the data source. The media coverage (MEDIA) was measured through searching the name of the listed company in the news title box for each year, adding the number of news reports to 1, and taking the natural logarithm of the number. Among them, analyst coverage and media coverage are measured by LN (the number of analysts or news reports + 1), mainly to avoid the loss of sample size (focus on the loss when the number of analysts or news reports is 0), while ensuring the stability of the data and reliability of the empirical results.

In addition, we controlled some control variables. Referring to the existing literature [29,53], this paper controlled the lagging firm size, circulation market value, return on equity, market-to-book ratio (because the influence of these control variables on stock price synchronicity is likely to have a lag

effect in time, it is not the current period that affects investor trading decisions, and thus the stock price changes), as well as the stock turnover of the year, listed years. For the measure of firm size, we used total sales instead of total assets or market value of equity, mainly for the following considerations: Total sales directly reflect the annual revenue of the company, which is an important financial indicator affecting corporate profits, investor decisions, and stock price information. In comparison, total assets and the market value are more related to the capital structure, executive compensation and firm risk than corporate governance [53], and the impact of the two on the investor's decision-making behavior and the information content transmitted to the stock price is not so important. Therefore, the total sales were used to measure the firm size. Also, this paper controlled the noise variables, including the skewness, kurtosis, standard deviation of the rate of return, and the volatility of the company's return on assets over the past three years. Furthermore, we controlled the industry and year dummy variables. The metric method of main variable in this study is shown in Table 1.

Table 1. Definition and metric of variables.

Variable Name	Variable Symbol	Metric Method
Stock price synchronicity	SYNCH	$Ln (R^2/(1 - R^2))$
Whether to disclose CSR	CSR1	The value is 1 if the CSR report is disclosed, otherwise 0
CSR disclosure level	CSR2	The logarithm of the CSR report score by RKS
Institutional ownership	INST	Shareholding ratio of institutional investors
Analyst coverage	ANALYST	LN (the number of analysts + 1)
Media coverage	MEDIA	LN (the number of news reports + 1)
Firm size	SIZE	LN (total sales)
Circulation market value	MVE	Market value of circulation
Return on equity	ROE	The ratio of net profit to annual net assets
Market-to-book ratio	MB	The ratio of total market value to book value
Stock turnover	TURN	LN (annual turnover rate of stock)
Listed years	AGE	LN (listed years of the company)
Skewness	SKEW	Skewness of the rate of return
Kurtosis	KUR	Kurtosis of the rate of return
Standard deviation	STD	Standard deviation of the rate of return
Volatility of return	SROE	The volatility of return on assets over the past three years

3.3. Empirical Model

Referring to the study of Gul et al. [28], this paper constructed multiple regression models to examine our hypotheses. Specifically, we used a panel data regression model with fixed-effect and used the software IBM SPSS Statistics 20 for analysis. First, in order to test the effect of CSR on stock price synchronicity (H1a and H1b), the following Equation (3) was established:

$$
\begin{aligned}
SYNCH_i = \alpha_0 + \quad & \alpha_1 CSR_{i,t-1} + \alpha_2 SIZE_{i,t-1} + \alpha_3 MVE_{i,t-1} + \alpha_4 ROE_{i,t-1} + \alpha_5 MB_{i,t-1} \\
& + \alpha_6 TURN_{i,t} + \alpha_7 AGE_{i,t} + \alpha_8 SKEW_{i,t} + \alpha_9 KUR_{i,t} + \alpha_{10} STD_{i,t} \\
& + \alpha_{11} SROE_{i,t} + \varepsilon_{i,t}
\end{aligned}
\tag{3}
$$

Among them, CSR is measured by CSR1 and CSR2, respectively. If $\alpha1$ is significantly negative, then H1a is established. If $\alpha1$ is significantly positive, then H1b is established.

Further, in order to test H2, we divided the sample into voluntary disclosure (CSRVOL), semi-mandatory disclosure (CSRSEMI), and mandatory disclosure (CSRMAN) subsamples. Subsample regression was performed on the above models to test the effect of different CSR disclosure motives on stock price synchronicity.

Next, we introduced the cross term of external information concern subject and CSR to examine H3.

$$SYNCH_i = \gamma_0 + \quad \gamma_1 CSR_{i,t-1} + \gamma_2 FACTOR_{i,t} + \gamma_3 FACTOR_{i,t} \times CSR_{i,t-1} + \gamma_4 SIZE_{i,t-1}$$
$$+\gamma_5 MVE_{i,t-1} + \gamma_6 ROE_{i,t-1} + \gamma_7 MB_{i,t-1} + \gamma_8 TURN_{i,t} + \gamma_9 AGE_{i,t} \quad (4)$$
$$+\gamma_{10} SKEW_{i,t} + \gamma_{11} KUR_{i,t} + \gamma_{12} STD_{i,t} + \gamma_{13} SROE_{i,t} + \varepsilon_{i,t}$$

Among them, FACTOR takes INST, ANALYST, and MEDIA respectively to test the moderating effect of the three on the relationship between CSR and stock price synchronicity. Also, we examined the differences in the above effects under different disclosure motives through subsample regression (See Equation (4)).

4. Analysis of Empirical Results

4.1. Descriptive Statistics

Table 2 shows descriptive statistics of the full sample. The average value of the stock price synchronicity index R^2 is 0.301 during the period of 2010–2015, indicating that 30.1% of the stock price during the sample period can be explained by market and industry information. The average value of CSR1 was 0.251, indicating that 25.1% of companies had published CSR reports during the sample period.

Table 2. Descriptive statistics.

Variable	N	Mean	Median	Minimum	Maximum	St. Dev
R^2	11,518	0.301	0.000	0.000	1.000	0.459
SYNCH	11,518	−1.631	−2.000	−10.000	1.000	1.030
CSR1	11,518	0.251	0.000	0.000	1.000	0.434
CSR2	2891	3.641	4.000	3.000	4.000	0.480
INST	11,518	9.474	5.000	−8.000	93.000	12.521
ANALYST	11,518	1.623	2.000	0.000	4.000	1.132
MEDIA	11,518	5.959	7.000	0.000	9.000	2.518
SIZE	11,518	3.454	3.000	−1.000	10.000	1.324
MVE	11,518	3.854	4.000	1.000	10.000	0.978
ROE	11,518	8.356	8.000	−421.000	466.000	16.109
MB	11,518	4.011	3.000	−343.000	1648.000	18.906
TURN	11,518	2.751	2.000	0.000	17.000	2.077
AGE	11,518	2.160	2.000	1.000	3.000	0.793
SKEW	11,518	0.118	0.000	−3.000	13.000	0.466
KUR	11,518	1.518	1.000	−1.000	188.000	2.875
STD	11,518	3.045	3.000	1.000	20.000	1.078
SROE	11,518	6.436	3.000	0.000	844.000	16.099

In order to further observe whether there is a significant difference in the level of stock price synchronicity between companies that disclose CSR information and the rest of companies, we provide the frequency table for CSR1 (Table 3) and results of the independent-samples *t*-test (Table 4).

Table 3. Frequency table for CSR1.

		Frequency	Percentage	Valid Percentage	Accumulative Percentage
Valid	0	8627	74.900	74.900	74.900
	1	2891	25.100	25.100	100
	Total	11,518	100	100	

Table 4. Results of the independent-samples *t*-test.

		Levene Test of Variance Equation		T Test of Mean Value Equation		
		F	Sig.	t	df	Sig. (Bilateral)
SYNCH	Equal variances assumed	2.017	0.156	−16.392 ***	11,516	0.000
	Equal variances not assumed			−16.572 ***	5060.038	0.000

Notes: *** Indicate statistical significance at the 1% level.

Table 3 shows that in the total sample, 74.9% of companies did not publish CSR reports, and another 25.1% of listed companies published CSR reports. The t-test values in Table 4 shows that there is a significant difference in the level of stock price synchronicity among listed companies that disclose CSR information and the rest of the companies. To this end, we need to further explore the relationship between CSR1 and stock price synchronicity SYNCH.

4.2. Correlation Test

In order to avoid the collinearity of the main variables, Table 5 shows the correlation test results. Among them, the correlation coefficient between SYNCH and CSR is positive, and the correlation coefficient between SYNCH and INST is negative. It can be preliminarily judged that CSR information disclosure is positively related to stock price synchronicity. On the whole, the correlation coefficients between the main variables are less than 0.5, so it can be judged that there is no collinearity problem.

Table 5. Correlation matrix.

	SYNCH	CSR1	CSR2	INST	ANALYST	MEDIA	SIZE	MVE	ROE	MB	TURN	AGE	SKEW	KUR	STD	SROE
SYNCH	1															
CSR1	0.151	1														
CSR2	0.155	0.988	1													
INST	−0.054	0.054	0.054	1												
ANALYST	0.127	0.234	0.238	0.460	1											
MEDIA	0.005	0.166	0.165	−0.088	−0.029	1										
SIZE	0.247	0.452	0.467	0.017	0.319	0.305	1									
MVE	0.241	0.415	0.427	0.199	0.508	0.220	0.718	1								
ROE	0.111	0.083	0.081	0.181	0.309	0.006	0.089	0.225	1							
MB	−0.036	−0.034	−0.035	0.010	−0.028	0.004	−0.094	−0.011	−0.182	1						
TURN	−0.003	−0.211	−0.209	−0.079	−0.153	−0.277	−0.339	−0.243	−0.042	0.008	1					
AGE	0.002	0.173	0.173	−0.114	−0.175	0.389	0.309	0.142	−0.091	0.027	−0.275	1				
SKEW	−0.233	0.097	0.102	−0.056	−0.039	0.089	0.164	0.049	−0.054	−0.013	−0.108	0.124	1			
KUR	−0.205	0.035	0.036	−0.080	−0.063	0.060	0.071	−0.019	−0.040	−0.023	−0.167	0.050	0.532	1		
STD	0.131	−0.106	−0.097	−0.003	−0.081	−0.150	−0.135	−0.033	−0.080	0.030	0.611	−0.014	−0.022	−0.111	1	
SROE	−0.097	−0.064	−0.066	−0.021	−0.082	−0.025	−0.090	−0.060	−0.095	0.187	0.017	−0.007	−0.001	0.018	−0.021	1

4.3. Regression Analysis

According to the results of the Hausman test, this paper finally selected the fixed effect model. The test results are shown in Table 6 (according to the P value, the null hypothesis is rejected). To begin with, we examine the impact of CSR1 on stock price synchronicity. The regression results in Table 6 show that the coefficient of the variable CSR1 is positive and significant at the 1% level, indicating that the release of the CSR report does not achieve the effect of transmitting firm-specific information. It verifies that H1b is established, that is, CSR information disclosure is positively correlated with stock price synchronicity. In fact, as an important carrier of non-financial information of an enterprise, investors may be more concerned about the information disclosure level of CSR reports than whether they are released or not. The regression coefficient of CSR information disclosure level CSR2 in Table 6 is positive and significant, indicating that, as CSR information disclosure level increases, stock price synchronicity increases, which further supports research hypothesis H1b.

Table 6. Regression results of corporate social responsibility (CSR) and stock price synchronicity.

Variable	Whether to Disclose	Disclosure Level	Mandatory	Semi-Mandatory	Voluntary
CSR1	0.154 *** (7.490)	-	-	-	-
CSR2	-	0.071 ** (2.062)	0.072 (1.611)	0.129 (0.919)	0.058 (1.024)
SIZE	0.115 *** (14.969)	0.056 *** (3.456)	0.067 *** (3.312)	0.034 (0.554)	0.026 (0.839)
MVE	0.021 * (1.715)	0.084 *** (3.701)	0.083 *** (2.922)	−0.037 (−0.374)	0.155 *** (3.382)
ROE	0.002 *** (3.537)	−0.000 (−0.080)	−0.006 *** (−2.894)	0.007 * (1.864)	0.002 (1.605)
MB	−0.001 (−1.361)	−0.054 *** (−7.665)	−0.026 *** (−3.083)	−0.013 (−0.405)	−0.133 *** (−7.958)
TURN	−0.020 *** (−3.749)	−0.019 (−1.4320)	−0.013 (−0.660)	−0.154 *** (−2.862)	−0.013 (−0.644)
AGE	−0.120 *** (−10.415)	−0.063 *** (−2.676)	−0.039 (−1.163)	−0.117 (−1.120)	−0.057 (−1.412)
SKEW	−0.289 *** (−13.925)	−0.170 *** (−4.495)	−0.089 * (−1.847)	−0.268 * (−1.655)	−0.321 *** (−4.722)
KUR	−0.012 *** (−3.518)	−0.031 *** (−3.6560)	−0.031 ** (−2.059)	−0.057 (−0.924)	−0.019 *** (−1.688)
STD	−0.173 *** (−12.099)	−0.124 *** (−4.228)	−0.146 *** (−3.744)	−0.046 (−0.393)	−0.093 * (−1.911)
SROE	−0.004 *** (−7.385)	−0.001 (−0.602)	−0.002 (−0.606)	−0.001 (−0.222)	−0.000 (−0.037)
Intercept	0.111 (1.097)	−0.549 ** (−2.375)	−0.428 (−1.389)	−0.736 (−0.752)	−1.032 *** (−2.693)
INDUSTRY	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES
N	11517	2890	1690	207	991
F	188.616 ***	57.830 ***	38.578 ***	7.926 ***	20.496 ***
Adj-R^2	0.336	0.379	0.400	0.445	0.355

Hausman Test		Chi-square statistic	Chi-square d.f.	Prob > chi2
Ho: difference in coefficients not systematic		374.900 ***	12.000	0.000

Notes: The values in brackets are *t*-values, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The N is the sample observations.

Next, the samples that have disclosed CSR reports were divided into subsamples of mandatory, semi-mandatory, and voluntary disclosure to test the impact of different disclosure motives on stock price synchronicity. The results in Table 6 show that the disclosure motives of CSR information have no significant impact on stock price synchronicity. This shows that hypothesis H2 in this paper is not

tenable. In addition, the regression coefficients of control variables show that return on equity (ROE) is positively correlated with stock price synchronicity, while stock turnover (TURN) and listed years (AGE) are negatively correlated with stock price synchronicity, which is similar to the existing research conclusions [29,54].

The above results show that, on the whole, disclosure of CSR information cannot reduce stock price synchronicity, so the value of CSR information is not obvious. On the one hand, this is because listed companies use CSR reports as a self-interest tool. Enterprises with poor performance publish low-quality CSR reports through obscure processing methods to cover up their poor operating conditions. As a result, the information contained in CSR reports is mainly industry and market public information, which leads to a rise in stock price synchronization. On the other hand, the proportion of mandatory disclosure in the sample is larger. The overall quality of CSR reports is not high, since mandatory disclosure conveys more formal and standardized information [22], which is not conducive to improving the pricing efficiency of the capital market.

In addition, different CSR disclosure motives do not have a significant impact on stock price synchronicity. This is likely due to the offset effect of positive and negative effects of different disclosure motives on the quality of CSR reports, which makes the difference in disclosure motives not significantly reflected in the impact on CSR information content and stock price synchronicity. Moreover, different listed companies will form heterogeneous behaviors and representations, and such heterogeneity cannot be clearly distinguished directly by disclosure motives.

Although companies that voluntarily disclose CSR information tend to proactively publish high-quality CSR reports to maintain a good reputation and allow more firm-specific information to be transmitted to investors, they may also disclose more industry or market hotspot information to attract investors' attention. This act of proactively manipulating CSR reports will result in a reduction in firm-specific information incorporated into the stock price. On the one hand, mandatory and semi-mandatory disclosure conveys formatted information under the force of the legal system. On the other hand, they may also actively improve the quality of CSR information for reasons of reputation and social responsibility. The existence of the above possibilities makes the distinction of disclosure motives not have a significant impact on the information content in the CSR reports and stock price synchronicity.

Further, we examined the role of external information concern subjects in regulating the relationship between CSR and stock price synchronicity. Table 7 shows the results. We mainly examined the roles of institutional investors, securities analysts, and the media. Among them, CSR is measured by CSR1 and CSR2, respectively. According to the results in Table 7, when CSR is measured by CSR1, the coefficient of the cross terms ANALYST *CSR is significantly negative, while the coefficients of INST *CSR and MEDIA *CSR are positive, but not significant, indicating that the analyst coverage has a negative effect on the positive relationship between CSR and stock price synchronicity, while institutional ownership and media reports do not have this effect, which partially supports hypothesis H3. However, when CSR is measured by CSR2, the role of external information concerns is not significant.

For subsamples with different disclosure motives, CSR is measured by CSR2. The results show that the coefficient of INST *CSR is significantly negative in the semi-mandatory subsamples, the coefficient of MEDIA *CSR is significantly positive in the mandatory subsamples, while the coefficients of ANALYST *CSR is not significant. The results partially support hypothesis H3, that is, institutional investors will focus on semi-mandatory CSR information and pass on more firm-specific information to investors, which will weaken the positive relationship between CSR and stock price synchronicity. The media will make use of the mandatory CSR information disclosed by the listed companies and intensify the positive effect of CSR on stock price synchronicity.

The above results show that the roles of different external information concern subjects are different. Securities analysts play an important role in information mining and transmission, reducing the positive effect of CSR on stock price synchronicity. The trading behavior of institutional investors can inject more firm-specific information into stock price; especially CSR information disclosed by

central enterprises (semi-mandatory) is made use of by institutional investors for value trading, which can weaken the positive correlation between CSR and stock price synchronicity. Additionally, the media pay more attention to mandatory disclosure of CSR information, but mainly convey industry hotspot information that meets social expectations through sought-after reports and make use of the contagion of market sentiment to increase their popularity and profit, and thus intensified the positive effect of CSR on stock price synchronicity.

Table 7. Regression results of CSR, external information concern subject, and stock price synchronicity.

Variable	Whether to Disclose	Disclosure Level	Mandatory	Semi-Mandatory	Voluntary
CSR1	0.147 ** (1.995)	-	-	-	-
CSR2	-	0.064 (1.517)	0.054 (0.970)	0.291 * (1.890)	0.042 (0.588)
INST	−0.012 *** (−14.181)	0.002 (0.113)	−0.004 (−0.223)	0.137 ** (2.075)	−0.003 (−0.090)
ANALYST	0.029 *** (2.784)	0.019 (0.389)	0.044 (0.712)	0.268 (1.366)	−0.008 (−0.091)
MEDIA	−0.035 *** (−9.405)	−0.086 ** (−2.306)	−0.099 ** (−2.002)	−0.090 (−0.549)	−0.058 (−0.847)
INST*CSR	0.001 (0.630)	−0.003 (−0.799)	−0.001 (−0.222)	−0.046 ** (−2.537)	−0.002 (−0.300)
ANALYST*CSR	−0.043 ** (−2.404)	−0.011 (−0.798)	−0.023 (−1.287)	−0.059 (−1.092)	0.011 (0.461)
MEDIA*CSR	0.012 (1.173)	0.017 (1.631)	0.022 * (1.756)	0.024 (0.531)	0.008 (0.427)
SIZE	0.115 *** (14.873)	0.053 *** (3.309)	0.063 *** (3.127)	0.020 (0.332)	0.025 (0.802)
MVE	0.054 *** (4.160)	0.104 *** (4.266)	0.092 *** (2.984)	0.067 (0.642)	0.172 *** (3.498)
ROE	0.003 *** (5.178)	0.002 (1.428)	−0.003 (−1.207)	0.008 ** (2.259)	0.003 * (1.869)
MB	−0.000 (−0.828)	−0.050 *** (−7.024)	−0.025 *** (−3.002)	−0.002 (−0.055)	−0.126 *** (−7.538)
TURN	−0.035 *** (−6.438)	−0.030 ** (−2.244)	−0.024 (−1.235)	−0.160 *** (−3.148)	−0.021 (−1.043)
AGE	−0.104 *** (−8.524)	−0.046 * (−1.925)	−0.029 (−0.874)	−0.047 (−0.450)	−0.040 (−0.964)
SKEW	−0.281 *** (−13.716)	−0.174 *** (−4.641)	−0.091 * (−1.915)	−0.274 * (−1.761)	−0.314 *** (−4.657)
KUR	−0.015 *** (−4.665)	−0.035 *** (−4.249)	−0.040 *** (−2.646)	−0.117 * (−1.951)	−0.019 * (−1.785)
STD	−0.160 *** (−11.301)	−0.120 *** (−4.116)	−0.141 *** (−3.610)	−0.061 (−0.551)	−0.095 * (−1.946)
SROE	−0.004 *** (−7.711)	−0.001 (−1.043)	−0.003 (−0.871)	−0.004 (−0.641)	−0.000 (−0.171)
Intercept	0.190 * (1.842)	−0.420 (−1.625)	−0.217 (−0.596)	−1.301 (−1.293)	−0.916 ** (−2.176)
INDUSTRY	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES
N	11517	2890	1690	207	991
F	172.927 ***	52.090 ***	33.764 ***	8.275 ***	18.166 ***
Adj-R^2	0.356	0.395	0.411	0.513	0.371

Notes: The values in brackets are *t*-values, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The N is the sample observations.

In addition, in order to further explore whether there is a nonlinear relationship, we added the squared term INSTsq (square of institutional ownership INST) and the cross-entry INSTsq *CSR to the model [55], and the relationship between CSR and stock price synchronism was, again, regression.

The results are shown in Table 8. The coefficients of INST *CSR1 and INSTsq *CSR1 are significantly negative and positive, respectively, indicating that, as the institutional shareholding ratio increases, the role of institutional investors in weakening the positive correlation between CSR and stock price synchronicity is first weakened and then strengthened. The inflection point is when INST = -57.738%. Since the inflection point is less than 0, the role of institutional investors in weakening the positive correlation between CSR and stock price synchronicity is gradually enhanced (in reality, INST $\geq$ 0). In addition, there is no nonlinear relationship when distinguishing different disclosure motives.

Table 8. Nonlinear regression results.

	CSR1	CSR2	Mandatory	Semi-Mandatory	Voluntary
CSR1	0.221 *** (7.662)	-	-	-	-
CSR2	-	0.112 *** (2.907)	0.103 ** (2.029)	0.356 ** (2.504)	0.105 (1.603)
INST	−0.008 *** (−4.095)	0.020 (0.827)	0.001 (0.051)	0.253 ** (2.108)	0.056 (1.131)
INSTsq	−0.000 * (−1.764)	−0.001 (−1.254)	−0.000 (−0.654)	−0.003 (−1.124)	−0.002 (−1.438)
INST *CSR	−0.012 *** (−3.585)	−0.010 (−1.522)	−0.005 (−0.655)	−0.076 ** (−2.292)	−0.018 (−1.309)
INSTsq *CSR	0.000 *** (3.505)	0.000 (1.481)	0.000 (0.896)	0.001 (1.090)	0.000 (1.430)
SIZE	0.106 *** (13.827)	0.049 *** (3.069)	0.061 *** (3.024)	0.021 (0.353)	0.018 (0.5750
MVE	0.059 *** (4.830)	0.109 *** (4.799)	0.098 *** (3.406)	0.113 (1.133)	0.189 *** (4.048)
ROE	0.003 *** (5.575)	0.001 (1.301)	−0.003 (−1.361)	0.007 ** (2.144)	0.003 * (1.889)
MB	−0.000 (−0.967)	−0.049 *** (−6.907)	−0.023 *** (−2.709)	−0.006 (−0.185)	−0.128 *** (−7.691)
TURN	−0.031 *** (−5.753)	−0.028 ** (−2.120)	−0.017 (−0.913)	−0.162 *** (−3.164)	−0.025 (−1.220)
AGE	−0.139 *** (−12.010)	−0.058 ** (−2.500)	−0.028 (−0.845)	−0.052 (−0.521)	−0.071 * (−1.769)
SKEW	−0.289 *** (−14.076)	−0.177 *** (−4.744)	−0.093 * (−1.961)	−0.289 * (−1.892)	−0.322 *** (−4.781)
KUR	−0.016 *** (−4.774)	−0.036 *** (−4.314)	−0.041 *** (−2.736)	−0.120 ** (−2.027)	−0.020 * (−1.843)
STD	−0.150 *** (−10.536)	−0.109 *** (−3.762)	−0.133 *** (−3.428)	−0.070 (−0.6320	−0.084 * (−1.725)
SROE	−0.004 *** (−7.669)	−0.001 (−0.993)	−0.003 (−0.741)	−0.006 (−1.000)	−0.000 (−0.159)
Intercept	−0.010 (−0.095)	−0.809 *** (−3.380)	−0.636 ** (−1.981)	−1.641 * (−1.745)	−1.270 *** (−3.201)
INDUSTRY	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES
N	11517	2890	1690	207	991
F	178.862 ***	54.972 ***	35.915 ***	8.848 ***	19.056 ***
Adj-R^2	0.351	0.395	0.413	0.515	0.368

Notes: the values in brackets are *t*-values, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The N is the sample observations.

4.4. Robustness Test

In order to ensure the reliability of the results, the following robustness tests were conducted: (1) Since the proportion of funds is highest among institutional investors and most representative, the ratio of shares held by the fund to the number of shares in circulation (INST2) is used as an alternative to institutional investors; (2) Use the logarithm of the number of research reports released by the analyst during the sample period (ANALYST2) to replace the analyst coverage index.

The results of the robustness test are shown in Tables 9 and 10 below, in which the coefficient of INST *CSR is significantly negative in the semi-mandatory subsample, the coefficient of MEDIA *CSR is significantly positive in the mandatory subsample, and the coefficient of ANALYST *CSR is significantly negative, which is consistent with previous results. That is, the analyst coverage has a negative effect on the positive relationship between CSR and stock price synchronicity. Institutional investors will focus on semi-mandatory CSR information and weaken the positive relationship between CSR and stock price synchronicity. The media will make use of the mandatory CSR information and intensify the positive effect of CSR on stock price synchronicity. On the whole, the results of the robustness test in this paper are basically consistent with the above results, indicating that the research conclusions in this paper are reliable.

Table 9. Robustness test 1.

Variable	Whether to Disclose	Disclosure Level	Mandatory	Semi-Mandatory	Voluntary
CSR1	0.097 (1.305)	-	-	-	-
CSR2	-	0.018 (0.436)	0.022 (0.404)	0.225 (1.485)	−0.019 (−0.269)
INST2	−0.016 *** (−15.900)	−0.006 (−0.292)	−0.012 (−0.520)	0.133 * (1.898)	−0.003 (−0.083)
ANALYST	0.022 ** (2.023)	0.043 (0.889)	0.084 (1.359)	0.229 (1.199)	0.002 (0.018)
MEDIA	−0.034 *** (−8.842)	−0.094 *** (−2.595)	−0.097 ** (−2.001)	0.001 (0.008)	−0.102 (−1.530)
INST2 *CSR	−0.005 ** (−2.249)	−0.004 (−0.660)	−0.001 (−0.166)	−0.045 ** (−2.322)	−0.004 (−0.416)
ANALYST *CSR	−0.004 (−0.238)	−0.015 (−1.061)	−0.025 (−1.400)	−0.072 (−1.366)	0.004 (0.146)
MEDIA *CSR	0.015 (1.541)	0.020 ** (2.022)	0.023 * (1.813)	−0.004 (−0.104)	0.020 (1.106)
SIZE	0.101 *** (12.397)	0.042 *** (2.607)	0.044 ** (2.129)	−0.016 (−0.272)	0.042 (1.364)
MVE	0.052 *** (3.945)	0.118 *** (4.872)	0.119 *** (3.873)	0.125 (1.143)	0.155 *** (3.211)
ROE	0.002 *** (3.076)	0.001 (0.916)	−0.006 *** (−2.681)	0.017*** (3.720)	0.004** (2.516)
MB	−0.003 *** (−3.570)	−0.055 *** (−7.249)	−0.032 *** (−3.578)	−0.048 (−1.228)	−0.120 *** (−7.279)
TURN	−0.038 *** (−6.778)	−0.027 ** (−2.005)	−0.004 (−0.186)	−0.167 *** (−3.366)	−0.029 (−1.454)
AGE	−0.096 *** (−7.738)	−0.056 ** (−2.355)	−0.038 (−1.172)	−0.019 (−0.179)	−0.054 (−1.316)
SKEW	−0.280 *** (−13.138)	−0.144 *** (−3.824)	−0.090 * (−1.909)	−0.227 (−1.483)	−0.275 *** (−4.035)
KUR	−0.027 *** (−6.892)	−0.072 *** (−5.637)	−0.049 *** (−3.250)	−0.135** (−2.307)	−0.152*** (−5.895)
STD	−0.129 *** (−8.816)	−0.126 *** (−4.286)	−0.127 *** (−3.281)	−0.094 (−0.865)	−0.181 *** (−3.596)
SROE	−0.003 *** (−5.045)	−0.001 (−0.542)	0.000 (0.025)	−0.007 (−1.061)	0.001 (0.376)
Intercept	0.103 (0.966)	−0.235 (−0.903)	−0.316 (−0.869)	−0.689 (−0.703)	−0.098 (−0.228)
INDUSTRY	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES
N	10614	2823	1661	202	958
F	163.686 ***	53.825 ***	34.487 ***	8.357 ***	19.811 ***
Adj-R^2	0.362	0.409	0.421	0.522	0.400

Notes: The values in brackets are *t*-values, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The N is the sample observations.

Table 10. Robustness test 2.

Variable	Whether to Disclose	Disclosure Level	Mandatory	Semi-Mandatory	Voluntary
CSR1	0.164 **	-	-	-	-
	(2.212)				
CSR2	-	0.065	0.052	0.300 *	0.049
		(1.546)	(0.928)	(1.941)	(0.677)
INST	−0.012 ***	0.002	−0.003	0.137 **	−0.005
	(−13.752)	(0.106)	(−0.177)	(2.009)	(−0.177)
ANALYST2	0.014 *	0.031	0.021	0.145	0.061
	(1.692)	(0.654)	(0.346)	(0.774)	(0.701)
MEDIA	−0.035 ***	−0.097 **	−0.105 **	−0.105	−0.071
	(−9.475)	(−2.558)	(−2.091)	(−0.636)	(−1.036)
INST *CSR	0.001	−0.003	−0.001	−0.045 **	−0.002
	(0.710)	(−0.769)	(−0.246)	(−2.435)	(−0.209)
ANALYST2 *CSR	−0.041 ***	−0.018	−0.021	−0.035	−0.012
	(−2.847)	(−1.331)	(−1.239)	(−0.686)	(−0.472)
MEDIA *CSR	0.012	0.020 *	0.024 *	0.028	0.012
	(1.157)	(1.886)	(1.872)	(0.614)	(0.608)
SIZE	0.116 ***	0.055 ***	0.066 ***	0.018	0.027
	(15.026)	(3.402)	(3.270)	(0.301)	(0.874)
MVE	0.060 ***	0.113 ***	0.104 ***	0.081	0.178 ***
	(4.667)	(4.661)	(3.362)	(0.768)	(3.648)
ROE	0.003 ***	0.002	−0.002	0.008 **	0.003 *
	(5.401)	(1.623)	(−0.962)	(2.242)	(1.917)
MB	0.000	−0.050 ***	−0.025 ***	0.000	−0.125 ***
	(−0.792)	(−7.053)	(−3.022)	(0.012)	(−7.525)
TURN	−0.035 ***	−0.030 **	−0.026	−0.162 ***	−0.021
	(−6.493)	(−2.306)	(−1.340)	(−3.163)	(−1.031)
AGE	−0.107 ***	−0.051 **	−0.034	−0.031	−0.044
	(−8.825)	(−2.143)	(−1.010)	(−0.295)	(−1.054)
SKEW	−0.282 ***	−0.174 ***	−0.092 *	−0.271 *	−0.314 ***
	(−13.757)	(−4.666)	(−1.937)	(−1.737)	(−4.655)
KUR	−0.015 ***	−0.036 ***	−0.043 ***	−0.125 **	−0.020 *
	(−4.700)	(−4.364)	(−2.827)	(−2.074)	(−1.811)
STD	−0.159 ***	−0.120 ***	−0.140 ***	−0.070	−0.095 *
	(−11.230)	(−4.116)	(−3.587)	(−0.640)	(−1.943)
SROE	−0.004 ***	−0.001	−0.003	−0.006	0.000
	(−7.766)	(−1.074)	(−0.864)	(−1.007)	(−0.170)
Intercept	0.182 *	−0.420	−0.217	−1.351	−0.947 **
	(1.764)	(−1.627)	(−0.596)	(−1.335)	(−2.243)
INDUSTRY	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES
N	11517	2890	1690	207	991
F	172.880 ***	52.281 ***	33.977 ***	8.150 ***	18.158 ***
Adj-R^2	0.356	0.396	0.413	0.509	0.371

Notes: The values in brackets are *t*-values, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The N is the sample observations.

In addition, endogeneity problems may affect the reliability of the results, and there may exist causal relationships between variables. CSR information disclosure can affect information content and stock price synchronicity. The level of stock synchronicity may also affect CSR information disclosure ideas and motivations of listed companies. In order to alleviate this endogeneity problem, we used the lag phase of CSR indicators LCSR1 and LCSR2 for regression [56]. The results are shown in Table 11. The coefficient of one-lag indicator LCSR1 is significantly positive, supporting the conclusion that CSR information disclosure will increase stock price synchronicity. On the whole, the conclusions of this paper are reliable.

Table 11. Regression results for controlling endogeneity.

Variable	Whether to Disclose	Disclosure Level	Mandatory	Semi-Mandatory	Voluntary
LCSR1	0.181 ***	-	-	-	-
	(7.682)				
LCSR2	-	0.038	−0.001	−0.060	0.119 *
		(1.019)	(−0.014)	(−0.375)	(1.889)
SIZE	0.119 ***	0.055 ***	0.077 ***	0.027	0.004
	(13.498)	(3.021)	(3.349)	(0.412)	(0.104)
MVE	0.002	0.071 ***	0.062 *	−0.036	0.140 ***
	(0.166)	(2.785)	(1.909)	(−0.333)	(2.738)
ROE	0.002 ***	0.001	−0.005 **	0.009 **	0.005 **
	(2.804)	(0.844)	(−2.194)	(2.444)	(2.538)
MB	0.000	−0.048 ***	−0.023 **	0.012	−0.137 ***
	(−0.724)	(−5.913)	(−2.294)	(0.347)	(−6.879)
TURN	−0.016 **	−0.024	−0.018	−0.108	−0.031
	(−2.355)	(−1.519)	(−0.785)	(−1.651)	(−1.284)
AGE	−0.105 ***	−0.054 *	−0.044	−0.142	−0.032
	(−7.661)	(−1.914)	(−1.085)	(−1.137)	(−0.646)
SKEW	−0.279 ***	−0.149 ***	−0.089 *	−0.220	−0.258 ***
	(−11.784)	(−3.495)	(−1.679)	(−1.236)	(−3.259)
KUR	−0.053 ***	−0.041 ***	−0.027 *	−0.062	−0.116 ***
	(−6.089)	(−2.968)	(−1.656)	(−0.932)	(−4.043)
STD	−0.195 ***	−0.140 ***	−0.175 ***	−0.183	−0.150 ***
	(−11.188)	(−4.171)	(−3.905)	(−1.380)	(−2.646)
SROE	−0.005 ***	−0.002	−0.005	−0.001	0.000
	(−6.384)	(−0.915)	(−1.042)	(−0.210)	(0.165)
Intercept	0.231 *	−0.308	0.065	0.576	−0.835 *
	(1.935)	(−1.172)	(0.189)	(0.488)	(−1.874)
INDUSTRY	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES
N	9195	2297	1352	163	780
F	158.841 ***	50.972 ***	32.483 ***	7.529 ***	18.960 ***
Adj-R^2	0.340	0.387	0.403	0.468	0.383

Notes: The values in brackets are *t*-values, ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively. The N is the sample observations.

5. Conclusions and Suggestions

This paper studied the value of CSR information on firm-specific information content and capital market pricing efficiency based on the sample of China Shanghai and Shenzhen A-share listed companies in years 2010–2015. The results showed that: (1) Overall, the value of CSR information for improving the efficiency of capital market pricing is obvious. There is a significant positive correlation between the disclosure of CSR information and stock price synchronicity; (2) under different disclosure motives, there is no significant difference in the impact of CSR on stock price synchronicity; (3) securities analysts can highlight the value of CSR information since, it can negatively regulate the positive relationship between CSR and stock price synchronicity. Institutional investors will focus on semi-mandatory CSR information and play a similar role. However, the media will make use of mandatory CSR information and intensify the positive effect of CSR on stock price synchronicity.

The research in this paper is of great significance for understanding the role of CSR information and external information concern subjects: (1) This paper shows that disclosure motivation does not directly affect CSR information content and stock price synchronicity. Considering the reasons behind this, even if the disclosure motives are differentiated, the specific expectations and purposes of different companies in disclosing CSR information are inconsistent. Whether the division of CSR disclosure motives needs to consider the behavioral heterogeneity of listed companies remains to be studied; (2) the conclusions indicate that institutional investors and the media will focus on CSR information under different disclosure motives, which in turn will affect stock price synchronicity. This reminds us

to pay attention to the role of external subjects in information mining, transmission, and transaction, and also to distinguish the differences between different external subjects.

Furthermore, the research conclusions of this paper have the following policy implications: (1) There is a significant difference in the level of stock synchronicity for companies that disclose CSR information and companies that don't. On the whole, the CSR report is more used as a self-interest tool by companies in China. Low-quality information disclosure damages the pricing efficiency of the capital market. In order to effectively improve the capital market pricing efficiency and promote social sustainable development, China should conduct substantive supervision and objective third-party authentication on the quality of non-financial information disclosed in the CSR report, and effectively improve the quality and information content of CSR reports; (2) securities analysts can effectively play their role in information mining and transmission in China. In order to provide investors with higher quality information for decision-making, the securities analyst industry should be further regulated in the future, and a group of highly qualified securities analysts should be cultivated to guarantee the objectivity of the report issued by analysts and the quality of firm-specific information contained in the report; (3) the trading behavior of institutional investors in China can inject more firm-specific information into the market, and this effect becomes more apparent as the proportion of institutional holdings increases. In order to further improve the pricing efficiency of the capital market, we should pay more attention to the guiding norms of institutional investors, so that CSR information can be better used and integrated into stock price through their value trading behavior; (4) only if the objectivity and impartiality of the media are under more rigorous supervision can firm-specific information contained in the CSR report be better conveyed to the market. In the future, China should strengthen the review and normative management of the media and improve the punishment mechanism for media dereliction of duty.

This paper provides an important supplement to the existing literature research and policy practice, but there are still some limitations that need further exploration. First of all, there is no unified non-financial indicator for the measurement of CSR at home and abroad. Based on the existing research, the CSR level is measured by the logarithm of the CSR report score by RKS in this paper. Although the score is relatively authoritative and comprehensive, there is, in fact, a certain degree of subjectivity. In the future, the measurement method of variables should be further improved, and the robustness test should be combined with subjective score, multi-level index and non-financial indicators to ensure the reliability of the empirical results. Secondly, although this paper has carried out research from the perspective of various external information concern subjects, it has not dug deep into the irrational factors. In particular, the empirical results show that the media cannot fully play the information function and supervision function. The next step should be to focus on how the irrational behavior mechanism works. Finally, due to data and time constraints, this article does not distinguish between institutional investors, securities analysts, and the media, and different types of subjects play different roles in monitoring and improving the CSR information disclosure of listed companies. In the future, we can distinguish between stable and transactional institutional investors, leading and non-leading analysts, state-owned and private media, and examine the differential effects of these external information concern subjects on CSR information disclosure more carefully and thoroughly.

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