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# A Study of the Relationship between Corporate Social Responsibility Report and the Stock Market

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**Abstract:** This study mainly investigates the relationship between corporate social responsibility (CSR) reporting and the reaction in the stock market. Specifically, we utilize the data from Taiwanese stock market from 2012 to 2017 to examine whether the CSR report disclosed by the listed companies on the Taiwan Stock Exchange and the Taipei Exchange will cause abnormal returns on the short-, mid- or long-term horizon. The empirical results demonstrate that companies which disclose their CSR reports generate higher and more positive mid- to long-term abnormal returns than undisclosed companies. In addition to filling the gap of previous studies, this study also examines whether CSR reports mitigate the information asymmetry between management and stakeholders. Companies disclosing their CSR reports will boost the confidence of investors and lead to higher stock return valuations.

**Keywords:** corporate social responsibility report; CSR; ESG; abnormal return; event study

## 1. Introduction

Corporate social responsibility (CSR) was developed by Bowen in 1953. Amid the rapid development of the global economy and technologies, environmental protection is rising in awareness. Thus, CSR has become an important agenda for industries, governments, and academics. Crifo and Forget [1] suggest that CSR integrates social, environmental, ethical, human rights, and consumer issues into business operations and core strategies to maximize the benefits of shareholders and stakeholders. Shih et al. [2] posit that in addition to the pursuit of better profits and performance, companies should take responsibilities and obligations regarding society and the environment. In brief, CSR is a firm's efforts to create value for the society while it is seeking profits, which is achieved through adherence to moral standards and accountability to all stakeholders. Owing to the separation of enterprise ownership and management rights, the owner hires managers to operate the company and managers should aim to pursue the company's values. However, the information asymmetry exists between shareholders and managers. Thus, the moral crisis may cause managers not to aim at pursuing the company's maximum value but pursuing self-interest. Under this condition, managers will cause the company to lose their values. Given the information asymmetry, the disclosure of non-financial information enhances transparency, which can make investors accurately value firms. Kao et al. [3] found that socially responsible companies disclose their sustainability performance in CSR reports, which complements financial reports and keeps stakeholders informed of the strategy and allows information users to understand the firm value and the capability in business sustainability.

As the pursuit of carbon reduction and environmental protection has become a global consensus, the disclosure of environmental information is increasingly sophisticated, and consumers have started to pay attention to CSR issues. With the rise of citizenship and civic justice, environmental awareness and

information transparency, stakeholders are increasingly concerned about social environmental pollution issues. Investment decisions will also be targeted at the environment, sustainability and governance (ESG) of the assessment [4]. CSR describes a company's socially responsible commitment, efforts and practices. On the other hand, ESG is a set of standards/criteria for investors and other stakeholders to evaluate a company's environmental, social and governance performance. The ESG concept proposed in the report of the United Nations Principles of Responsible Investment, which suggests that related-investors and stakeholders make their decisions should consider the key factor-ESG scores. In practice, management consulting firms and investors have widely used ESG scores as a major index to understand a firm's overall CSR performance. Besides the traditional financial information, CSR reports or ESG reports have become an irresistible global trend for enterprises to meet the needs of stakeholders and to disclose non-financial information [5]. Bowman and Haire [6] indicate that CSR initiatives enhance the social reputation, brand images, and competitiveness of companies, which leads to better performance and stronger financial results [7]. Socially conscious investors are willing to pay a premium for the shares of these companies [8]. This is why CSR achievements improve financial performances and bolster investors' confidence and willingness to invest. This in turn boosts the short-term and long-term performances of stock returns. In response to the global trends for CSR and its increasing importance, Taiwan has been promoting this idea to the public and to society since 2002. Companies can publish CSR reports voluntarily.

The Kaohsiung gas explosions and the Ting Hsin food scandals have dented the public's trust in Taiwan. To keep up with the global emphasis on CSR reports and to salvage citizens' confidence, the Financial Supervisory Commission (FSC) of Taiwan on 18 September 2014 announced the mandatory requirement for four groups of listed companies to compile CSR reports. The requirements for the first group of listed companies are particularly stringent in that CSR reports should be accompanied with opinions issued by auditors. This policy demonstrates the Taiwan government's ambition to address corporate social responsibilities for food and related industries and to embark on the era of mandatory CSR reporting. This disclosure requirement sets the tone for the development of CSR reports in Taiwan [9]. In contrast with overseas literature [8,10–14], there are few studies in Taiwan regarding the roles and influences of CSR reports in the local stock market. Will this mandatory requirement for CSR reporting rescue the confidence of consumers and the investing public? Is this just a compliance exercise that adheres to regulatory requirements, without any information substance? Given the variances in cultural and legal systems, the research findings may differ. It is also worth noting that the percentage of Taiwanese firms that produce CSR reports is lower than that in other countries. These are the research motivations of this paper and the focus on stock market reactions to CSR reporting and disclosure.

This paper is trying to test whether the stock returns of the companies affected by the FSC's mandatory requirement for CSR reporting change significantly. In advance, we continue to examine whether CSR reporting causes positive abnormal returns both in the mid- and in the long term. This paper adopts the event study method. The first step is to examine whether the FSC's mandatory requirement announced on 18 September 2014 for CSR reporting and disclosure affected the stock returns of the firms concerned. Next, the study identifies the significant and positive returns on the stock returns of the listed companies that published CSR reports from 2012 to 2017, with event dates defined as the CSR reporting dates. The purpose is to explore whether the stock market reacts differently in different periods (before and after the requirement from the FSC) or to CSR reports of different natures (compulsory vs. voluntary).

The empirical findings of this paper suggest that those firms required to disclose CSR reporting mandatorily have negative stock returns after the announcement date. This possibly leads to investors' negative attitudes, as they believe that expenses may incur for CSR activities after compiling the CSR reports, which may damage shareholders' equity. In general, the firms publishing CSR reports show the positive and abnormal returns on their stock performances. This suggests that investors are optimistic about companies publishing CSR reports. This study divides the sample by the publication time (before

or after the mandatory requirement) or by nature (voluntary vs. compulsory). The results indicate that investors have greater confidence in the CSR reports published after the mandatory requirement or voluntary disclosure than before the mandatory requirement or compulsory disclosure. The stock market has reacted positively to the CSR publications after the announcement of the mandatory requirement by the FSC.

This paper makes the following contributions. First, few studies have been conducted in Taiwan on the relationship between CSR reports and the stock market. In practice, there are both positive and negative viewpoints on the influence of the mandatory CSR reporting on the stock market. This paper hopes to fill this research gap. Second, the empirical study provides a full picture of how investors react to the mandatory CSR reporting and disclosure. To analyze the impact of CSR report disclosures of the listed companies, this paper collects and divides CSR reports into mandatory and voluntary samples. Finally, firms can observe whether CSR reports mitigate the information asymmetry between management and stakeholders. This will boost the confidence of investors and lead to higher stock return valuations, which can then enhance the firms' willingness toward CSR reporting and disclosures.

The following sections of this paper are organized as follows. Section 2 conducts a literature review on CSR reporting and stock markets and develops research hypotheses accordingly. Section 3 explains the sample selection, data sources, variable definitions, and empirical modeling. Section 4 summarizes the empirical results and analysis. Section 5 presents conclusions and suggestions.

## 2. Literature Review and Hypothesis Development

### 2.1. Regulations and Studies on CSR Reporting

The World Business Council for Sustainability and Development (WBCSD) defines CSR as the continuing commitment of the business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large. Gu [15] suggests that CSR requires companies to care about employees, the society, the environment, and the government while seeking profits and being held accountable to shareholders. The purpose is to create the value for all stakeholders and achieve the business sustainability for companies. CSR reports are the disclosure of CSR activities, as well as goals, achievements, commitment, and plans in sustainable operations and corporate social responsibilities. Therefore, CSR reports can be viewed as an effective non-financial communication tool, to give information users a clear picture of firm values and provide the capability of business sustainability [16].

The preparation of financial reports is governed by accounting principles such as the U.S. Generally Accepted Accounting Principles (U.S. GAAP) of International Financial Reporting Standards (IFRS). Similarly, there is a number of standards on CSR reporting such as the OECD Guidelines for Multinational Enterprises, ISO14000 Series, United Nations Global Compact, and Global Reporting Initiative (GRI). Most companies follow the GRI standards in the compilation of CSR reports [16]. GRI guidelines start with environmental issues and then expand to an equal emphasis on the economy, the environment, and society. Companies disclose their CSR involvement in a systematic manner.

The publication of non-financial CSR reports has become a global trend. To achieve business sustainability and enhance competitiveness, companies must establish CSR practices [17,18]. KPMG Global has been conducting a KPMG Survey of Corporate Responsibility Reporting once every two years since 1993. According to its 2017 global survey, 93% of the top 250 companies (G250) have been releasing CSR reports. The top 100 companies (N100) in 45 countries are following suit, with the percentage of CSR reporting up from 73% in 2015 to 75% in 2017. The percentage of the top 100 companies in Taiwan that publish CSR reports also witnessed significant growth, from 77% in 2015 to 88% in 2017.

Du et al. [19] suggest that socially responsible companies foster positive attitudes and behaviors among stakeholders and establish good corporate and brand images. Fombrun et al. [20] posit that the engagement of public welfare activities helps to enhance corporate and brand images and boost

firm competitiveness. Chi and Hsieh [21] indicate that CSR reports provide relevant information that can reduce the cost of the capital and mitigate the information asymmetry. However, some scholars hold opposite views and argue that CSR damages shareholders' interest and props up funding costs [6]. Ullmann [22] points out that CSR increases corporate costs, affects product development, and hampers firm competitiveness. Friedman [23] mentions that CSR is not part of management's job. The implementation of CSR engagements may cause cash outflows and infringe the trust relationship between managers and shareholders.

The empirical research on CSR, finance, and accounting tends to focus on the connection between CSR and financial performances. Most studies support this positive relation. Orlitzky et al. [24] suggest that CSR performance and financial results are positively correlated, and they often affect each other. Tsoutsoura [25] contends that greater CSR involvement denotes higher return on equity, return on assets, and return on sales. Cornell and Shapiro [26] develop the social impact hypothesis, in which meeting the expectations of non-shareholder stakeholders such as employees and customers will enhance corporate reputations and better financial performances. Lev et al. [7] argue that socially responsible companies attract socially conscious consumers and are able to create good sales and financial results. Shen and Chang [27] prove that the listed companies in Taiwan honoring corporate social responsibilities perform better than those who do not when measured with financial metrics such as pre-tax earnings and net income margins. Dhaliwal et al. [28] suggest that CSR affects financial achievements and firm values via avenues relevant to the finance.

## 2.2. Studies on CSR Reports and Stock Markets

Hannon and Milkovich [29] indicate that stock returns of the companies witness positive and abnormal returns after two days post-announcement on the offering of the best work environment. Richardson and Welker [8] suggest that socially conscious investors are willing to pay a premium for the securities of socially responsible companies. Anderson and Smith [10] posit that companies with higher scores in social responsibility perform better on their stock returns. Kempf and Osthoff [11] contend that CSR investment portfolios exhibit positive, significant, and abnormal returns and even a net of transaction costs. This indicates that better CSR performance implies more trusts from the investors. Arya and Zhang [12] and Marna et al. [13] highlight the positive influence of CSR announcements and the disclosure on stock returns. Huang et al. [30] examine both awarded companies and companies reporting unlawful incidences in Taiwan in 2005–2010 to explore the effect of positive and negative CSR event announcements on abnormal stock returns. According to the empirical findings, positive CSR event announcements lead to positive abnormal stock returns, while negative CSR event announcements result in negative abnormal stock returns. Ahmed et al. [14] indicate that the CSR performance and stock returns have significant and positive effects.

## 2.3. Research Hypotheses

Chang [31] applies the event study method in examining the stock returns of the top 30 listed companies in Taiwan according to the CSR rankings by Common Wealth Magazine by assessing the short-term announcement effects and the long-term stock return performance based on the announcement of the ranking results. The empirical results suggest that these top 30 companies report significantly higher returns than the index. Huang et al. [30] also use the event study method to explore the impact of positive (negative) CSR events on stock returns. The empirical findings support that positive event announcements trigger positive abnormal stock returns, while negative event announcements generate negative abnormal stock returns. According to Worrell et al. [32] and Clinebell and Clinebell [33], the announcements of layouts and factory closures lead to negative abnormal stock returns. Richardson and Welker [8] suggest that more CSR disclosures may entail higher costs. Yu et al. [34] examine the market reaction to the announcement of material information regarding the mandatory requirements of CSR reporting in 2014 and 2015. The empirical results indicate negative and significant responses in stock returns. Investors anticipate greater costs than benefits for the

new policy of compulsory compilation of CSR reports. Therefore, this paper examines the negative market reaction to the mandatory CSR reports news from the FSC on 18 September 2014 based on the short-term response of the stock market. Thus, this paper develops the following hypotheses.

**Hypothesis 1 (H1).** *The news of the mandatory CSR disclosure for specific firms have a negative effect on short-term stock returns.*

Furthermore, this study extends the market reaction period to mid- and long-term responses. Since the mandatory disclosure of CSR reports is only imposed on specific firms, the benefits of disclosing CSR activities would offset the costs of preparing the CSR report in a longer examination period. Then, this paper develops the hypothesis as follows.

**Hypothesis 2 (H2).** *The mandatory CSR disclosure reports for specific firms shows insignificant impacts on mid- to long-term stock returns.*

Schadewitz and Niskala [35] argue that CSR reports in compliance with GRI guidelines are the corporate communication tool. The research indicates that CSR reporting has a positive influence on stock returns, primarily because CSR disclosure mitigates the information asymmetry, and investors can use accurate information in the assessment of the true value of companies. Lin and Fu [18] find that the CSR disclosure of the listed electronics companies in Taiwan helps to convey a positive message to the investors and reduce the information asymmetry between management and shareholders. Cheng [17] indicates that companies publishing CSR reports enjoy higher stock returns and lower cost of capital. Liu [36] suggests that CSR reporting has positive effects on stock returns. CSR awards also bolster stock returns. Dhaliwal et al. [28] show that CSR reporting and good CSR performance can effectively lower the cost of capital and attract long-term institutional investors.

CSR reports are a showcase of the achievements in CSR. They enhance the transparency of the sustainability information, reinforce the corporate accountability, and serve as an important tool for communicating with stakeholders. Therefore, this paper infers that CSR reporting and disclosure of non-financial information in business sustainability, which emphasizes the corporate governance, the environmental protection, and social engagements, help to reduce the information asymmetry between companies and investors and result in positive mid- to long-term stock returns. Hence, this paper develops the following hypotheses.

**Hypothesis 3 (H3).** *CSR disclosure reports have positive effects on mid- to long-term stock returns.*

In response to food safety problems, the FSC in 2014 stipulated that companies should publish CSR reports. At the same time, both the Taiwan Stock Exchange and the Taipei Exchange required the listed companies to refer to the most recent guidelines from the GRI for the preparation of CSR reports. This will improve the robustness of the disclosure in CSR reports, reduce the information asymmetry, and create information content for investors. As pointed out by Grossman [37], even if companies conceal unfavorable information in the published CSR reports, investors are likely to make reasonable conjectures anyway. Zhang and Kuo [38] posit that certified CSR reports provide better information content and value, as well as reliable information for investment decisions. This paper believes that investors have better confidence in the CSR reports published under the mandatory requirement from the FSC and hence develops the following hypothesis.

**Hypothesis 4 (H4).** *Firms that disclose CSR reports show mid- to long-term positive stock returns after the mandatory requirement.*

The other focus of this paper is on the voluntary and compulsory nature of CSR reports. Lin et al. [39] found a positive and significant effect between the voluntary disclosure of environmental

protection spending and the value of the companies. However, there is no significant relationship between mandatory disclosure and firm values. Marna et al. [13] indicate that CSR information is important to stakeholders. At the same time, voluntary disclosure of CSR information affects stock returns. Lee and Wu [40] argue that if information disclosure is regular and can be anticipated by the market, the market response to information disclosure will be smaller than expected. The mandatory disclosure of CSR reports is an event that can be anticipated by the market. Therefore, the investors will expect all the companies subject to this requirement to release CSR reports each year. Thus, this paper infers that voluntary disclosure of CSR reports leads to better mid- to long-term stock returns compared to mandatory disclosure of CSR reports. Hence, the following hypothesis is developed.

**Hypothesis 5 (H5).** *Firms that voluntarily disclose CSR reports have positive mid- to long-term stock returns.*

### 3. Research Method

#### 3.1. Data Sources and Sample Selection

This paper examines companies listed on the Taiwan Stock Exchange and the Taipei Exchange that published CSR reports under the stipulation from the FSC and those companies that published CSR reports from 2012 to 2017. The list of companies under the mandatory stipulation can be found in the FSC “List of Listed Companies That Should File CSR Reports” and “Survey by the Taipei Exchange on Mandatory Requirement for Preparation of CSR Reports”. The CSR reports and stock returns are collected from the corporate governance database of the Taiwan Economic Journal. In total, 1414 observations were sampled as of 31 May 2017.

#### 3.2. Variable Definitions

##### 3.2.1. Dependent Variables

###### (1) Cumulative Abnormal Returns (CAR)

The event study method examines whether an event causes abnormal changes in the stock returns. This paper uses the market model to calculate the CAR, which is the most widely used one. The abnormal return is defined as the differences between the actual return and the expected return. We compute the CAR by summing the abnormal returns over different horizons. A statistical test is performed to see whether there exist significant abnormal returns within the event period in order to validate whether the event has affected the stock return performance.

###### (2) Buy-and-Hold Abnormal Returns (BHAR)

This paper calculates buy-and-hold abnormal returns (BHAR) based on the method developed by Barber and Lyon [41]. The BHAR of these companies is compared with the BHAR of the industry peers of comparable size, but which do not publish CSR reports. The BHAR of the investment portfolio is estimated with the simple weighted average of the BHAR of individual securities (i.e., sampled companies). A statistical test is performed to that of CAR in order to validate whether the event has affected the stock return performance.

##### 3.2.2. Independent Variables

- (1) Companies subject to mandatory requirements (Mand): a dummy variable equals to 1 if the firm is required by the FSC to disclose a CSR report, and 0 otherwise.
- (2) Companies that publish CSR reports (CSR): a dummy variable equals to 1 if the firm publishes CSR report, and 0 otherwise.

- (3) Companies that publish CSR reports after the disclosure requirement imposed by the FSC (AftPly): a dummy variable equals to 1 if the firm discloses CSR report after the mandatory requirement, and 0 otherwise.
- (4) Companies that voluntarily publish CSR reports (Volunt): a dummy variable equals to 1 if the firm voluntary discloses CSR report, and 0 otherwise.

### 3.2.3. Control Variables

- (1) Size: Conrad et al. [42] indicate that stock returns of large firms react faster to information than those of small firms. This paper measures firm size with the natural logarithm of the beginning of the period's assets.
- (2) Institutional holdings (Inst): Badrinath et al. [43] observe that the higher the institutional holdings are, the faster stock returns respond to information compared to securities with lower institutional shareholdings. Institutional shareholdings are measured by the total number of shares held by institutional investors divided by the total number of ordinary shares outstanding.
- (3) Trading volume (Volm): Lee and Wu [40] indicate that shares with higher trading volumes react faster to major announcements. This paper refers to Lee and Swaminathan [44] by measuring trading volumes with share turnover ratios. This is calculated by the monthly trading volume of ordinary shares during the previous period divided by the total number of ordinary shares outstanding at the end of the previous period.
- (4) Market-to-book (MTB): Hung and Lei [45] highlight an inverse relation between market-to-book values and stock returns. Market-to-book are calculated with market value divided by book values.
- (5) Listed on Taiwan Stock Exchange (TSE): Lin et al. [46] suggest that the investment risks associated with companies listed on the Taipei Exchange are greater than those listed on the Taiwan Stock Exchange. The dummy variable is 1 for a firm listed on the Taiwan Securities Exchange and 0 otherwise.
- (6) Industry (Ind): The stock returns of companies in different industries react to information with different levels of sensitivity. Therefore, this paper incorporates industries as a dummy variable to observe how stock returns in different sectors respond to CSR reporting announcements.
- (7) Year: This paper incorporates years as a dummy variable to control the effect of individual years on the announcement regarding CSR reporting.

### 3.3. Establishment of the Empirical Model

This paper establishes a regression Equation (1) to validate H1: There will be short-term and negative effect on the stock returns of the companies affected by the mandatory requirement for CSR reporting.

$$CAR_i = \beta_0 + \beta_1 Mand + \beta_2 Size + \beta_3 Inst + \beta_4 Volm + \beta_5 MTB + \beta_6 TSE + \varepsilon_i \quad (1)$$

This paper establishes a regression Equation (2) to validate H2: There will be insignificant impacts on the mid- to long-term stock returns of mandatory CSR disclosure reports for specific firms.

$$CAR_i = \beta_0 + \beta_1 Mand + \beta_2 Size + \beta_3 Inst + \beta_4 Volm + \beta_5 MTB + \beta_6 TSE + \sum \beta_\alpha Ind + \sum \beta_\gamma Year + \varepsilon_i \quad (2)$$

This paper establishes regression Equation (3) to validate H2: The effect of CSR disclosure reports shows mid- to long-term positive stock returns.

$$CAR_{it} = \beta_0 + \beta_1 CSR + \beta_2 Size + \beta_3 Inst + \beta_4 Volm + \beta_5 MTB + \beta_6 TSE + \sum \beta_\alpha Ind + \sum \beta_\gamma Year + \varepsilon_{it} \quad (3)$$

This paper establishes regression Equation (4) to validate H3: Firms that disclose CSR reports show mid- to long-term positive stock returns after the mandatory requirement for CSR disclosure.

$$CAR_{it} = \beta_0 + \beta_1 AftPly + \beta_2 Size + \beta_3 Inst + \beta_4 Volm + \beta_5 MTB + \beta_6 TSE + \sum \beta_\alpha Ind + \varepsilon_{it} \quad (4)$$

This paper establishes regression Equation (5) to validate H4: Firms that voluntary disclose CSR reports show mid- to long-term positive stock returns.

$$CAR_{it} = \beta_0 + \beta_1 Volunt + \beta_2 Size + \beta_3 Inst + \beta_4 Volm + \beta_5 MTB + \beta_6 TSE + \sum \beta_\alpha Ind + \sum \beta_\gamma Year + \varepsilon_{it} \quad (5)$$

To enhance the robustness of the research results, this paper measures abnormal returns by using buy-and-hold abnormal returns (BHAR) developed by Barber and Lyon [41] in the validation of the influence of CSR reports on mid- to long-term stock returns.

## 4. Empirical Results and Analysis

### 4.1. Descriptive Statistics

Table 1 summarizes the descriptive statistics of respective variables. The number of observations is 1414 for H1 and H2; 1335 for H3; and 833 for H4 and H5. First, the short-term cumulative abnormal returns (CAR\_News) of dependent variables are estimated with the market model, to measure the short-term cumulative abnormal returns of the companies before and after the FSC's mandatory requirement for CSR reporting. The mean is 0.001, and the median is  $-0.001$ , indicating that more than half of the companies posted negative and abnormal returns during the event period. Second, the mid- to long-term cumulative abnormal returns (CAR\_90, CAR\_180, CAR\_270, CAR\_360, BHAR\_90, BHAR\_180, BHAR\_270, BHAR\_360) of dependent variables report medians are between  $-0.020$  to  $-0.038$ , also indicating that more than half of the companies posted negative and abnormal returns during the mid- to long-term period.

**Table 1.** Summary Statistics.

Variable	N	Mean	Median	SD	Max	Min
CAR_News	1414	0.001	$-0.001$	0.049	0.940	$-0.782$
Mand	1414	0.139	0.000	0.346	1.000	0.000
CAR_90	1335	$-0.002$	$-0.020$	0.145	0.985	$-0.632$
CAR_180	1335	$-0.003$	$-0.022$	0.201	1.342	$-0.809$
CAR_270	1335	0.004	$-0.025$	0.258	1.545	$-0.854$
CAR_360	1335	0.003	$-0.037$	0.323	2.791	$-0.918$
BHAR_90	1335	0.001	$-0.021$	0.152	1.277	$-0.653$
BHAR_180	1335	0.000	$-0.032$	0.220	1.953	$-0.669$
BHAR_270	1335	0.011	$-0.038$	0.306	2.790	$-0.668$
BHAR_360	1335	0.024	$-0.054$	0.458	5.972	$-0.721$
CSR	1335	0.624	1.000	0.485	1.000	0.000
AftPly	833	0.435	0.000	0.496	1.000	0.000
Volunt	833	0.516	1.000	0.500	1.000	0.000
Size	1335	16.855	16.598	1.824	22.795	11.408
Inst	1335	0.145	0.091	0.156	0.802	0.000
Volm	1335	0.080	0.038	0.126	1.237	0.000
MTB	1335	1.616	1.131	2.050	51.729	0.199
TSE	1335	0.784	1.000	0.412	1.000	0.000

Note: The definitions for variables used in this paper can be found in Appendix A.

With regard to independent variables, the mean of the number of companies which are subject to the mandatory requirement (Mand) is 0.139. The mean of the number of companies publishing CSR reports (CSR) is 0.624. The mean is close to 0.5, as a published CSR report matches non-publication of a CSR report. The mean of the CSR reports published after the mandatory requirement (AftPly) is

0.435. This refers to the CSR reports released after 18 September 2014. The research period is from 2012 to 2017. Following the stipulation from FSC, the number of companies preparing CSR reports has increased over the years. The mean of the number of voluntarily published CSR reports (Volunt) is 0.516. The segmentation of voluntary and compulsory publication of CSR reports indicates that more reports are published as required.

As far as control variables are concerned, the mean of institutional holdings (Inst) is 14.5%. The maximum value is 80.2%, and some companies have zero institutional holdings. The mean of market-to-book (MTB) values is 1.616. The maximum is 51 (i.e., market capitalization as 51 times the book value), and the minimum is only 0.2. The mean of the companies listed on the Taiwan Stock Exchange (TSE) is 0.784, indicating that 78.4% of the sampled companies are listed on the main board.

#### 4.2. Empirical Model and Regression Analysis

This paper continues with a regression analysis. H1 examines whether the news on the mandatory CSR disclosure reports for specific firms shows short-term negative stock returns. As summarized by Model 1 of Table 2, there is a negative and significant effect between firms subject to the mandatory requirement (Mand) and short-term cumulative abnormal returns (CAR\_News) (coefficient =  $-0.011$ ,  $t$ -value =  $-3.44$  \*\*\*). When we control industry and year variables, shown in Model 2 of Table 2, there is also a negative and significant effect between firms subject to the mandatory requirement (Mand) and short-term cumulative abnormal returns (CAR\_News) (coefficient =  $-0.015$ ,  $t$ -value =  $-3.32$  \*\*\*). This suggests that compared with firms not subject to the mandatory requirement, firms covered by the mandatory requirement reported short-term, negative, and abnormal stock returns. This is consistent with the literature [30,32,33]; therefore, H1 is supported.

**Table 2.** The Impact of Mandatory Disclosure News on Stock Returns (For H1).

Dependent Variable: CAR News		
Variables	Model 1	Model 2
Constant	-0.035 (-1.37)	-0.034 (-1.26)
Mand	-0.011 (-3.44) ***	-0.015 (-3.32) ***
Size	0.001 (1.09)	0.002 (1.30)
Inst	-0.025 (-1.98) **	-0.028 (-2.04) **
Volm	14.53 (2.56) **	5.058 (0.84)
MTB	1.158 (1.14)	1.103 (1.03)
TSE	0.011 (3.24) ***	0.012 (3.38) ***
Ind/Year Dummies	-	Yes
N	1414	1414
R <sup>2</sup>	0.023	0.005
F-value	5.62 ***	1.96 ***

Note: The dependent variable is the cumulative abnormal returns (CAR\_News) over the window  $(-2, +2)$  where the mandatory disclosure of CSR news is  $t = 0$ . The  $t$ -statistics in parentheses are based on heteroskedasticity-robust standard errors. The superscripts \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels, respectively. The variable inflation factor (VIF) values of the main variables are between 1.21 to 2.83, which preclude severe multicollinearity concerns. Detailed descriptions of variables can be found in Appendix A.

H2 examines whether insignificant impacts on the mid- to long-term stock returns of mandatory CSR disclosure reports are for specific firms. As summarized in Panel A and B of Table 3, there is a negative but not significant effect between firms subject to the mandatory requirement

(Mand) and mid-term cumulative abnormal returns (CAR\_90, CAR\_180, BHAR\_90, BHAR\_180) (coefficient =  $-0.013, -0.007, -0.015, -0.004$ ;  $t$ -value =  $-1.02, -0.38, -1.21, -0.20$ ). There is a positive but not significant effect between companies subject to the mandatory requirement (Mand) and long-term cumulative abnormal returns (CAR\_270, CAR\_360, BHAR\_270, BHAR\_360) (coefficient =  $0.015, 0.010, 0.015, 0.027$ ;  $t$ -value =  $0.64, 0.35, 0.53, 0.68$ ). This suggests that there are insignificant impacts on the mid- to long-term stock returns of mandatory CSR disclosure reports. This is consistent with the literature [40]. Therefore, H2 is supported.

H3 explores whether CSR disclosure reports show mid- to long-term positive stock returns. As shown in Panel A and B of Table 4, the publication of CSR reports (CSR) and the mid-term cumulative abnormal returns (CAR\_90, BHAR\_90) show positive and significant effects (coefficient =  $0.208, 0.022$ ;  $t$ -value =  $2.31^{**}, 2.33^{**}$ ). The publication of CSR reports (CSR) and the long-term cumulative abnormal returns (CAR\_180, CAR\_270, CAR\_360, BHAR\_180, BH\_270, BHAR\_360) show positive but not significant effects (coefficient =  $0.019, 0.015, 0.032, 0.018, 0.015, 0.045$ ;  $t$ -value =  $1.47, 0.95, 1.59, 1.28, 0.81, 1.62$ ). In general, this is consistent with the literature [12,13,36]. Hence, H3 is supported.

H4 seeks to validate whether disclosed CSR reports show mid- to long-term positive stock returns after the mandatory requirement for CSR disclosure. As shown in Panel A and B of Table 5, the release of CSR reports as mandatorily required (AftPlcy) and the mid-term cumulative abnormal returns (BHAR\_180) show positive and but not significant effects (coefficient =  $0.015$ ;  $t$ -value =  $0.96$ ). The release of CSR reports as mandatorily required (AftPlcy) and long-term cumulative abnormal returns (CAR\_270, CAR\_360, BHAR\_270, BHAR\_360) show positive and significant effects (coefficient =  $0.048, 0.061, 0.058, 0.061$ ;  $t$ -value =  $2.84^{***}, 3.03^{***}, 2.82^{***}, 3.03^{***}$ ). In general, this is consistent with the literature. Hence, H4 is supported.

H5 examines whether voluntary publication of CSR reports yields better mid- to long-term stock returns compared with the required publication of CSR reports. As shown in Panel A and B of Table 6, voluntary disclosure of CSR reports (Volunt) and mid-term cumulative abnormal returns (CAR\_90, BHAR\_90) show positive and significant effects (coefficient =  $0.025, 0.025$ ;  $t$ -value =  $1.90^*, 1.85^*$ ). The voluntary disclosure of CSR reports (Volunt) and the long-term cumulative abnormal returns (CAR\_360) show positive but not significant effects (coefficient =  $0.004$ ;  $t$ -value =  $0.16$ ). In general, this is consistent with the literature [13,17,39]. Therefore, H5 is supported.

This paper uses the variable inflation factor (VIF) to test the collinearity among variables in the regression models. As shown in Table 2 to Table 6, the VIF values of the main variables are between 1.03 to 3.15, which preclude severe multicollinearity concerns.

**Table 3.** The Relationship between Mandatory CSR Disclosure and Mid- to Long-term Stock Returns (For H2).

Variables	Panel A: Dependent Variable: CAR				Panel B: Dependent Variable: BHAR			
	CAR_90	CAR_180	CAR_270	CAR_360	BHAR_90	BHAR_180	BHAR_270	BHAR_360
Constant	−0.024 (−0.42)	−0.071 (−0.81)	−0.028 (−0.24)	0.232 (1.16)	−0.029 (−0.49)	−0.073 (−0.76)	−0.051 (−0.40)	0.428 (1.26)
Mand	−0.013 (−1.02)	−0.007 (−0.38)	0.015 (0.64)	0.010 (0.35)	−0.015 (−1.21)	−0.004 (−0.20)	0.015 (0.53)	0.027 (0.68)
Size	0.004 (1.19)	0.004 (0.88)	0.001 (0.09)	−0.005 (−0.54)	0.004 (1.29)	0.004 (0.86)	0.002 (0.32)	−0.008 (−0.62)
Inst	−0.039 (−1.31)	−0.111 (−2.70) ***	−0.112 (−2.25) **	−0.074 (−1.21)	−0.038 (−1.25)	−0.119 (−2.79) ***	−0.126 (−2.21) **	−0.089 (−1.15)
Volm	−11.294 (−0.31)	8.815 (0.19)	10.525 (0.17)	−60.831 (−0.85)	−7.139 (−0.20)	19.120 (0.41)	23.875 (0.37)	−43.446 (−0.59)
MTB	−3.734 (−1.27)	−5.085 (−1.22)	−7.487 (−1.34)	−18.794 (−2.79) ***	−4.483 (−1.52)	−6.366 (−1.42)	−12.186 (−2.01) **	−25.910 (−3.43) ***
TSE	−0.041 (−3.45) ***	−0.046 (−2.80) ***	−0.035 (−1.64)	−0.037 (−1.29)	−0.039 (−3.17) ***	−0.048 (−2.72) ***	−0.040 (−1.67) *	−0.054 (−1.32)
Ind/Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1231	1231	1231	1231	1231	1231	1231	1231
R <sup>2</sup>	0.052	0.048	0.075	0.072	0.055	0.045	0.073	0.076
F-value	2.01 ***	2.20 ***	3.31 ***	2.72 ***	2.11 ***	2.24 ***	3.21 ***	2.41 ***

Note: The dependent variable is the mid- to long-term cumulative abnormal returns (CAR, shown in Panel A) and the buy-hold abnormal returns (BHAR, shown in Panel B). The measures for the mid- and long-term abnormal returns are based on the CSR disclosure date  $t = 0$  and cumulative over 90, 180, 270, and 360 days, respectively. The  $t$ -statistics in parentheses are based on heteroskedasticity-robust standard errors. The superscripts \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively. The VIF values of the main variables are between 1.30 to 3.15, which preclude severe multicollinearity concerns. Detailed descriptions of variables can be found in Appendix A.

**Table 4.** The Relationship between CSR Disclosure and Mid- to Long-term Stock Returns (For H3).

Variables	Panel A: Dependent Variable: CAR				Panel B: Dependent Variable: BHAR			
	CAR_90	CAR_180	CAR_270	CAR_360	BHAR_90	BHAR_180	BHAR_270	BHAR_360
Constant	−0.023 (−0.41)	−0.055 (−0.69)	−0.048 (−0.45)	0.131 (0.88)	−0.032 (−0.55)	−0.082 (−0.92)	−0.107 (−0.86)	0.206 (0.93)
CSR	0.208 (2.31) **	0.019 (1.47)	0.015 (0.95)	0.032 (1.59)	0.022 (2.33) **	0.018 (1.28)	0.015 (0.81)	0.045 (1.62)
Size	0.003 (1.03)	0.002 (0.39)	0.001 (0.17)	−0.008 (−0.91)	0.004 (1.11)	0.003 (0.62)	0.005 (0.62)	−0.011 (−0.81)
Inst	−0.055 (−1.67) *	−0.081 (−1.74) *	−0.064 (−1.06)	−0.022 (−0.30)	−0.062 (−1.74) *	−0.095 (−1.89) *	−0.087 (−1.21)	−0.039 (−0.43)
Volm	−0.044 (−1.23)	−0.102 (−2.03) **	−0.138 (−2.10) **	−0.288 (−3.41) ***	−0.049 (−1.36)	−0.127 (−2.43) **	−0.161 (−2.54) **	−0.341 (−3.37) ***
MTB	−0.007 (−2.15) **	−0.009 (−2.04) **	−0.011 (−2.76) ***	−0.011 (−4.23) ***	−0.006 (−2.32) **	−0.008 (−2.15) **	−0.010 (−3.63) ***	−0.014 (−0.014) ***
TSE	−0.040 (−3.58) ***	−0.051 (−3.32) ***	−0.047 (−2.27) **	−0.047 (−1.74) *	−0.039 (−3.29) ***	−0.056 (−3.31) ***	−0.058 (−2.40) **	−0.070 (−1.79) *
Ind/Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1335	1335	1335	1335	1335	1335	1335	1335
R <sup>2</sup>	0.063	0.054	0.080	0.075	0.063	0.050	0.077	0.078
F-value	2.24 ***	2.60 ***	3.55 ***	3.22 ***	2.27 ***	2.66 ***	3.49 ***	2.82 ***

Note: The dependent variable is the mid- to long-term cumulative abnormal returns (CAR, shown in Panel A) and the buy-hold abnormal returns (BHAR, shown in Panel B). The measures for the mid- and long-term abnormal returns are based on the CSR disclosure date  $t = 0$  and cumulative over 90, 180, 270, and 360 days, respectively. The  $t$ -statistics in parentheses are based on heteroskedasticity-robust standard errors. The superscripts \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively. The VIF values of the main variables are between 1.14 to 2.53, which preclude severe multicollinearity concerns. Detailed descriptions of variables can be found in Appendix A.

**Table 5.** The Relationship between After Policy CSR Disclosure and Mid- to Long-term Stock Returns (For H4).

Variables	Panel A: Dependent Variable: CAR				Panel B: Dependent Variable: BHAR			
	CAR_90	CAR_180	CAR_270	CAR_360	BHAR_90	BHAR_180	BHAR_270	BHAR_360
Constant	0.024 (0.39)	−0.009 (−0.11)	0.102 (0.102)	0.207 (1.57)	0.028 (0.44)	−0.036 (−0.37)	0.068 (0.49)	0.207 (1.57)
AftPlcy	−0.004 (−0.39)	−0.014 (1.01)	0.048 (2.84) ***	0.061 (3.03) ***	−0.005 (−0.52)	0.015 (0.96)	0.058 (2.82) ***	0.061 (3.03) ***
Size	0.002 (0.56)	0.001 (0.15)	0.001 (0.08)	−0.002 (−0.21)	0.002 (0.51)	0.003 (0.49)	0.003 (0.40)	−0.002 (−0.21)
Inst	−0.076 (−1.71) *	−0.101 (−1.73) *	−0.108 (−1.32)	−0.110 (−1.15)	−0.082 (−1.66) *	−0.127 (−1.95) *	−0.138 (−1.36)	−0.110 (−1.15)
Volm	−0.049 (−1.14)	−0.113 (−1.78) *	−0.236 (−3.11) ***	−0.283 (−2.84) ***	−0.062 (−1.35)	−0.134 (−2.05) **	−0.263 (−3.47) ***	−0.283 (−2.84) ***
MTB	−0.002 (−0.63)	0.001 (0.18)	−0.006 (−1.00)	−0.016 (−2.38) **	−0.003 (−0.80)	0.001 (0.17)	−0.009 (−1.38)	−0.016 (−2.38) **
TSE	−0.037 (−2.62) ***	−0.041 (−2.07) **	−0.045 (−1.77) *	−0.059 (−1.91) *	−0.033 (−2.21) **	−0.044 (−2.05) **	−0.053 (−1.79) *	−0.059 (−1.91) *
Ind dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	833	833	833	833	833	833	833	833
R <sup>2</sup>	0.073	0.058	0.092	0.103	0.075	0.059	0.092	0.103
F-value	2.53 ***	2.98 ***	4.18 ***	7.14 ***	2.64 ***	2.84 ***	3.79 ***	7.14 ***

Note: The dependent variable is the mid- to long-term cumulative abnormal returns (CAR, shown in Panel A) and the buy-hold abnormal returns (BHAR, shown in Panel B). The measures for the mid- and long-term abnormal returns are based on the CSR disclosure date  $t = 0$  and cumulative over 90, 180, 270, and 360 days, respectively. The  $t$ -statistics in parentheses are based on heteroskedasticity-robust standard errors. The superscripts \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively. The VIF values of the main variables are between 1.03 to 2.73, which preclude severe multicollinearity concerns. Detailed descriptions of variables can be found in Appendix A.

**Table 6.** The Relationship between Voluntary CSR Disclosure and Mid- to Long-term Stock Returns (For H5).

Variables	Panel A: Dependent Variable: CAR				Panel B: Dependent Variable: BHAR			
	CAR_90	CAR_180	CAR_270	CAR_360	BHAR_90	BHAR_180	BHAR_270	BHAR_360
Constant	−0.028 (−0.49)	−0.017 (−0.20)	0.148 (1.27)	0.254 (1.89) *	−0.027 (−0.45)	−0.034 (−0.39)	0.134 (1.02)	0.309 (1.72) *
Volunt	0.025 (1.90) *	0.010 (0.56)	−0.001 (−0.05)	0.004 (0.16)	0.025 (1.85) *	0.006 (0.28)	−0.001 (−0.24)	−0.006 (−0.16)
Size	0.004 (1.21)	0.001 (0.27)	−0.001 (−0.08)	−0.003 (−0.33)	0.004 (1.16)	0.003 (0.56)	0.002 (0.20)	−0.002 (−0.21)
Inst	−0.074 (−1.68) *	−0.098 (−1.68) *	−0.100 (−1.22)	−0.100 (−1.04)	−0.080 (−1.64) *	−0.124 (−1.91) *	−0.129 (−1.26)	−0.168 (−1.27)
Volm	−0.055 (−1.26)	−0.122 (−1.91) *	−0.256 (−3.32) ***	−0.310 (−3.00) ***	−0.067 (−1.45)	−0.142 (−2.16) **	−0.285 (−3.67) ***	−0.350 (−3.35) ***
MTB	−0.003 (−0.79)	0.001 (0.12)	−0.006 (−1.08)	−0.016 (−2.53) **	−0.003 (−0.96)	0.001 (0.13)	−0.009 (−1.46)	−0.207 (−2.82) ***
TSE	−0.038 (−2.71) ***	−0.043 (−2.14) **	−0.048 (−1.89) *	−0.064 (−2.04) **	−0.035 (−2.29) **	−0.046 (−2.10) **	−0.056 (−1.91) *	−0.805 (−1.71) *
Ind dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	833	833	833	833	833	833	833	833
R <sup>2</sup>	0.076	0.058	0.083	0.092	0.079	0.058	0.082	0.126
F-value	2.56 ***	2.86 ***	4.3 ***	5.23 ***	2.59 ***	2.76 ***	3.99 ***	4.37 ***

Note: The dependent variable is the long-term cumulative abnormal returns (CAR, shown in Panel A) and the buy-hold abnormal returns (BHAR, shown in Panel B). The measures for the mid- and long-term abnormal returns are based on the CSR disclosure date  $t = 0$  and cumulative over 90, 180, 270, and 360 days, respectively. The  $t$ -statistics in parentheses are based on heteroskedasticity-robust standard errors. The superscripts \*, \*\*, and \*\*\* denote statistical significance at the 10%, 5%, and 1% levels, respectively. The VIF values of the main variables are between 1.19 to 2.94, which preclude severe multicollinearity concerns. Detailed descriptions of variables can be found in Appendix A.

## 5. Conclusions and Suggestions

In response to various problems with food safety and environmental protection over recent years, the FSC announced on 18 September 2014 that four groups of companies listed on the Taiwan Stock Exchange and on the Taipei Exchange are required to file CSR reports. This paper is trying to answer the following questions. First, this paper examines whether the stock returns of the companies affected by the mandatory requirement by the FSC for CSR reporting change significantly. This is followed by sampling the companies listed on the Taiwan Stock Exchange and on the Taipei Exchange that published CSR reports in 2012–2017. The results indicate negative stock returns on the announcement days. This paper notes that the higher the institutional holdings are, the stronger the negative response is. In other words, both the investors and professional investors viewed unfavorably the mandatory requirement by the FSC for CSR reporting. This may be due to the expectation that the preparation of CSR reports needs to be substantiated with CSR activities and will incur upfront expenses that have direct effects on the financials.

Second, this paper aims to validate whether CSR reporting causes positive abnormal returns both in the mid- and the long-term. In general, the results indicate that firms publishing CSR reports show positive abnormal stock returns. This suggests the optimism among investors with companies that do publish CSR reports. The next step is to divide the sample of CSR reports according to the time point of publication (before or after the mandatory requirement) or by nature (voluntary vs. compulsory). The results indicate that investors have greater confidence in the CSR reports published after the mandatory requirement or voluntary disclosure than before the mandatory requirement or compulsory disclosure. The stock market has reacted positively to the CSR publications after the announcement of the mandatory requirement by the FSC.

In sum, the stock market reacts with short-term negative returns to the FSC's mandatory requirement for CSR reporting. However, the mid- to long-term abnormal stock returns of firms who are mandatorily required or voluntarily release CSR reports are higher than those that do not publish CSR reports. The abnormal returns on the stock returns of companies that publish CSR reports after the announcement of the FSC's requirement (on 18 September 2014) are relatively higher.

The publication of CSR reports in Taiwan is not classified as material information or a major announcement. The investors can only access CSR reports from firm websites. The fulfillment of CSR has become a focal point of attention from investors. The Taiwan government has been advised to categorize CSR announcements as material information. The findings of this paper establish an understanding of the short-term, mid-term and long-term market reactions to the FSCs' mandatory requirement for CSR reporting and the CSR disclosure by listed companies. The research results can serve as a reference to academics. For companies, the preparation of CSR reports is about describing and articulating their CSR strategies and activities, in order to mitigate information asymmetry between managers and investors. The overall purpose is to bolster the confidence among investors, generate stock returns, and enhance a willingness for CSR reporting.

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## Appendix A

Variables	Definition
CAR_News	The cumulative abnormal returns over the window $(-2, +2)$ where the mandatory disclosure of CSR report news is $t = 0$ .
CAR	The mid- to long-term cumulative abnormal returns, which are based on the CSR disclosure date $t = 0$ and are cumulative over 90 (CAR_90), 180 (CAR_180), 270 (CAR_270), and 360 (CAR_360) days, respectively.
BHAR	The mid- to long-term cumulative buy-hold abnormal returns which are based on the CSR disclosure date $t = 0$ and cumulative over 90 (BHAR_90), 180 (BHAR_180), 270 (BHAR_270), and 360 (BHAR_360) days, respectively.
CSR	A dummy variable equals to 1 if the firm discloses CSR report, and 0 otherwise.
Mand	A dummy variable equals to 1 if the firm is required by the FSC to disclose a CSR report, and is 0 otherwise.
AftPly	A dummy variable equals to 1 if the firm discloses a CSR report after the mandatory requirement, and is 0 otherwise.
Volunt	A dummy variable equals to 1 if the firm voluntary discloses CSR report, and is 0 otherwise.
Size	Firm size is measured as the natural logarithm of total assets at the beginning of the year.
Inst	Institutional shareholdings are measured by the total number of shares held by institutional investors divided by the total number of ordinary shares outstanding.
Volm	Trading volume is measured by the monthly trading volume of ordinary shares divided by the total number of shares outstanding at the end of the previous period.
MTB	The market-to-book ratio is measured as market capitalization divided by book value.
TSE	A dummy variable equals to 1 if the firm is listed in the Taiwan Securities Exchange, and is 0 otherwise.
Ind	The industrial classification is based on the Taiwan Securities Exchange SIC code.
Year	Dummy variables to construct the sample year used in this study.

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