Corporate Social Responsibility and Firm Value: The Moderating Effects of Financial Flexibility and R&D Investment

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Abstract: Despite the significance of corporate social responsibility (CSR), there remains an extensive debate regarding its implications for firm value. This study examines the moderating effects of financial flexibility and R&D investment on CSR and firm value. Using multiple archival data of 2311 companies from 2010 to 2016, our study finds that CSR is a “double-edged sword” for firm value; specifically, CSR significantly increases systematic risk but reduces firms’ idiosyncratic risk as well as the Tobin’s q. Besides, the results indicate that financial flexibility and R&D investment significantly reduce the negative correlation between CSR and Tobin’s q, the difference between the two being that financial flexibility can reduce the positive relationship between CSR and system risk, while R&D spending can reduce the negative relationship between CSR and idiosyncratic risk. By adding new aspects to the discussion about how CSR affects firm value, the results speak to both theorists and practitioners.

Keywords: corporate social responsibility; firm value; R&D investment; financial flexibility; risk

1. Introduction

Numerous studies have attempted to determine the relationship between corporate social responsibility (CSR) and firm value, but the existing literature presents conflicting views [1–4]. Studies rooted in agency theory [5] show that CSR may reduce firm value. Participating in CSR is a costly activity and has the tendency to lead to overinvestment, it is a waste of scarce resources and hurts firm value [6]. On the contrary, building on stakeholder theory [7], some researchers suggest that CSR may increase firm value. Since CSR engagement will reduce the conflicts of interest between managers and other stakeholders, firm value will be increased [8]. In short, the relationship between CSR and firm value remains unclear.

Some scholars believe that this unclear relationship may be due to the lack of consideration of boundary effects in the company or consumer level [9], and therefore new models need to be considered. Although CSR has been deeply explored in theoretical and empirical studies, there are still many gaps in the field. First of all, although fulfilling social responsibility can help firms gain “moral assets”, it is still unknown how the internal organizational ability (such as financial flexibility) affects such benefit. Secondly, R&D and CSR activities may compete for slack resources of the company [10,11], but there is a lack of research on how the interaction between the two influences firm value. Third, previous studies on CSR mainly focus on its impact on financial returns, ignoring its role with regard to firm risks.
To address these gaps, this paper proposes three research questions: (1) What is the impact of CSR on firm value (including earnings and risks)? (2) How does financial flexibility affect the relationship between CSR and firm value? (3) How does R&D investment affect the relationship between CSR and firm value?

This study makes the following contributions to the literature. First, the theory of market-based value [12] is extended. In addition, our study points out that in order to make full use of market assets, other factors need to be considered, such as the internal capacity of the organization (e.g., financial flexibility and R&D investment). Second, the results of this paper point out that financial flexibility is one of the important organizational capabilities and R&D investment is one of the important strategies to cultivate organizational innovation capability. Finally, this paper further verifies the integration of various business functions of organizations, increases the understanding of their relationships, and attempts to explore the relationship between CSR and organizational financial factors.

The rest of the paper is organized as follows: Section 2 reviews the literature and develops the main hypotheses of the paper; Section 3 describes the data and measurements; Section 4 discusses the results for each hypothesis; Section 5 summarizes the content of the article and discusses the theoretical and practical implications of the results.

2. Literature Review and Hypotheses Development

This section includes a review of the literature and the development of hypotheses. First, the discussion will focus on explaining the impact of CSR on firm value. Then, the moderating effects of financial flexibility and R&D investment on the relationship between them are proposed. Figure 1 depicts these relationships.

![Figure 1. The conceptual model.](image)

2.1. Corporate social Responsibility and Firm Value

CSR is an activity that allows a firm’s managers to make their own decisions for the purpose of improving social welfare [13,14]. In line with the multi-stakeholder perspective, CSR covers about four different categories [15]: organizations (such as employees, consumers, shareholders, and suppliers, etc.), communities (such as local residents, special group interests, etc.), regulators (such as autonomous regions, monitoring systems, etc.), and media stakeholders [8].

More and more attention has been paid to the influence of CSR on firm value [16,17]. There are two alternative predictions about the relationship between CSR and firm value in existing studies. One hypothesis is overinvestment based on agency theory, that is, in order to obtain the private benefits of building a reputation, managers may over-invest in CSR, which has a negative impact on firm value [6]; the other is the conflict resolution hypothesis based on stakeholder theory, that is, managers engage in CSR in order to resolve the conflicts among stakeholders. Conflict resolution has a positive impact on corporate value [18]. Nevertheless, a great deal of research provides arguments for a positive impact of CSR on firm value [1,17]. Based on the second theory, this paper discusses
the influence of CSR on firm value from two aspects, namely corporate earnings and firm risk, among which firm risk can be divided into “systematic” risk and “idiosyncratic” risk. The former reflects the variability of a company’s stock returns in relation to macroeconomic events that affect the entire stock market, such as changes in currency exchange rates, energy prices, and interest rates [19,20]; the latter reflects the variability of a company’s stock returns in relation to events that primarily affect only that company, such as strikes or product defects [19,21]. Each aspect will be further discussed in this study.

**CSR and corporate earnings.** According to stakeholder theory, enterprises need to manage their relationships with key stakeholders to ensure that access to scarce resources is maintained [7]. Since CSR activities can cater to different stakeholders, meet the expectations of all stakeholders for enterprises to assume social responsibility, and improve the legitimacy of organizations [22], they can help enterprises to obtain the support of stakeholders. Barnett (2007) further finds that firms could charge premium prices because the relationship between the company and its stakeholders had been improved [23]. To sum up, CSR can improve firm performance by improving the relationship with stakeholders. Jo and Harjoto (2012) provide evidence to support the positive impact of CSR participation on firm performance [18]. Lourenco et al. (2012) argues that whether enterprises engage in CSR or not may affect the reaction of investors, and thus firm performance [24].

**CSR and systematic risk.** Since CSR can meet the expectations of different stakeholders for firms to assume social responsibility, it may lead investors to buy or sell these stocks not because of their performance in returns, but because of their performance in social responsibility. This suggests that investors get utility from holding these assets rather than from their returns, which may lead investors to develop a preference for CSR [25]. Loi et al. (2014) argue that when a company has an ideal identity (e.g., social responsibility), stakeholders may associate themselves with the company and create a social identity that will lead to internal and external group preferences [26]. In addition, the higher customer loyalty to CSR means that these firms will face a more loyal demand and customers will be less price-sensitive, thus bringing more stable profits to enterprises [27]. Taken together, these behaviors indicate the potentially inelastic demand for CSR stocks, which makes enterprises less responsive to the impact of the whole market and less prone to systemic risks [28]. Therefore, firms with higher CSR tend to have lower systemic risks [29].

**CSR and idiosyncratic risk.** By engaging in CSR activities, the company can strengthen or maintain good relationships between stakeholders, which provides insurance-like protection for the company [30]. This not only helps to reduce firm capital constraint [31], but it may also result in stable demand and supply even in times of crisis and enhance the ability to go against shocks, so as to accelerate the recovery and sustainable growth [32]. In addition, CSR is regarded as a way to accumulate social (or moral) capital [33–35]. Firms with a higher level of social capital are considered to have a stronger ability to absorb (external and internal) shocks, which is helpful to reduce idiosyncratic risk. Boutin-Dufresne and Savaria (2004) report preliminary evidence that leading CSR companies have a low expected idiosyncratic risk [36]. Chen et al. (2018) show that under different market conditions, CSR can significantly reduce idiosyncratic risk [37]. Mishra and Modi (2013) also argue that CSR has a significant impact on idiosyncratic risk [38].

In summary, we expect the following:

**Hypothesis 1.** CSR (a) improves the corporate earnings and (b) reduces systematic risk and (c) idiosyncratic risk.

### 2.2. Moderating Effects

Sen and Bhattacharya (2001) believe that the relationship between CSR and firm performance is influenced by boundary factors [9]. This paper argues that examining boundary conditions can deepen the understanding of the underlying mechanism and further clarify the relationship between
CSR and firm value. Therefore, the moderating effects of two contextual factors are discussed below: financial flexibility and R&D investment.

2.2.1. Financial Flexibility

CSR reduces the flexibility to respond to negative productivity shocks, at which time the enterprise may need to reduce the welfare of other stakeholders to maintain its target interests [39]. The increase of financial flexibility can alleviate this problem. Financial flexibility refers to an enterprise’s ability to have the advantage against unexpected opportunities or manage unexpected events at a low cost [40]. Enterprises with high financial flexibility are able to avoid financial difficulties in the face of negative shocks and invest funds whenever profit opportunities arise, thus ensuring the well-being of stakeholders. This paper explains it in detail from the following three aspects.

First, financially flexible companies can enter the external capital market more easily to meet greater capital needs [41], which helps enterprises to better meet the expectations of different stakeholders, thus facilitating the relationship with them and improving corporate earnings.

Second, financial flexibility helps maintain a company’s debt capacity and future financing capacity and helps the firm choose more and better investments [42], which will greatly enhance the company’s competitiveness, to make it stand out in the market. These performances will subtly influence investors’ confidence in investment choices and improve their loyalty, thus reducing the systematic risk of the firm.

Third, the financing, investment and business activities of firms are all affected by their financial flexibility. The higher the level of financial flexibility, the more flexible a firm can be in the face of various emergencies [43], which is conducive to increasing the ability of firms to withstand shocks in periods of crisis, thus reducing idiosyncratic risks. Arslan-Ayaydin et al. (2014) pointed out that during a financial crisis affecting developing countries, firms with financial flexibility have a greater chance of obtaining investment opportunities [41].

Based on the previous discussion, the second hypothesis is as follows:

**Hypothesis 2.** Financial flexibility (a) strengthens the positive effect of CSR on corporate earnings and (b) weakens the negative effects on systematic risk and (c) idiosyncratic risk.

2.2.2. R&D Investment

Firm innovation is widely regarded as a knowledge-intensive activity [44]. In a dynamic environment, innovation ability is the driving force for a firm to break through the bottleneck of its own development, achieve sustainable development, and create welfare for interest groups [45]. Padgett and Galan (2010) argued that both R&D and CSR activities can create assets and provide a competitive advantage for firms [46]. Fu et al. (2020) pointed out that there is a significant positive correlation between R&D intensity and CSR [47]. In order to better understand the impact of R&D on the relationship between CSR and firm value, it will be further discussed from the following three aspects:

First, by sharing knowledge in R&D and CSR, the needs of stakeholders can be integrated into practice, thus creating more value for different stakeholders with similar interests [48,49]. The result of this is to get closer to the stakeholders, which will increase the firm’s earnings.

Second, combining R&D knowledge with a deep understanding of social welfare can produce new products or services that promote the attention to vulnerable communities. In other words, R&D can help the product to gain better CSR attributes [50]. This shows that it not only reduces the total cost of knowledge, but also increases the utility of CSR, which helps increase customer loyalty to CSR and eventually reduce systematic risk.

Third, R&D investment leads to innovation in CSR-related products and processes, as well to the creation of complex and ambiguous product portfolios, which increase product differentiation
and reduce the possibility of imitation by competitors [51,52]. This not only increases the competitive advantage of the enterprise, but also increases the protection of the enterprise, which reduces the idiosyncratic risk.

Hence, based on the above arguments, we propose that:

**Hypothesis 3.** R&D investment (a) strengthens the positive effect of CSR on corporate earnings and (b) weakens the negative effects on systematic risk and (c) idiosyncratic risk.

### 3. Method

#### 3.1. Sample and Data

The hypotheses of this paper are tested with a sample of Chinese firms (excluding financial services firms and firms issuing B-shares and H-shares) listed on the Shenzhen and Shanghai stock exchanges between 2010 to 2016. The time window of the explanatory variable is 2010–2016 and that of the explained variable is 2011–2017.

This article retrieves data from multiple reliable sources. First, corporate social responsibility (CSR) data were obtained from Hexun.com (http://stockdata.stock.hexun.com/zrbg/), which has been widely used in academic research [53]. To calculate the risk dimension of the dependent variable, data of the Fama-French three factor, risk-free interest rate, and stock return rate were obtained from CSMAR database. Other than that, other financial data are also from CSMAR. After excluding the observations with missing data, the final data consist in an unbalanced panel consisting of 2311 companies and 13,869 observations.

#### 3.2. Measures

**Dependent variable:** Firm value is measured in two dimensions. One is the revenue dimension, represented by a given firm’s Tobin’s q. Following the previous literature [54], this paper calculates Tobin’s q as \( \frac{MVE + PS + DEBT}{TA} \), where MVE is the product of the annual closing price of a stock and the number of common stock outstanding; PS refers to the liquidation value of the company’s preferred stock; DEBT is calculated by subtracting short-term assets from short-term liabilities and adding long-term debts; TA is the book value of the total assets. The other dimension is the risk dimension, which is represented by systematic risk and idiosyncratic risk. The risk dimension is calculated by the rolling regression of daily data by ordinary least squares (OLS) using the Fama-French three-factor model, and the time window is set at 240 days [55].

**Independent variable:** CSR is measured using the corporate social responsibility score on Hexun.com, which includes five dimensions (shareholder responsibility, employee responsibility, supplier, client and consumer rights and interests responsibility, environmental responsibility).

**Moderating variables:** The two moderators are financial flexibility and R&D investment. Financial flexibility is usually measured by debt-to-asset ratio, or cash and current ratio. This paper chooses the former for two reasons: first, companies with financing constraints are more inclined to hold cash for precautionary reasons [56]; Second, the asset-liability ratio is a forward-looking indicator of a firm’s financing difficulty. In order to repay debts, a company will sacrifice current earnings and future cash flow, which will reduce future cash holdings [57]. For the calculation, we followed the approach recommended by Kurt and Hulland (2013) [57]. That is, it was calculated as the company’s financial leverage minus the industry’s average financial leverage, divided by the standard deviation of the industry’s financial leverage, and multiplied by minus one. Therefore, the higher the value, the more financial flexibility a focal firm has. R&D investment was measured by dividing total R&D expenditure by sales, as suggested by Honoreé et al. (2015) [58].

**Control variables:** To rule out alternative explanations, we used a comprehensive set of control variables. First, we controlled a set of firm-level factors (i.e., firms’ return on assets, size, age, and nature).
Return on assets (ROA) is calculated as a firm’s net profit scaled by the total assets, and the total assets are the average value of the beginning and the ending of the total assets within a focal year. Previous studies have shown that a higher ROA indicates a firm’s better profitability, which attracts investors and promotes the firm value [59,60]. Firm size (SIZE) is measured as the logarithm of the number of employees in the firm [61]. Previous studies have suggested that firm size has an impact on firm value because large firms are better at managing their risks than small ones, which helps them to avoid threats to their value [62,63]. Firm age (AGE) is measured as the number of years since the establishment of a listed firm [64]. Prior studies demonstrate that younger firms have worse firm performance than older ones because of lack of experience, external connections, and legitimacy [65,66]. State-owned shares (STATE) are specifically calculated as the share of state-owned shareholdings [67]. Research shows that firms may use their political connections to transfer corporate resources to government officers, which dilutes the firm value [68].

Second, we controlled for the industry-level factors by industry competition (COMP). According to the spirit of the Herfindahl-Hirschman index (HHI), it is calculated as a firm’s squared share of the revenue within the same industry. For the convenience of interpretation, we reversed it by subtracting the HHI from 1 to represent the degree of industrial competition. Previous studies have found that industry competition increases the incentives and quality in management and promotes firm value [69–71].

Third, to account for the board-level ownership concentration, we included the largest shareholder ratio (BIG1) (i.e., measured as the largest shareholder’s squared shareholding ratio). Previous studies have argued that large shareholders are more motivated to have elaborative supervision on a firm’s company management, which helps to increase the firm value [72–74].

Fourth, we included the SH, YEAR, and INDUSTRY to control the kinds of fixed effects. We controlled for the market-level factors by including a stock exchange (SH) dummy, which was coded as 1 if the company is listed on the Shanghai Stock Exchange, and as 0 if the company is listed on the Shenzhen Stock Exchange. Prior studies pointed out that the stock exchange differences in terms of trading patterns, information liquidity, and trading volume may affect the firms’ strategic decision and firm value [75–77]. We also included the year dummies (YEAR) and industry dummies (INDUSTRY) to account for the macro variation and industry time-invariant factors responsively [78].

Table 1 gives basic descriptive statistics, measurement methods, and data sources for all variables in this study.

### Table 1. Variables’ measurement and data sources.

| Variables | Measurement | Data |
|-----------|-------------|------|
| TOBINQ    | Tobin’s \( q = \frac{(MVE+PS+DEBT)}{TA} \), where MVE=the number of common stock share outstanding * the share’s close yearly price; PS is the liquidating value of the firm’s outstanding preferred stock; DEBT= short-term liabilities - short-term assets + long-term debts; TA = book value of total assets. | CSMAR |
| IRISK     | Idiosyncratic risk. In the Fama-French three-factor model, the idiosyncratic risk is the standard deviation of the residual error of the regression model, which represents the information that cannot be interpreted by the three factors. | CSMAR |
| SRISK     | Systemic risk. The Fama-French three-factor model is used, in which systemic risk is the regression coefficient of market factors, indicating the degree of common variation between the company and the whole market. | CSMAR |
| CSR       | Corporate social responsibility. The evaluation score of corporate social responsibility of listed companies in HeXun. | [http://stockd-ata.stock.he-xun.com/zrbg](http://stockd-ata.stock.he-xun.com/zrbg) |
Table 1. Cont.

| Variable | Description |
|----------|-------------|
| FLEX | Financial flexibility. First, calculate the financial leverage of each company (the sum of long-term and short-term liabilities divided by total assets). Then, the industry’s average financial leverage is subtracted from the company’s financial leverage, divided by the standard deviation of the industry’s financial leverage, and finally multiplied by minus 1. |
| RD | Firm R&D investment. The ratio of R&D expense to sales. |
| ROA | Return on assets. Net profit scaled by total assets. |
| SIZE | Firm size. Take the logarithm of the number of employees in the firm. |
| AGE | Firm age. The number of years since the establishment of a listed firm. |
| STATE | State-owned shares. The share of state-owned shareholdings. |
| COMP | Industry competition. According to the Herfindahl-Hirschman index (HHI), calculate as a firm’s squared share of the revenue within the same industry. For the convenience of interpretation, the value is subtracted to 1. |
| BIG1 | The largest shareholder. The largest shareholder’s squared shareholding ratios. |
| SH | Dummy variable, 1 = the company is listed on the Shanghai stock exchange, 0 = the company is listed on the Shenzhen stock exchange. |
| YEAR | Dummy variable, control variable of year, 6 dummy variables represent 7 years. |
| INDUSTRY | Dummy variables, indicating the category of industry, 44 dummy variables representing 45 industries. |

3.3. Modeling

We employed a pool regression panel analysis with the cluster error settings to test our hypothesis, and estimated our models by the ordinary least square method. In order to test hypothesis H1, the following Formulas (1)–(3) were constructed:

\[
\text{TOBINQ}_{i(t+1)} = a_{10} + a_{11} \text{CSR}_{it} + \sum a_{1j} CVs + SH_i + \sum \text{YEAR} + \sum \text{INDUSTRY}_i + \varepsilon_{1it} \quad (1)
\]

\[
\text{SRISK}_{i(t+1)} = b_{10} + b_{11} \text{CSR}_{it} + \sum b_{1j} CVs + SH_i + \sum \text{YEAR} + \sum \text{INDUSTRY}_i + \varepsilon_{2it} \quad (2)
\]

\[
\text{IRISK}_{i(t+1)} = c_{10} + c_{11} \text{CSR}_{it} + \sum c_{1j} CVs + SH_i + \sum \text{YEAR} + \sum \text{INDUSTRY}_i + \varepsilon_{3it} \quad (3)
\]

In Formulas (1), (2), and (3), \(i\) represents the firm \(i\) and \(t\) represents the year \(t\). CSR represents the score value of corporate social responsibility. \(\text{YEAR} \) represents the year’ dummies (in which 2010 is the reference group). \(\text{INDUSTRY} \) represents the industrial dummies, except for manufacturing (according to the three-digit number), and other industries are classified according to the two-digit China industry classification (2012 version of China securities regulatory commission) [79]. \(SH \) is a dummy variable, in which 1 indicates that a firm’s public offerings are listed on the Shanghai stock exchange and 0 indicates that a firm’s public offerings are listed on the Shenzhen stock exchange. \(CVs\) represents the control variables. Following previous studies [63,65,80], we took the firm-, industry-, and market- level indicators as control variables. Firm-level variables include return on assets (ROA), firm size (SIZE), firm age (AGE), state-owned shares (STATE), and ownership concentration of the largest shareholder (BIG1). Industry-level variables includes industry competition (COMP). Market-level variables include the difference of stock exchange (SH). \(\varepsilon \) represents the error term.

We followed the Aiken and West’s (1991) method to test our moderating effects [81]. Hypothesis H2, and Formulas (4)–(6) were constructed as follows:

\[
\text{TOBINQ}_{i(t+1)} = a_{20} + a_{21} \text{CSR}_{it} + a_{22} \text{FLEX}_{it} + a_{23} \text{CSR}_{it} \times \text{FLEX}_{it} + \sum a_{2j} CVs + SH_i + \sum \text{YEAR} + \sum \text{INDUSTRY}_i + \varepsilon_{4it} \quad (4)
\]
were concentrated before multiplication.

\[
\text{SRISK}_{i(t+1)} = b_{20} + b_{21}CSR_{it} + b_{22}\text{FLEX}_{it} + b_{23}CSR_{it} \times \text{FLEX}_{it} + \sum b_{2j}\text{CVs} + SH_{i} + \sum \text{YEAR} + \sum \text{INDUSTRY}_{i} + \epsilon_{it}
\]

(5)

\[
\text{IRISK}_{i(t+1)} = c_{20} + c_{21}CSR_{it} + c_{22}\text{FLEX}_{it} + c_{23}CSR_{it} \times \text{FLEX}_{it} + \sum c_{2j}\text{CVs} + SH_{i} + \sum \text{YEAR} + \sum \text{INDUSTRY}_{i} + \epsilon_{it}
\]

(6)

where \text{FLEX} represents the financial flexibility and \text{CSR} \times \text{FLEX} is the interactive term of financial flexibility and CSR. In order to avoid multicollinearity, \text{CSR} \times \text{FLEX} is the interactive term of financial flexibility and CSR. In order to avoid multicollinearity, continuous variables were centralized before generating the production terms [81].

In order to test hypothesis H3, Formulas (7)–(9) were constructed as follows:

\[
\text{TOBINQ}_{i(t+1)} = a_{30} + a_{31}CSR_{it} + a_{32}RD_{it} + a_{33}CSR_{it} \times \text{FLEX}_{it} + \sum a_{3j}\text{CVs} + SH_{i} + \sum \text{YEAR} + \sum \text{INDUSTRY}_{i} + \epsilon_{it}
\]

(7)

\[
\text{SRISK}_{i(t+1)} = b_{30} + b_{31}CSR_{it} + b_{32}RD_{it} + b_{33}CSR_{it} \times \text{FLEX}_{it} + \sum b_{3j}\text{CVs} + SH_{i} + \sum \text{YEAR} + \sum \text{INDUSTRY}_{i} + \epsilon_{it}
\]

(8)

\[
\text{IRISK}_{i(t+1)} = c_{30} + c_{31}CSR_{it} + c_{32}RD_{it} + c_{33}CSR_{it} \times \text{FLEX}_{it} + \sum c_{3j}\text{CVs} + SH_{i} + \sum \text{YEAR} + \sum \text{INDUSTRY}_{i} + \epsilon_{it}
\]

(9)

where RD represents firm R&D investment and \text{CSR} \times \text{RD} is the interaction item between R&D investment and CSR. In order to avoid the interference of multicollinearity with the regression results, the variables were concentrated before multiplication.

4. Results

Table 2 presents the descriptive statistics and the correlation matrix for the key variables. The variable inflation factor (VIF) shows that all values are significantly below the well-suggested cutoff value of 10 [82]. Our values of VIFs range from 1.032 to 2.873, which indicates that the multicollinearity is not a serious concern in this study. The correlations between CSR and Tobin’s q, systematic risk, and idiosyncratic risk are −0.195 (\(p < 0.05\)), 0.133 (\(p < 0.05\)), and −0.249 (\(p < 0.05\)), respectively, which indicates that the impact of CSR on firm value may be a “double-edged sword” and is worth further exploration.

4.1. Tests of Hypotheses

The main effect of CSR. The results provided in Table 3 (Model 1) indicate that CSR negatively and significantly influences Tobin’s q (\(\beta = −0.003; p < 0.01\)). In addition, as shown in Model 5 and Model 9, CSR positively influences systemic risk (\(\beta = 0.001; p < 0.01\)) and negatively influences idiosyncratic risk (\(\beta = −0.000; p < 0.01\)). Therefore, only H1(c) is supported. Taken together, these results indicate that the influence of CSR on corporate value is a “double-edged sword”. These results will be discussed in a more detailed manner in the next section.

The moderating role of financial flexibility. Results from Model 2 and Model 6 indicate that financial flexibility significantly weakens the negative relationship between CSR and Tobin’s q (\(\beta = 0.004; p < 0.01\)) and the positive relationship between CSR and systemic risk (\(\beta = −0.001; p < 0.01\)). Model 10 indicates that its influence on the relationship between CSR and idiosyncratic risk is not significant (\(p > 0.10\)). To sum up, financial flexibility significantly reduces the adverse impact of CSR on corporate earnings and systematic risks; in other words, financial flexibility increases the beneficial impact of CSR on corporate earnings and systematic risks, and thus H2(a) and H2(b) are supported.
|       | Mean  | S.D.  | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1     | TOBINQ | 1.620 | 1.722 | 1     |       |       |       |       |       |       |       |       |       |       |       |       |
| 2     | SRISK  | 1.031 | 0.229 | −0.222 | 1     |       |       |       |       |       |       |       |       |       |       |       |
| 3     | IRISK  | 0.021 | 0.006 | 0.353 | −0.019 | 1     |       |       |       |       |       |       |       |       |       |       |
| 4     | CSR    | 27.437 | 19.496 | −0.195 | 0.133 | −0.249 | 1     |       |       |       |       |       |       |       |       |       |
| 5     | FLEX   | −0.010 | 0.884 | 0.084 | 0.021 | −0.001 | 0.058 | 1     |       |       |       |       |       |       |       |       |
| 6     | RD     | 0.022 | 0.034 | 0.115 | 0.003 | 0.109 | −0.031 | 0.165 | 1     |       |       |       |       |       |       |       |
| 7     | ROA    | 0.036 | 0.055 | −0.026 | 0.044 | −0.128 | 0.378 | 0.345 | 0.063 | 1     |       |       |       |       |       |       |
| 8     | SIZE   | 7.705 | 1.388 | −0.350 | 0.163 | −0.223 | 0.282 | −0.229 | 0.010 | 0.066 | 1     |       |       |       |       |       |
| 9     | AGE    | 10.599 | 6.499 | 0.092 | 0.012 | −0.023 | 0.000 | −0.268 | −0.229 | −0.184 | 0.003 | 1     |       |       |       |       |
| 10    | STATE  | 0.053 | 0.145 | −0.111 | 0.047 | −0.054 | 0.066 | −0.012 | −0.088 | 0.028 | 0.111 | 0.001 | 1     |       |       |       |
| 11    | COMP   | 0.155 | 0.129 | 0.040 | 0.005 | 0.042 | −0.057 | 0.064 | 0.043 | −0.025 | −0.155 | −0.021 | −0.016 | 1     |       |       |
| 12    | BIGI   | 0.996 | 0.027 | −0.151 | 0.065 | −0.044 | 0.158 | 0.028 | −0.080 | 0.112 | 0.207 | −0.124 | 0.242 | −0.081 | 1     |       |
| 13    | SH     | 0.453 | 0.498 | −0.039 | 0.053 | −0.101 | 0.100 | −0.160 | −0.212 | −0.069 | 0.123 | 0.274 | 0.071 | −0.063 | 0.090 | 1     |

**Note(s):** N = 13,869. Correlations above |0.017| are significant at the 0.05 level (two-tailed). In this paper, a total of 6 dummy variables are used to control the year and 44 dummy variables are used to control the industry; due to the large number of control variables, none is listed.
Table 3. Regression Result.

|          | M1   | M2   | M3   | M4   | M5   | M6   | M7   | M8   | M9   | M10  | M11  | M12  |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| CSR      | −0.003 ** (0.001) | −0.002 ** (0.001) | −0.003 ** (0.001) | −0.002 ** (0.001) | 0.001 ** (0.000) | 0.001 ** (0.000) | 0.001 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) |
| FLEX     | 0.069 ** (0.016) | 0.062 ** (0.017) | 0.008 ** (0.002) | 0.006 ** (0.002) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | (0.000) | (0.000) | (0.000) |
| CSR*FLEX | 0.004 ** (0.001) | 0.004 ** (0.001) | −0.001 ** (0.000) | −0.001 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | (0.000) | (0.000) | (0.000) |
| RD       | 1.772 ** (0.440) | 1.584 ** (0.444) | 0.288 ** (0.065) | 0.254 ** (0.065) | −0.000 ** (0.002) | −0.000 ** (0.002) | −0.000 ** (0.002) | −0.000 ** (0.002) | −0.000 ** (0.002) | (0.000) | (0.000) | (0.000) |
| CSR*RD   | 0.061 ** (0.020) | 0.053 ** (0.020) | −0.003 (0.003) | −0.001 (0.003) | 0.000 ** (0.000) | 0.000 ** (0.000) | 0.000 ** (0.000) | 0.000 ** (0.000) | 0.000 ** (0.000) | (0.000) | (0.000) | (0.000) |
| ROA      | 0.829 ** (0.268) | 0.561 * (0.254) | 0.777 ** (0.268) | 0.548 * (0.268) | 0.225 ** (0.037) | 0.166 ** (0.039) | 0.223 ** (0.037) | 0.171 ** (0.040) | −0.007 ** (0.001) | −0.005 ** (0.001) | −0.007 ** (0.001) | −0.005 ** (0.001) |
| SIZE     | −0.473 ** (0.010) | −0.461 ** (0.011) | −0.471 ** (0.011) | −0.460 ** (0.011) | 0.022 ** (0.002) | 0.023 ** (0.002) | 0.022 ** (0.002) | 0.023 ** (0.002) | −0.001 ** (0.000) | −0.001 ** (0.000) | −0.001 ** (0.000) | −0.001 ** (0.000) |
| AGE      | 0.031 ** (0.002) | 0.033 ** (0.002) | 0.034 ** (0.002) | 0.001 ** (0.000) | 0.001 ** (0.000) | 0.001 ** (0.000) | 0.001 ** (0.000) | 0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) | −0.000 ** (0.000) |
| STATE    | −0.385 ** (0.090) | −0.391 ** (0.090) | −0.384 ** (0.090) | −0.390 ** (0.090) | 0.025 * (0.013) | 0.025 * (0.013) | 0.025 * (0.013) | 0.026 * (0.013) | 0.001 * (0.000) | 0.001 * (0.000) | 0.001 * (0.000) | 0.001 * (0.000) |
| COMP     | 0.182 (0.536) | 0.068 (0.536) | 0.109 (0.536) | 0.012 (0.536) | 0.250 ** (0.079) | 0.256 ** (0.079) | 0.246 ** (0.079) | 0.252 ** (0.079) | 0.003 * (0.002) | 0.004 * (0.002) | 0.003 * (0.002) | 0.003 * (0.002) |
| BIG1     | −0.338 ** (0.106) | −0.336 ** (0.106) | −0.323 ** (0.106) | −0.323 ** (0.106) | 0.004 (0.016) | −0.004 * (0.016) | −0.002 (0.016) | −0.003 (0.016) | 0.000 ** (0.000) | 0.000 ** (0.000) | 0.000 ** (0.000) | 0.000 ** (0.000) |
| SH       | 0.030 (0.027) | 0.032 (0.027) | 0.043 (0.027) | 0.043 (0.027) | 0.000 ** (0.04) | 0.000 ** (0.04) | 0.000 ** (0.04) | 0.000 ** (0.04) | 0.000 ** (0.00) | 0.000 ** (0.00) | 0.000 ** (0.00) | 0.000 ** (0.00) |
| Constant | 4.797 ** (0.565) | 4.785 ** (0.564) | 4.839 ** (0.564) | 4.826 ** (0.564) | 0.514 ** (0.083) | 0.502 ** (0.083) | 0.517 ** (0.083) | 0.506 ** (0.083) | 0.025 ** (0.003) | 0.025 ** (0.003) | 0.025 ** (0.003) | 0.026 ** (0.003) |
| Industry FE Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE  Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N        13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 | 13,868 |
| R–squared 0.298 | 0.300 | 0.300 | 0.301 | 0.141 | 0.145 | 0.143 | 0.146 | 0.401 | 0.405 | 0.402 | 0.405 | 0.405 |
| Adjusted R–squared 0.298 | 0.297 | 0.296 | 0.298 | 0.138 | 0.142 | 0.139 | 0.142 | 0.399 | 0.402 | 0.400 | 0.403 | 0.403 |
| F        101.2 | 98.80 | 98.41 | 96.03 | 39.24 | 39.13 | 38.35 | 38.15 | 159.7 | 156.3 | 154.8 | 151.7 | 151.7 |

**Note(s):** Standard error in parentheses; + p < 0.10; * p < 0.05; ** p < 0.01 (two–tailed tests); the dependent variable of Models M1–M4 is Tobin’s q, of Model M5–M8 is systemic risk, and of Model M9–M12 is idiosyncratic risk.
The moderating role of R&D investment. In Model 3 and Model 11, R&D investment significantly weakens the negative relationship between CSR and Tobin’s q ($\beta = 0.061; p < 0.01$) as well as the negative relationship between CSR and idiosyncratic risk ($\beta = 0.001; p < 0.01$). In Model 7, its impact on the positive relationship between CSR and systemic risk is not significant ($p > 0.10$). To sum up, R&D significantly reduces the adverse impact of CSR on corporate earnings, thus supporting H3 (a). However, the H3 (b) is rejected because R&D weakens the negative effects of CSR on idiosyncratic risk. The possible reason is that R&D and CSR may compete for the limited resources of the enterprise. Research on value generation generally considers innovation as a mechanism for sustained high profits [83]. So, when faced with two choices, the firm may spend less on CSR [84], which causes the enterprise to reduce the accumulation of some insurance-like resources, or society (or morality) capital, thereby increasing the firm’s idiosyncratic risk.

4.2. Analysis of Simple Slopes

In order to further illustrate the moderating roles of financial flexibility and R&D investment, the impact of CSR on firm value was calculated at different levels of moderating variables (high level = mean+1*standard deviation; low level = mean−1*standard deviation), as shown in Figure 2.

![Moderation Effects of Financial Flexibility and R&D Investment](image)

**Figure 2.** Moderation Effects of Financial Flexibility and R&D Investment.

When financial flexibility is low, CSR has a negative impact on Tobin’s Q ($t = −6.263, p < 0.01$) and a positive impact on systematic risk ($t = 9.823, p < 0.01$). On the other hand, the influence of CSR on Tobin’s q and system risk are both positive but insignificant ($p > 0.10$) when financial flexibility is high. When R&D investment is low, CSR negatively affects Tobin’s q ($t = −4.736, p < 0.01$) and idiosyncratic risk ($t = −11.335, p < 0.01$). Conversely, when R&D investment is high, the negative impact of CSR on Tobin’s q becomes insignificant ($p > 0.10$), and the negative impact on idiosyncratic risk is reduced but still significant ($t = −4.941, p < 0.01$).
4.3. Robustness Tests

To further test the robustness of the empirical results, three methods were adopted. First, all the moderating variables and interaction terms were placed into the same equation (see M4, M8, and M12). Secondly, a four-factor model was used to measure the dependent variable. Finally, to consider the possible contemporaneous correlations of the dependent variables, seemingly unrelated regressions for joint estimation were adopted. The results of all robustness tests were largely consistent with the main results.

5. Discussion and Conclusions

In spite of the increasing awareness and requirements of CSR, the relationship between CSR and corporate value is still a controversial topic [4]. This paper investigates the connection between CSR and firm value, and explores the moderating role of financial flexibility and R&D investment. With a sample of A-share listed companies in China for 2010–2016, the results show that the influence of CSR on firm value is a “double-edged sword”. On the one hand, financial flexibility increases the beneficial impact of CSR on corporate earnings and systematic risk, but has no impact on idiosyncratic risk; on the other hand, although R&D investment increases the positive impact of CSR on corporate earnings, it also reduces the negative impact of CSR on idiosyncratic risk. In addition, it has no impact on the relationship between CSR and systematic risk. Some of the results are discussed below.

First, as an emerging economy, China still lags behind developed countries in terms of economic development. Although the government has adopted various policies to promote the development of CSR, compared to the other developed market countries, China’s CSR development is still at relatively elementary stage [85]. Therefore, if firms ignore environmental differences to undertake CSR, it will be difficult to translate it into firm financial performance.

Second, the concept of CSR of Chinese investors as compared to investors in developed countries is relatively weak [86]. Because of this, it is not easy link their investment mode directly with corporate social responsibility. Instead, Chinese investors are more concerned with “self-interested” factors such as return and risk. In other words, they have a low preference for CSR, which may lead to an increase in firms’ systematic risk.

In addition, it is worth mentioning that in the regression results of the control variables, we found that the Shanghai Stock Exchange has a higher systematic risk than the Shenzhen Stock Exchange. This may be due to the fact that the information efficiency in the Shanghai Stock Exchange is low [87,88]. To elaborate further, companies listed on the Shanghai Stock Exchange are unlikely to be sensitive to changes in market economic factors, thus leading to greater systematic risks [19]. In addition, we also found that the idiosyncratic risk of Shenzhen Stock Exchange is higher than that of Shanghai Stock Exchange, indicating that the companies listed on Shenzhen Stock Exchange have a higher volatility, which is leading to a relatively high idiosyncratic risk [21]. This result is consistent with evidence of seasonal anomalies on the Shenzhen Stock Exchange [89].

5.1. Theoretical Implications

The findings of this study have important implications for the relevant literature. First of all, this paper expands the theory of market-based value [12]. The research results show the complexity of the relationship results: CSR has a two-sided impact on the firm value, reducing the idiosyncratic risk and the corporate earnings and increasing the systematic risk; however, financial flexibility and R&D investment can inhibit the negative effects. The conclusion not only partly supports the theory of market asset value, but also enriches it. That is, in order to make the best use of market assets, other factors need to be considered, such as the internal capacity of the organization (e.g., financial flexibility and R&D investment).

Second, this paper is a response to the research of Sen and Bhattacharya (2001), who believe that the relationship between CSR and firm performance is influenced by boundary factors [9]. In the
previous research, the financial structure of a company has rarely been considered as a boundary factor. The main function of financial flexibility is to inhibit the negative impact of CSR activities on firm value, such as weakening the decrease of Tobin’s q and the increase of systemic risk caused by CSR. In this manner, financial flexibility is one of the important organizational capabilities.

Third, this paper deepens the academic understanding of the interaction between key strategic marketing instruments and CSR to reduce firm risk. Previous research has found that different intensities of strategic levers, such as R&D, can explain the variability of CSR’s impact on firm risk [32]. As one of the important strategies to cultivate organizational innovation ability, R&D plays a critical role in creating firm value [90]. By revealing the additional effects of R&D, the results of this paper indicate that the main effect of R&D investment is to reduce the negative impact of CSR on corporate earnings.

Last but not least, this paper examines the integration and mutual understanding of various business functions of organizations, which is also emphasized by Kumar (2015) [91], and attempts to explore the relationship between CSR and organizational financial policy factors.

5.2. Managerial Implications

The results of this study also have important implications for managerial practices on corporate social performance. First, the complex relationship between CSR and firm value has been revealed, providing a theoretical basis for top management teams to make decisions on CSR activities. Corporate social responsibility helps reduce idiosyncratic risks but increases systemic risks and reduces corporate earnings. Therefore, it is necessary to consider the impact of scenario factors when making decisions: when a company pays more attention to its market value, it can choose to strengthen the CSR expenditure when R&D investment is relatively high or debt is relatively low. However, when a company needs to avoid risks, it is better to fulfill its CSR with high financial flexibility.

Second, in evaluating the performance of marketers, the effects of multi-sector decisions should be considered comprehensively. Most performance evaluations do not consider the impact of other departments’ policies. For example, when the marketing department performs CSR activities, it expects an increase in the value of the company. However, if a company’s debts rise, the positive effects of CSR will disappear and even have negative effects. Therefore, the evaluation of CSR effectiveness should consider its impact on multiple business units.

Third, company managers should keep an eye on the impact of competition in the same industry. The company financial constraint adopted in this study is a relative indicator (Kurt and Hulland, 2013), which reflects a company’s relative debts to all companies in the same industry. The results show that highly indebted companies are unable to curb the negative impact of CSR activities on corporate value. Therefore, when making decisions on CSR activities, managers need to take the market and competitors into consideration.

5.3. Limitations and Future Research

This study has limitations, which in turn create opportunities for future research. First, the relationship between CSR and firm value has been controversial. This study only considers the moderating effect of two important organizational capabilities (namely, financial flexibility and R&D activities). Future research can explore other factors, such as social systems composed of rules, beliefs, values, cultures, and religions, all of which have different influences on the effect of CSR.

In addition, this study did not distinguish the types of CSR activities. CSR is a composite construct, which includes technical CSR activities, such as product improvement, and institutional CSR activities, such as environmental protection. Therefore, the impacts of different types of CSR may vary with regard to firm value [4], which is worth further consideration.

Finally, while China is a representative of emerging markets, this context may limit the generalization of our findings. Additional research should be conducted in other emerging and developed economies to examine the similarities and differences in the impact of CSR on firm value.
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