THE IMPACT OF SELECTED MODERATORS ON THE RELATIONSHIP BETWEEN CSR AND PROFITABILITY: EVIDENCE FROM CHINA
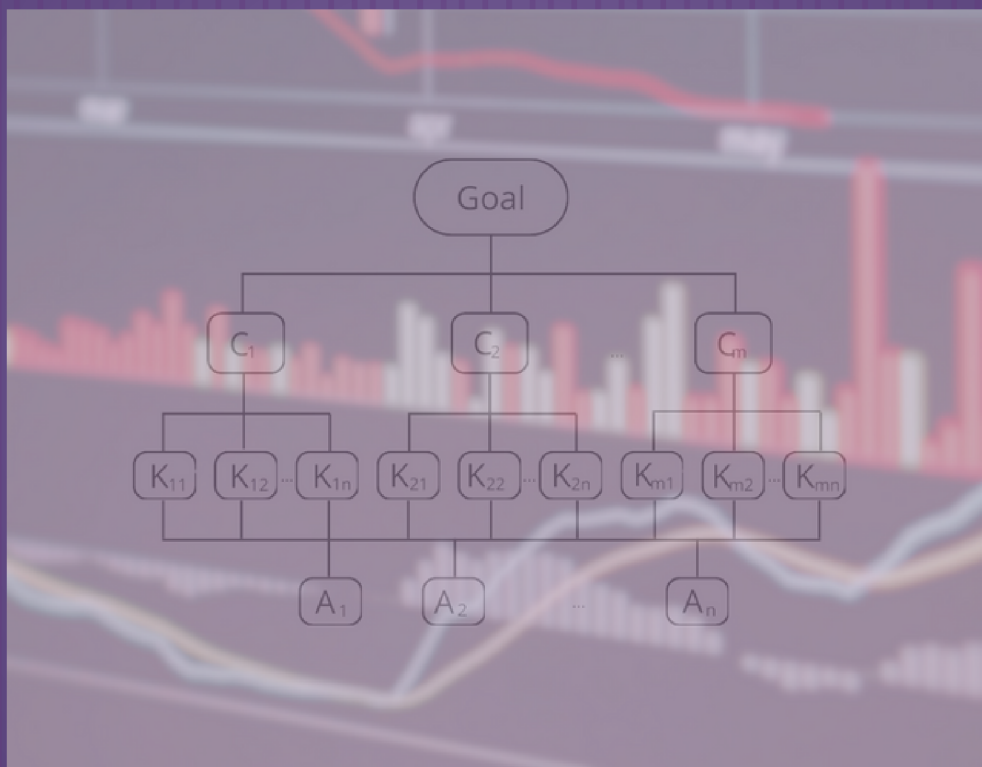

Xiaojuan Wu

Xiaojuan Wu

THE IMPACT OF SELECTED MODERATORS ON THE RELATIONSHIP BETWEEN CSR AND PROFITABILITY: EVIDENCE FROM CHINA

Ostrava, 2023

Xiaojuan Wu[1][2]
[1]Department of Finance
Faculty of Economics
VŠB-Technical University of Ostrava
Sokolská 33
702 00 Ostrava, CZ
Xiaojuan.wu@vsb.cz

[2] Department of Accounting, School of Management
Hebei GEO University
Huaian Road 136
050031 Shijiazhuang, China
287306163@qq.com

Reviews

Sylvia Jenčová, University of Presov, Slovak republic

Lucjan Klimsza, VSB – Technical University of Ostrava

Patrycja Hąbek, The Silesian University of Technology, Gliwice, Poland

The text should be cited as follows: Wu, X. (2023). *The Impact of Selected Moderators on the Relationship Between CSR and Profitability: Evidence from China*, SAEI, vol. 68. Ostrava: VSB-TUO.

Preface

With the rapid development of the economy, corporate behaviour has an increasing impact on the economy, society and the natural environment. Therefore, corporate social responsibility (CSR) has become a hot topic in the business community, the public and researchers. In the existing literature, research on the relationship between CSR and corporate financial performance (CFP) has been one of the focuses for decades. However, the results are inconclusive. Therefore, some scholars suggest that research could be carried out under the consideration of some moderators or mediators. Many studies have focused on how CSR affects CFP when certain moderating or mediating variables are taken into account. Little attention has been paid to the opposite effect, namely, how CFP affects CSR under certain mediators or mediators, especially in emerging economies.

Therefore, the aim of this monograph is to study and verify whether the profitability of different types of companies, companies at different life cycle stages, and companies with different levels of internal control have a comparable impact on CSR engagement. The research sample is selected from Chinese home appliance listed companies from 2018 to 2020.

The monograph is divided into seven chapters. Chapter 1 firstly describes the current research results on the relationship between CSR and CFP in detail, and points out the existing gap, which becomes the theme of this research. Second, the current CSR situation of listed companies in China is introduced. Finally, the structure and content of the monograph are briefly described. Chapter 2 focuses on analysing how profitability affects CSR engagement, and how this effect changes across different company types, corporate life cycle stages, and levels of internal control. Hypotheses are formulated based on theoretical analysis and empirical findings. Chapter 3 delineates the two methods used in the monograph: the Analytic Hierarchy Process (AHP), applied to determine the CSR engagement for Chinese home appliance listed companies' conditions and the interactive regression model to analyse the impact of the selected moderators on the relationship between profitability and CSR engagement. Chapter 4 is the presentation of the model and sample data, consisting of the measurement or identification of the main variables used in regression models, the specification of regression models for testing hypotheses, and sample data sources. Subsequently, the validation of the models and empirical results are presented in Chapter 5. The results are then explained and discussed in Chapter 6. The final chapter, Chapter

7, is the conclusion, including a summary of the findings, the contributions of the monograph, and further research directions.

This monograph is suitable for readers interested in the CSR situation in China. Many current impressions of CSR are based on research in developed economies such as the United States and European countries. In emerging economies, the situation may be different. Our research found that the overall impact of CFP on CSR engagement in the Chinese home appliance industry is neutral. Founder companies are reluctant to engage in CSR projects like family companies actively. Compared with companies in other stages of the corporate life cycle, mature companies are less involved in CSR. Moreover, their average CSR engagement level is the lowest across the corporate life cycle. However, CFP has a positive impact on the CSR engagement of mature companies and a negative impact on companies at other stages of the corporate life cycle. Of course, some findings are the same as the existing results, such as the company's level of internal control, which could improve CSR engagement and enhance the impact of CFP on CSR.

Xiaojuan Wu

Ostrava, October 2023

Content

Detailed Content

List of Chosen Abbreviations

AHP	Analytic Hierarchy Process
ANOVA	Analysis of Variance
CEO	Chief Executive Officer
CFP	Corporate Financial Performance
CI	Consistency Index
CLC	Corporate Life Cycle
COSO	Committee of Sponsoring of the Treadway Commission
CSMAR	China Stock Market and Accounting Research
CSR	Corporate Social Responsibility
DIB	DIBO database
EPS	Earnings Per Share
FNCF	Financing Net Cash Flow
GSIA	Global Sustainable Investment Alliance
HSD	Honest Significant Difference
IC	Internal Control
INCF	Investing Net Cash Flow
LLCI	Lower Limit Confidence Interval
MSCI	Morgan Stanley Capital International
OLS	Ordinary Least Squares
ONCF	Operating Net Cash Flow
R&D	Research and Development
RI	Random Index
RKS	Rankins CSR Ratings
ROA	Return on Assets
ROE	Return on Equity

ROS   Return on Sales

SEW   Socioemotional Wealth

SMEs   Small and Medium Enterprises

SOEs   State-owned Enterprises

ST   Special Treatment

TBL   Triple Bottom Line

ULCI   Upper Limit Confidence Interval

VIF   Variance Inflation Factor

Chapter 1

Introduction

As companies play an increasingly important role in economic development, the public has higher expectations for companies. For example, employees want companies to improve welfare and the working environment, customers wish companies to provide high-quality products or services at reasonable prices, the government hope for companies to pay more taxes and try to avoid damage to the environment, and the community expect companies to contribute more to the locality. Therefore, modern companies are not only responsible to their shareholders, but also to the stakeholders, environment and society. These responsibilities constitute the content of corporate social responsibility and become an inseparable part of business operations.

Corporate Social Responsibility (CSR) has become a growing concern for companies around the world, and the phenomenon is deeply analysed and investigated. Jo and Harjoto (2011) pointed out that CSR engagement can positively influence a company's value. The benefits of CSR are also associated with its impact on company reputation (Fatma *et al*., 2015; Fombrun, 2005), consumer loyalty (Park *et al*., 2017), and risk reduction (Jo and Na, 2012). These advantages brought about by CSR participation have attracted more and more companies to invest in CSR activities. According to the 2020 Global Sustainable Investment Review released by the Global Sustainable Investment Alliance (GSIA), global sustainable investment reached US$35.30 trillion in 2020, an increase of 15% in two years (2018-2020).

Corporate Financial Performance (CFP), as one of the critical indicators measuring the results of corporate operations, is also one of the indispensable factors in determining corporate activities. Thus, CSR is an essential activity of modern companies, and its causal relationship with CFP is one of the topics that researchers constantly discuss. Some scholars tend to explain their relationship in theory. Slack resources theory, advanced by Waddock and Graves (1997), argues that better CFP results in companies having an abundance of financial resources, enabling them to address social issues. As a result, they believe that good CFP contributes to good CSR. Instrumental stakeholder theory (Donaldson and Preston, 1995) argues that CSR can also positively influence CFP. The main argument is that good management means the company has positive relationships with key stakeholders, which, in turn, results in better resource utilisation,

ultimately improving CFP. So CSR can be seen as an effective instrument to improve CFP.

Some scholars have tried to explore their relationship from empirical research. Cochran and Wood (1984) discovered weak evidence for a positive relationship between CSR and CFP, even after controlling for some factors ignored in previous studies. A positive association was found between CSR and prior CFP, as well as CSR and future CFP by Wadock and Graves (1997). Fauzi and Idris (2009) found a positive relationship between CFP and CSR based on a questionnaire-based survey of Indonesian companies. Clarkson *et al*. (2011) studied the four most polluting industries in the US (Pulp and Paper, Chemical, Oil and Gas, and Metals and Mining) through empirical modelling. They found that corporate environmental performance (CEP) in the subsequent periods generally improved (declined) due to positive (negative) changes in their financial resources in the prior periods. Furthermore, CFP can also improve (decline) when CEP improves (declines) in previous periods.

A more macroscopic and comprehensive understanding of the relationship between CSR and CFP is expected to obtain through literature reviews. However, various conclusions are drawn even if the same method (meta-analysis) is used to examine their relationship. For example, Orlitzky *et al*. (2003) found that CSR seems more relevant to accounting-based CFP indicators than market-based ones; the CSR reputation indicator is significantly correlated with CFP over other CSR indicators. Wang *et al*. (2016) found that subsequent CFP is associated with prior CSR, while the reverse direction is not supported. Furthermore, Endrikat *et al*. (2014) discovered a positive and partially bidirectional relationship between CEP and CFP. Hang *et al*. (2019) observed that CFP could increase CEP in the short run (one year), and however, the effects disappear in the long run (after more than one year). In turn, increasing CEP has no short-term impact on a CFP, while a company benefits significantly in the long term.

In the face of inconsistent study results, some scholars claim that there is still a lot of research to be done before the relationship between CSR and CFP is fully understood (Margolis and Walsh, 2003; Alshehhi *et al*., 2018). In particular, Margolis and Walsh (2003) have stressed the importance of developing models incorporating omitted variables, testing mediating mechanisms and contextual conditions, and establishing causal links between CFP and CSR in theory. Alshehhi *et al*. (2018) also emphasise the importance of moderators in understanding this relationship.

Some scholars have started to take steps along these lines. Surroca *et al*. (2010) discovered an indirect relationship between CSR and CFP that relies on the mediating effect of a company's intangible resources but no direct relationship between them. Youn *et al*. (2015) took company size as the moderator and found that company size moderated the effects of positive CSR on CFP but did not moderate the effects of negative CSR on CFP in the US restaurant industry. Wang *et al*. (2016) examined the environmental context's moderating effect on the link

between CSR and CFP. They observed that compared with companies from developing economies, companies from advanced economies have a stronger CSR-CFP relationship. Cho and Lee (2017) studied the moderating role of managerial efficiency and found that CSR is positively associated with CFP with efficient managers. Ang *et al*. (2022) researched how ownership structure affects the link between CSR and CFP. They found that the positive effect of CSR on CFP is enhanced by ownership balance but weakened by ownership concentration. Simmou *et al*. (2023) found that CSR strategies can improve CEP through the basic mechanisms of green innovation, especially in developing countries. Most of the existing literature focuses on studying how moderators or mediators influence the impact of CSR on CFP. Few studies are concerned with how moderators or mediators influence the impact of CFP on CSR, and this monograph is about filling that gap.

China's economy has grown rapidly since 2000. At the same time, China's social and environmental problems have also come to the fore (Hao *et al*., 2020; Liu and Lin, 2019). Shenzhen Stock Exchange issued the "Notice for Better Preparing 2008 Annual Reports", requiring companies listed on the Shenzhen 100 Index to disclose CSR reports. It means that in 2008, a mandatory requirement for CSR reporting emerged for the first time in China. Since then, various CSR-related laws and regulations have been promulgated continuously, encouraging Chinese listed companies to actively participate in CSR projects and disclose relevant information (Wu and Hąbek, 2021). It is particularly noteworthy that the "Guidelines for Establishing the Green Financial System" were released in 2016. The concept of green finance here refers to the provision of preferential and priority financial services to support the investment, financing, operations, and risk management of projects such as environmental protection, energy conservation, clean energy, green transportation, and green building. It marks that China's CSR policy has entered an incentive phase. It provides attractive financial support for companies participating in and disclosing green projects while simultaneously forming a restraint mechanism to curb loans for industries with high pollution, high energy consumption and excess capacity.

Since 2008, some institutions have tried assessing Chinese listed companies' CSR through different methods. Rankins CSR rating agency (RKS) is one of the earliest professional institutions to evaluate the CSR performance and disclosure of Chinese listed companies. According to the CSR rating results of Chinese listed companies published by RKS, it can be seen that the number of CSR reports issued by Chinese listed companies increased across all levels except the very low level from 2009 to 2017, which is a good trend. However, the CSR rating scores of most Chinese listed companies are concentrated in the range of 20 to 50 points (out of 100 points) from 2009 to 2017, as shown in Figure 1–1 (Wu and Hąbek, 2021). CSR reports with a high level of disclosure (score above 75) are rare, and those with an average level of disclosure (score between 50 and 75) are not numerous. It indicates that the majority of Chinese listed companies are not performing well in terms of CSR performance and disclosure, and their CSR engagement status is not ideal.
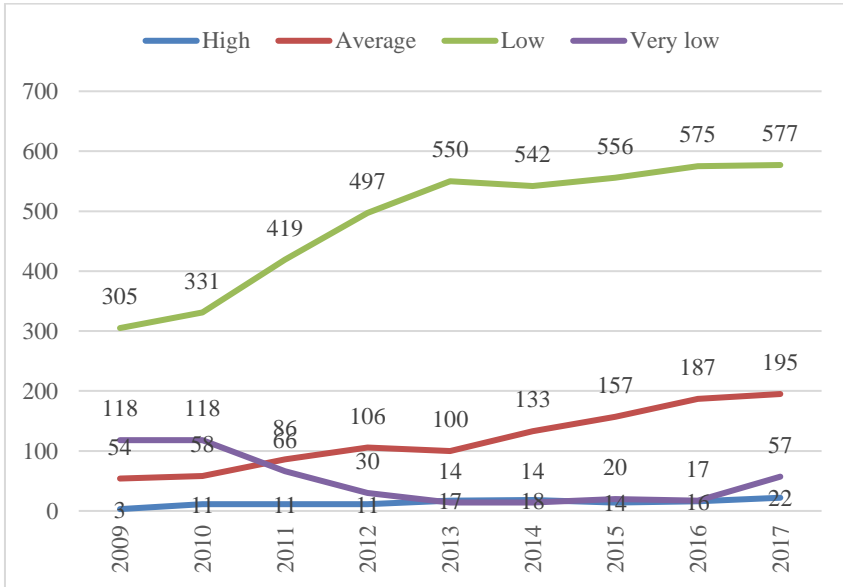
Figure1–1 Statistics on CSR reports rating of Chinese listed companies published by RKS

Note: CSR Disclosure Rating by CSR Score: High: 75-100; Average: 50-75; Low: 25-50; Very Low: 0-25.

Source: Wu and Hąbek (2021)

China is a manufacturing powerhouse whose goods appear everywhere. The added value of manufacturing accounts for 27.4% of China's GDP in 2021. After decades of development, China's home appliance industry has become a globally competitive industry. Haier, Gree, Midea, Hisense and many other brands are world-renowned. Aside from the production scale of China's home appliances ranking at the top of the world, overseas exports have also achieved remarkable results. Consequently, the CSR of Chinese home appliance companies affects not only their long-term and healthy development (Cierna and Sujová, 2020), but also their international image and competitiveness (Liu, 2018). Therefore, it is necessary to evaluate the CSR engagement of Chinese home appliance companies and explore the impact of profitability (there are many ways to measure CFP, and it is measured by profitability in this monograph) on CSR engagement, and whether and how this impact varies in different contexts.

The general objective of the monograph is to study and verify whether the profitability of different types of companies, companies at different life cycle stages, and companies with different levels of internal control has a comparable impact on the CSR engagement of Chinese home appliance listed companies. To achive this general goal, three sub-goal are set one by one. The first sub-goal is to evaluate the CSR engagement of Chinese home appliance companies. The second sub-goal is to explore the overall impact of profitability on CSR engagement of

Chinese home appliance companies. The third sub-goal is to verify whether and how the impact of profitability on CSR engagement of Chinese home appliance companies changes when separately considering the moderating role of company type, corporate life cycle (CLC) stage, and level of internal control.
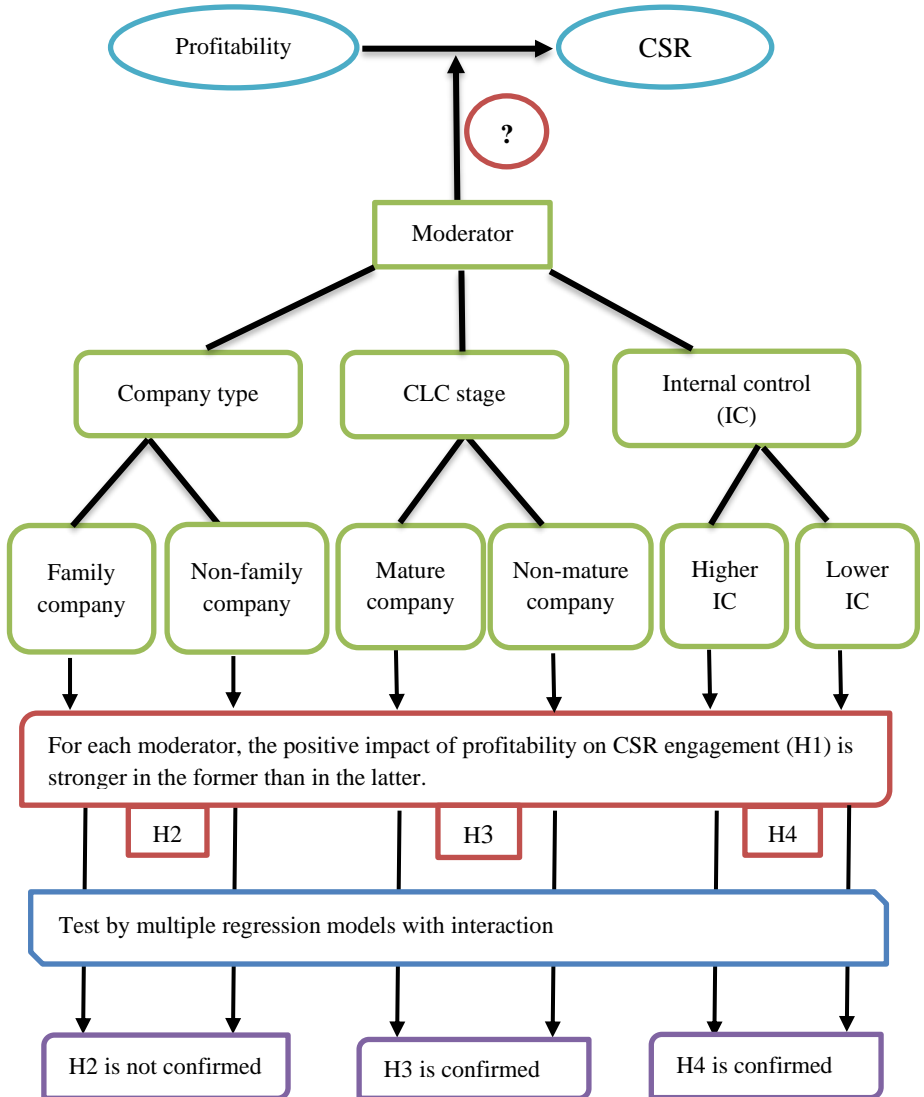
Figure 1–2 Diagram of the main content of the monograph

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

The research significance of this monograph has three aspects. First, on the basis of systematically sorting out existing theories and empirical research, we conduct an in-depth analysis of the differential impact of corporate profitability on CSR under the influence of different moderating variables, enriching and developing relevant theories on how profitability affects CSR. Second, based on a heterogeneous perspective, we empirically test whether the impact of corporate profitability on CSR is comparable under the influence of corporate type, corporate life cycle stage and internal control level. New evidence is provided for the proper relationship between corporate profitability and CSR. Third, the research results provide a more targeted reference for relevant government departments in formulating policy mechanisms to promote companies to fulfil their CSR.

The research route of the monograph is illustrated in Figure 1–2. In order to study whether the impact of profitability on CSR changes in different contexts, three moderators are chosen in the monograph: company type, CLC stage, and internal control level. Based on a combination of theoretical analysis and empirical results, hypotheses about how moderators affect the impact of profitability on CSR engagement are proposed. Multiple linear regression models with interaction are used to test these hypotheses. We can finally determine whether the hypotheses are confirmed based on the regression analysis results.

The specific content of the monograph is structured as follows. Chapter 1 is the introduction. First, the current research results on the relationship between CSR and CFP are described; then, the gaps in the current research and the significance of the monograph are pointed out; finally, the objective and structure of the monograph are put forward.

In Chapter 2, the hypotheses are proposed on the base of reviewing the existing literature. First, the definitions of CSR are compared, and then the definition adopted in this monograph is proposed. Second, the impact of profitability on CSR engagement and the moderating effects of company type, CLC stage, and level of internal control on this impact is analysed, and corresponding hypotheses are proposed.

In Chapter 3, the two methods which are involved in this monograph are introduced. One method used is the Analytic Hierarchy Process (AHP), which is employed to measure the CSR engagement of Chinese home appliance listed companies. The other method applied is the multiple linear regression model with interaction, which is used to explain the effect of moderating variables on the relationship between profitability and CSR engagement.

Chapter 4 is the presentation of the model and sample data, consisting of the measurement or identification of the main variables used in regression models, the specification of regression models for testing hypotheses, and sample data sources. First, the two-level multi-attribute model, including criteria and sub-criteria, is proposed and described for measuring the CSR engagement of Chinese home

appliance listed companies. Secondly, the reasons for choosing ROE as the profitability indicator of Chinese home appliance listed companies are expounded. Next, how to define or measure the moderator company type, CLC stage, and level of internal control are present. And then, the multiple linear regression models with and without interactive variables are formulated. Finally, sample structure and data sources are introduced.

In Chapter 5, the primary statistical analysis of the variables is carried out at the beginning, including descriptive statistics, correlation analysis between variables and analysis of differences between groups. Then, the validation of the sample data satisfying the Ordinary Least Squares regression (OLS) hypothesis and the empirical results of the model are presented.

Chapter 6 is the interpretation and discussion of the results. According to the existing research results and theoretical viewpoints, reasonable or plausible explanations for our findings are found one by one.

The final chapter, Chapter 7, is the conclusion, including a summary of the findings, the contributions of the monograph, and further research directions.

Chapter 2

Analysis of the Relationship between Profitability and CSR

In this chapter, the hypotheses are proposed on the base of reviewing the existing literature. First, the definition of CSR adopted in this monograph is proposed. Second, the impact of profitability on CSR engagement and the moderating effects of company type, corporate life cycle stage and level of internal control on this impact are analysed, and hypotheses are proposed

2.1 Corporate social responsibility

Academic research on CSR began to take form in the 1950s (Carroll, 2009). A lot of scholars and organisations strive to define the concept of CSR. While many definitions of CSR exist, it is not easy to find a commonly accepted one (Hąbek, 2017). However, Dahlsrud (2008) found five dimensions of CSR through a content analysis of the existing 37 CSR definitions: environmental, social, economic, stakeholders and voluntariness. Furthermore, he concluded that confusion is less about how CSR is defined than about how CSR is socially constructed in a particular context. Here, we briefly review three widely accepted CSR theories: Carroll's CSR Pyramid, stakeholder theory, and Triple Bottom Line, and the impact of regulation on CSR.

Carroll (1991) proposed that four kinds of social responsibilities consist of overall CSR: economic, legal, ethical, and philanthropic. These four responsibilities or components of CSR can be described as a pyramid, as shown in Figure 2–1(a). Economic responsibilities mean companies make profits for shareholders, which is the basic one "because without it the others become moot considerations" (Carroll, 1991). Legal responsibilities refer to companies should actively adhere to the laws and regulations since companies are expected to pursue their economic mission within the legal framework. Although they are on the second layer of the pyramid above the economic responsibilities, they are appropriately seen as coexisting with economic responsibilities as the basic tenets of the free enterprise system. Ethical responsibilities indicate that companies should do what is right even if it is not codified in the law, especially focusing on what consumers, employees, shareholders and communities think is fair, just, or

in line with respecting or protecting stakeholders' moral rights. Philanthropic responsibilities mean that companies should contribute to social projects, even if they are independent of their business. For example, supporting art, education, and the community by providing time or finances. Philanthropic responsibilities at the top of the pyramid are "highly desired and prized but actually less important than the other three categories of social responsibility" (Carroll, 1991). The CSR pyramid is designed to depict a company's overall CSR as consisting of different components that together form a whole, which helps companies achieve all of their components simultaneously as they engage in decision-making, action, and planning.

(a)

(b)

(c)
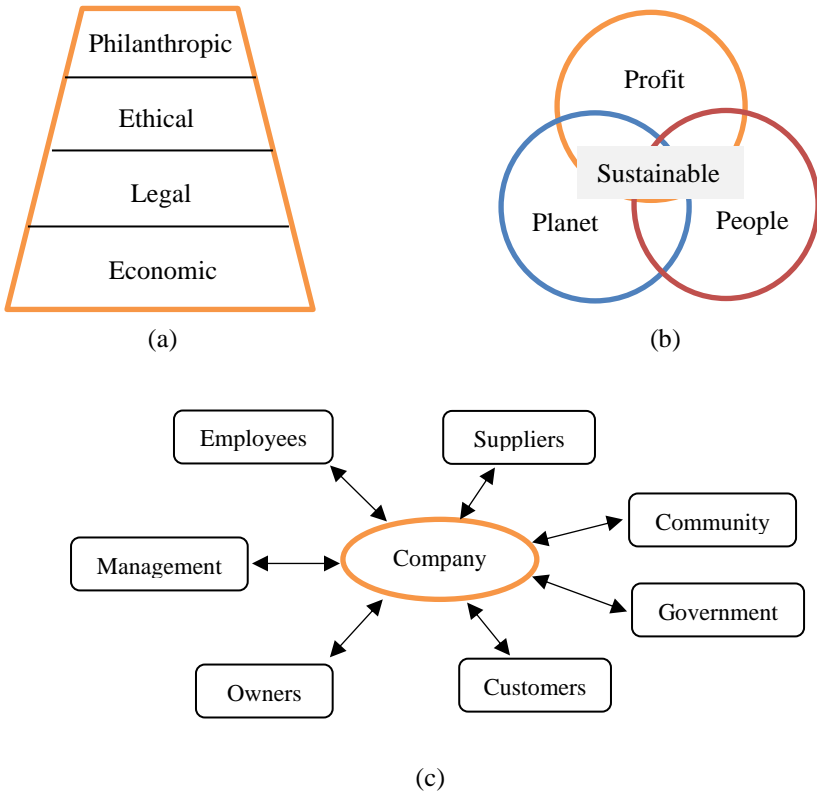
Figure 2–1 Illustration of CSR theory

Source: (a): Carroll (1991); (b): Elkington (2013); (c): Freeman *et al*. (2010).

Triple Bottom Line (TBL) was introduced at the Brundtland Commission in 1987 and officially named by John Elkington in 1994. Elkington (1997) assumes that if an enterprise forms an economic and social system, then its development objectives should constitute a triple beam related to the profit, the people associated with the company, and care for the planet. It states that a company

should be responsible for three characteristics: Profit, People and Planet, so this theory is also known as 3Ps or three pillars. In other words, companies should fulfil economic, social and environmental responsibilities (KsięzaK and FischBach, 2017). A company can only be sustainable if it cares about three aspects of TBL because all three aspects are highly closely related, as shown in Figure 2–1 (b).

Freeman (1984) defines a stakeholder as "any group or individual who can affect or is affected by the achievement of the firm's objectives". Stakeholder theory argues that companies should create "as much value as possible for stakeholders, without resorting to trade-offs" (Freeman *et al*., 2010). It is designed to attempt to expand the company's obligations to include not only the consideration of shareholders' interests, but the creation of maximum value for all stakeholders. Figure 2–1 (c) illustrates the interrelationships between the company and relevant stakeholders. The theory is generally viewed from three different taxonomic branches: normative, instrumental, and descriptive (Donaldson and Preston, 1995).

- Normative stakeholder theory is concerned with how management should deal with stakeholders. One of the core tenets of normative stakeholder theory is that companies should focus on the interests of all stakeholders—not just their shareholders, so stakeholders are here seen as "ends".

- Instrumental stakeholder theory believes that the ultimate goal of a company is market success and that good stakeholder management is a useful means of achieving this goal. Thus, instrumental stakeholder theory takes stakeholder management as a "means" and links it to the ends of outcomes (CFP).

- Descriptive stakeholder theory depicts how companies deal with stakeholders who vary in terms of salience. In normative stakeholder theory, stakeholders do not differ in importance and are treated as a whole, whereas in descriptive stakeholder theory, stakeholders are treated differently depending on their importance to a company's development.

While agreeing with the positive role of stakeholders in promoting CSR, some scholars have also explored the impact of regulation on CSR, but have reached the opposite conclusion. On the one hand, some scholars (Armstrong and Green, 2013) believe mandatory CSR changes people's plans and preferences, distorts resource allocation, and increases the likelihood of irresponsible decision-making. Management support for CSR and stakeholder accounting are important for the successful implementation of CSR. Laws and regulations only provide additional protection. On the other hand, some scholars (Tan-Mullins and Hofman, 2014) found that CSR practices in developing countries like China are often strongly influenced by the governance systems of these countries. In China, the government has played a more significant role in promoting CSR, and sometimes, China's CSR can be called "government social responsibility"(Tan-Mullins and Hofman, 2014).

To sum up, Carroll's CSR pyramid defines the four types of social responsibilities that companies should fulfil, whereas TBL reflects the three aspects that CSR should cover and includes the main content of stakeholder theory. Therefore, given that TBL contains all the key elements at the same time and is also one of the most used in CSR academic research (Tate *et al.*, 2010; Moravcikova *et al.*, 2015; Wilhelm *et al.*, 2016; El Akremi *et al.*, 2018), we adopt it as the basic concept for measuring CSR in Chapter 4 of this monograph.

2.2 Profitability and CSR

CSR usually represents a relatively high area of management discretion (Carroll, 1979, 1991). Implementation of CSR-related projects may be particularly sensitive to slack resources (McGuire *et al.*, 1988). Waddock and Graves (1997) put forward the slack resource theory claiming that better financial performance may cause available slack (financial and other) resources. It allows companies to invest in CSR-related projects, such as community relations, employee benefits, philanthropic donation, or environmental protection. If slack resources are available, allocating these resources to the social domain produces better social performance. Therefore, better financial performance is a more effective predictor of better corporate social performance. Shahzad *et al*. (2016) further divide the slack resources into financial slack, human resources slack, and innovation slack, and explore how they affect CSR, respectively.

Although the empirical evidence on the impact of profitability on CSR engagement is not unique, much of the extant literature supports the positive relationship. Clarkson *et al*. (2011) used the four most polluting industries in the USA as samples and found that the company's previous better financial resources led to improved environmental performance in the subsequent period. Based on Indonesian companies, Swandari and Sadikin (2016) concluded that profitability significantly influences CSR because "companies with high profits have the flexibility fund to implement CSR programs". Giannarakis (2014) took a sample consisting of 100 companies from the Fortune 500 list for 2011 and discovered that profitability is positively associated with the extent of CSR disclosure. The same result is obtained from the Chinese sample studied, e. g. by Li and Zhang (2010) and Wu *et al*. (2021). Based on the arguments as mentioned above, the following hypothesis is stated.

Hypothesis (H1): The impact of profitability on CSR engagement is positive.

2.3 Profitability and CSR: Moderating role of company type

When researching CSR, companies are often categorized from different perspectives. For example, depending on the status of major shareholders, companies can be divided into state-owned enterprises (SOEs) (Chen *et al*., 2009; Carey *et al*., 2017), family-owned enterprises (Adomako *et al*., 2019; Madden *et al*., 2020) and other companies. According to the size of the company, companies can be divided into large companies (Arvidsson, 2010; Parsa *et al*., 2021) and

small and medium enterprises (SMEs) (Jenkins, 2006; Morsing and Spence, 2019). Based on the sensitivity of different companies' profitability to CSR engagement, companies are divided into family companies (ownership and board of directors of the company are controlled by family members) and non-family companies in the monograph.

Researchers Gomez-Mejia *et al.* (2007) developed a general "socioemotional wealth (SEW)" model. This model has become one of the most influential theories for studying family companies. A large number of studies on the relationship between CSR and family companies use the SEW model as the theoretical basis and argue that family companies tend to perform CSR for the preservation of their SEW (Lamb and Butler, 2018; López-González *et al.*, 2019; Block and Wagner, 2014). However, to date, there is an inconclusive picture of the relationship between CSR and family companies (Faller and Zu Knyphausen-Aufseß, 2018; Block and Wagner, 2014; Madden *et al.*, 2020; Aguilar, 2018). We find that these studies ignore the factual content mentioned by Berrone *et al.* (2012) when applying the SEW model. He declared that "although SEW preservation is the 'higher-order' reference point for the family principal, poor performance acts as an informational clue that alters the family owners' loss framing". This is because "poor performance raises the spectre of a dual threat: the prospect of severe financial hardship to the family's standard of living and the possibility of SEW extinction" (Berrone *et al.*, 2012). It means that when family companies are underperforming, they would consider the issue of survival first and shift the reference point for formulating strategies from SEW to economic outcomes. In other words, the family companies adjust the reference point of the related CSR strategy following the change in financial performance. Specifically, when their profitability is high, they are likely to invest more into CSR to preserve SEW; when their profitability is low, they tend to care about financial results and reduce CSR investment. Thus, we believe that the profitability of family companies significantly impacts CSR engagement.

Socio-political theories, which are often applied in research of SOEs, argue that block-holders could urge companies to issue CSR reports, as outlined by Cao *et al.* (2019), for the following reasons: political connections with government, the need to obtain a better social image, consideration for public visibility, or incentives to avoid negative consequences. According to institutional theory, SOEs bring CSR activities to practice by three types of external drivers: coercive driver, normative driver, and mimetic driver (Zhu and Zhang, 2015). Hence, it is foreseeable that SOEs are highly involved in CSR. However, it is also possible that CSR engagement is relatively low in such companies. These companies are usually separated from market mechanisms, have immature corporate governance structures (Qiu, 2013; Zhang *et al.*, 2010), and lack managers' incentives or project management skills (Cordeiro *et al.*, 2018). These conditions can be expected to limit consciousness and considerations regarding stakeholder wishes and CSR-oriented expectations. Therefore, theoretically, it is unclear whether SOEs are inclined to engage in CSR activities due to the special status of their block-holder, or whether they are reluctant to engage in CSR activities due to immature

corporate governance structures and limited management skills. However, it is clear that, regardless of the trend, profitability is not the critical factor affecting the motivation of SOEs to engage or not engage in CSR. Thus, in the monograph, it is posited that the impact of profitability on CSR engagement is insignificant for SOEs.

For non-family private companies, they have neither a particular major shareholder like SOEs to urge them to fulfil CSR from a political perspective (Cao *et al.*, 2019; Zhu and Zhang, 2015; Zhao and Patten, 2016), nor the motivation to preserving SEW like family companies, prompting them to engage in CSR actively (Berrone *et al.*, 2010; Cennamo *et al.*, 2012). Consequently, they only implement CSR according to the basic requirements of the regulations, which has nothing to do with their slack resources such as profits. Hence, it is assumed in the monograph that for non-family private companies, the impact of profitability on their CSR engagement is negligible.

In summary, the following hypothesis is suggested:

Hypothesis (H2): The positive impact of profitability on CSR engagement is stronger for family companies than for non-family companies.

2.4 Profitability and CSR: Moderating role of corporate life cycle stages

The theory of CLC is derived from the scientific literature on organisation and dates back several decades (Penrose, 1959). Existing models differ in the number of stages and activities within each stage (Jawahar and McLaughlin, 2001), but some commonalities exist (Lester *et al.*, 2003). A four-stage model used in this monograph is consistent with the main literature. So, the life cycle of a typical organisation comprises "four identifiable but overlapping" stages: introduction, growth, maturity, and decline (Jawahar and Mclaughlin, 2001). Next, in light of the dynamic resource-based view, the role of the CLC stage in moderating the relationship between profitability and CSR is analysed.

The "dynamic resource-based view" of the company articulates "general patterns and paths in the evolution of organisational capabilities over time" (Helfat and Peteraf, 2003). This resource-based view posits that companies should identify and cultivate valuable, rare, inimitable and irreplaceable resources (Chaharbaghi *et al.*, 1999) because they are the basis of the corporate strategy (Wernerfelt, 1984) and the internal source of sustainable competitive advantage (Barney, 1991). The dynamic resource-based theory explains the founding, development, and maturity of corporate capabilities from the sources of heterogeneity in organisational capabilities and how the resources and capabilities of competitive advantage evolve (Helfat and Peteraf, 2003). Companies in different life cycle stages are linked with varying levels of resources that shape their CSR behaviour (Hasan and Habib, 2017).

Companies in the introduction stage of the life cycle are usually small in scale, lack a stable customer base, assume "liability of newness" (Stinchcombe, 1965), and have high initial exit risks. In the early life cycle stages, companies highly evaluate market share gains and capital capabilities (Shahzad *et al*., 2019). They cannot afford investments related to CSR activities, and their future sustainability is uncertain (Park, 2021). Once the market recognises products, sales soar while companies enter the growth stage. However, facing fierce market competition, growth companies have to focus on infrastructure (Park, 2021), research and development (R&D), and advertising to distinguish their products from their competitors (Shahzad *et al*., 2019) to achieve high-profit margins to support further development. Companies in the decline stages usually have a scarcity of resources and new plans (Shahzad *et al*., 2019). It is difficult for them to find any further growth opportunities in the market, leading to a decline in their market share, a deterioration in profitability, an increase in debt, and a decrease in liquidity (Miller and Friesen, 1984). These companies pay considerable attention to survival strategies. If companies with such weak financial performance invest in CSR, it is likely to threaten shareholder value (Hasan and Habib, 2017). Therefore, the limited capacity and resource base restrict companies from using scarce resources for CSR projects in the stages mentioned above, thus significantly reducing their CSR engagement.

Mature companies have a well-established customer base and stable and predictable performance and cash flows (Jiraporn and Withisuphakorn, 2016). In the mature stage, the effectiveness of companies is greatly improved, but the innovation ability is visibly reduced (Miller and Friesen, 1984). Faced with threats from competitors, mature companies can choose a strategy to build a unique reputation and public recognition to distinguish themselves from other companies (McWilliams *et al*., 2002). Greater involvement in CSR activities is a smart move to achieve this goal (Fombrun, 2005; Minor and Morgan, 2011). Moreover, the expertise and capabilities generated by organisational maturity enable these companies to make more meaningful CSR contributions. Companies with larger operating scales can allocate and use their resources more effectively to provide specialised CSR initiatives without incurring high additional costs (Udayasankar, 2008). Based on the above analysis, a good resource base, super resource integration ability, and strong demand for unique strategies enable mature companies to be able and willing to engage in more CSR-related.

In summary, the following hypothesis is suggested:

Hypothesis (H3): The positive impact of profitability on CSR engagement is stronger for companies in the mature stage than for companies in other stages of CLC.

2.5 Profitability and CSR: Moderating role of internal control

Internal control is the process designed to provide reasonable assurance that an entity achieves its objectives related to operations, reporting and compliance (COSO, 2013). An effective system of internal control helps an organization adapt

to changing business and operating environments, reduces risk to acceptable levels, and supports sound decision-making and governance of the organization, as pointed out by COSO (2013). In view of the importance of internal control to the development of enterprises, five Chinese ministries and commissions, including the Ministry of Finance, successively issued the "Basic Norms for Enterprise internal control" and the "Supporting Guidelines for Enterprise internal control", intending to promote enterprises to develop internal control construction vigorously. The five integrated components of internal control stipulated in Basic Norms are the same as proposed by COSO (2013), including control environment, risk assessment, control activities, information and communication, and internal supervision.

Internal control not only helps companies improve operational efficiency (Cheng *et al*., 2018), but also promotes companies to fulfil their social responsibilities. The "Application Guidelines for Internal Control No. 4—Social Responsibility" clearly states that enterprises should fulfil their social obligations and responsibilities in the process of operation and development, including production safety, product quality, environmental protection, resource conservation, promotion of employment, and protection of employees' rights and interests (Li, 2020). Some scholars have tried to provide empirical evidence based on the positive theoretical correlation between internal control and CSR. Wang *et al*. (2015) and Li *et al*. (2018), both based on Chinese samples, reached similar results that high-quality or effective internal control significantly improved the fulfilment of CSR. Gao (2021) found a positive association between the quality of internal control and the level of CSR disclosure in China's power and chemical companies. In addition, some studies have sought to take internal control as a moderator to explore its impact on the relationship between CSR and corporate development. Hao *et al*. (2018) found that internal control had a significant and partial moderating effect on the relationship between CSR and stock price crash risk. Guo and Shen (2019) study the role of internal control quality in the impacts of managerial shareholding on CSR performance. Dhar *et al*. (2022) observed that high-quality internal control effectively reduces the negative impact of financial expert CEO changes on CSR performance. However, to our knowledge, whether internal control affects the relationship between profitability and CSR engagement is under-researched in the previous literature.

First, internal control is conducive to the optimisation of capital allocation efficiency (Li, 2020). It indicates that a high level of internal control prompts companies to invest more funds in CSR-related fields deemed beneficial to long-term performance (Hang *et al*., 2019) in order to achieve the company's sustainable development. Next, through the establishment of appropriate standards, processes and structures, a high level of internal control ensure the smooth progress of CSR activities and the efficient use of capital for CSR (Castka *et al*., 2004; Liu, 2018). Moreover, internal control could be perceived as a system for company risk management (Spira and Page, 2003). A company with a high level of internal control has sound risk management and control capabilities. Therefore, to a large extent, the damage to the reputation and image of the

company caused by misconduct is prevented, and adverse events that impair the practice of CSR are avoided, thereby improving the realistic performance of CSR activities (Li, 2020). In other words, a high level of internal control promotes the achievement of CSR strategic goals by preventing money from being wasted on compromising CSR activities. To sum up, a high level of internal control not only stimulates the flow of financial resources to the CSR field, but also ensures the effectiveness and efficiency of the use of capital in CSR activities. Based on the above analysis, the following hypothesis is proposed.

Hypothesis (H4): The positive impact of profitability on CSR engagement is stronger for companies with higher levels of internal control than for companies with lower levels of internal control.

2.6   Summary

The main focus of this chapter is to formulate hypotheses based on a review of the existing literature. First, the concept of CSR adopted in the monograph is introduced after a brief review of the development of CSR. Secondly, according to the slack resource theory and most empirical results, we hypothesise that profitability has a positive impact on CSR engagement. Next, we analyse the possible influence of the moderator company type, CLC stages and level of internal control on this relationship. Specifically, considering the different sensitivities of the profitability of family and non-family companies to CSR engagement, we assume that the profitability of family companies has a more significant impact on CSR engagement than non-family companies. Given that the resources and capabilities underlying CSR engagement vary across the CLC stages based on the "dynamic resource-based view", we suppose that mature companies would enhance the positive effect of profitably on CSR engagement compared to non-mature companies. Since higher levels of internal control facilitate the allocation of financial resources to CSR activities and improve the effectiveness and efficiency of the use of those resources, we propose the hypothesis that higher levels of internal control would promote the positive impact of profitability on CSR engagement.

Chapter 3

Description of Applied Methods

There are mainly two methods involved in the monograph. The first one is the Analytic Hierarchy Process (AHP), which is used to measure the CSR engagement of Chinese home appliance listed companies. The second one is the multiple linear regression model with interaction, which is used to explain the effect of moderating variables. These two methods are described in detail in this chapter.

3.1 Analytic Hierarchy Process

The Analytic Hierarchy Process (AHP) was formally proposed in the mid-1970s by Thomas L. Saaty, a professor at the University of Pittsburgh. It is a systematic and hierarchical analysis method combining qualitative and quantitative aspects (Saaty and Vargas, 2012). Due to its practicality and effectiveness in dealing with complex decision-making problems, it has quickly gained worldwide attention. Especially since this method can transform the qualitative nature of CSR into a quantitative evaluation of CSR for research needs through a comparative manner, many scholars use it to measure CSR, such as Oluwafemi and Oyatoye (2012), Xu *et al*. (2013), and Karaman and Akman (2018). As the CSR data provided by China's CSR ranking agencies cannot meet the monographneeds in terms of accuracy and coverage simultaneously, see sub-chapter 4.1 for specific reasons. A hierarchical CSR evaluation system is set up in the monograph. AHP determines the weights of the system's criteria and sub-criteria, which are then used to calculate the companies' CSR scores.

Typically, when decisions are made in an organized manner to generate priorities (weights), the decision-making process consists of four steps. First, construct the decision hierarchy; second, form a set of pairwise comparison matrices; then, get the weights from the eigenvector solution or row geometric mean and perform a consistency test; finally, calculate the score of every alternative, and obtain the ranking.

3.1.1 Structure of the decision hierarchy

We can draw a picture to show how to structure the decision hierarchy. As Figure 3–1 shows, on the top is the goal of the decision, and the intermediate levels are the relations of criteria and sub-criteria. The criteria (C_i) are the main factors influencing the goal, and each criterion could decompose into several sub-criteria

(K_{ij}), but each sub-criterion belongs to only one criterion. Ideally, each branch should have no more than 5-6 criteria (sub-criteria), and the final tree should be as balanced as possible. The lowest level is usually a set of alternatives (A_i).
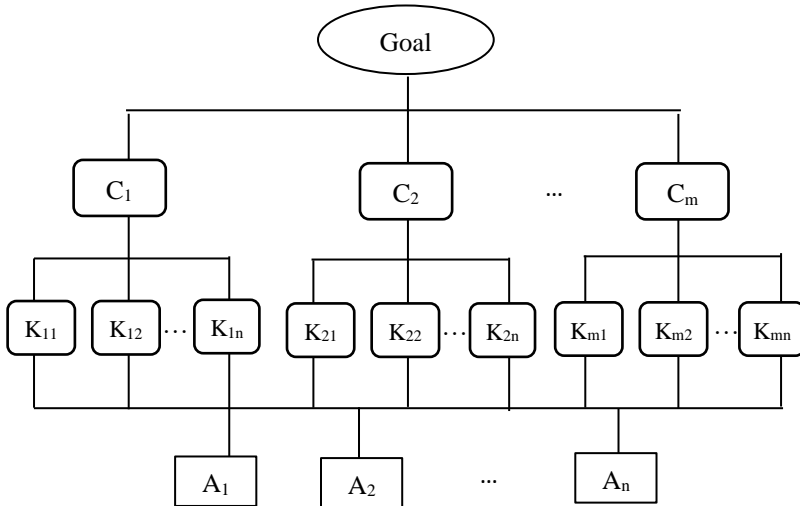
Figure 3–1 Diagram of the AHP process

Source: Saaty and Vargas (2012)

3.1.2 Construction of a set of pairwise comparison matrices

Because different criteria and sub-criteria have different importance to the goal. The weight of each criterion and sub-criterion could be obtained by Saaty's matrix. According to the theory of Saaty (Saaty and Vargas, 2012, p.5–7), Saaty's matrix is a pairwise comparison matrix $S = \{s_{ij}\}$, where $i, j = 1, 2, \dots, k$, for which the following conditions apply:

$$s_{ij} \in \left\{ \frac{1}{9}, \frac{1}{8}, \dots, \frac{1}{2}, 1, 2, \dots, 9 \right\}, \forall i, j = 1, \dots, k;$$

$$s_{ij} \in \left\{ \frac{1}{9}, \frac{1}{8}, \dots, \frac{1}{2} \right\} \Leftrightarrow K_i \prec K_j;$$

$$s_{ij} \in \{2, 3, \dots, 9\} \Leftrightarrow K_i \succ K_j;$$

$$s_{ij} = 1 \Leftrightarrow K_i = K_j, \forall K_i, K_j \in K;$$

$$s_{ij} = 1, \text{for } i = j.$$

$K_i \in K$ stands for the i-th criterion from the considered set of criteria K.

The number 1–9 indicates how many times one element is more important or dominant than another. Table 3–1 shows the fundamental scale of values to represent judgment intensities.

By comparing criteria in pairs, we can get a pairwise comparison matrix. For every group of sub-criteria which depend on one criterion, do the same work. Then, we get a set of pairwise comparison matrices.

Table 3–1 The fundamental scale of absolute numbers

Intensity of importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
2	Weak	
3	Moderate importance	Experience and judgement slightly favor one activity over another
4	Moderate plus	
5	Strong importance	Experience and judgement strongly favor one activity over another
6	Strong plus	
7	Very strong or demonstrated importance	An activity is favored very strongly over another; its dominance demonstrated in practice
8	Very, very strong	
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
Reciprocals of above	If activity *i* has one of the above non-zero number assigned to it when compared with activity *j*, then *j* has the reciprocal value when compared with *i*	A reasonable assumption

Source: Saaty and Vargas (2012)

3.1.3 Calculation of weights and consistency test

For each paired comparison matrix, the maximum eigenvalue and its corresponding eigenvector are calculated, and consistency tests are performed using consistency index (CI), random index (RI) and consistency ratio (CR). If the consistency test passes, the eigenvector (normalised) is the weight vector; if it does not pass, the pairwise comparison matrix must be reconstructed.

That is to say, in order to pass the consistency test, the Saaty's matrix S and the entries s_{ij} in the Saaty's matrix must follow the rules below, according to the theory of Saaty (Saaty and Vargas, 2012, p.8):

i. The matrix must be reciprocal, i.e. $s_{ij} = {}^1/_{s_{ji}}$, $\forall\, i,\, j = 1, \dots,\, k$;

ii. Transitivity is expected, i.e. $K_i > K_j \wedge K_j > K_m$, then $K_i > K_m$, for $\forall\, K_i,\, K_j,\, K_m \in K$;

iii. The last property is multiplicative consistency, i.e. $s_{ij} \cdot s_{jm} = s_{im}$, for $\forall\, i,\, j,\, m = 1, \dots,\, k$.

In general, two methods are commonly used to estimate priorities or weights. One is the eigenvector method, and the other is the row geometric mean method.

a) The eigenvector method

It is recommended to use the eigenvector solution to get the criteria weights. The eigenvector here refers to the one corresponding to the maximum eigenvalue (Saaty and Vargas, 2012, p.8). The formula is as follows:

$$S\, \vec{w} = \lambda_{max}\vec{w}, \tag{3.1}$$

where λ_{max} is the maximum eigenvalue of the matrix S and $\vec{w} = (w_1, \dots, w_k)$ is its corresponding eigenvector.

There are many ways to derive the eigenvector from the matrix. Now some software can be used to quickly obtain the maximum eigenvalue λ_{max} and the corresponding eigenvector.

b) The row geometric mean method

An easy way to get an approximation of the priorities (weights) is to normalise the geometric means of the rows (Saaty and Vargas, 2012, p.8). The formula is as follows:

$$w_i = \frac{\left[\prod_{j=1}^{k} s_{i,j}\right]^{1/k}}{\sum_{i=1}^{k}\left[\prod_{j=1}^{k} s_{i,j}\right]^{1/k}}, \tag{3.2}$$

$$\lambda_{max} = \frac{1}{k}\sum_{i=1}^{k} {}^{(S\,\cdot\vec{w})_i}/_{w_i}, \tag{3.3}$$

where $(S\cdot\vec{w})_i$ element is the i-th element of an eigenvector.

Next, we can check the consistency by calculating the consistency ratio (CR). Saaty's matrix is sufficiently consistent if and only if its CR is less than 0.1, where

$$CR = CI/RI, \tag{3.4}$$

$$CI = \frac{\lambda_{max} - k}{k-1}, \tag{3.5}$$

where k is the number of criteria. The value of RI is shown in Table 3–2.

Table 3–2 Average random index

k	1	2	3	4	5	6	7	8	9	10
RI	0	0	0.52	0.89	1.11	1.25	1.35	1.40	1.45	1.49

Source: Saaty and Vargas (2012)

3.1.4 Scoring and ranking of alternative

If all the pairwise comparison matrices pass the consistency test, we can get the global weight of each sub-criterion by multiplying its weight with the weight of the criterion to which it belongs. In order to enhance the comparability of the same criteria between different alternatives, every indicator value corresponding to each criterion needs to be normalised so that each indicator value can be in the same interval. Min-max normalisation is one of the most common ways to normalise data (Kabir *et al*., 2015; Patro and Kumar, 2015).

If all the original indicator value for one criterion is positive, this normalised method can be applied directly. That is, each indicator value minus the minimum values of this indicator, and then the result is divided by the difference between the maximum and minimum value of the indicator, as shown in Equation (3.6). If one criterion includes a partial negative original indicator value, it is normalised by two steps. First, subtract the minimum value of this indicator to make all indicator values non-negative; second, divide each non-negative indicator value by its maximum value. These two steps are combined and shown in Equation (3.7), where the minimum value of the positive indicator value is ignored because the minimum value of this indicator is zero after the first step of processing. After normalisation, the minimum and maximum value of the indicator are converted to 0 and 1, and other values are converted to decimals between 0 and 1. Therefore, all indicator values are in the interval of 0-1.

$$x_{i,j} = \left. (x'_{i,j} - x_{min}) \middle/ (x_{max} - x_{min}) \right., \tag{3.6}$$

$$x_{i,j} = \left. (x'_{i,j} - x_{min}) \middle/ (x'_{i,j} - x_{min})_{max} \right., \tag{3.7}$$

where the $x_{i,j}$ is the normalised indicator value, the $x'_{i,j}$ is the original indicator value and x_{max} and x_{min} are the maximum and minimum values of one indicator. After normalisation of all indicator values, each alternative's final score can be obtained by adding all the products of every normalised indicator value multiplied by its global weight. The formula is as follows:

$$S_i = \sum_{j=1}^{k} x_{i,j} \cdot w_j, \tag{3.8}$$

where S_i is the final score of the *i*-th alternative. Then we can rank the alternatives in light of the final score and get their distribution.

3.1.5 Summary of the Analytic Hierarchy Process

In summary, the procedure of decision-making by the method of AHP mainly contains the following four steps. First, it needs to construct the decision hierarchy, including the goal, criteria, sub-criteria and alternatives. Second, a set of comparison matrices are constructed by comparing the criteria or sub-criteria in pairs. Next, the weights of criteria are obtained if consistency tests pass. Finally, the final score for each alternative is calculated by the normalised indicator values corresponding to the sub-criteria and their global weights. This process is shown intuitively in Figure 3–2.
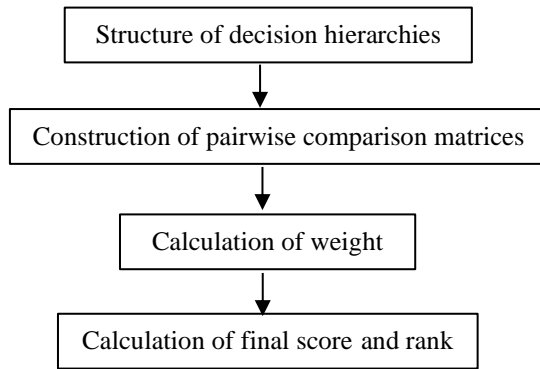
Figure 3–2 Procedure of decision-making by AHP

However, all things have two sides, and the method of AHP is not an exception. Its advantages include mainly three aspects. First, qualitative and quantitative data could be applicable; second, an established hierarchical structure is helpful to reveal some new exciting information; third, more criteria can be involved. Nevertheless, its disadvantages are obvious: only one-way linear relationships can be used, and the method is sometimes too time demanding even if not difficult to use. In particular, it is worth additional attention that AHP can reverse the ranking of alternatives when alternatives identical to existing ones are introduced.

3.2 Interactive regression model

In order to test the hypothesis that a relationship between two variables (X and Y) depends on a third variable (Z) that is called a moderator, the regression model with interaction (XZ), as shown in Equation (3.9), is suggested to investigate how moderator Z affects the relationship between two variables (X and Y), see Cohen *et al*. (2003).

$$Y = \beta_1 X + \beta_2 Z + \beta_3 XZ + \beta_4 E + \beta_0 + \varepsilon, \qquad (3.9)$$

where β_1,..., β_4 are the coefficients of the independent variables, E is the set of control variables, β_0 is the constant, and ε is the residual.

Such interactions are interpreted and illustrated as conditional relationships between *Y* and two or more variables. For example, an *X* by *Z* interaction is interpreted as meaning that the regression (relationship) of *Y* to *X* is conditional on (depends on, varies with, is not uniform over) the status of *Z*. The contribution of the *X* by *Z* interaction is the increment to R^2 due to the *XZ* products over and above the *X* set and *Z* set. As a result, the regression models with interaction are appropriate for testing the hypotheses of the monograph.

The cross-product terms that carry the interactions should be formed from the centred predictors (i.e. centre each predictor first and then form the cross-products). Centring only applies to continuous variables, not to dummy variables. Centring all continuous predictors has interpretational advantages and eliminates confusing multicollinearity. So the regression model after centring is shown as Equation (3.10),

$$Y = \beta_1 x + \beta_2 z + \beta_3 xz + \beta_4 E + \beta_0 + \varepsilon \qquad (3.10)$$

where $x = X - M_X, z = Z - M_Z$, M_X and M_Z are the mean values of *X* and *Z*, respectively. There is no need to centre *Y* and *E*.

When predictors are centred, each first-order coefficient (β_1, β_2) in a regression Equation (3.10) containing interactions is the average regression of the dependent variable on a predictor across the range of the other predictors in the Equation.

There are three theoretically meaningful and engaging interaction patterns between two predictors; each pattern depends on the values of β_1, β_2 and β_3 in Equation (3.10).

The first pattern is a synergistic or enhancing interaction, where two predictors affect the dependent variable *Y* in the same direction, and together they produce a stronger than additive effect on the outcome. The interaction is synergistic or enhancing when both the first-order and interactive effects are of the same sign.

A second theoretically prominent pattern of first-order and interactive effects is the buffering interaction. Here the two predictors have regression coefficients of opposite signs. Besides, one predictor weakens the effect of the other predictor. Therefore, the impact of one predictor increases in value while the impact of the other predictor is diminished.

The third interaction pattern is interference or antagonistic interaction in which both predictors work on the criterion in the same direction, and the interaction is of the opposite sign. It means a partially "either-or" pattern of influence of the two predictors on the criterion.

It must be noted that it is not simply the sign of the β_3 regression coefficient for the interaction that determines whether an interaction is enhancing, buffering, or antagonistic. It is the pattern of signs and magnitudes of the coefficients for all the first three terms in Equation (3.10) that determine the form of the interaction.

For the estimation of coefficients $\beta_1, \beta_2, \beta_3$ and β_4 in Equation (3.10), we adopt the ordinary least squares (OLS) estimates. The Classical Assumptions must be met for OLS estimators to be the best available (Studenmund, 2016). The Classical Assumptions are the following:

- The regression model is linear in the coefficients and has an additive error term;
- The error term has a zero population mean;
- Observations of the error term are uncorrelated with each other (no serial correlation);
- The error term has a constant variance (no heteroskedasticity);
- All independent variables are uncorrelated with the error term;
- No independent variable is a perfect linear function of any other independent variable(s) (no perfect multicollinearity);
- The error term is normally distributed.

Typically, t-tests are used to test hypotheses about individual regression coefficients. As a result, the t-value is calculated for each estimated coefficient in the Equation. The relevant form of the t-statistic for the *j*-th coefficient is

$$t_j = \left. (\hat{\beta}_j - \beta_{H_0}) \middle/ se(\hat{\beta}_j) \right., \quad j = 1, 2, \ldots, k, \qquad (3.11)$$

where $\hat{\beta}_j$ is the estimated regression coefficient of the *j*-th variable, β_{H_0} is the hypothesis (border) value implied by the null hypothesis for β_j, and $se(\hat{\beta}_j)$ is the estimated standard error of β_j.

Since most regression hypotheses test whether a particular regression coefficient is significantly different from zero (H₀: $\beta_j = 0$, Hₐ: $\beta_j \neq 0$), β_{H_0} is typically stated as zero. A detailed description of the t-test is in the monographof Studenmund (2016, p.121–128).

3.3 Summary

In this chapter, the description of two methods involved in the monograph is presented. The first method, Analytic Hierarchy Process (AHP), is applied in subchapter 4.1 to obtain the weights of the criteria and sub-criteria of the CSR evaluation model when measuring the CSR engagement of Chinese home appliance listed companies. The second one is the multiple linear regression model with interaction, including the specification of models and explanation of interaction in theory, which is used in sub-chapter 4.4 to construct the specific regression models to explain the effect of moderators on the relationship between profitability and CSR engagement.

Chapter 4

Research Design and Sample Selection

This chapter mainly covers the setting of variables and the construction of the model. First, how to measure the dependent variables (CSR) by a multi-attribute AHP model is introduced. Secondly, it expounds on the selection of a profitability indicator suitable for the Chinese market and can reasonably measure the creative ability of slack resources as independent variables. Next, the identification or measurement methods of the moderating variables, including company type, CLC stages and internal control, are present. And then, the empirical regression models are built based on these variables and control variables. Finally, the selection process and results of the samples and the data sources used in the monograph are described.

4.1 Dependent variable (CSR)

In academic research, two primary data sources are often used to measure the CSR of Chinese listed companies. One source is to collect the CSR data from the China Stock Market and Accounting Research (CSMAR) database (Rauf *et al.*, 2021) (Gulzar *et al.*, 2019). The other source of CSR data is Rankins CSR Ratings (RKS) database (Marquis and Qian, 2014; Hao *et al.*, 2018; Guo and Shen, 2019).

There are 11 items of CSR data in the CSMAR database, including protection of rights and interests of stakeholders (shareholders, creditors, employees, suppliers, and customers), environment and sustainable development, public relations and social welfare, CSR system construction and improvement, working conditions, CSR defect disclosure, and CSR report certification, see Table 1 of (Sial *et al.*, 2018) for details. Each item is dichotomous, that is, 1 if the item is disclosed and 0 if the item is not disclosed. Typically, researchers calculate a weighted average as a measure of CSR (Sial *et al.*, 2018; Gulzar *et al.*, 2019). During this calculation, all items are of equal importance and weight. The advantage of this data source is that it can cover all the listed companies in China, but due to the lack of quantitative evaluation items, the accuracy of the data is relatively low.

RKS is one of the earliest CSR rating agencies that measure the CSR performance and disclosure of Chinese listed companies. Originally designed by RKS, this rating system includes four level-1 sub-indicators (Macrocosm, content, technical and industry) and many level-2 and level-3 sub-indicators, and the weight of each level-1 sub-indicator is assigned according to its importance, as detailed in Appendix A Table 2 of Zhong *et al.*(2019). Since the RKS scoring method is based on content analysis to score each level-3 indicator on a scale of 0 to 4, the overall CSR score published by RKS is more accurate than the weighted average calculated based on CSMAR. Therefore, a considerable amount of previous literature on China's CSR research adopted the CSR rating score published by RKS. However, a flaw in its rating results cannot be ignored: it cannot include all listed companies. This flaw exists because RKS evaluates the CSR of listed companies based on the CSR reports issued by Chinese listed companies, but not every listed company is able or willing to disclose its CSR report. Table 4–1 shows a detailed comparison of CSMAR and RKS databases on CSR data.

Table 4–1 Comparison of CSR data from CSMAR and RKS databases

	CSMAR	**RKS**
Indicator setting	11 items assigned by a dichotomy	3 level indicators, and the score range of each indicator is 0-4 points and the minimum unit is 0.5 points
Weight setting	Equal	Set according to the importance of the indicator
Evaluation result	A weighted average calculated by researchers	A weighted average calculated by RKS and published each year directly
Information source	Annual reports and public material	Focus on CSR reports supplemented by website information
Evaluation scale	All Chinese listed companies	Chinese listed companies issuing CSR reports
Advantage of data	High coverage	High accuracy
Disadvantage of data	Low accuracy	Low coverage

Given that neither of the two widely used databases can meet our requirements for the CSR evaluation of Chinese home appliance listed companies (in terms of the accuracy and coverage of the assessment), an original multi-attribute model in the monograph is proposed and applied. The model is based on the two-level decomposition of the evaluation criteria and sub-criteria. Weights of the criteria and sub-criteria are calculated by the analytic hierarchy process (AHP), see sub-chapter 3.1. Criteria and sub-criteria are of a quantitative and qualitative type. The

score is calculated by the weighted average arithmetic method. Other authors, e.g. Karaman and Akman (2018), have adopted similar self-designed multi-attribute CSR evaluation models.

With the aid of the AHP, the CSR evaluation criteria system for Chinese home appliance listed companies is established according to the triple bottom line (TBL) principle mentioned in sub-chapter 2.1. It consists of three common aspects: economy, environment and society. However, we have reclassified the content of the TBL. That is, the economics aspect includes not only the profit related to the interest of shareholders but also other stakeholders' interests. The environmental aspect is the same as the original classification, which is related to the impact of company operations on the natural environment. The social aspect only includes the impact of the company on its external social environment, like community contribution, public welfare, and philanthropy. The content comparison between the original TBL and the reclassified TBL is shown in Table 4–2.

Table 4–2 Content comparison of original TBL and reclassified TBL

Original TBL	Objects the company should be responsible for	Reclassified TBL
Economy	Shareholders	Economy
Society	Consumers	
	Employers	
	Suppliers	
	Government	
	Community contribution	Society
	Public welfare	
	Philanthropy	
Environment	Natural environment	Environment

We believe that this reclassification of the TBL helps the company treat all stakeholders' interests as a whole. These stakeholders' rights should be considered interdependent rather than independent. Therefore, the economic aspect of the CSR evaluation system includes five criteria: shareholder, consumer, employee, supply chain, and government. The environmental and societal aspects have a single criterion. The particular hierarchy of the criteria and sub-criteria, including the corresponding indicators, is shown in Table 4–3. An explanation for the selection of these criteria, sub-criteria, indicators and their weight assignment can be found in another paper by the author (Wu, 2019). The calculation formula for each indicator is shown in Appendix 1. The scales of the qualitative sub-criteria, including meaning, are introduced in Table 4–4. The Saaty preferences of criteria and sub-criteria are assigned according to our judgement and experience with Chinese home appliance companies in the current Chinese context. The final

weights, including local and global weights, are shown in Table 4–5. All weights passed the consistency test.

Table 4–3 Criteria, sub-criteria and corresponding indicators constructed for assessing CSR

Criteria	Symbol	Sub-criteria	Corresponding indicators
Shareholder	A1	Preserving and increasing the value of equity	The growth rate in owner equity
	A2	Cash dividend returns	Cash dividend yield
	A3	Dividend payment	Dividend payout ratio
Consumer	B1	Product quality	The proportion of export revenue
	B2	Product R&D spending	The proportion of R&D expenditure in revenue
	B3	Product R&D capabilities	R&D staff ratio
Employee	C1	Salary level	Salary competitiveness (compared with local average salary)
	C2	Salary growth	Salary growth rate
	C3	Employee training	Qualitative indicator
Supply chain	D1	Capital occupation of supplier	Accounts payable turnover ratio
	D2	Relationship with supplier	Qualitative indicator
	D3	Relationship with dealer	Qualitative indicator
Government	E1	Ability to pay taxes	The proportion of taxes in revenue
	E2	Support for government policies	The proportion of government subsidies in revenue
	E3	Employment issues	Number of employees
Environment	F1	Energy saving	Qualitative indicator
	F2	Emission reduction	Qualitative indicator
	F3	Recycling of discarded or used household appliances	Qualitative indicator
Society	G1	Donation expenses	The proportion of donation expenses in revenue
	G2	Charity activity	Qualitative indicator
	G3	Public welfare	Qualitative indicator

Table 4–4 Description of scales of qualitative sub-criteria

Sub-criteria	Bad	Common	Good	Better	Best
	1	**2**	**3**	**4**	**5**
C3	little relevant content	relevant content is just a few clichés	only involves a basic training plan without a quantitative description	involves an advanced training plan but without quantitative description	the description of employee training is clear, both in quantitative and qualitative aspects
D2	little mention of their relation	only passively accepts the product	a cooperative relationship	evaluates suppliers before purchasing	helps in improving the development of suppliers to provide higher quality products
D3	only provides products to the dealer	just meets the basic needs of the dealers	only a cooperative relationship without other disclosure	establishes stable cooperative relations and jointly makes specific marketing plans	actively trains its dealers to make them better understand its products
F1	little mention of energy saving	only mentions the term "energy saving" without any practice	saves energy during the production process	involves production or research and development of energy-saving products	clear and quantitative energy-saving instructions
F2	little mention of emission reduction	only mentions emission reduction in a few words without any practice	describes qualitatively and routinely how to reduce emissions	describes qualitatively and in detail how to reduce emissions	clear and quantitative emission reduction instructions
F3	If there is relevant information about recycling discarded or used household appliances in annual or CSR reports, this indicator is 1; otherwise, it is 0.				
G2, G3	If the company participated in charity activities or public welfare, the corresponding indicator has a value of 1; otherwise, the value is 0.				

Table 4–5 Summary of weights of criteria and sub-criteria

Criteria	Local weight	Sub-criteria	Local weight	Global weight
Shareholder	0.1	Preserving and increasing the value of equity	0.54	0.054
		Cash dividend returns	0.16	0.016
		Dividend payment	0.30	0.03
Consumer	0.24	Product quality	0.50	0.12
		Product R&D spending	0.25	0.06
		Product R&D capabilities	0.25	0.06
Employee	0.16	Salary level	0.54	0.0864
		Salary growth	0.30	0.048
		Employee training	0.16	0.0256
Supply chain	0.07	Capital occupation of supplier	0.20	0.014
		Relationship with supplier	0.40	0.028
		Relationship with dealer	0.40	0.028
Government	0.04	Ability to pay taxes	0.54	0.0216
		Support for government policies	0.16	0.0064
		Employment issues	0.30	0.012
Environment	0.35	Energy saving	0.65	0.2275
		Emission reduction	0.12	0.042
		Recycling of discarded or used household appliances	0.23	0.0805
Society	0.03	Donation expenses	0.61	0.0183
		Charity activity	0.12	0.0036
		Public welfare	0.27	0.0081

The information required for evaluating the qualitative sub-criteria involved in this hierarchy evaluation multi-criteria system is collected from the annual report and CSR report (if any). The financial data of Chinese home appliance listed companies are obtained from the CSMAR database. Since CSMAR database is one of the most comprehensive and widely used databases in China, the data from CSMAR is of high quality and reliable. The local average salary is downloaded from the statistical bureaus of each province in China. The particular values of sub-criteria are presented in Appendix 2–1, 2–2 and 2–3. The usual assumption of the multi-attribute method is positivity and comparability of criteria. If some indicators contain negative values, we subtract the indicator's minimum value from the original value. The comparability is reached by the normalisation procedure of the same indicator between different companies. Thus, the value of

each indicator is normalised (standardised) by dividing the difference between the original indicator value and the minimum value of this indicator by the difference between the maximum and minimum value of the indicator, as shown in Equation (3.6) and (3.7) in sub-chapter 3.1. After the normalisation process, all indicators are dimensionless, and their values are within the interval of [0, 1]. This min-max normalisation approach is frequently applied when processing data (Kappal, 2019; Li and Liu, 2011).

The final scores of CSR calculated from global weights and normalised indicators for each company serve as the proxy for the CSR engagement of the Chinese home appliance listed companies. See Appendix 2–1, 2–2 and 2–3 for all original data and concrete computed CSR scores of each sample company.

4.2   Independent variable (Profitability)

For the measurement of corporate profitability, accounting-based indicators and market-based indicators (i.e., the market price of the corresponding company's stock) are often considered in the previous literature (Kansal *et al*., 2014; Orlitzky *et al*., 2003). Since China's capital market is not as mature as that of developed countries, the stock price usually does not reflect the true value of the company, and sometimes even the opposite occurs. Therefore, the traditional accounting-based profitability indicator, which is used in many studies in China (Chen *et al*., 2018; Lin and Wu, 2014), is employed in this monograph.

There are many accounting-based indicators to measure a company's profitability, such as return on assets (ROA), return on equity (ROE), return on sales (ROS), or earnings per share (EPS). Accounting returns depend on managers' discretionary capital allocation to different projects and accounting policy choices, thus reflecting internal decision-making capabilities and managerial performance (Orlitzky *et al*., 2003). Although Alshehhi *et al*. (2018) found that ROA is the most widely used measure of financial performance related to profitability based on 132 papers in top journals, it does not guarantee an increase in a company's value since the cost of capital is not considered (Dluhošová *et al*., 2014). The increase in company value can lead to more slack resources being available. In this monograph, the impact of profitability on CSR engagement is studied based on the slack resource theory, which holds that more slack resources positively affect the decision-making of companies' engagement in CSR. So ROA is not an appropriate measure of profitability in this monograph. ROS is a standard measure of revenue-generating returns, but it remains the same regardless of sales. Therefore, it also fails to measure how much slack resources a company could create through its business activities. The second most commonly used measure, ROE, found by Alshehhi *et al*. (2018), overcomes the above shortcomings of ROA and ROS and can be a good measure of a company's ability to create slack resources. Therefore, ROE is used as a proxy for profitability in the monograph.

4.3   Moderating variables

In Chapter 2, the impacts of moderators, such as company type, corporate life cycle, and internal control, on the relationship between profitability and CSR engagement are analysed. The methods for identifying or measuring these moderators in the monograph are described below.

4.3.1   Company type

The first moderator considered in the monograph is company type. Due to the different sensitivity of the profitability of different types of companies to their engagement in CSR, companies are divided into two categories: family companies and non-family companies.

Determination of a company belonging to a family company or a non-family company can be performed in various ways. The concept of the family company as defined by the Morgan Stanley Capital International (MSCI) used by Madden *et al*. (2020) is adopted here. Namely, family ties, most often going back a generation or two to the founder, play a vital role in the ownership and board membership. Family members may not have absolute control over shareholder votes (more than 50%); however, they usually own at least 20% of shares. Since many studies generally include founder companies within the scope of the family company (López-González *et al*., 2019; Adomako *et al.*, 2019), this book is conducted in the same way. The definition of a founder company provided by MSCI is also used. It means that the CEO or chairman of the company in a given year is the company's founder. When the sample company does not meet the definition of a family company or a founder company, it is placed in the reference group of the moderator company type, in contrast to the family company. In other words, the moderating variable family company (FC) is equal to 1 if the company is a family company; otherwise, it equals 0.

4.3.2   Corporate life cycle

The second moderator concerned in the book is the corporate life cycle (CLC). In the existing CLC literature, various measures are used to represent the CLC stages, for example, company age (Jiraporn and Withisuphakorn, 2016), growth (ur Rehman, Wang and Yu, 2016; Lee and Choi, 2018), company size (Porter, 2004), and the retained earnings to total assets ratio (DeAngelo *et al*., 2006). These methods potentially treat CLC as a sequential pattern. However, some studies argue that CLC does not follow a sequential pattern (Lester *et al*., 2003; Miller and Friesen, 1984). Therefore, following previous research (Park, 2021; Shahzad *et al*., 2019; Zhao and Xiao, 2019), the CLC proxies of Dickinson (2011) are adopted to capture the dynamic nature of the CLC. It is assumed that cash flow reflects differences in company profitability, growth, and risk. Hence it is suggested to use net cash flow from operating (ONCF) activity, investing (INCF) activity and financing (FNCF) activity to assign companies to different life cycle stages. A significant advantage of this division method is that it does not imply a strict order across CLC stages. Instead, it allows companies to move back and forth dynamically between CLC stages (Drobetz *et al*., 2015).

As shown in Table 4–6, the eight patterns generated from the possible combination of the sign (positive or negative) of three cash flows are divided into five stages by Dickinson (2011). It is worth noting that "the literature is silent regarding cash flows for shake-out companies. Consequently, shake-out companies are classified by default if the cash flow patterns do not fall into one of the other theoretically defined stages", as Dickinson (2011) points out. Other authors, e. g., Jawahar and McLaughlin (2001) and Gupta and Chin (1994), propose four CLC stages (excluding the shake-out stage).

Table 4–6 The various correspondence between cash flow and corporate life cycle stages

Pattern	1	2	3	4	5	6	7	8
Dickinson's division	Introduction	Growth	Mature	Shake-Out			Decline	
ONCF	-	+	+	+	+	-	-	-
INCF	-	-	-	+	+	-	+	+
FNCF	+	+	-	+	-	-	+	-
Our division	Introduction	Growth	Mature				Decline	
Model division	Non-mature		Mature			Non-mature		

Source: Hasan and Habib (2017) and own elaboration

Therefore, we propose to further divide the three situations of the shake-out stage in Dickinson (2011) into the mature or decline stage. Specifically, among the three situations of the shake-out stage, for patterns 4 and 5 shown in Table 4–6: ONCF > 0 indicates that company operation activity is running normally; INCF > 0 indicates that the company may dispose of some assets; FNCF > 0 indicates the company's investment demand for new projects or products; FNCF < 0 indicates the company is returning investors as the mature company does, all this information shows the company is closer to the mature stage. For pattern 6, ONCF < 0 means that the company's operational activities are abnormal and severe business problems occur, which signal that the company is likely to enter the decline stage. Our final division proposal for matching the relationship between the CLC stage and cash flow symbols of the sample companies is shown in Table 4–6. For ease of interpretation, the mature stage of the corporate life cycle is used in the regression model, and other life cycle stages are used as benchmarks for analysis. The final model division of CLC by the dummy variable mature company (MC) characterised by mature and non-mature companies derived from four stages is presented in Table 4–6. Here, MC is equal to 1 if the company is in the mature stage; otherwise, it is equal to 0.

4.3.3 Internal control

Internal control is the third moderator of concern. In the monograph, the DIB internal control index is used to reflect the internal control level of sample companies. The data are obtained from the Shenzhen DIB Internal Control and Risk Management Database, an independent third-party professional evaluation

agency dedicated to researching the internal control status and risk management level of Chinese listed companies.

Since its release in 2011, the DIB internal control index has been widely recognized by academia (Zhu and Sun, 2017; Hao *et al.*, 2018; Li *et al.*, 2018, 2019; Guo and Shen, 2019; Li, 2020) and practice. The basic internal control index is designed in accordance with the realization degree of the internal control objectives set forth in the "Basic Norms of Enterprise Internal Control". The internal control objectives include legal compliance, asset safety, authenticity and integrity of financial reports, improvement of operational efficiency and effectiveness, and promotion of the realization of corporate strategies. Then, the basic index is revised by taking the internal control defect as the correction variable to form the DIB internal control index, which comprehensively reflects the internal control level of the listed company (Zhu and Sun, 2017; Li, 2020). Therefore, for the moderating variable internal control (IC) in the model, the internal control index of listed companies published in the DIB database is adopted as a proxy to measure the internal control level of Chinese home appliance listed companies. Since the internal control index ranges from 0 to 1000, the data used in the regression model is divided by 1000. The internal control index of listed companies is 0 (except for ST companies) when there are significant defects in internal control. The defects include major defects actively disclosed in the internal control self-evaluation reports of listed companies, invalid internal control evaluation conclusions, significant defects disclosed by accounting firms in the internal control audit reports, and negative internal control audit opinions. The larger the internal control index, the higher the internal control level of the listed company.

4.4   Empirical regression model description

Since the dependent variable (*CSR*) is normally distributed, as shown in Figure 5–1 in sub-chapter 5.1, multiple linear regression models are proposed to test the hypotheses formulated in Chapter 2. Hence, the following regression specification is developed to test the relationship between corporate profitability and CSR (test of Hypothesis H1).

$$CSR_{i,t} = \beta_0 + \beta_1 ROE_{i,t-1} + \beta_2 CS_{i,t} + \beta_3 EOC_{i,t} + \beta_4 CH_{i,t} + \beta_5 AGE_{i,t} +$$

$$\beta_6 YEAR_{i,t} + \varepsilon, \tag{4.1}$$

where β_0 is the intercept, symbols β_1, β_2, β_3, β_4, β_5, β_6 represent the regression coefficients; ROE_{t-1} is the return on equity with a lag of one year, *CS* is the company size, *EOC* is the equity ownership concentration, CH is the cash holding rate, *AGE* is the company age, *YEAR* is the year of data, and ε represents the error term.

In order to control the issue of endogeneity, the one-year lagged *ROE* is used in the monograph to denote corporate profitability, measured as the ratio of net profit to equity with a lag of one year, which is the case in many studies (Sial *et*

al., 2018; Li, 2020; Shahzad *et al*, 2016; Zahid *et al.*, 2019). Following the prior literature, several company-level factors that may affect CSR engagement are controlled. Company size, equity ownership concentration, cash holding rate, and company age are included in the analysis. First, previous research has shown that company size plays a vital role in CSR engagement (Udayasankar, 2008; Børing, 2019). Company size (*CS*) is calculated by the natural logarithm of total assets, one of the most frequently used measures for company size (Rodríguez-Ariza *et al.*, 2017; Ali *et al.*, 2017; Oh *et al.*, 2011). Since equity ownership concentration may be positively (Faller and zu Knyphausen-Aufseß, 2018; Sufian and Zahan, 2013) or negatively (Dam and Scholtens, 2013) associated with the company's CSR engagement, equity ownership concentration (*EOC*), measured by the shareholding ratio of the largest shareholder (Ducassy and Montandrau, 2015; Gao *et al.*, 2019), is included. Furthermore, a company holds more cash and marketable securities, reflecting that the company has fewer resource constraints and more management discretionary activities, which may enhance the company's ability to invest in CSR (Hasan and Habib, 2017a). Cash holding rate (*CH*) is measured by the ratio of the sum of cash balance and marketable securities to total assets and is used similarly to Hsu (2018), Drobetz *et al.*, (2015), and Jiraporn and Withisuphakorn (2016). In addition, older companies invest significantly more in CSR, especially in diversity and environmental issues (Jiraporn and Withisuphakorn, 2016). Company age (*AGE*) is the natural logarithm of the number of years since the company's inception (Khan *et al.*, 2013; Hasan and Habib, 2017). Finally, the year categorical variable (*YEAR*) in the regression analyses to control the time impact is included (Khan *et al.*, 2021).

To test Hypothesis H2, we regress CSR on corporate profitability, company type, the interaction term of profitability and company type, and control variables in Model (4.2). This approach allows us to examine the moderating effect of company type on the relationship between profitability and CSR engagement.

$$CSR_{i,t} = \beta_0 + \beta_1 ROE_{i,t-1} + \beta_2 FC_{i,t} + \beta_3 ROE_{i,t-1} \cdot FC_{i,t} + \beta_4 CS_{i,t} +$$
$$\beta_5 EOC_{i,t} + \beta_6 CH_{i,t} + \beta_7 AGE_{i,t} + \beta_8 YEAR_{i,t} + \varepsilon, \qquad (4.2)$$

where *FC* is the moderating variable representing company type, and $ROE_{t-1} \cdot FC$ is the interaction variable. The dummy variable *FC* provides a value of 1 for family companies and a value of 0 for non-family companies.

To test hypothesis H3, we regress CSR on corporate profitability, the corporate life cycle stage, their interaction term, and control variables in Model (4.3) so that we could examine the moderating effect of the corporate life cycle stage on the relationship between profitability and CSR engagement.

$$CSR_{i,t} = \beta_0 + \beta_1 ROE_{i,t-1} + \beta_2 MC_{i,t} + \beta_3 ROE_{i,t-1} \cdot MC_{i,t} + \beta_4 CS_{i,t} +$$
$$\beta_5 EOC_{i,t} + \beta_6 CH_{i,t} + \beta_7 AGE_{i,t} + \beta_8 YEAR_{i,t} + \varepsilon, \qquad (4.3)$$

where *MC*, which represents the CLC stage in which the company is located, is a dummy variable, and $ROE_{t-1} \cdot MC$ is the interaction variable. The dummy variable *MC* provides a value of 1 for the mature company and a value of 0 for the non-mature company.

To test Hypothesis H4, we regress CSR on corporate profitability, internal control, their interaction term, and control variables in Model (4.4), which help us to examine the moderating effect of internal control on the relationship between profitability and CSR engagement.

$$CSR_{i,t} = \beta_0 + \beta_1 ROE_{i,t-1} + \beta_2 IC_{i,t} + \beta_3 ROE_{i,t-1} \cdot IC_{i,t} + \beta_4 CS_{i,t} +$$
$$\beta_5 EOC_{i,t} + \beta_6 CH_{i,t} + \beta_7 AGE_{i,t} + \beta_8 YEAR_{i,t} + \varepsilon, \quad (4.4)$$

where *IC*, which stands for internal control level of listed companies, is a continuous variable, and $ROE_{t-1} \cdot IC$ is the interaction variable. Since the value of *IC* from the DIB database ranges from 0 to 1000, the data used in regression model is divided by 1000.

Note that the continuous variables used in the interaction terms, like the ROE_{t-1} in Model (4.2), (4.3), and (4.4), as well as the *IC* in Model (4.4), are mean-centred before inclusion in the analysis. The introduced centring procedure could mitigate multicollinearity problems and facilitate the interpretation of the main effects (Hasan and Habib, 2017; Guo and Shen, 2019) without affecting the regression results of the model. The definitions of all variables used in the models and how they were measured are summarised in Table 4–7.

Table 4–7 Variables description

Symbol	Criteria	Calculation formula
CSR	corporate social responsibility	a weighted average of criteria and weights
ROE_{t-1}	return on equity	the ratio of net profit to equity with a lag of one year
FC	family company	a dummy variable, 1 for family companies, 0 otherwise
MC	mature company	a dummy variable, 1 for mature companies, 0 otherwise
IC	internal control	the ratio of the DIB internal control index to 1000
CS	company size	the natural log of total assets of a company
EOC	equity ownership concentration	the shareholding ratio of the largest shareholder
CH	cash holding rate	the ratio of the sum of cash balance and marketable securities to total assets
AGE	company age	the natural logarithm of company age
YEAR	year of data	the categorical variable identifies the sample year

4.5 Sample selection

Chinese home appliance listed companies from 2018 to 2020 are selected as the research object of the monograph. The list of sample companies is taken from the professional stock information provider Iwencai database, which provides a detailed classification of listed companies according to their primary business. After excluding the newly listed companies in 2020 and ST companies (companies labelled as special treatment—ST or ST* by the China Securities Regulatory Commission), there are 169 samples of listed companies remaining. The annual number of sample companies and their distribution on each stock exchange market is shown in Table 4–8. To be precise, the number of sample companies from 2018 to 2020 is 56, 56, and 57, respectively. The number of home appliance companies listed on the Main Board is the largest, followed by companies listed on the Small and Medium Enterprise Board, and the fewest companies listed on the Growth Enterprise Market. Except for the internal control index from the DIB database[1], all data are collected from the CSMAR database[2], corporate annual reports and CSR reports (if any). The company code and the variable data in the models are presented in Appendix 3. Stata 15.0 is used for statistical analysis.

Table 4–8 Number and distribution of sample companies

Year	Number of samples	Distribution of sample		
		Main Board	**Small and Medium Enterprise Board**	**Growth Enterprise Market**
2018	56	25	23	8
2019	56	27	22	7
2020	57	27	23	7
Total	169	79	68	22

4.6 Summary

In this chapter, we start by comparing the two most commonly used databases that provide CSR information for Chinese listed companies. Given that the CSR data from these two databases cannot meet the accuracy and coverage requirements simultaneously, we construct a multi-attribute AHP model to specifically measure the dependent variables of the monograph, the CSR engagement of Chinese home appliance listed companies. Secondly, why the traditional accounting-based indicator ROE is chosen as the independent variable to measure the profitability of Chinese home appliance listed companies is expounded. Next, the identification or measurement methods of the moderators are presented in detail. Specifically, company type is measured by the dummy variable family company, which is

---

[1] The DIB database is available online at http://www.ic-erm.com/pro2-6.html (accessed on 20 January 2022).
[2] The CSRMAR database is available online at https://cn.gtadata.com/ (accessed on 14 January 2022).

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

defined based on the MSCI concept of the family company. The CLC stages are represented by the moderating variable mature company, which is determined by the sign of the net cash flow from operating, financing, and investing activities as proposed by Dickson (2011). Due to the theoretical lack of a cash flow description for the shake-out stage, we further divided the stages on the basis of the five stages identified by Dickson (2011), excluding the shake-out stage. The level of internal control is directly measured by the DIB internal control index published annually by the DIB database. Then, empirical regression models with and without interaction are built based on these variables to test the hypotheses proposed in Chapter 2. Finally, the selection process and results of Chinese home appliance listed companies as research objects and all the data sources involved in the monograph are described.

Chapter 5

Research Results

In this chapter, the results of the preliminary statistical analysis of the sample data are exhibited first. Then, the results of the regression models are presented, which reflect the relationship between profitability and CSR engagement as well as how company type, CLC stages and level of internal control moderate this relationship. Finally, all the results are summarized.

5.1 Basic statistical analysis of data

Descriptive statistics, correlation analysis for detecting multicollinearity, and analysis of differences between groups are the basic statistics of data analysis used in this monograph.

Table 5–1 provides the descriptive statistics for the variables used in the regression models. The CSR score varies from 0.1226 to 0.6525, with a mean of 0.3943, a standard deviation of 0.1155, and an overall median of 0.3843, suggesting a relatively balanced distribution of companies with above and below the mean CSR. It is further evidenced by the distribution of CSR scores shown in Figure 5–1. Judging from the year-by-year evolution of CSR shown in Figure 5–2, CSR in 2018 had the highest score in three years. In 2019, CSR declined to a certain extent. In 2020, CSR has recovered somewhat, but it has not reached the level of 2018.

ROE_{t-1} ranges between −0.7026 and 0.8834, with a mean of 0.0779 and a standard deviation of 0.1864. It can be seen from the year-by-year evolution of ROE_{t-1} shown in Figure 5–3 that ROE_{t-1} in 2018 was the highest in three years. Then, ROE_{t-1} dropped sharply in 2019. ROE_{t-1} recovered significantly in 2020, but has not yet reached 2018 levels. Calculated statistics show that the average value of the dummy variable — family company (FC) is 0.6036, indicating that about 60% of listed companies in China's appliance industry from 2018 to 2020 are family companies (the nature of family companies has not changed during these three years). In other words, in terms of the number of listed companies in China's appliance industry, family-owned listed companies are dominant. And the average value of the dummy variable — mature company (MC) is 0.5680, which shows that more than half of the listed companies in China's appliance industry

are mature companies. The mean (median) internal control (IC) is 0.6296 (0.6696), with a standard deviation of 0.1574.

Table 5–1 Descriptive statistics

Variables	Mean	SD	Min.	P5	P50	P95	Max.
CSR	0.3943	0.1155	0.1226	0.2169	0.3843	0.6095	0.6525
ROE_{t-1}	0.0779	0.1864	–0.7026	–0.3410	0.0839	0.3005	0.8834
FC	0.6036	0.4906	0	0	1	1	1
MC	0.5680	0.4968	0	0	1	1	1
IC	0.6296	0.1574	0	0.2454	0.6696	0.7606	0.8833
CS	22.5208	1.4679	19.7426	20.6789	22.4120	25.9847	26.6104
EOC	0.3352	0.1547	0.0782	0.1386	0.2966	0.5775	0.8120
CH	0.2169	0.1305	0.0202	0.0562	0.1904	0.4714	0.6694
AGE	3.0378	0.2585	2.3979	2.4849	3.0445	3.4340	3.6889

Note: SD stands for standard deviation; Max. and Min. represent the maximum and minimum values; P5, P50 and P95 represent the value at 5, 50 and 95 per cent, respectively.
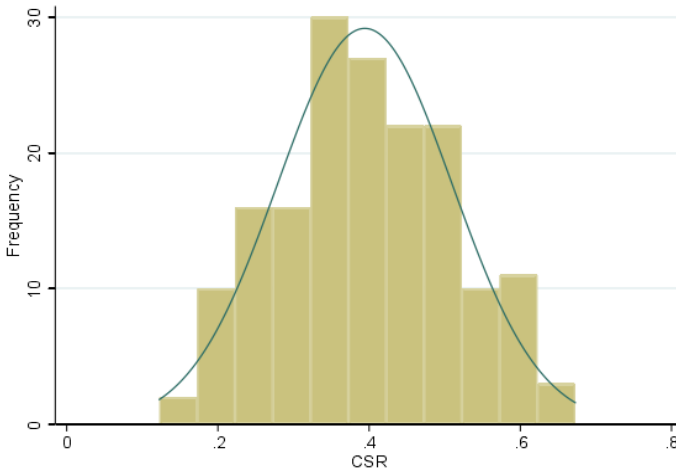
Figure 5–1 Distribution of CSR score of Chinese home appliance listed companies
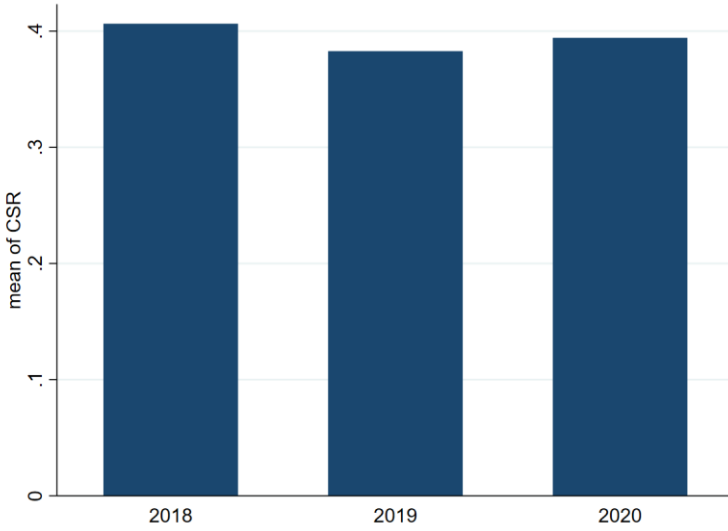
Figure 5–2 Evolution of CSR score of Chinese home appliance listed companies
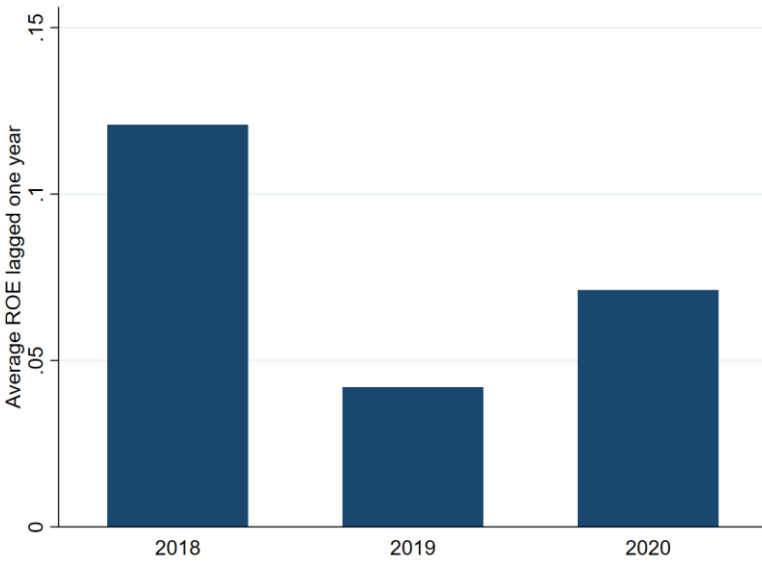
Figure 5–3 Evolution of ROE lagged one year of Chinese home appliance listed companies

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

Table 5–2 Correlation matrix

Variable	1	2	3	4	5	6	7	8	9
1CSR	1								
2 ROE$_{t-1}$	0.109	1							
3 FC	−0.3216*	0.0416	1						
4 MC	−0.0601	−0.0063	−0.0474	1					
5 IC	0.1992*	0.4404*	−0.0723	0.0033	1				
6 CS	0.5869*	0.2467*	−0.3525*	0.0634	0.2935*	1			
7 EOC	−0.2015*	0.3182*	0.0941	0.0356	0.2817*	−0.1042	1		
8 CH	0.0697	0.2440*	−0.0825	0.1843*	0.2554*	0.1658*	0.024	1	
9 AGE	0.1601*	0.1422	−0.4494*	−0.0004	0.2899*	0.2220*	−0.1281	0.1209	1

Note: The symbols * indicate statistical significance at the level of 0.05.

Table 5–2 presents Pearson's correlation analysis results between the variables included in the regression models with their significance levels. The coefficient values of all the independent variables are lower than 0.5, suggesting that there is no issue of multicollinearity. At first glance, the correlation between ROE_{t-1} and CSR is not significant. Moderator FC is significantly negatively correlated with CSR, while moderator IC is significantly positively correlated with CSR. Furthermore, the correlation between CSR and control variables aligns with the expectation.

Table 5–3 reports the comparison of CSR engagement levels by company type and CLC stages. An ANOVA test is performed and followed by Tukey's HSD (honest significant difference) test to determine whether there were significant differences in the mean value of CSR engagement across different types of companies and at different life cycle stages. The values shown in parentheses are the number of sample companies. It can be seen that the mean CSR engagement of family companies is significantly lower than that of non-family companies, which is consistent with the negative correlation between CSR and FC shown in Table 5–2. And the mean CSR engagement of state-owned companies and other companies are significantly higher than that of family companies. This difference is visualized in Figure 5–4. The difference in mean CSR engagement between mature and non-mature companies is not significant according to the HSD test results. Moreover, there is no significant difference in average CSR engagement between mature companies and companies at any other stage of CLC. Surprisingly, however, the average CSR engagement of Chinese home appliance listed companies is highest at the introduction stage, declines gradually as the companies grow, reaches the lowest at the mature stage, and then rises in the decline stage. Figure 5–5 clearly shows this trend.
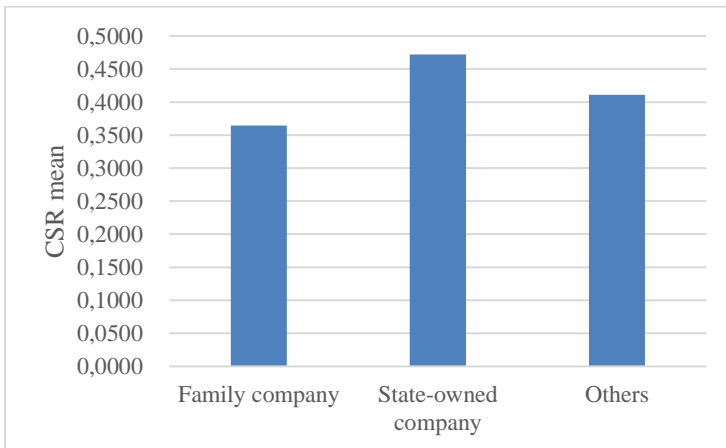
Figure 5–4 The average value of CSR for different company types

Table 5–3 Mean difference of CSR engagement under different moderators

Moderator	Group mean		Mean difference	HSD test
	Family	Non-family		
	0.3643 (102)	0.4400 (67)	−0.0757	−4.39***
	Family	State-owned		
Company type	0.3643 (102)	0.4720 (32)	−0.1078	4.91***
	Family	Others		
	0.3643 (102)	0.4108 (35)	−0.0465	−2.19*
	Mature	Non-mature		
	0.3864 (105)	0.4073 (64)	−0.0209	−1.14
	Mature	Introduction		
	0.3864 (105)	0.4220 (12)	−0.0356	−1.01
Life cycle stage	Mature	Growth		
	0.3864 (105)	0.4081 (39)	−0.0217	−1
	Mature	Decline		
	0.3864 (105)	0.3914 (13)	−0.0050	−0.15

Note: The symbols *** and * indicate statistical significance at the levels of 0.01 and 0.1.
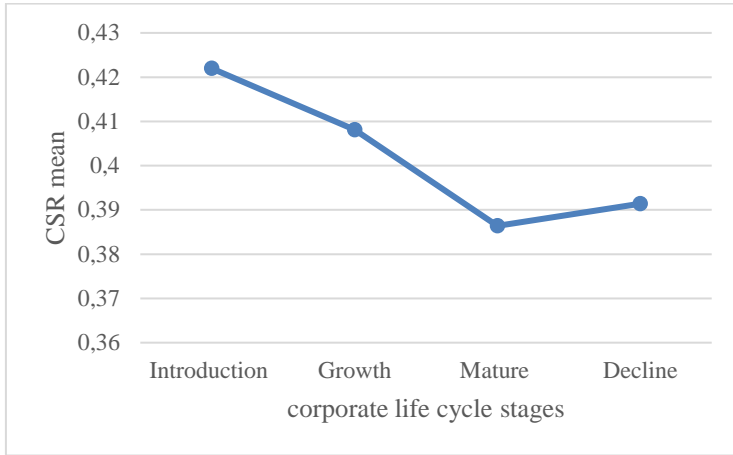
Figure 5–5 The average value of CSR at each stage of corporate life cycle

5.2 Results of regression models

The regression results for the four analysed regression models are shown in Tables 5–4, 5–5, 5–7, and 5–8. In all the regression specifications, t-statistics using robust standard errors are estimated to improve the validity of statistical results. In addition, White and Shapiro-Wilk tests are performed on all regression models to mitigate the concern that the results might be biased because of the heteroskedasticity and non-normal distribution of residuals. All the test results shown in Tables 5–4, 5–5, 5–7, and 5–8 passed the test (p > 0.1), indicating that the null hypotheses could not be rejected. That is, the residuals are homoskedastic and normally distributed across all models analysed. To further accurately check for multicollinearity issues, the variance inflation factor (VIF) values of all the regression models are checked. The mean VIF values for all independent variables in each model are shown in Tables 5–4, 5–5, 5–7, and 5–8. The VIF value for each independent variable is shown in Appendix 4. As all VIF values are within the tolerance limit, multicollinearity is not considered an issue in each model.

5.2.1 Profitability and CSR

Model (4.1) is mainly used to verify the impact of ROE_{t-1} on CSR in general. As shown in Table 5–4, the adjusted R-squared of Model (4.1) is 0.3468, which means that all the independent variables in Model (4.1) together explain about 34.68% of the variance in the CSR engagement level of the Chinese home appliance listed companies. The coefficient of ROE_{t-1} of interest is not significant (p > 0.1) in Model (4.1), implying ROE_{t-1} is not related to CSR engagement when all sample companies are studied as a whole. H1 is not confirmed.

Table 5–4 Regression results of Model (4.1)

Variable	Model (4.1)		
	Coef.	S.E.	t
ROE_{t-1}	–0.004	0.044	–0.100
CS	0.045	0.004	10.54***
EOC	–0.102	0.049	–2.09**
CH	–0.006	0.063	–0.10
AGE	0.009	0.033	0.28
YEAR	Yes		
Constant	–0.599	0.128	–4.69***
Adj. R^2	0.3468		
White test	Chi2 = 42.53 (p = 0.1009)		
VIF	1.26		
Shapiro-Wilk test	W = 0.99428 (p = 0.7563)		

Note: Coef. stands for the regression coefficient; S.E. stands for robust standard error. The symbols *** and ** indicate statistical significance at the levels of 0.01 and 0.05.

5.2.2 Profitability and CSR: Moderating role of company type

Model (4.2) is used to investigate the moderating effect of company type on the relationship between ROE_{t-1} and CSR engagement of the Chinese home appliance listed companies. The adjusted R-squared of Model (4.2) increases to 0.3527 due to the addition of moderating variable FC (family company) to Model (4.1). As shown in Table 5–5, the coefficient of ROE_{t-1} remains insignificant ($p > 0.1$) in Model (4.2), the same as in Model (4.1).

The moderating variable FC coefficient is significant ($p < 0.1$) but negative, indicating family companies are negatively associated with CSR engagement in Chinese home appliance listed companies. In other words, family companies are less involved in CSR than non-family companies, which is also supported by the correlation results shown in Table 5–3. The coefficient of interaction ROE_{t-1}·FC is positive but not significant even at the 10% level. It means that the relationship between ROE_{t-1} and CSR engagement of the Chinese home appliance listed companies is not strengthened by the fact that the company is held and controlled by a family. These results can be seen clearly in Table 5–6, which shows the marginal effect of ROE_{t-1} on CSR engagement for different company types. The marginal effects of ROE_{t-1} on CSR engagement are insignificant ($p > 0.1$) regardless of whether the company is a family or a non-family company. Figure 5–4 visualizes the relationship between ROE_{t-1} and CSR engagement for different company types. It can be seen that for the non-family company (shown by the blue line), this relationship is almost horizontal, while for the family company (shown by the red line), this relationship rises slightly but not significantly, and its status is consistently lower than that of non-family companies. These results, shown in Figure 5–6 and Table 5–6, suggest that among Chinese home appliance listed

companies, the CSR engagement of family companies is lower than that of non-family companies, and the profitability has little impact on CSR engagement of both family companies and non-family companies. H2 is not supported.

Table 5–5 Regression results of Model (4.2)

Variable	Model (4.1)			Model (4.2)		
	Coef.	S.E.	t	Coef.	S.E.	t
ROE_{t-1}	–0.004	0.044	–0.100	0.009	0.082	0.11
FC				–0.032	0.019	–1.71*
$ROE_{t-1}·FC$				0.009	0.092	0.1
CS	0.045	0.004	10.54***	0.042	0.005	8.57***
EOC	–0.102	0.049	–2.09**	–0.108	0.050	–2.16**
CH	–0.006	0.063	–0.10	–0.014	0.064	–0.21
AGE	0.009	0.033	0.28	–0.016	0.040	–0.4
YEAR	Yes			Yes		
Constant	–0.599	0.128	–4.69***	–0.428	0.186	–2.3**
Adj. R^2	0.3468			0.3527		
White test	Chi2 = 42.53 (p = 0.1009)			Chi2 = 57.38 (p = 0.1428)		
VIF	1.26			1.78		
Shapiro-Wilk test	W = 0.99428 (p = 0.7563)			W= 0.99374 (p = 0.6875)		

Note: Coef. stands for the regression coefficient; S.E. stands for robust standard error. The symbols ***, ** and * indicate statistical significance at the levels of 0.01, 0.05 and 0.1.

Table 5–6 Average marginal effects of the focal predictor at values of moderators

Moderator	Marginal effect	Std. Err.	t	*p*	LLCI	ULCI
FC						
0	0.009	0.082	0.11	0.91	–0.152	0.170
1	0.019	0.043	0.43	0.67	–0.067	0.104
MC						
0	–0.169	0.096	–1.76	0.08	–0.359	0.020
1	0.087	0.042	2.07	0.04	0.004	0.170

Note: Std. Err. stands for standard error.
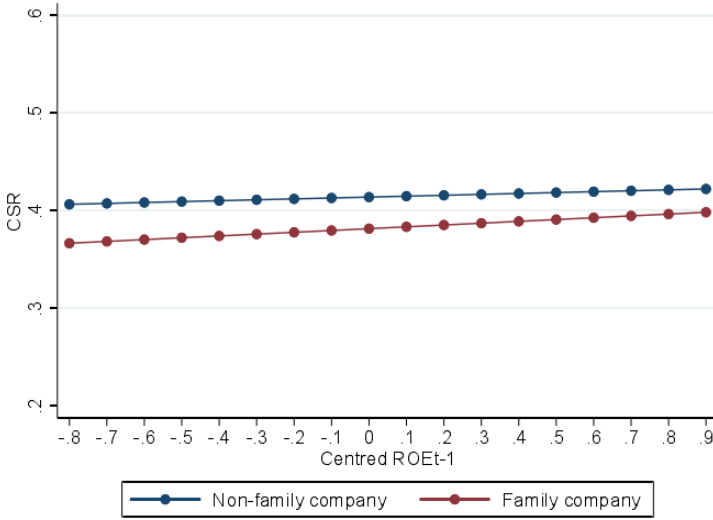
Figure 5–6 The relationship between ROE_{t-1} and CSR in different company types

5.2.3 Profitability and CSR: Moderating role of corporate life cycle stage

Model (4.3) is employed to examine the influence of the moderator corporate life cycle stage on the relationship between ROE_{t-1} and CSR engagement of the Chinese home appliance listed companies. The adjusted R-squared for Model (4.3) increases to 0.3832 as the moderating variable MC (mature company) is added to Model (4.1). As can be seen from Table 5–7, the coefficient of ROE_{t-1} in Model (4.3) is significant ($p < 0.1$) but negative, suggesting that the impact of ROE_{t-1} on CSR engagement of Chinese home appliance listed companies is highlighted when the moderating role of the corporate life cycle stage is considered.

The coefficient of moderator MC is not significant ($p > 0.1$) in Model (4.3), implying that among Chinese home appliance listed companies, mature companies are not necessarily associated with more CSR activities. This is also confirmed by the results in Table 5–3 and Figure 5–5, which show that mature companies have the lowest CSR engagement across all CLC stages. However, the coefficient of interaction $ROE_{t-1} \cdot MC$ is positive and statistically significant ($p < 0.05$), indicating that the CLC stage moderates the impact of ROE_{t-1} on CSR engagement. The specific moderating effects are shown in Table 5–6. For mature companies, the marginal effect of ROE_{t-1} on CSR is positive and significant ($p < 0.05$), while for the companies in other stages of CLC, the marginal effect of ROE_{t-1} on CSR is negative and significant ($p < 0.1$). Furthermore, the coefficient of the latter (–0.169) is almost twice that of the former (0.087), resulting in the negative coefficient of ROE_{t-1} in Model (4.3). Figure 5–7 intuitively depicts the relationship between ROE_{t-1} and CSR at different CLC stages. As shown in Figure 5–7, with the increase of ROE_{t-1}, mature companies (shown by the purple line) prefer to be

involved in more CSR activities, while non-mature companies (shown by the yellow line) are prone to engage in fewer CSR activities. H3 is confirmed.

Table 5–7 Regression results of Model (4.3)

Variable	Model (4.1)			Model (4.3)		
	Coef.	S.E.	t	Coef.	S.E.	t
ROE_{t-1}	-0.004	0.044	-0.100	-0.169	0.096	-1.76*
MC				-0.016	0.014	-1.14
ROE_{t-1}·MC				0.256	0.098	2.6**
CS	0.045	0.004	10.54***	0.046	0.004	11.31***
EOC	-0.102	0.049	-2.09**	-0.119	0.048	-2.47**
CH	-0.006	0.063	-0.10	-0.010	0.062	-0.16
AGE	0.009	0.033	0.28	0.007	0.031	0.22
YEAR	Yes			Yes		
Constant	-0.599	0.128	-4.69***	-0.601	0.123	-4.91***
Adj. R^2	0.3468			0.3832		
White test	Chi2 = 42.53 (p = 0.1009)			Chi2 = 40.37 (p = 0.7421)		
VIF	1.26			1.67		
Shapiro-Wilk test	W = 0.99428 (p = 0.7563)			W = 0.99221 (p = 0.4962)		

Note: Coef. stands for the regression coefficient; S.E. stands for robust standard error. The symbols ***, ** and * indicate statistical significance at the levels of 0.01, 0.05 and 0.1.
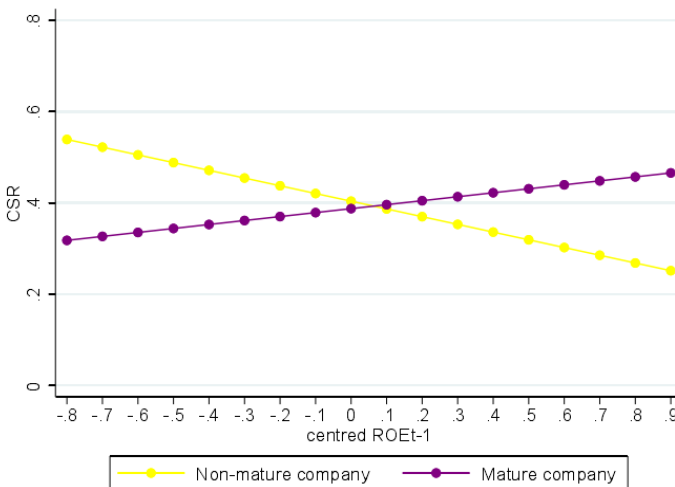
Figure 5–7 The relationship between ROE_{t-1} and CSR at different CLC stages

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

5.2.4   Profitability and CSR: Moderating role of internal control

Model (4.4) is adopted to explore the influence of the moderator internal control on the relationship between ROE_{t-1} and CSR of the Chinese home appliance listed companies. The results reported in Table 5–8 exhibit that the adjusted R-squared for Model (4.4) increases to 0.3621 owing to the inclusion of the moderating variable IC (internal control) in Model (4.1). The ROE_{t-1} coefficient is not significant ($p > 0.1$), but the coefficient of the moderator IC is positive and statistically significant ($p < 0.05$), and the coefficient of interaction $ROE_{t-1}\cdot IC$ is also positive and significant ($p < 0.1$).

These results indicate that a higher level of internal control can not only better contribute to CSR engagement, but also strengthen the effect of ROE_{t-1} on CSR engagement. For example, the interaction coefficient indicates that the impact of ROE_{t-1} on CSR engagement is expected to increase from 0.220 to 0.251 as IC moves from the first quartile to the third quartile[3]. Because IC is a continuous variable, it is impossible to show the relationship between ROE_{t-1} and CSR engagement under different levels of internal control like a categorical variable. To visually demonstrate the moderating role of internal control on the effect of ROE_{t-1} on CSR engagement, two values are taken to represent the higher and lower levels of internal control. Their values equal the mean (0) of the centred internal control plus and minus two standard deviations (0.1574). Based on this proxy for internal control, Figure 5–8 is drawn to show the relationship between ROE_{t-1} and CSR at the higher and lower levels of internal control. It can be observed that when the company is in a higher level of the internal control environment (shown by the green line), CSR engagement increases with the increase of ROE_{t-1}, while when the company is in a lower level of the internal control environment (shown by the pink line), CSR engagement decreases with increasing ROE_{t-1}. Therefore, H4 is supported.

---

[3] The first and third quartiles of IC are 0.61577 and 0.70227. The effect of ROE_{t-1} on CSR at the first quartile of IC is calculated as $0.357 \times 0.61577 = 0.21983$, and at the third quartile of IC is calculated as $0.357 \times 0.70227 = 0.25071$.

Table 5–8 Regression results of Model (4.4)

Variable	Model (4.1)			Model (4.4)		
	Coef.	S.E.	t	Coef.	S.E.	t
ROE_{t-1}	−0.004	0.044	−0.100	−0.020	0.043	−0.46
IC				0.161	0.067	2.42**
$ROE_{t-1}\cdot IC$				0.357	0.213	1.67*
CS	0.045	0.004	10.54***	0.042	0.005	9.25***
EOC	−0.102	0.049	−2.09**	−0.127	0.050	−2.53**
CH	−0.006	0.063	−0.10	−0.022	0.064	−0.35
AGE	0.009	0.033	0.28	−0.006	0.033	−0.19
YEAR	Yes			Yes		
Constant	−0.599	0.128	−4.69***	−0.466	0.141	−3.3***
Adj. R^2	0.3468			0.3621		
White test	Chi2 = 42.53 (p = 0.1009)			Chi2 = 53.54 (p = 0.3401)		
VIF	1.26			1.48		
Shapiro-Wilk test	W = 0.99428 (p = 0.7563)			W = 0.99319 (p = 0.6170)		

Note: Coef. stands for the regression coefficient; S.E. stands for robust standard error.
The symbols ***, ** and * indicate statistical significance at the levels of 0.01, 0.05 and 0.1.
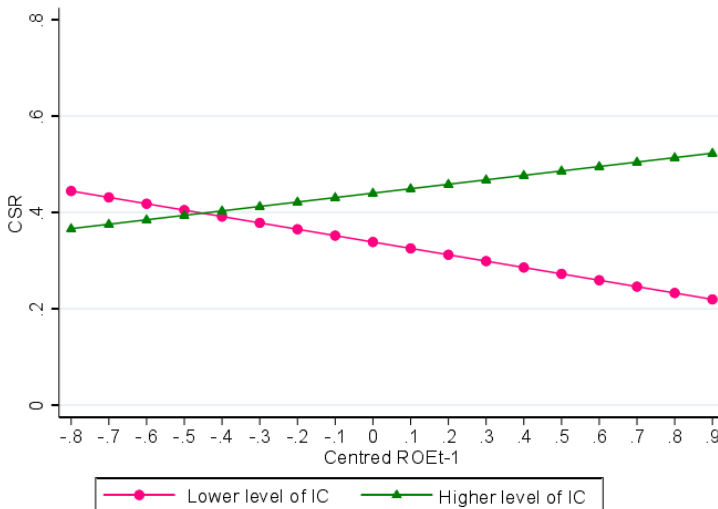
Figure 5–8 The relationship between ROE_{t-1} and CSR at higher and lower levels of internal control

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

5.2.5 The effects of control variables on CSR

An analysis of company-level control variables is presented in this monograph by taking into account five variables: company size, equity ownership concentration, cash holding rate, and company age.

Among these control variables, the coefficients for company size (CS) and equity ownership concentration (EOC) are significant across all the specifications, but positive for the former and negative for the latter. These results suggest that the larger the company size and the lower the equity ownership concentration, the more CSR initiatives company undertake. However, the coefficients of cash holding rate (CH) and company age (AGE) are insignificant among all the specifications, indicating that the level of cash holdings and company age have no impact on the CSR engagement of Chinese home appliance listed companies.

5.3 Sensitivity analysis

The regression model type applied can influence the calculated results. Therefore, the robustness of the results can be verified by comparing results from different models. In many strategy and management cases, the dependent variable of interest is a proportion or a fraction, which ranges in the interval [0, 1]. Papke and Wooldridge (1996) introduced fractional regression applied in economics, and Wooldridge (2010) added technical discussion. By method comparison, Villadsen and Wulff (2021) demonstrated that fractional regression is a best-practice technique for many outcomes in the form of fractions, proportions, or percentages that are of interest to management and strategy researchers. In the monograph, the dependent variable CSR ranges in the closed [0, 1] interval. So, the fractional response function regression is a suitable alternative method for the intended model estimation (Baum, 2008; Wu *et al*.,2023).

Table 5–9 shows the results from applying fractional logit regressions with interaction. As shown in Model (4.2), (4.3) and (4.4) of Table 5–9, the results from fractional logit regression with interaction are consistent with the main regression results shown in Model (4.2) of Table 5–5, Model (4.3) of Table 5–7 and Model (4.4) of Table 5–8, including statistical significance and moderating effect. The comparison results confirmed the robustness of the model results.

Table 5–9 Results from fractional logit regression

	Model (4.1)	Model (4.2)	Model (4.3)	Model (4.4)
Variable	CSR (logit)	CSR (logit)	CSR (logit)	CSR (logit)
ROE_{t-1}	–0.026 (0.887)	0.024 (0.943)	–0.717* (0.074)	–0.101 (0.573)
FC		–0.137* (0.078)		
$ROE_{t-1} \cdot FC$		0.051 (0.892)		
MC			–0.070 (0.241)	
$ROE_{t-1} \cdot MC$			1.086*** (0.009)	
IC				0.700** (0.014)
$ROE_{t-1} \cdot IC$				1.509* (0.087)
CS	0.188*** (0.000)	0.175*** (0.000)	0.192*** (0.000)	0.173*** (0.000)
EOC	–0.419** (0.041)	–0.449** (0.032)	–0.497** (0.014)	–0.524** (0.012)
CH	–0.021 (0.938)	–0.050 (0.852)	–0.036 (0.890)	–0.088 (0.743)
AGE	0.039 (0.776)	–0.071 (0.668)	0.027 (0.836)	–0.029 (0.834)
YEAR	YES	YES	YES	YES
Constant	–4.574*** (0.000)	–3.851*** (0.000)	–4.574*** (0.000)	–4.000*** (0.000)

Note: t-statistics in brackets.
The symbols ***, ** and * indicate statistical significance at the levels of 0.01, 0.05 and 0.1.

5.4 Summary

In this chapter, fundamental statistical analysis and multiple regression analysis with interaction based on data from home appliance listed companies in China are conducted. First, fundamental statistical analysis is performed on the sample data, including descriptive statistics, correlation analysis, and between-group difference test of CSR engagement. The results show that multicollinearity between variables is not a concern, the CSR engagement is normally distributed, and the average CSR engagement of Chinese home appliance listed companies is V-shaped during the corporate life cycle. In other words, the average CSR engagement of Chinese

home appliance listed companies peaks in the introduction stage, then continues to decline, reaches the lowest point in the mature stage, and rebounds slightly in the decline stage.

Next, we consider the overall effect of profitability on CSR engagement. The results of Model (4.1) used to examine this effect show that ROE_{t-1} is not linked with CSR engagement, suggesting that from the overall perspective, ROE_{t-1} is not one of the factors affecting CSR engagement of Chinese home appliance listed companies. H1 is not confirmed.

Finally, we examine, in turn, how the moderator company type, CLC stage and internal control influence the relationship between profitability and CSR engagement. The results of Model (4.2) show that when the moderator company type is considered, ROE_{t-1} remains unrelated to CSR engagement, FC (family company) is negatively related to CSR engagement, while the interaction $ROE_{t-1} \cdot FC$ does not show any significant effect on CSR engagement. It means that family companies have lower CSR engagement among Chinese home appliance listed companies than non-family companies, and company type is not a moderator which could change the impact of ROE_{t-1} on CSR engagement. H2 is not confirmed either. The results of Model (4.3) show that when the moderator CLC stage is concerned, ROE_{t-1} is negatively associated with CSR engagement, but MC (mature company) are not related to CSR engagement, and the interaction $ROE_{t-1} \cdot MC$ positively affects CSR engagement. It indicates that ROE_{t-1} has become one of the factors influencing CSR engagement of Chinese home appliance listed companies when considering the moderator CLC stage; mature Chinese home appliance listed companies do not engage in more CSR activities but strengthen the effect of ROE_{t-1} on CSR engagement. Furthermore, the coefficient of ROE_{t-1} in Model (4.3) is negative because the negative effect of ROE_{t-1} on CSR engagement for non-mature companies is much greater than the positive effect of ROE_{t-1} on CSR engagement for mature companies. H3 is confirmed. The results of Model (4.4) show that when the moderator internal control is considered, ROE_{t-1} is still not significantly related to CSR engagement, but IC (internal control) and the interaction $ROE_{t-1} \cdot IC$ are positively related to CSR engagement. It suggests that a higher level of internal control can promote CSR engagement of Chinese home appliance listed companies and help them to be involved in more CSR activities as ROE_{t-1} increases. H4 is confirmed. Furthermore, sensitivity analysis confirms that the regression results are robust.

Chapter 6

Discussion of Results

The detailed research results of regression models used to test the hypotheses are present in the previous chapter. Possible reasons or explanations for these results are shown in this chapter.

6.1 Profitability and CSR

The overall impact of profitability on CSR engagement is tested by taking all sample companies as a whole through Model (4.1). The results show that the coefficient of ROE_{t-1} is insignificant, indicating that from the overall perspective, ROE_{t-1} is not a primary driving force for Chinese home appliance listed companies to engage in CSR. This result is different from that of (Melo, 2012; Krukowska, 2014; Pradhan, 2021), who found that profitability could positively affect CSR engagement or disclosure. However, it is consistent with the findings of Dyduch and Krasodomska (2017) based on a Polish sample, Joshi and Hyderabad (2019) based on an Indian sample, and Reverte (2009) based on a Spain sample. This result is out of expectation but further stimulates the interest and need to explore the influence of moderators on this relationship.

6.2 Profitability and CSR: Moderating role of company type

The first moderator of interest in the monograph is company type, which divides the companies into family and non-family companies. H2 proposes that the profitability of family companies has a stronger impact on CSR engagement than non-family companies.

The influence of the moderator company type on the relationship between ROE_{t-1} and CSR engagement is examined by Model (4.2). The results show that the coefficient of ROE_{t-1} remains insignificant, and although the moderating variable FC (family company) is negatively related to CSR engagement, the interaction of $ROE_{t-1} \cdot FC$ is not significant.

First, the negative effect of FC on CSR engagement indicates that among Chinese home appliance listed companies, the CSR engagement of family companies is lower than that of non-family companies. This finding is contrary to many existing studies (Berrone *et al.*, 2010; Cennamo *et al.*, 2012; McGuire *et al.*,

2012; Wu *et al*., 2012), which found that family companies are positively associated with CSR activities. However, the research results of (Block and Wagner, 2014) and Muttakin and Khan (2014) are consistent with ours. Block and Wagner (2014) distinguish the ownership and management dimensions of founder and family companies and study their relationship with CSR concerns. They found that family and founder ownership were related to fewer CSR concerns, whereas the presence of a family and founder CEO was associated with more CSR concerns. In our sample, family companies are typically in a situation where the founder and his family members jointly hold the largest stake and the founder is the CEO, which is in line with the founder CEO as defined by Block and Wagner (2014). As explained by (Block and Wagner, 2014), founder CEOs "see themselves more as entrepreneurs rather than as pure administrators of family wealth". As a result, founders as CEOs have more entrepreneurial characteristics (e.g. achievement need, risk orientation, and overconfidence) and are more likely to follow growth-oriented company strategies than professional managers as CEOs. When founders are primarily concerned with company growth, CSR may be seen as a limiting factor. Family companies are therefore less likely to invest in CSR since founder CEOs avoid investments that would endanger their growth. While non-family companies, especially state-owned companies, need to maintain certain CSR activities due to the influence of government political relations and the need for a better social image (Cao *et al*., 2019). Consequently, as shown by the results of Model (4.2), compared with non-family companies, family companies have significantly lower CSR involvement.

Second, the result that the interaction of $ROE_{t-1} \cdot FC$ is not significant supports and extends the argument of Block and Wagner (2014) about founder CEOs. As Block and Wagner (2014) argue, the founder CEOs pursue a business expansion strategy, which results in that most of the companies' resources (such as high profit from high ROE) will be allocated to support the further development of the company, rather than forming the basis for CSR engagement. Therefore, CSR engagement of founder companies will not increase with profitability, which is superficially consistent with the situation of non-family companies regarding the relationship between profitability and CSR engagement. In other words, family companies, like non-family companies, are not affected by profitability in their engagement in CSR.

6.3   Profitability and CSR: Moderating role of corporate life cycle stage

The second moderator of consideration in the monograph is the CLC stages. It is proposed in H3 that profitability has a more significant influence on CSR engagement for mature companies compared to those at other stages.

The results of Model (4.3) used to test H3 suggest that mature companies are not related to CSR engagement, which is consistent with the findings of Lee and Choi (2018) based on a Korean sample; but have a positive moderating role on the impact of ROE_{t-1} on CSR engagement, which is analogous to the findings of Hasan

and Habib (2017). Furthermore, the average engagement in CSR in each stage of CLC implies that it is highest in the introduction stage, continues to decrease as the company grows, reaches its lowest level in the mature stage, and then slowly rises in the decline stage. Although the difference between stages is not statistically significant, it is intuitively visible, as shown in Figure 5–3. In sum, interesting results are found in this monograph. That is, mature companies are not directly associated with more CSR activities, and unexpectedly, CSR engagement of non-mature companies is higher than that of mature companies; however, CSR engagement of mature companies increases with the increase of ROE_{t-1}, whereas CSR engagement of companies in other stages decreases with the increase of ROE_{t-1}.

The descriptive stakeholder theory proposed by Jawahar and Mclaughlin (2001) may be a plausible explanation for the results that mature companies do not engage in more CSR activities, but non-mature companies are more involved in CSR than mature companies, especially in the introduction stage. This theory is developed on the basis of the integration of resource dependence theory, prospect theory and corporate life cycle model. Jawahar and Mclaughlin (2001) argue that since the threats and opportunities faced by companies vary with CLC stages, companies have different needs for resources at different stages of CLC, resulting in different degrees of reliance on stakeholders who own these resources. Companies in the introduction stage usually face the greatest threats (for example, shortage of funds, products or services not recognized by consumers, and fierce competition), which makes their survival highly uncertain and extremely dependent on stakeholder support. Therefore, in order to gain more support from stakeholders, early-stage companies strive to engage in more CSR activities, as CSR engagement can be an effective tool to gain such support (Hasan and Habib, 2017). As the company grows and enters the growth stage, the opportunities for the company gradually increase, and the threats gradually decrease. As a result, the increased independence of companies leads to a progressive reduction in their reliance on stakeholder-provided resources, which incurs a decline in CSR engagement among growth companies. When the company enters the mature stage, the company can survive and develop completely independently, and the dependence on stakeholders is reduced to the lowest point. Therefore, from the perspective of resource dependence, mature companies have the least incentive to engage in CSR. Therefore, CSR engagement would reach the lowest level at the mature stage, consistent with our results. If companies run poorly and enter the decline stage, their very existence is at stake, and they must once again depend on the support of their stakeholders to survive. Consequently, they have to increase their CSR engagement to gain this support. Thus a slight increase in the average CSR engagement in the decline stage is seen in our study. In conclusion, levels and changes in CSR engagement across stages of CLC shown in this monograph are positively related to reliance on stakeholder support for company survival.

Cost-benefit analysis of CSR presented by Mcwilliams and Siegel (2001) may be a reasonable explanation for the result that CSR engagement of mature companies increases with the increase of ROE_{t-1}, whereas CSR engagement of

companies in other stages decreases with the increase of ROE_{t-1}. Mcwilliams and Siegel (2001) outline a demand and supply model of CSR from the company's perspective and conclude that there is an "ideal" level of CSR, which managers can determine through cost-benefit analysis as with all other investments. On the demand side, they argue, managers need to assess the possibility of product or service differentiation. "Product (service) differentiation is used to create new demand or to command a premium price for an existing product (service)", as Mcwilliams and Siegel (2001) believe. When a company has little ability to differentiate products or services, revenue may not increase with CSR provision. On the supply side, managers need to assess the resource costs of CSR promotion while recognizing the possibility of economies of scale or scope associated with providing CSR. Therefore, company management at each stage of the CLC will decide the extent to which resources are allocated to the CSR area based on the cost-benefit analysis results.

On the one hand, mature companies operate on a larger scale, which allows their resources to be allocated and used more efficiently through economies of scale, thereby engaging in more CSR activities without incurring high additional costs (Udayasankar, 2008). On the other hand, mature companies have stable market positions and consumer-approved products. They could choose a CSR-based strategy to build a unique reputation and public recognition that differentiates them from other companies (McWilliams *et al*., 2002; Fombrun, 2005; Minor and Morgan, 2011). It suggests that it is not a problem for them to achieve the product or service differentiation strategy by providing CSR. Therefore, by means of the provision of CSR, mature companies could successfully achieve the product or service differentiation strategy, which leads to an increase in revenue (such as customers are willing to pay higher prices for environmentally friendly products or attract new customers who are concerned about CSR to purchase products or services). However, the cost will not increase due to economies of scale. Based on the above benefit-cost analysis, the management of mature companies is willing to invest in more CSR areas when financial resources (high profitability) are available.

For the non-mature companies, the changes in revenue and costs associated with providing CSR are another story. Survival is the most prominent organizational need for companies in their infancy and early stages (Tuzzolino and Armandi, 1981). As mentioned earlier, the survival of start-ups is highly dependent on stakeholder support. So in order to gain stakeholder buy-in, which is the biggest benefit for start-ups, start-up executives are willing to engage in more CSR activities even with poor financial resources (negative profitability). Moreover, "Although CSR is costly, the marginal benefit of CSR investments may be greater for younger firms than their mature counterparts", as Hasan and Habib (2017) point out. Therefore, CSR activities tended to be greater at the beginning of a company's development with poor profitability. With the improvement of profitability, the company enters the growth stage. At this time, the existential threat has declined, and how to better develop has become the primary concern of management. Therefore, management will reconsider the optimal and appropriate

level of CSR engagement based on cost-benefit analysis. Growth companies face fierce market competition, and it is difficult to achieve high returns by implementing CSR strategies because their competitors may adopt similar strategies (Gaurangkumar, 2015). Thus, boosting revenue by promotion of CSR to implement a product or service differentiation strategy does not work for growth companies. Also, from a cost perspective, growth companies are relatively small and cannot replicate the advantages of economies of scale that mature companies have when offering CSR (Udayasankar, 2008). In short, for growth companies, allowing more resources in CSR activities means high costs, and it is challenging to sustain abnormal returns to make up for the high cost. Therefore, it seems more reasonable for the management of growth companies to reduce their investment in the CSR area as profitability improves. When companies enter the decline stage, they are in a similar situation to companies in the introduction stage. In order to gain the support of stakeholders and keep them from going bankrupt, the management of companies in the decline stage must try their best to engage in CSR activities even when profitability is poor. Thus, during the introduction and decline stages of lower profitability, it is critical that companies enlist the support of stakeholders through engaging in more CSR activities, as this is their best option based on the benefit-cost analysis. However, as profitability increases, growth companies are more willing to reduce CSR engagement, which is a reasonable decision after comparing the revenue and cost of providing CSR.

In summary, based on the benefit-cost analysis, with the increase in profitability, mature companies benefit from increasing CSR engagement, while growth companies benefit from decreasing it, as shown in the monograph.

6.4 Profitability and CSR: Moderating role of internal control

The last moderator of concern in the monograph is internal control. It is proposed in H4 that higher levels of internal control promote the positive impact of profitability on CSR engagement compared to lower levels of internal control.

The results of Model (4.4) used to test H4 show that the level of internal control is positively related to CSR engagement. It implies that a higher level of internal control helps companies to engage more in CSR activities, which is consistent with the results found in previous studies (Gao, 2021; Li *et al.*, 2018; Wang *et al.*, 2015). The coefficient of interaction $ROE_{t-1}·IC$ is also positive, suggesting that higher levels of internal control facilitate the impact of ROE_{t-1} on CSR engagement. These results confirm our inference that high levels of internal control not only directly contribute to increased CSR engagement but also promote the active flow of financial resources to the CSR field and the effectiveness and efficiency of capital used for CSR activities. For example, with the improvement of profitability, a higher level of internal control could prompt companies to improve employee compensation and working environment, avoid corporate tax evasion, increase R&D investment to improve product quality or reduce production costs. All of these are difficult to achieve in an environment with lower internal control. Therefore, it can be concluded that the level of internal control

plays a crucial moderating role in the relationship between ROE_{t-1} and CSR engagement.

6.5 Summary

In this chapter, reasonable or plausible interpretations of the results are found based on existing views or theories. First, the results of Model (4.1) show that the overall impact of ROE_{t-1} on CSR engagement is neutral. H1 is not confirmed. Next, the results of Model (4.2) indicate that family companies have lower CSR engagement than non-family companies, and company type is not a moderator which could change the impact of ROE_{t-1} on CSR engagement. So H2 is not confirmed either. We found these results are likely because all of the family companies in the monograph have founders as CEOs. Their decisions are more influenced by entrepreneurship stemming from growth, so they are reluctant to invest in CSR activities even when profitability improves. And then, the results of Model (4.3) manifest that ROE_{t-1} has become one of the factors influencing CSR engagement of Chinese home appliance listed companies when the moderator CLC stage is considered, and mature companies do not engage in more CSR activities but strengthen the impact of ROE_{t-1} on CSR engagement. H3 is supported. Furthermore, ROE_{t-1} has a negative impact on the CSR engagement of non-mature companies but has a positive impact on the CSR engagement of mature companies. Benefit-cost analysis can explain these opposite findings. Finally, the results of Model (4.4) confirm H4. That is, higher levels of internal control not only facilitate the allocation of financial resources to the CSR field, but also improve the efficiency and effectiveness of funds used for CSR.

Chapter 7

Conclusion

This monograph is motivated by the inconsistency in the empirical findings on the relationship between profitability and CSR and is inspired by the further research directions pointed out by predecessors. There appears to be a lacuna in the literature on this type of investigation, especially in emerging markets such as China, where companies face many opportunities but fierce competition, and CSR is a critical factor affecting companies' survival and development.

The focus of the monograph is to verify whether the impact of profitability on CSR engagement differs in different contexts, such as company type, corporate life cycle stages, and levels of internal control, based on the sample of Chinese home appliance listed companies. The main research work of the monograph can be summarised as follows.

First of all, based on theoretical analysis and empirical findings, hypotheses about how profitability affects CSR engagement and how this effect varies by company type, corporate life cycle stage, and level of internal control were proposed.

Then, the decision-making process of AHP was described, which was applied to determine the CSR engagement of Chinese home appliance listed companies by the construction of an original multi-attribute AHP model. The multiple regression model with interaction was introduced to test the moderating effect proposed in the hypothesis.

Next, based on the evaluation of CSR engagement of Chinese home appliance listed companies, we examined the overall impact of profitability on CSR engagement. The results showed that profitability was unrelated to CSR engagement, which did not support H1.

Finally, the influence of moderating factors on the impact of profitability on CSR engagement were studied. The first moderator we investigated was company type. The results indicated that, like non-family companies, the profitability of family companies has little impact on CSR engagement, and CSR engagement of family companies is significantly lower than that of non-family companies. Hence, H2, the profitability of family companies has a more significant and positive impact on CSR engagement than non-family companies, failed to be supported.

One possible interpretation of these results is that the family companies in the monograph are almost the founder companies. As CEOs, these founders are more motivated by entrepreneurship to pursue company growth and are reluctant to invest in CSR as it hinders the company's rapid development.

The second moderator we examined was corporate life cycle stages. The results suggested that the effect of profitability on CSR engagement was positive for mature companies but negative for non-mature companies. H3, mature companies would strengthen the effect of profitability on CSR engagement, was supported. Benefit-cost analysis was used to explain these opposing results. In addition, we also found that CSR engagement was highest in the introduction stage, decreased as the companies developed, reached the lowest point in the mature stage, and increased slightly in the decline stage. We argued that this changing trend was caused by the changing reliance on stakeholder support for company survival.

The last moderator we studied was internal control. The results indicated that a higher level of internal control not only directly promoted CSR engagement, but also facilitated the effect of profitability on CSR engagement. The empirical results confirmed H4.

We contribute to the literature in several aspects. First, the monograph enriches the literature on the relationship between profitability and CSR by verifying that the impact of profitability on CSR engagement varies in different contexts. It provides valuable insights into understanding the link between profitability and CSR engagement in the Chinese context and, at the same time, offers new evidence that generalised findings are too simplistic to be valid.

Second, as a result of studying the impact of the CLC stage on the relationship between profitability and CSR, we extend the slack resource theory and provide empirical evidence for the resource dependence theory. Slack resources (such as high profitability) will only provide the possibility, not the inevitability, for companies to invest more in CSR-related projects. CSR decisions are made on a company-specific basis (e.g. benefit-cost analysis and dependence on stakeholders). Simultaneously, our finding also breaks the stereotype that mature companies are more involved in CSR in previous studies (Trihermanto and Nainggolan, 2020; Jiraporn and Withisuphakorn, 2016).

 Third, the monograph provides evidence that it is necessary to distinguish between founder companies and family companies when studying emerging markets. In mature economies with long-term development, such as Europe and the United States, founder companies currently account for only a small part of family companies, so scholars usually classify founder companies as one of them when studying family companies. However, in emerging economies that have only developed for a few decades (for example, China's modern private economy has only just begun to flourish since the reform and opening-up in 1978), almost all family companies today are in the first generation, that is, founder companies. Therefore, it may not be appropriate to mechanically apply the family company

theory to founder companies, whose nature and impact on CSR deserve to be studied separately. In this way, perhaps we can get a more realistic picture.

Lastly, the findings of this monograph on the influence of internal control on the effect of profitability on CSR engagement are expected to contribute to the practice of Chinese regulators, investors and managers. Specifically, the findings provide empirical support for internal control regulatory policies, such as the "Basic Norms for Enterprise internal control" and the "Supporting Guidelines for Enterprise internal control". The results provide an essential reference indicator for investors when analysing the CSR engagement of Chinese listed companies. They also serve as a reliable channel for managers to improve CSR engagement.

In addition to the achievements and contributions of the monograph mentioned above, there are still some limitations that need to be resolved by further research, including.

At first, the results are valid for the sample of Chinese home appliance listed companies from 2018 to 2020 and cannot be extended to other sectors, countries or periods. Further research could expand the sample size to get broadly applicable results.

Second, we only classify companies into mature and non-mature companies due to the limited sample size when exploring the moderating effect of the CLC stage on the relationship between profitability and CSR engagement. It would be advisable to investigate whether and how profitability affects CSR engagement in each life cycle stage in future research.

Eventually, in further research, it would be interesting and meaningful to examine how the COVID-19 pandemic affects the profitability of Chinese listed companies and, consequently, their engagement in CSR.

Appendices

Appendix 1 The measurement of the indicators involved in CSR scoring

Appendix 2–1 Original data for 2018 with symbols in Table 4–3 and the CSR score of each sample company obtained via the AHP method

Appendix 2–2 Original data for 2019 with symbols in Table 4–3 and the CSR score of each sample company obtained via the AHP method

Appendix 2–3 Original data for 2020 with symbols in Table 4–3 and the CSR score of each sample company obtained via the AHP method

Appendix 3 Input data for regression models

Appendix 4 Detail of VIF in each regression model

Appendix 1 The measurement of the indicators involved in CSR scoring

Symbol	Corresponding Indicators	Measurement
A1	The growth rate in owner equity	$= (\text{Equity}_t - \text{Equity}_{t-1}) / \text{Equity}_{t-1}$
A2	Cash dividend yield	$= \text{Cash dividends}_t / \text{Equity}_{t-1}$
A3	Dividend payout ratio	$= \text{Cash dividends}_t / \text{net profits}_t$
B1	The proportion of export revenue	= Export revenue/Operating revenue
B2	The proportion of R&D expenditure in revenue	= R&D expenses /Operating revenue
B3	R&D staff ratio	= The number of R&D staff/The number of staff
C1	Salary competitiveness	$= (\overline{\text{Salary}} - \overline{\text{Salary}_{\text{local}}})/\overline{\text{Salary}_{\text{local}}}$ [1]
C2	Salary growth rate	$= (\overline{\text{Salary}_t} - \overline{\text{Salary}_{t-1}})/\overline{\text{Salary}_{t-1}}$
C3	Qualitative indicator	Described in Table 4–4 in the text
D1	Accounts payable turnover ratio	= Operating revenue / The average of accounts payable
D2	Qualitative indicator	Described in Table 4–4 in the text
D3	Qualitative indicator	Described in Table 4–4 in the text
E1	The proportion of taxes in revenue	= All the tax /Operating revenue
E2	The proportion of government subsidies in revenue	= Subsides /Operating revenue
E3	Number of employees	Set the value from 1 to 7 based on the scale of the number of employees (NE) [2]
F1	Qualitative indicator	Described in Table 4–4 in the text
F2	Qualitative indicator	Described in Table 4–4 in the text
F3	Qualitative indicator	Described in Table 4–4 in the text
G1	The proportion of donation expenses in revenue	= Donation /Operating revenue
G2	Qualitative indicator	Described in Table 4–4 in the text
G3	Qualitative indicator	Described in Table 4–4 in the text

Note: [1] $\overline{\text{Salary}}$ represents the average salary of a sample company, and $\overline{\text{Salary}_{\text{local}}}$ represents the average salary in the province where the sample company is located.

[2] Sub-criterion E3 is divided into 7 levels according to the size of employees: 1 for NE < 500, 2 for 500 < NE < 1000, 3 for 1000 < NE < 3000, 4 for 3000 < NE < 5000, 5 for 5000 < NE < 10000, 6 for 10000 < NE < 50000, 7 for NE > 50000.

Appendix 2−1 Original data for 2018 with symbols in Table 4–3 and the CSR score of each sample company obtained via the AHP method

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
000801	0.0277	0.0086	0.2258	0.1947	0.0664	0.2086	0.3890	0.1992	4	1.5132	3	5	0.0237	0.0173	4	2	3	0	0.0186	0	1	0.3448
000810	0.1243	0.0000	0.0000	0.3077	0.0462	0.2120	0.6666	0.0073	4	2.0759	3	4	0.0255	0.0029	5	2	3	0	0.0000	1	1	0.3421
002052	-0.3767	0.0000	0.0000	0.2641	0.0806	0.4641	1.3613	0.3460	3	1.9647	4	4	0.0742	0.0095	2	4	3	0	0.0000	0	0	0.5096
002519	-0.3384	0.0000	0.0000	0.0815	0.0989	0.2670	0.3799	0.2021	3	1.8655	2	4	0.0805	0.0400	3	3	3	0	0.0404	0	1	0.3738
002848	-0.0682	0.0000	0.0000	0.7877	0.0690	0.1541	0.2881	0.2219	5	1.5044	3	5	0.0297	0.0059	3	3	3	0	0.1320	0	1	0.4752
000016	0.1529	0.0294	0.3601	0.6343	0.0086	0.0774	0.0379	0.0650	4	11.6760	3	3	0.0357	0.0006	6	4	5	1	0.0024	1	1	0.5516
002429	0.0503	0.0000	0.0000	0.3076	0.0184	0.1336	-0.0106	0.2138	4	3.2755	5	4	0.0349	0.0049	5	4	2	0	0.0122	1	0	0.4139
600060	0.0738	0.0082	0.2154	0.4592	0.0340	0.1227	0.6567	0.2051	5	14.2355	1	4	0.0271	0.0060	6	5	4	1	0.0000	0	1	0.6154
600839	0.0272	0.0049	0.1537	0.2044	0.0159	0.1076	0.2804	0.1857	5	9.8689	4	4	0.0214	0.0009	7	4	5	1	0.0017	1	0	0.5192
002032	0.1363	0.2338	0.7282	0.2657	0.0226	0.1041	0.3589	-0.0087	4	11.0634	1	4	0.0481	0.0062	6	1	5	1	0.1382	0	1	0.3575
002035	0.1826	0.1141	0.3720	0.0165	0.0367	0.0712	0.0528	0.0703	4	10.5614	5	5	0.0747	0.0032	5	3	4	0	0.2312	0	1	0.3729
002242	0.0691	0.1714	0.8277	0.0350	0.0364	0.1951	2.2055	-0.0076	2	54.6648	3	4	0.0543	0.0052	3	1	3	0	0.5690	0	1	0.3037
002403	0.0024	0.0228	0.3835	0.3432	0.0456	0.0852	0.2655	-0.0687	5	4.5924	2	3	0.0560	0.0073	5	2	5	0	0.2444	0	1	0.3320
002473	0.0397	0.0000	0.0000	0.3353	0.0075	0.1270	0.1463	0.1675	3	4.2469	2	4	0.1899	0.0007	1	4	3	0	0.0000	0	0	0.3985
002508	0.1661	0.1444	0.5117	0.0036	0.0395	0.1600	0.8911	0.0126	4	18.1551	5	2	0.1126	0.0136	4	4	3	0	0.0886	1	1	0.4424
002543	0.0854	0.0775	0.4971	0.3349	0.0346	0.1022	0.3837	0.1491	4	11.2542	4	3	0.0553	0.0095	5	4	3	0	0.0178	1	1	0.4547
002614	0.1284	0.0192	0.1260	0.7587	0.0337	0.1024	0.4319	0.2010	3	7.1925	1	3	0.0597	0.0042	5	1	1	0	0.0656	0	1	0.2876
002677	0.0433	0.2296	0.7957	0.0000	0.0291	0.1087	0.1717	0.1267	3	120.1173	5	4	0.1289	0.0006	3	5	3	1	0.1315	1	0	0.5609
002705	0.0472	0.0750	0.5570	0.8580	0.0326	0.1215	-0.1145	0.2020	5	8.7932	3	4	0.0376	0.0038	6	2	5	0	0.2405	1	1	0.4337
002723	-0.1096	0.0000	0.0000	0.7406	0.0373	0.1446	0.4390	0.2949	4	6.2224	4	3	0.0090	0.0034	3	4	1	0	0.0000	0	0	0.4634

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
002759	0.0183	0.0000	0.0000	0.0220	0.0367	0.1374	-0.1994	0.1752	3	7.2167	1	3	0.0635	0.0040	2	1	3	0	0.0014	0	1	0.1730
300247	-0.3257	0.0000	0.0000	0.5758	0.0599	0.1061	0.1858	0.0710	4	2.3678	1	2	0.0411	0.0127	3	1	3	0	0.0000	0	0	0.2387
300272	-0.3185	0.0280	0.1387	0.5400	0.0386	0.0963	0.2493	0.4137	5	6.0028	1	4	0.0305	0.0060	3	5	5	0	0.0397	0	1	0.5286
603355	-0.1417	0.0272	0.2086	0.3318	0.0417	0.0826	0.2157	0.1720	5	5.3881	3	4	0.0203	0.0068	5	4	2	0	0.0433	1	1	0.4245
603366	-0.1712	0.0000	0.0000	0.0454	0.0246	0.1038	0.4948	-0.1311	4	24.7127	1	4	0.0728	0.0057	4	4	1	0	0.2696	0	1	0.3313
603579	0.0831	0.0607	0.3360	0.4156	0.0474	0.1369	0.2047	0.2915	4	18.1807	2	3	0.0349	0.0044	3	1	3	0	0.1231	1	1	0.2902
603868	0.0802	0.2711	0.7745	0.0061	0.0133	0.0351	-0.4173	-0.0481	3	9.9184	1	4	0.1370	0.0119	4	1	3	0	0.0107	0	1	0.1725
600983	0.0574	0.0098	0.1464	0.4740	0.0229	0.1298	0.3164	-0.2474	5	4.4995	4	4	0.0319	0.0088	5	5	5	0	0.0000	0	0	0.5064
000404	0.0636	0.0035	0.0850	0.3472	0.0332	0.0909	0.3993	-0.0481	4	6.9551	1	4	0.0084	0.0034	5	4	5	0	0.0017	0	1	0.4244
002011	-0.5225	0.0000	0.0000	0.1181	0.0367	0.0571	0.2179	0.0098	4	4.5856	5	4	0.0436	0.0085	6	4	5	0	0.0005	0	0	0.3785
002050	0.0978	0.0935	0.5652	0.4572	0.0403	0.1400	0.5673	0.0560	4	6.2322	3	4	0.0417	0.0056	5	4	5	0	0.0168	0	0	0.4889
002418	-0.2170	0.0000	0.0000	0.0845	0.0200	0.0466	-0.1178	0.0955	5	1.7798	3	4	0.0501	0.0173	4	1	5	0	1.0000	1	1	0.2272
002676	0.0068	0.0000	0.0000	0.1344	0.0161	0.0896	-0.0753	-0.0235	4	3.6110	3	5	0.0516	0.0042	4	4	3	0	0.0013	0	1	0.3682
002860	0.1155	0.0263	0.1731	0.0433	0.0478	0.1165	-0.1021	-0.0175	4	3.4108	4	4	0.1066	0.0130	2	4	3	0	0.0000	1	0	0.3879
300160	-0.3403	0.0898	0.5205	0.2470	0.0314	0.0582	0.3642	0.3518	4	4.4014	4	4	0.0503	0.0091	3	4	1	0	0.4444	1	0	0.4047
300217	0.0727	0.0123	0.1582	0.0807	0.0347	0.1040	-0.0907	0.2087	4	4.5876	4	4	0.0595	0.0030	4	4	5	0	0.0000	0	0	0.4111
300342	-0.0183	0.0467	0.6536	0.0536	0.0714	0.2136	0.2430	0.1365	4	2.3437	4	4	0.0753	0.0038	3	4	3	0	0.4719	0	1	0.4497
300403	-0.0967	0.0407	0.3873	0.6337	0.0715	0.1639	0.0684	0.0872	4	4.7364	3	4	0.0547	0.0127	3	4	3	0	0.1160	0	1	0.4916
300475	0.0350	0.0056	0.2904	0.0000	0.0673	0.0798	0.1904	0.3643	3	2.6940	2	4	0.1173	0.0254	2	4	1	0	0.0140	0	1	0.3863
600619	0.0565	0.0257	0.3099	0.2074	0.0388	0.1508	0.6280	0.0899	5	5.6744	5	5	0.0274	0.0055	5	5	5	0	0.0256	1	1	0.5450

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
603519	-0.0137	0.1534	1.2133	0.2776	0.0315	0.1452	0.1152	0.1272	3	4.7435	1	4	0.0160	0.0007	1	1	2	0	0.0000	0	0	0.2192
603578	0.0876	0.0379	0.3132	0.0066	0.0397	0.1419	-0.2113	0.1309	3	3.0696	4	4	0.0718	0.0422	2	2	2	0	0.4511	1	1	0.2734
603677	0.1731	0.0437	0.4989	0.2563	0.0347	0.0997	-0.1199	0.1266	4	4.3201	4	4	0.0262	0.0029	3	2	5	0	0.2690	1	0	0.3300
603726	0.0784	0.0892	0.6541	0.0423	0.0414	0.1565	-0.1357	0.1623	4	5.4214	1	3	0.0639	0.0079	3	2	3	0	0.1825	0	0	0.2644
000333	0.1149	0.1032	0.3954	0.4252	0.0320	0.1074	1.4822	-0.0979	5	14.0668	4	4	0.0525	0.0050	7	5	5	0	0.0868	1	0	0.5763
000651	0.3872	0.1890	0.4789	0.1124	0.0349	0.1330	0.1653	0.1201	5	29.3208	5	5	0.0757	0.0034	7	5	5	1	0.0000	0	0	0.6263
300249	0.0413	0.0070	0.1795	0.0000	0.0525	0.2478	0.4025	0.0969	4	1.2427	1	5	0.0394	0.0100	3	4	3	1	0.0116	0	0	0.4781
600854	-0.0017	0.0168	1.9620	0.0010	0.0006	0.0136	-0.1714	-0.1705	3	21.8770	1	1	0.1304	0.0027	1	1	3	0	0.0000	0	0	0.1226
000521	-0.0042	0.0122	1.7971	0.2128	0.0135	0.1552	0.2799	0.1620	4	10.1351	2	4	0.0203	0.0055	6	4	5	0	0.0000	0	0	0.4391
000921	0.1132	0.0583	0.2902	0.2985	0.0191	0.0398	0.0900	0.1420	5	12.1489	5	4	0.0340	0.0096	6	4	5	1	0.0000	1	1	0.5423
002668	-0.3193	0.0000	0.0000	0.6678	0.0432	0.0731	-0.1408	-0.0709	3	3.5787	3	2	0.0351	0.0021	6	1	3	0	0.0303	0	1	0.2342
600336	0.0329	0.0123	0.3197	0.1615	0.0199	0.0880	0.1704	0.0560	5	11.0241	2	4	0.0439	0.0048	5	4	4	0	0.0110	0	0	0.3942
600690	0.1793	0.0478	0.2288	0.4202	0.0277	0.1709	2.0620	0.0651	5	15.7202	5	5	0.0487	0.0049	7	5	5	0	0.0310	1	1	0.6312
000100	0.1243	0.0248	0.3297	0.4970	0.0412	0.1663	0.3542	-0.0599	5	7.9967	4	5	0.0441	0.0000	7	5	5	1	0.0321	1	1	0.6525
002426	-0.1120	0.0000	0.0000	0.1895	0.0214	0.2575	1.0986	0.1642	3	5.2419	1	4	0.0242	0.0017	5	3	3	0	0.0107	1	0	0.3546
603331	0.0545	0.0448	0.4308	0.2674	0.0319	0.0952	-0.0073	0.0799	3	3.9598	4	4	0.0577	0.0039	3	4	5	0	0.1586	1	0	0.4285

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

Appendix 2−2 Original data for 2019 with symbols in Table 4–3 and the CSR score of each sample company obtained via the AHP method

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
000801	0.0024	0.0000	0.0000	0.1493	0.0844	0.2092	0.3650	0.0636	4	1.2037	3	5	0.0454	0.0177	4	1	2	0	0.0000	0	1	0.2448
000810	0.2588	0.0615	0.3100	0.3612	0.0540	0.2097	0.8245	0.1754	4	2.0169	3	4	0.0337	0.0140	5	3	3	0	0.0000	1	0	0.4241
002052	-0.3442	0.0000	0.0000	0.6211	0.0947	0.4029	1.9589	0.3980	2	2.1223	4	4	0.0599	0.0072	2	3	4	0	0.0001	0	1	0.5331
002519	0.0607	0.0000	0.0000	0.0486	0.1251	0.2360	0.2722	0.1093	3	1.8997	3	4	0.0790	0.0347	3	3	2	0	0.0003	1	1	0.3654
002848	0.1232	0.0000	0.0000	0.6076	0.0673	0.1448	0.1195	-0.0796	5	1.2988	3	5	0.0193	0.0767	3	1	4	0	0.0001	0	1	0.3096
000016	0.0503	0.0127	0.3595	0.6313	0.0091	0.0775	0.0052	0.0441	3	12.4223	3	3	0.0153	0.0226	6	4	5	1	0.0000	0	1	0.5230
002429	0.1236	0.0000	0.0000	0.3302	0.0222	0.1555	-0.1040	0.0114	3	3.9723	5	4	0.0356	0.0318	5	4	1	0	0.0000	0	1	0.3819
600060	0.0592	0.0350	0.6671	0.3067	0.0418	0.0868	0.8135	0.2116	5	13.3979	4	3	0.0259	0.0098	6	5	5	1	0.0000	1	1	0.6212
600839	-0.0134	0.0022	0.1381	0.2158	0.0179	0.0175	0.3231	0.1313	3	10.5496	3	4	0.0212	0.0065	6	4	5	1	0.0000	1	0	0.4638
002032	0.1587	0.2199	0.6782	0.2573	0.0228	0.1150	0.2915	0.0654	4	11.2659	2	3	0.0538	0.0084	6	1	5	1	0.0001	0	1	0.3503
002035	0.1651	0.0951	0.3344	0.0957	0.0413	0.0745	0.0345	0.0396	3	7.3405	5	5	0.0712	0.0054	5	3	3	0	0.0001	1	1	0.3456
002242	-0.0206	0.2163	1.0281	0.0555	0.0353	0.1953	2.1149	0.0745	1	49.7416	2	4	0.0375	0.0049	3	1	3	0	0.0008	1	1	0.2935
002403	-0.0342	0.0000	0.0000	0.3794	0.0489	0.0818	0.2373	0.0835	4	4.1647	3	4	0.0336	0.0142	5	4	5	0	0.0002	1	1	0.4378
002508	0.1376	0.0774	0.2940	0.0056	0.0386	0.1582	0.7782	0.0529	5	13.2388	5	4	0.1098	0.0114	4	3	3	1	0.0001	1	1	0.4584
002543	0.1344	0.0712	0.4031	0.3364	0.0415	0.1498	0.4319	0.1550	4	8.9117	4	3	0.0559	0.0137	5	4	5	0	0.0000	1	1	0.4760
002614	0.0338	0.0337	0.3949	0.7725	0.0430	0.0891	0.2492	-0.0413	3	5.7143	1	3	0.0581	0.0129	6	1	1	0	0.0001	1	0	0.2614
002677	0.1129	0.2565	0.7612	0.0000	0.0302	0.1095	0.0356	-0.0067	3	103.4834	5	4	0.0998	0.0013	3	3	3	0	0.0003	1	1	0.3529
002705	0.1048	0.0818	0.4656	0.1980	0.0366	0.1160	-0.0767	0.0351	4	8.7289	2	5	0.0300	0.0049	6	2	5	0	0.0003	1	1	0.3072
002723	0.0394	0.0132	0.1968	0.6573	0.0298	0.1416	0.3763	0.4357	4	4.6382	4	4	0.0057	0.0122	3	4	2	0	0.0000	0	1	0.4803

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
002759	-0.2096	0.0047	0.4955	0.0167	0.0387	0.1325	-0.2305	0.0718	3	5.4700	4	2	0.0466	0.0058	2	2	2	0	0.0001	0	1	0.2036
300247	-0.4438	0.0000	0.0000	0.5508	0.0483	0.0667	0.1805	0.0602	4	2.9592	3	3	0.0195	0.0144	3	1	2	0	0.0001	0	1	0.2169
300272	0.0438	0.0494	0.4832	0.5760	0.0178	0.1366	0.8919	0.6167	5	7.3093	2	5	0.0440	0.0042	2	1	1	0	0.0000	0	1	0.3227
603355	0.1500	0.0375	0.2076	0.6375	0.0462	0.0819	0.1489	0.0746	5	5.6134	3	3	0.0280	0.0059	5	4	1	0	0.0001	1	1	0.4455
603366	0.0325	0.0159	0.5625	0.0566	0.0243	0.0973	0.3789	0.0513	4	15.3531	4	4	0.0531	0.0067	4	4	1	0	0.0004	1	1	0.3679
603486	-0.0046	0.0000	0.0000	0.4713	0.0522	0.1427	0.6078	0.1582	3	5.8709	4	4	0.0527	0.0034	5	1	3	0	0.0005	0	1	0.2924
603579	0.0890	0.1365	0.7099	0.4658	0.0530	0.1133	0.0952	-0.0227	3	18.0114	2	3	0.0332	0.0066	3	1	1	0	0.0001	1	1	0.2431
603868	0.0102	0.1673	0.6373	0.0096	0.0226	0.0519	-0.2824	0.3041	3	6.7220	2	4	0.1128	0.0150	4	1	3	0	0.0001	0	1	0.1875
600983	-0.0877	0.0093	-0.1187	0.5349	0.0285	0.1407	0.2779	0.0317	5	3.7678	4	3	0.0296	0.0098	3	5	5	0	0.0000	0	0	0.5055
000404	0.0111	0.0033	0.1392	0.3627	0.0331	0.0731	0.4893	0.1204	4	6.5270	3	3	0.0107	0.0037	5	4	5	0	0.0000	0	1	0.4287
002011	0.0410	0.0000	0.0000	0.1490	0.0417	0.0503	0.1791	0.0910	4	4.5635	5	4	0.0381	0.0121	6	4	5	0	0.0001	0	1	0.4085
002050	0.0765	0.0475	0.2883	0.5043	0.0471	0.1203	0.4671	0.0510	4	6.0735	4	3	0.0390	0.0090	6	4	5	0	0.0000	0	1	0.4826
002418	-0.2878	0.0000	0.0000	0.1151	0.0195	0.0475	-0.1049	0.1407	4	2.0412	4	4	0.0353	0.0120	4	2	5	0	0.0000	0	1	0.2417
002676	0.0073	0.0000	0.0000	0.1771	0.0267	0.0876	-0.1880	-0.0452	4	3.7453	3	4	0.0438	0.0061	4	4	2	0	0.0000	0	0	0.3301
002860	0.4935	0.0332	0.1271	0.0635	0.0445	0.0793	-0.2725	-0.1410	4	4.6620	5	5	0.0861	0.1617	3	4	3	0	0.0000	1	0	0.3873
300160	0.1410	0.1408	1.0301	0.3017	0.0326	0.1063	0.9238	0.6078	3	4.2147	3	5	0.0441	0.0068	3	1	3	0	0.0013	0	1	0.3318
300217	-0.0591	0.0057	-0.1095	0.0302	0.0366	0.1036	-0.2707	-0.0857	5	5.1769	4	4	0.0472	0.0029	4	5	5	0	0.0000	1	0	0.4148
300342	0.0718	0.0475	0.4490	0.0508	0.0856	0.2269	0.2359	0.1330	4	2.9197	4	4	0.0617	0.0073	3	4	2	0	0.0000	1	0	0.4167
300403	0.0316	0.1082	0.9172	0.6227	0.0592	0.1484	0.0456	0.0873	3	4.5205	3	4	0.0671	0.0096	3	4	2	0	0.0000	1	0	0.4710
300475	0.0451	0.0105	0.2467	0.0000	0.0491	0.0641	0.0198	-0.0893	3	4.0469	2	4	0.1068	0.0254	2	4	3	0	0.0035	1	0	0.3486

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
600619	0.0278	0.0298	0.4370	0.1428	0.0450	0.1771	0.3235	-0.1344	5	4.7814	5	5	0.0206	0.0044	5	5	5	0	0.0001	1	1	0.5009
603519	0.0258	0.0933	0.5037	0.2826	0.0328	0.1601	0.0722	0.0952	3	4.9544	3	4	0.0177	0.0006	1	1	4	0	0.0000	0	0	0.2325
603578	0.1733	0.0349	0.3054	0.0083	0.0413	0.1120	-0.1250	0.2439	3	3.1785	4	4	0.0600	0.0451	2	2	2	0	0.0010	1	1	0.2577
603657	0.0368	0.0571	0.4502	0.1108	0.0391	0.0807	-0.1521	0.0419	3	3.1532	4	3	0.0608	0.0066	3	2	1	0	0.0022	1	0	0.2329
603677	0.0317	0.0517	0.7049	0.2628	0.0293	0.1032	-0.0949	0.1549	4	4.4830	4	4	0.0250	0.0056	3	2	5	0	0.0009	0	1	0.3183
603726	0.0496	0.0737	0.6157	0.0481	0.0503	0.1647	-0.2203	0.0130	3	5.1019	2	4	0.0515	0.0058	3	4	2	0	0.0003	1	0	0.3495
000333	0.1627	0.1204	0.4404	0.4198	0.0345	0.1018	1.0124	-0.0753	5	14.6222	4	4	0.0533	0.0043	7	4	5	0	0.0001	1	1	0.5074
000651	0.2085	0.0779	0.2908	0.1051	0.0294	0.1604	0.1326	-0.0525	5	24.5303	5	5	0.0754	0.0061	7	5	5	1	0.0000	1	1	0.5868
600854	0.0083	0.0113	0.8170	0.0000	0.0037	0.0296	-0.1650	0.1498	3	10.1921	1	1	0.1570	0.0088	1	2	5	0	0.0000	0	0	0.2043
000521	-0.0046	0.0102	1.2004	0.2365	0.0202	0.1091	0.4512	0.1898	4	10.8228	1	4	0.0318	0.0067	6	4	5	0	0.0000	0	0	0.4281
000921	0.5820	0.0682	0.2760	0.3067	0.0249	0.0490	0.1397	0.1667	5	10.8096	5	4	0.0379	0.0099	6	5	5	0	0.0000	0	1	0.5310
002668	0.0846	0.0000	0.0000	0.7789	0.0340	0.0778	-0.0636	0.2184	3	3.8640	3	2	0.0328	0.0017	5	1	5	0	0.0003	0	1	0.3004
600336	0.0919	0.0317	0.3187	0.2030	0.0209	0.0874	0.2450	0.1750	4	7.9039	2	4	0.0339	0.0059	5	3	4	0	0.0000	0	1	0.3416
600690	0.1788	0.0448	0.2000	0.4678	0.0312	0.1672	1.7810	0.0134	4	18.6327	4	5	0.0444	0.0064	7	5	5	0	0.0001	1	1	0.6037
000100	0.0495	0.0214	0.3554	0.3504	0.0452	0.1740	0.2165	0.0618	5	6.8293	5	3	0.0572	0.0261	6	5	5	1	0.0001	1	1	0.6146
002426	-0.4378	0.0000	0.0000	0.2554	0.0362	0.2607	1.2408	0.2179	4	4.1452	2	3	0.0220	0.0053	5	3	5	0	0.0000	0	1	0.3862
603331	0.1687	0.0420	0.4075	0.2528	0.0313	0.1070	-0.0668	0.0438	3	4.2024	4	4	0.0383	0.0113	3	3	5	0	0.0000	1	0	0.3549

Appendix 2−3 Original data for 2020 with symbols in Table 4–3 and the CSR score of each sample company obtained via the AHP method

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
000801	0.1507	0.0109	0.2632	0.1570	0.1010	0.2091	0.8341	0.4273	4	1.6579	3	5	0.0303	0.0184	3	1	2	0	0.0000	0	1	0.3185
000810	0.1023	0.0272	0.3003	0.4027	0.0598	0.1995	0.7378	0.0118	4	2.1945	3	4	0.0315	0.0163	5	4	4	0	0.0000	1	0	0.4864
002052	-0.3885	0.0000	0.0000	0.6625	0.1399	0.3641	1.5068	-0.0744	2	1.0687	4	4	0.0773	0.0482	1	3	4	0	0.0000	0	0	0.5107
002519	0.1096	0.0000	0.0000	0.0542	0.0979	0.2204	0.0307	-0.1303	3	2.7625	3	4	0.0420	0.0287	3	3	3	0	0.0001	1	0	0.3472
002848	-0.4786	0.0000	0.0000	0.5773	0.1229	0.1784	0.1077	0.0534	5	1.0710	3	5	0.0249	0.0391	3	2	3	0	0.0033	0	1	0.3843
000016	0.0800	0.0243	0.4459	0.6045	0.0135	0.0874	-0.0005	0.0864	3	12.1081	3	3	0.0170	0.0187	6	4	5	1	0.0000	0	1	0.5368
002429	0.2045	0.0000	0.0000	0.4336	0.0234	0.1146	-0.2821	-0.1246	3	4.4996	5	4	0.0334	0.0231	6	4	2	0	0.0002	0	1	0.4127
600060	0.0743	0.0291	0.3100	0.3025	0.0443	0.0858	0.6683	-0.0088	5	13.5448	4	3	0.0248	0.0096	6	5	5	1	0.0000	1	1	0.6050
600839	0.0029	0.0022	0.1964	0.2350	0.0200	0.0185	0.1683	-0.0620	5	11.0764	3	4	0.0172	0.0037	7	4	5	1	0.0000	1	0	0.4798
002032	0.0573	0.1536	0.5707	0.3080	0.0238	0.1089	0.2288	0.0373	4	9.2402	2	3	0.0512	0.0110	6	1	5	1	0.0004	0	1	0.3526
002035	0.0376	0.0408	0.3060	0.1190	0.0505	0.1479	0.0546	0.1138	3	5.7666	5	5	0.0529	0.0140	4	3	3	0	0.0006	1	1	0.3745
002242	0.1417	0.2045	0.8371	0.0832	0.0308	0.2101	2.0784	0.0647	1	53.6832	2	4	0.0421	0.0033	3	1	3	0	0.0007	1	1	0.3109
002403	0.0458	0.0118	0.2437	0.4124	0.0587	0.0812	0.0659	-0.0608	4	3.5568	3	4	0.0335	0.0152	5	4	5	0	0.0009	1	1	0.4580
002508	0.1749	0.0680	0.2812	0.0045	0.0373	0.1609	0.5809	-0.0307	4	9.3763	5	4	0.0962	0.0114	4	5	5	1	0.0003	1	1	0.5949
002543	0.0410	0.0628	0.4010	0.4151	0.0378	0.1602	0.4453	0.1028	4	7.5114	4	3	0.0386	0.0069	4	4	5	0	0.0001	1	1	0.4846
002614	0.3951	0.0543	0.4165	0.7766	0.0381	0.0735	0.2073	0.0413	3	6.3894	1	3	0.0536	0.0092	6	1	1	0	0.0006	1	0	0.2903
002677	0.1214	0.2551	0.7131	0.0000	0.0307	0.1148	-0.0616	-0.0121	3	83.7361	5	4	0.1255	0.0071	3	3	3	0	0.0007	1	1	0.3718
002705	0.4102	0.1146	0.4292	0.2287	0.0299	0.0895	-0.2611	-0.1255	4	9.5653	2	5	0.0295	0.0034	6	2	5	0	0.0008	1	1	0.3227
002723	0.0541	0.0046	0.1084	0.4816	0.0308	0.1232	0.1638	-0.0761	4	3.5845	4	4	0.0194	0.0199	3	4	2	0	0.0005	0	1	0.4272

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
002759	-0.0100	0.0000	0.0000	0.0225	0.0396	0.1286	-0.2426	0.0753	3	3.5718	4	2	0.0468	0.0045	2	2	2	0	0.0001	0	1	0.2224
002959	0.1851	0.1125	0.4372	0.0571	0.0288	0.0747	-0.2243	0.0334	3	32.6950	4	2	0.0615	0.0037	4	2	2	0	0.0011	0	1	0.2522
300247	-0.0665	0.0000	0.0000	0.7506	0.0261	0.1001	0.3715	0.2620	4	6.1882	3	3	0.0112	0.0096	2	1	1	0	0.0001	0	1	0.2751
300272	-0.0104	0.0232	0.5634	0.6173	0.0304	0.0938	0.1155	-0.3215	5	7.0682	2	5	0.0378	0.0130	3	1	1	0	0.0009	0	1	0.2499
603355	0.0779	0.2569	2.5195	0.7036	0.0494	0.0829	0.1110	0.0381	5	5.4488	5	4	0.0199	0.0064	5	4	1	0	0.0000	1	1	0.5163
603366	0.0501	0.0308	0.5775	0.0700	0.0328	0.0872	0.2154	-0.0538	4	14.1117	2	4	0.0476	0.0088	4	4	1	0	0.0009	1	1	0.3634
603486	0.2525	0.1152	0.4445	0.4808	0.0467	0.1452	0.6466	0.0994	3	6.5292	2	3	0.0478	0.0092	5	2	3	0	0.0000	1	1	0.3737
603579	0.0116	0.0418	0.3768	0.5280	0.0496	0.1541	-0.1195	-0.0749	4	16.3968	2	3	0.0345	0.0093	3	1	1	0	0.0005	1	1	0.2450
603868	0.0772	0.1656	0.6839	0.0040	0.0208	0.0651	-0.3942	-0.0287	3	6.5682	2	4	0.1284	0.0126	3	1	3	0	0.0008	0	1	0.1882
600983	-0.0542	0.0102	-0.2560	0.6898	0.0298	0.0538	0.6506	0.4031	5	3.4732	4	5	0.0136	0.0080	5	5	5	0	0.0000	0	0	0.5632
000404	0.0363	0.0163	0.3831	0.3347	0.0363	0.0691	0.3126	-0.0654	4	8.3835	3	3	0.0082	0.0035	5	4	5	0	0.0000	0	0	0.4158
002011	-0.4225	0.0000	0.0000	0.1660	0.0401	0.0490	-0.0756	-0.1453	4	5.2990	5	4	0.0416	0.0082	6	4	5	0	0.0000	0	1	0.3762
002050	0.0841	0.1339	0.8509	0.5157	0.0428	0.1206	0.2233	-0.0909	4	5.7298	4	3	0.0301	0.0125	6	4	5	0	0.0000	0	1	0.4855
002418	0.0630	0.0000	0.0000	0.0790	0.0143	0.0347	-0.2294	-0.0614	4	1.3022	4	4	0.0296	0.0281	4	2	5	0	0.0000	0	0	0.2463
002676	0.0261	0.0000	0.0000	0.1742	0.0287	0.1009	-0.2777	-0.0281	4	3.6051	3	4	0.0425	0.0043	4	4	5	0	0.0000	0	0	0.3817
002860	-0.0542	0.0270	0.2715	0.0615	0.0401	0.1079	-0.0211	0.4670	4	4.0313	2	3	0.0462	0.0104	3	4	3	0	0.0005	0	1	0.3872
300160	0.0041	0.0000	0.0000	0.3462	0.0350	0.1038	0.2896	-0.2804	3	3.9271	3	5	0.0221	0.0072	3	3	2	0	0.0006	0	1	0.3303
300217	-0.0176	0.0091	0.3334	0.0265	0.0353	0.1017	-0.3013	0.0284	4	5.2512	4	4	0.0343	0.0037	4	4	5	0	0.0000	0	1	0.3829
300342	0.0546	0.0443	0.4980	0.0457	0.0922	0.3095	0.3020	0.1309	4	2.3692	4	4	0.0513	0.0090	3	4	2	0	0.0000	1	0	0.4478
300403	0.0941	0.0481	0.3337	0.5575	0.0485	0.1176	-0.0279	0.0158	3	4.3827	3	4	0.0603	0.0081	3	4	2	0	0.0001	0	1	0.4410

Stock code	Shareholder			Consumer			Employee			Supply chain			Government			Environment			Society			CSR
	A1	A2	A3	B1	B2	B3	C1	C2	C3	D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2	G3	
300475	0.0340	0.0000	0.0000	0.0000	0.0433	0.0590	-0.1071	-0.0489	3	3.4242	2	4	0.1245	0.0221	2	4	3	0	0.0000	0	0	0.3405
600619	-0.0029	0.0242	0.6404	0.1213	0.0445	0.1370	-0.1549	-0.2653	5	3.7056	5	5	0.0255	0.0100	5	5	5	0	0.0001	1	1	0.4811
603519	0.0397	0.0607	0.4641	0.2765	0.0315	0.1613	-0.1009	-0.0998	3	5.1270	3	4	0.0230	0.0006	1	1	4	0	0.0000	0	0	0.2222
603578	0.1781	0.0406	0.3004	0.0080	0.0391	0.0914	-0.0543	0.1783	3	3.3706	4	4	0.0552	0.0345	2	4	2	0	0.0003	1	1	0.3823
603657	0.1029	0.0771	0.4718	0.1296	0.0318	0.0995	-0.2006	0.0278	3	3.5663	4	3	0.0331	0.0137	3	2	1	0	0.0023	1	0	0.2498
603677	-0.0337	0.0537	1.0255	0.3124	0.0318	0.1080	-0.2712	-0.1221	4	3.9025	4	4	0.0123	0.0065	3	2	5	0	0.0009	1	0	0.3047
603726	0.0958	0.0802	0.6661	0.0536	0.0510	0.1623	-0.3254	-0.0567	3	4.5906	2	4	0.0563	0.0094	3	4	2	0	0.0003	1	0	0.3611
000333	0.1557	0.1029	0.4023	0.4260	0.0354	0.1077	0.7641	-0.0422	5	13.6506	4	4	0.0469	0.0050	7	4	5	0	0.0001	1	1	0.5092
000651	0.0431	0.2090	1.0512	0.1190	0.0355	0.1722	0.0195	-0.0165	5	19.4996	5	5	0.0480	0.0081	7	5	5	1	0.0001	1	1	0.6144
600854	0.0251	0.0106	0.4696	0.0000	0.0041	0.0417	-0.2545	-0.0416	3	27.4708	1	1	0.1299	0.0099	1	2	5	0	0.0000	0	0	0.2018
000521	-0.0293	0.0101	-0.6548	0.3242	0.0247	0.0960	0.1951	-0.1055	4	12.2213	1	4	0.0260	0.0068	6	4	5	0	0.0000	0	1	0.4137
000921	0.1543	0.0379	0.1661	0.3025	0.0266	0.0428	0.0087	-0.0330	5	9.1639	5	4	0.0444	0.0094	6	5	5	0	0.0000	0	1	0.5015
002668	-0.2861	0.0000	0.0000	0.8697	0.0364	0.0646	-0.1832	-0.0470	3	5.0620	3	2	0.0229	0.0056	6	1	5	0	0.0001	0	1	0.2767
600336	0.1814	0.0435	0.2148	0.2316	0.0231	0.0944	0.1214	-0.0296	4	6.0287	2	4	0.0410	0.0052	5	3	5	0	0.0003	1	1	0.3662
600690	0.0480	0.0523	0.3000	0.4859	0.0327	0.1814	1.6534	0.0280	4	15.5664	4	5	0.0382	0.0055	7	5	5	0	0.0000	1	1	0.6095
000100	0.4097	0.0254	0.3209	0.2912	0.0573	0.1683	-0.1920	-0.2743	5	7.3382	5	3	0.0512	0.0257	6	5	5	1	0.0000	1	1	0.6104
002426	0.0935	0.0000	0.0000	0.4383	0.0280	0.3163	1.2254	0.0661	4	4.0435	2	3	0.0146	0.0049	5	3	5	0	0.0000	0	1	0.4522
603331	0.1321	0.0425	0.4400	0.1991	0.0290	0.1121	-0.1689	-0.0290	3	3.5632	4	4	0.0252	0.0137	3	3	5	0	0.0000	0	1	0.3535

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

Appendix 3 Input data for regression models

Stock code	CSR	ROE$_{t-1}$	FC	MC	IC	CS	EOC	CH	AGE	YEAR
000801	0.3448	0.0003	0	1	0.6616	22.4120	0.4761	0.1545	3.2581	2018
000810	0.3421	0.0347	0	0	0.7280	22.8454	0.5442	0.1180	3.4340	2018
002052	0.5096	0.0072	0	0	0.6639	21.1282	0.1650	0.3544	3.2189	2018
002519	0.3738	0.0512	0	0	0.6018	22.0100	0.2125	0.0720	2.9444	2018
002848	0.4752	0.0231	1	0	0.3398	20.8764	0.2792	0.0394	2.8904	2018
000016	0.5516	0.8834	0	0	0.7667	24.2193	0.2175	0.1320	3.6636	2018
002429	0.4139	0.0755	1	0	0.6961	23.6523	0.5450	0.2066	2.4849	2018
600060	0.6154	0.0736	0	0	0.6943	24.1042	0.3953	0.1376	3.0910	2018
600839	0.5192	0.0324	0	1	0.6709	24.9930	0.2322	0.2398	3.2581	2018
002032	0.3575	0.2680	0	1	0.7384	23.0872	0.8118	0.1742	3.0445	2018
002035	0.3729	0.2596	1	0	0.7277	22.3898	0.1372	0.2984	3.2958	2018
002242	0.3037	0.2001	1	0	0.6980	22.6194	0.5010	0.1638	2.8332	2018
002403	0.3320	0.0738	1	1	0.6354	22.2632	0.3507	0.1162	3.2581	2018
002473	0.3985	−0.1833	0	0	0.0000	19.7426	0.1813	0.3972	2.6391	2018
002508	0.4424	0.3115	1	1	0.6473	22.9698	0.4968	0.2323	2.9444	2018
002543	0.4547	0.1378	1	0	0.7114	22.6401	0.2966	0.1389	2.7726	2018
002614	0.2876	0.1300	1	1	0.6978	22.5054	0.2773	0.2287	3.1355	2018
002677	0.5609	0.2482	1	1	0.7229	21.3002	0.2320	0.4714	2.8904	2018
002705	0.4337	0.1279	1	1	0.6753	22.6877	0.4243	0.2595	3.1781	2018
002723	0.4634	0.0118	1	0	0.5696	20.7144	0.2932	0.0558	2.4849	2018
002759	0.1730	0.0066	1	0	0.6721	22.1091	0.2760	0.1358	3.1355	2018
300247	0.2387	0.0278	1	1	0.0000	21.4257	0.1083	0.0890	3.1781	2018
300272	0.5286	0.0075	1	0	0.7146	21.2052	0.3796	0.0943	2.8904	2018
603355	0.4245	0.1176	1	1	0.6445	22.2215	0.3663	0.2747	2.8904	2018
603366	0.3313	0.0154	1	0	0.5836	22.4825	0.5775	0.0850	3.0910	2018
603579	0.2902	0.2462	1	1	0.7034	21.4965	0.2893	0.5012	2.8332	2018
603868	0.1725	0.3779	1	0	0.7067	22.0308	0.8099	0.2633	2.5649	2018
600983	0.5064	−0.0244	0	0	0.5658	22.8388	0.5100	0.3052	2.9444	2018
000404	0.4244	0.0588	0	0	0.6236	23.0352	0.2998	0.2760	3.2189	2018
002011	0.3785	0.0183	1	0	0.5541	23.0535	0.2948	0.1118	2.8904	2018
002050	0.4889	0.1806	1	1	0.7220	23.3575	0.3700	0.0968	2.8904	2018
002418	0.2272	0.1053	0	0	0.4924	22.4643	0.1558	0.0226	2.4849	2018
002676	0.3682	−0.0459	0	0	0.6458	21.3523	0.2769	0.0952	3.2958	2018
002860	0.3879	0.1827	1	1	0.6955	20.6138	0.3356	0.1862	3.0910	2018
300160	0.4047	0.0913	1	1	0.6503	21.2472	0.2436	0.1140	2.8904	2018

Stock code	CSR	ROE$_{t-1}$	FC	MC	IC	CS	EOC	CH	AGE	YEAR
300217	0.4111	0.0503	1	0	0.6417	22.0320	0.1637	0.0982	2.9444	2018
300342	0.4497	0.1465	0	1	0.5935	21.3710	0.4552	0.1989	2.8332	2018
300403	0.4916	0.1127	1	1	0.6567	21.2135	0.4836	0.2188	2.8332	2018
300475	0.3863	0.0725	0	1	0.6121	21.1188	0.2747	0.1572	3.0445	2018
600619	0.5450	0.0689	0	1	0.5114	23.3860	0.2444	0.1188	3.2958	2018
603519	0.2192	0.1183	1	0	0.6772	20.6688	0.4523	0.2336	3.2189	2018
603578	0.2734	0.1544	1	0	0.6774	20.2696	0.3440	0.0562	2.9957	2018
603677	0.3300	0.1489	1	0	0.6213	21.4183	0.5096	0.0988	3.1355	2018
603726	0.2644	0.1452	1	0	0.6388	21.0668	0.5518	0.0960	3.0445	2018
000333	0.5763	0.2450	0	1	0.6696	26.2981	0.3338	0.1058	2.9444	2018
000651	0.6263	0.3696	0	1	0.7326	26.2497	0.1822	0.4541	3.4012	2018
300249	0.4781	0.0933	1	0	0.6170	21.8039	0.1760	0.1179	2.7726	2018
600854	0.1226	–0.0162	0	0	0.6136	21.5325	0.2534	0.2219	3.4340	2018
000521	0.4391	0.0070	0	0	0.5805	23.4681	0.2358	0.2959	3.2958	2018
000921	0.5423	0.3339	0	0	0.7838	23.8065	0.3792	0.1672	3.2958	2018
002668	0.2342	0.1403	1	0	0.5105	22.9799	0.1679	0.2844	2.8332	2018
600336	0.3942	0.0167	0	1	0.6288	22.3554	0.3859	0.1825	3.0445	2018
600690	0.6312	0.2144	0	1	0.7569	25.8395	0.1976	0.2353	3.4012	2018
000100	0.6525	0.0710	1	0	0.7541	25.9847	0.0782	0.1449	2.8332	2018
002426	0.3546	0.0196	1	1	0.0000	23.6060	0.2234	0.0625	2.3979	2018
603331	0.4285	0.1199	1	0	0.6645	20.8053	0.3714	0.0619	2.9444	2018
000801	0.2448	0.0378	0	0	0.6104	22.4216	0.4761	0.2190	3.2581	2019
000810	0.4241	0.1082	0	0	0.6927	23.0786	0.5524	0.1995	3.4340	2019
002052	0.5331	–0.4661	0	0	0.4893	20.6763	0.1650	0.1062	3.2189	2019
002519	0.3654	–0.3885	0	1	0.7077	21.9526	0.2125	0.2054	2.9444	2019
002848	0.3096	–0.1191	1	1	0.4240	20.7882	0.2793	0.0312	2.8904	2019
000016	0.5230	0.0758	0	0	0.6749	24.4748	0.2175	0.1564	3.6636	2019
002429	0.3819	0.0490	1	0	0.6792	23.8126	0.5450	0.1904	2.4849	2019
600060	0.6212	0.0369	0	1	0.6726	24.1000	0.3953	0.3862	3.0910	2019
600839	0.4638	0.0301	0	1	0.7555	25.0272	0.2322	0.2723	3.2581	2019
002032	0.3503	0.2950	0	1	0.7641	23.1954	0.8119	0.2171	3.0445	2019
002035	0.3456	0.2810	1	1	0.6806	22.5110	0.1386	0.3789	3.2958	2019
002242	0.2935	0.2001	1	1	0.7055	22.7339	0.5011	0.2386	2.8332	2019
002403	0.4378	0.0594	1	0	0.6844	22.3757	0.3507	0.0839	3.2581	2019
002508	0.4584	0.2606	1	1	0.6946	23.0890	0.4968	0.5083	2.9444	2019
002543	0.4760	0.1494	1	1	0.6820	22.6639	0.2966	0.1274	2.7726	2019

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

Stock code	CSR	ROE$_{t-1}$	FC	MC	IC	CS	EOC	CH	AGE	YEAR
002614	0.2614	0.1430	1	1	0.6517	22.5385	0.2775	0.1401	3.1355	2019
002677	0.3529	0.2824	1	1	0.6808	21.4098	0.2320	0.4022	2.8904	2019
002705	0.3072	0.1315	1	1	0.7365	22.8214	0.4306	0.2932	3.1781	2019
002723	0.4803	−0.1461	1	0	0.7083	20.9349	0.2919	0.0651	2.4849	2019
002759	0.2036	0.0248	1	0	0.6012	21.8992	0.3056	0.0307	3.1355	2019
300247	0.2169	−0.3971	1	1	0.2342	20.8495	0.1273	0.0803	3.1781	2019
300272	0.3227	0.2404	1	0	0.6624	21.4027	0.3784	0.1248	2.8904	2019
603355	0.4455	0.1404	1	0	0.6056	22.4054	0.3663	0.4202	2.8904	2019
603366	0.3679	−0.1457	1	0	0.7089	22.5612	0.5775	0.1952	3.0910	2019
603486	0.2924	0.2580	1	0	0.6283	22.1893	0.4228	0.2522	3.0445	2019
603579	0.2431	0.1735	1	1	0.6788	21.6240	0.2893	0.4143	2.8332	2019
603868	0.1875	0.3365	1	1	0.6193	22.0300	0.8099	0.2591	2.5649	2019
600983	0.5055	0.0654	0	0	0.6099	22.7492	0.5100	0.4181	2.9444	2019
000404	0.4287	0.0401	0	1	0.7028	23.0504	0.3060	0.3459	3.2189	2019
002011	0.4085	−0.7026	1	1	0.6931	22.8864	0.2948	0.1520	2.8904	2019
002050	0.4826	0.1577	1	1	0.7089	23.4172	0.3243	0.2473	2.8904	2019
002418	0.2417	−0.2073	0	1	0.5102	22.1682	0.1575	0.0209	2.4849	2019
002676	0.3301	0.0066	0	0	0.6950	21.3609	0.2506	0.0947	3.2958	2019
002860	0.3873	0.1438	1	1	0.6932	21.0347	0.3342	0.2699	3.0910	2019
300160	0.3318	−0.2078	1	1	0.6630	21.2601	0.2335	0.1117	2.8904	2019
300217	0.4148	0.0750	1	0	0.6074	21.9961	0.1637	0.1543	2.9444	2019
300342	0.4167	0.0721	0	1	0.7401	21.3442	0.2853	0.1011	2.8332	2019
300403	0.4710	0.1105	1	0	0.6607	21.2253	0.4836	0.1669	2.8332	2019
300475	0.3486	0.0190	0	1	0.6192	21.1153	0.2060	0.6694	3.0445	2019
600619	0.5009	0.0808	0	1	0.7492	23.3579	0.2397	0.0914	3.2958	2019
603519	0.2325	0.1273	1	1	0.7189	20.9134	0.3392	0.1902	3.2189	2019
603578	0.2577	0.1159	1	0	0.6960	20.6523	0.3440	0.3505	2.9957	2019
603657	0.2329	0.1704	1	1	0.6877	20.7194	0.4688	0.4617	2.9444	2019
603677	0.3183	0.0806	1	1	0.6768	21.2970	0.5162	0.1066	3.1355	2019
603726	0.3495	0.1312	1	0	0.7023	21.2147	0.5518	0.0817	3.0445	2019
000333	0.5074	0.2469	0	1	0.7383	26.4335	0.3173	0.2385	2.9444	2019
000651	0.5868	0.3306	0	1	0.6710	26.3686	0.1822	0.4465	3.4012	2019
600854	0.2043	0.0086	0	1	0.6339	21.4649	0.2534	0.2275	3.4340	2019
000521	0.4281	0.0068	0	1	0.5983	23.3767	0.2379	0.3878	3.2958	2019
000921	0.5310	0.1900	0	1	0.7483	24.2494	0.3792	0.2424	3.2958	2019
002668	0.3004	−0.6579	1	1	0.6564	22.8952	0.1272	0.3495	2.8332	2019
600336	0.3416	0.0378	0	0	0.7064	22.6249	0.3859	0.2313	3.0445	2019

Stock code	CSR	ROE_{t-1}	FC	MC	IC	CS	EOC	CH	AGE	YEAR
600690	0.6037	0.1898	0	1	0.8445	25.9568	0.1913	0.1946	3.4012	2019
000100	0.6146	0.0707	1	0	0.7346	25.8283	0.0903	0.1500	2.8332	2019
002426	0.3862	−0.1028	1	1	0.2454	23.3405	0.1808	0.0681	2.3979	2019
603331	0.3549	0.1012	1	0	0.6439	21.1309	0.3737	0.1222	2.9444	2019
000801	0.3185	0.0104	0	1	0.6700	22.3377	0.4761	0.3256	3.2958	2020
000810	0.4864	0.1701	0	1	0.6696	23.0506	0.5497	0.3257	3.4657	2020
002052	0.5107	−0.4258	0	0	0.0000	20.3571	0.1650	0.0977	3.2581	2020
002519	0.3472	0.0619	0	1	0.6832	22.0785	0.2125	0.2462	2.9957	2020
002848	0.3843	0.0158	1	0	0.5278	20.5003	0.2793	0.0785	2.9444	2020
000016	0.5368	0.0346	0	0	0.6669	24.6328	0.2175	0.1213	3.6889	2020
002429	0.4127	0.1260	1	0	0.6558	24.0024	0.5450	0.1441	2.5649	2020
600060	0.6050	0.0510	0	1	0.7528	24.1719	0.3000	0.3241	3.1355	2020
600839	0.4798	0.0157	0	0	0.6731	25.0875	0.2322	0.2630	3.2958	2020
002032	0.3526	0.3005	0	1	0.6976	23.2322	0.8120	0.1493	3.0910	2020
002035	0.3745	0.2626	1	0	0.6303	22.4886	0.1392	0.3157	3.3322	2020
002242	0.3109	0.2126	1	1	0.7615	22.9354	0.5012	0.3512	2.8904	2020
002403	0.4580	0.0575	1	1	0.6305	22.4298	0.3507	0.1277	3.2958	2020
002508	0.5949	0.2464	1	1	0.7002	23.2456	0.4968	0.5036	2.9957	2020
002543	0.4846	0.1655	1	1	0.6926	22.7780	0.2966	0.1486	2.8332	2020
002614	0.2903	0.0839	1	0	0.6558	22.9163	0.2063	0.3902	3.1781	2020
002677	0.3718	0.3190	1	1	0.6770	21.5019	0.2320	0.4636	2.9444	2020
002705	0.3227	0.1670	1	0	0.7389	23.2486	0.4175	0.3684	3.2189	2020
002723	0.4272	0.0658	1	0	0.6158	21.1217	0.2914	0.0790	2.5649	2020
002759	0.2224	0.0106	1	1	0.3156	21.8831	0.2619	0.0202	3.1781	2020
002959	0.2522	0.2525	1	1	0.6643	22.0294	0.4442	0.5896	2.6391	2020
300247	0.2751	−0.5795	1	1	0.6125	20.6789	0.1454	0.2369	3.2189	2020
300272	0.2499	0.1001	1	1	0.6263	21.3212	0.3825	0.0977	2.9444	2020
603355	0.5163	0.1680	1	0	0.6111	22.6872	0.3573	0.4755	2.9444	2020
603366	0.3634	0.0279	1	1	0.6556	22.5491	0.5775	0.1616	3.1355	2020
603486	0.3737	0.0487	1	1	0.7125	22.5417	0.4238	0.3290	3.0910	2020
603579	0.2450	0.1842	1	0	0.5985	21.8052	0.2893	0.3366	2.8904	2020
603868	0.1882	0.2612	1	1	0.6507	22.0815	0.8099	0.2832	2.6391	2020
600983	0.5632	−0.0820	0	0	0.6036	22.6711	0.5100	0.3185	2.9957	2020
000404	0.4158	0.0236	0	1	0.6957	23.1155	0.3060	0.3117	3.2581	2020
002011	0.3762	0.0106	1	1	0.5356	22.8637	0.2948	0.1849	2.9444	2020
002050	0.4855	0.1587	1	1	0.7219	23.5584	0.2978	0.2490	2.9444	2020

The Impact of Selected Moderators on the Relationship Between CSR and Profitability

Stock code	CSR	ROE$_{t-1}$	FC	MC	IC	CS	EOC	CH	AGE	YEAR
002418	0.2463	–0.3410	0	1	0.0000	21.9341	0.1575	0.0304	2.5649	2020
002676	0.3817	0.0080	0	1	0.6558	21.4032	0.2506	0.1002	3.3322	2020
002860	0.3872	0.2095	1	0	0.6216	21.2326	0.3109	0.2829	3.1355	2020
300160	0.3303	0.1277	1	1	0.0000	21.2779	0.2335	0.0863	2.9444	2020
300217	0.3829	–0.0539	1	0	0.6922	22.0548	0.1468	0.1446	2.9957	2020
300342	0.4478	0.1021	0	1	0.6328	21.4579	0.2853	0.1084	2.8904	2020
300403	0.4410	0.1162	1	0	0.6855	21.4870	0.4352	0.1561	2.8904	2020
300475	0.3405	0.0417	0	1	0.6137	21.1270	0.2060	0.3946	3.0910	2020
600619	0.4811	0.0673	0	0	0.6069	23.4278	0.2397	0.1531	3.3322	2020
603519	0.2222	0.1830	1	1	0.6850	21.0804	0.2592	0.2144	3.2581	2020
603578	0.3823	0.1050	1	1	0.6655	20.7941	0.3358	0.1311	3.0445	2020
603657	0.2498	0.1245	1	1	0.7056	20.9360	0.4688	0.3019	2.9957	2020
603677	0.3047	0.0722	1	1	0.6411	21.3155	0.5203	0.1642	3.1781	2020
603726	0.3611	0.1168	1	1	0.6628	21.2961	0.5518	0.0960	3.0910	2020
000333	0.5092	0.2528	0	1	0.8833	26.6104	0.3086	0.3037	2.9957	2020
000651	0.6144	0.2426	0	1	0.8014	26.3553	0.1870	0.4899	3.4340	2020
600854	0.2018	0.0137	0	1	0.6696	21.5179	0.2534	0.2504	3.4657	2020
000521	0.4137	0.0085	0	0	0.6224	23.5023	0.2379	0.4125	3.3322	2020
000921	0.5015	0.1915	0	1	0.7902	24.4564	0.3792	0.2328	3.3322	2020
002668	0.2767	0.0172	1	1	0.5493	22.9016	0.1244	0.5414	2.8904	2020
600336	0.3662	0.0952	0	1	0.7053	22.7659	0.3859	0.1338	3.0910	2020
600690	0.6095	0.2042	0	1	0.7606	26.0387	0.2017	0.2390	3.4340	2020
000100	0.6104	0.0586	1	0	0.6084	26.2759	0.0826	0.1047	2.8904	2020
002426	0.4522	–0.5290	1	1	0.0000	23.1381	0.1573	0.1198	2.4849	2020
603331	0.3535	0.0951	1	0	0.6963	21.3587	0.3755	0.1026	2.9957	2020

Appendix 4 Detail of VIF in each regression model

Variable	Model (4.1)		Model (4.2)		Model (4.3)		Model (4.4)	
	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF	VIF	1/VIF
ROE_{t-1}	1.38	0.72	3.48	0.29	3.25	0.31	1.51	0.66
FC			1.51	0.66				
ROE_{t-1}·FC			2.89	0.35				
MC					1.1	0.91		
ROE_{t-1}·MC					3.03	0.33		
IC							2.33	0.43
ROE_{t-1}·IC							1.71	0.59
CS	1.15	0.87	1.5	0.67	1.16	0.86	1.24	0.81
EOC	1.2	0.84	1.2	0.83	1.22	0.82	1.29	0.78
CH	1.14	0.88	1.17	0.86	1.17	0.85	1.16	0.86
AGE	1.1	0.91	1.39	0.72	1.1	0.91	1.19	0.84
YEAR								
2019	1.44	0.69	1.46	0.69	1.49	0.67	1.48	0.68
2020	1.44	0.70	1.46	0.68	1.5	0.67	1.45	0.69
Mean VIF	1.26		1.78		1.67		1.48	

List of Figures

List of Tables

References

ADOMAKO, S., AMANKWAH-AMOAH, J., DANSO, A., KONADU, R., OWUSU-AGYEI, S. (2019). Environmental sustainability orientation and performance of family and nonfamily firms. *Business Strategy and the Environment 28*(6), 1250–1259. https://doi.org/10.1002/bse.2314

ALI, W., FRYNAS, J. G., MAHMOOD, Z. (2017). Determinants of corporate social responsibility (CSR) disclosure in developed and developing countries: A literature review. *Corporate Social Responsibility and Environmental Management 24*(4), 273–294. https://doi.org/10.1002/csr.1410

ALSHEHHI, A., NOBANEE, H., KHARE, N. (2018). The impact of sustainability practices on corporate financial performance: Literature trends and future research potential. *Sustainability (Switzerland) 10*(2). https://doi.org/10.3390/su10020494

AGUILAR, J. L. E. (2018). Corporate social responsibility practices developed by Mexican family and non-family businesses. *Journal of Family Business Management 9*(1), 40–53.

ANG, R., SHAO, Z., LIU, C., YANG, C., ZHENG, Q. (2022). The relationship between CSR and financial performance and the moderating effect of ownership structure: Evidence from Chinese heavily polluting listed enterprises. *Sustainable Production and Consumption 30*, 117–129.

ARMSTRONG, J. S., Green, K. C. (2013). Effects of corporate social responsibility and irresponsibility policies. *Journal of Business Research 66*(10), 1922–1927.

ARVIDSSON, S. (2010). Communication of corporate social responsibility: A study of the views of management teams in large companies. *Journal of Business Ethics 96*(3), 339–354. https://doi.org/10.1007/s10551-010-0469-2

BARNEY, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99–120. https://doi.org/10.1177/014920639101700108

BAUM, C.F., (2008). Stata tip 63: modeling proportions. *Stata Journal 8* (2), 299–303. https://doi.org/10.1177/1536867x0800800212.

BERRONE, P., CRUZ, C., GOMEZ-MEJIA, L. R. (2012). Socioemotional wealth in family firms: Theoretical dimensions, assessment approaches, and agenda for future research. *Family Business Review 25*(3), 258–279. https://doi.org/10.1177/0894486511435355

BERRONE, P., CRUZ, C., GOMEZ-MEJIA, L. R., LARRAZA-KINTANA, M. (2010). Socioemotional wealth and corporate responses to institutional pressures: Do family-controlled firms pollute less? *Administrative Science Quarterly 55*(1), 82–113. https://doi.org/10.2189/asqu.2010.55.1.82

BLOCK, J., WAGNER, M. (2014). Ownership versus management effects on corporate social responsibility concerns in large family and founder firms. *Journal of Family Business Strategy 5*(4), 339–346. https://doi.org/10.1016/j.jfbs.2014.08.005

BØRING, P. (2019). The relationship between firm productivity, firm size and CSR objectives for innovations. *Eurasian Business Review 9*(3), 269–297. https://doi.org/10.1007/s40821-019-00123-y

CAO, F., PENG, S., YE, K. (2019). Multiple large shareholders and corporate social responsibility reporting. *Emerging Markets Review 38*, 287–309. https://doi.org/10.1016/j.ememar.2019.02.004

CAREY, P., LIU, L., QU, W. (2017). Voluntary corporate social responsibility reporting and financial statement auditing in China. *Journal of Contemporary Accounting and Economics 13*(3), 244–262. https://doi.org/10.1016/j.jcae.2017.09.002

CARROLL, A. B. (1979). A three dimensional conceptual model of corporate social performance. *Academy of Management Review 4*(4), 497–505.

CARROLL, A. B. (1991). The pyramid of corporate social responsibility：Toward the moral management of organizational stakeholders. *Business Horizon 34*(4), 39–48.

CARROLL, A. B. (2009). A history of corporate social responsibility: Concepts and practices. *The Oxford Handbook of Corporate Social Responsibility 1*, 1–20. https://doi.org/10.1093/oxfordhb/9780199211593.003.0002

CASTKA, P., BAMBER, C. J., BAMBER, D. J. (2004). Integrating corporate social responsibility (CSR) into ISO management systems - In search of a feasible CSR management system framework. *TQM Magazine 16*(3), 216–224. https://doi.org/10.1108/09544780410532954

CENNAMO, C., BERRONE, P., CRUZ, C., GOMEZ-MEJIA, L. R. (2012). Socioemotional wealth and proactive stakeholder engagement: Why family-controlled firms care more about their stakeholders. *Entrepreneurship: Theory and Practice 36*(6), 1153–1173. https://doi.org/10.1111/j.1540-6520.2012.00543.x

CHAHARBAGHI, K., LYNCH, R. (1999). Sustainable competitive advantage：towards a dynamic resource-based strategy. *Management Decision 37*(1), 45–50.

CHEN, G., FIRTH, M., XU, L. (2009). Does the type of ownership control matter? Evidence from China's listed companies. *Journal of Banking and Finance 33*(1), 171–181. https://doi.org/10.1016/j.jbankfin.2007.12.023

CHEN, Y. C., HUNG, M., WANG, Y. (2018). The effect of mandatory CSR disclosure on firm profitability and social externalities: Evidence from China. *Journal of Accounting and Economics 65*(1), 169–190. https://doi.org/10.1016/j.jacceco.2017.11.009

CHENG, Q., GOH, B. W., KIM, J. B. (2018). Internal control and operational efficiency. *Contemporary Accounting Research 35*(2), 1102–1139. https://doi.org/10.1111/1911-3846.12409

CHO, S. Y., LEE, C. (2017). Managerial efficiency, corporate social performance, and corporate financial performance. *Journal of Business Ethics 158*(2), 467–486. https://doi.org/10.1007/s10551-017-3760-7

CIERNA, H., SUJOVÁ, E. (2020). Integrating principles of excellence and of socially responsible entrepreneurship. *Management Systems in Production Engineering 28*(1), 23–28. https://doi.org/10.2478/mspe-2020-0004

CLARKSON, P. M., LI, Y., RICHARDSON, G. D., VASVARI, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of Accounting and Public Policy 30*(2), 122–144. https://doi.org/10.1016/j.jaccpubpol.2010.09.013

COCHRAN, P. L., WOOD, A. R. (1984). corporate social responsibility and financialperformance. *Academy of Management Journal 27*(1), 42–56

COHEN, J. (2003). Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences (Third Edition). Lawrence Elbaum Law Firm: New Jersey, USA.

COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION (2013). *Internal Control—Integrated Framework*. Retrieved from https://www.coso.org/Pages/ic.aspx

CORDEIRO, J. J., GALEAZZO, A., SHAW, T. S., VELIYATH, R., NNADAKUMAR, M. K. (2018). Ownership influences on corporate social responsibility in the Indian context. *Asia Pacific Journal of Management 35*(4), 1107–1136. https://doi.org/10.1007/s10490-017-9546-8

DAHLSRUD, A. (2008). How corporate social responsibility is defined: An analysis of 37 definitions. *Corporate Social Responsibility and Environmental Management 15*(1), 1–13. https://doi.org/10.1002/csr.132

DAM, L., SCHOLTENS, B. (2013). Ownership concentration and CSR policy of European multinational enterprises. *Journal of Business Ethics 118*(1), 117–126. https://doi.org/10.1007/s10551-012-1574-1

DHAR, B. K., HARYMAWAN, I., SARKAR, S. M. (2022). Impact of corporate social responsibility on financial expert CEOs' turnover in heavily polluting companies in Bangladesh. *Corporate Social Responsibility and Environmental Management* (October 2021) 1–11. https://doi.org/10.1002/csr.2230

DICKINSON, V. (2011). Cash flow patterns as a proxy for firm life cycle. *Accounting Review 86*(6), 1969–1994. https://doi.org/10.2308/accr-10130

DLUHOŠOVÁ, D. et al. (2014). Financial management and decision-making of a company. Analysis, investing, valuation, sensitivity, risk, flexibility, SAEI, vol.28. Ostrava. Czech Republic.

DONALDSON, T., PRESTON, L. E. (1995). The stakeholder theory of the corporation: Concepts, evidence, and implications. *Academy of management Review 20*(1), 65–91.

DROBETZ, W., HALLING, M., SCHRRDER, H. (2015). Corporate Life-Cycle Dynamics of Cash Holdings. *SSRN Electronic Journal* (15). https://doi.org/10.2139/ssrn.2578315

DUCASSY, I., MONTANDRAU, S. (2015). Corporate social performance, ownership structure, and corporate governance in France. *Research in International Business and Finance 34*, 383–396. https://doi.org/10.1016/j.ribaf.2015.02.002

DYDUCH, J., KRASODOMSKA, J. (2017). Determinants of corporate social responsibility disclosure : An empirical study of Polish listed companies. *Sustainability (Switzerland) 9*(11), 1934. https://doi.org/10.3390/su9111934

El AKREMI, A., GOND, J. P., SWAEN, V., DE ROECK, K., IGALENS, J. (2018). How do employees perceive corporate responsibility? Development and validation of a multidimensional corporate stakeholder responsibility scale. *Journal of Management 44*(2), 619–657. https://doi.org/10.1177/0149206315569311

ELKINGTON, J. (2013). Enter the triple bottom line. In *The triple bottom line: Does it all add up?* Oxfordshire: Routledge, pp. 1–16.

ELKINGTON, J. (1997). Cannibals with Forks. The Triple Bottom Line of 21st Century. Oxford: Capstone Publishing Ltd..

ENDRIKAT, J., GUENTHER, E., HOPPE, H. (2014). Making sense of conflicting empirical findings: A meta-analytic review of the relationship between corporate environmental and financial performance. *European Management Journal 32*(5), 735–751. https://doi.org/10.1016/j.emj.2013.12.004

FALLER, C. M., ZU KNYPHAUSEN-AUFSEß, D. (2018). Does equity ownership matter for corporate social responsibility? A literature review of theories and recent empirical findings. *Journal of Business Ethics 150*(1), 15–40. https://doi.org/10.1007/s10551-016-3122-x

FATMA, M., RAHMAN, Z., KHAN, I. (2015). Building company reputation and brand equity through CSR : the mediating role of trust. *International Journal of Bank Marketing 33*(6), 840–856. https://doi.org/10.1108/IJBM-11-2014-0166

FAUZI, H., IDRIS, K. M. (2009). The Relationship of CSR and Financial Performance: New Evidence from Indonesian Companies. *Issues In Social And Environmental Accounting 3*(1), 66. https://doi.org/10.22164/isea.v3i1.38

FOMBRUN, C. J. (2005). A world of reputation research, analysis and thinking— building corporate reputation through CSR initiatives : Evolving standards. *Corporate Reputation Review 8*(1), 7–12. https://doi.org/10.1057/palgrave.crr.1540235

FREEMAN, R. E., HARRISON, J. S., WICKS, A. C., PARMAR, B. L., DE COLLE, S. (2010). *Stakeholder theory: The state of the art*. Cambridge: Cambridge university press.

FREEMAN, R. E. (1984). Strategic Management: A stakeholder approach, New York: Pitman.

GAO, X. (2021). Internal Control, Corporate Governance Attributes, and Corporate Social Responsibility (CSR) Disclosure: Evidence from the Power and Chemical Industries in China. Murdoch University.

GAO, W., HUANG, Z., YANG, P. (2019). Political connections, corporate governance and M&A performance: Evidence from Chinese family firms. *Research in International Business and Finance 50*, 38–53. https://doi.org/10.1016/j.ribaf.2019.04.007

GAURANGKUMAR, B. C. (2015). Cost benefit analysis of corporate social responsibility (CSR). *Advances in Management 8*(5), 7–13.

GIANNARAKIS, G. (2014). Corporate governance and financial characteristic effects on the extent of corporate social responsibility disclosure. *Social Responsibility Journal 10*(4), 569–590. https://doi.org/10.1108/SRJ-02-2013-0008

GLOBAL SUSTAINABLE INVESTMENT ALLIANCE (2020). *Global Sustainable Investment Review 2020.* Retrieved from http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf

GÓMEZ-MEJÍA, L. R., HAYNES, K. T., NÚÑEZ-NICKEL, M., JACOBSON, K. J. L., MOYANA-FUENTES, J. (2007). Socioemotional wealth and business risks in family-controlled firms: Evidence from Spanish olive oil mills. *Administrative Science Quarterly 52*, 106–137.

GULZAR, M. A., CHERIAN, J., HWANG, J., JIANG, Y., SIAL, M. S. (2019). The impact of board gender diversity and foreign institutional investors on the corporate social responsibility (CSR) engagement of Chinese listed companies. *Sustainability (Switzerland) 11*(2), 1–19. https://doi.org/10.3390/su11020307

GUO, M., SHEN, S. (2019). Managerial shareholding and CSR: Does internal control quality matter?-Evidence from China. *Sustainability (Switzerland) 11*(15). https://doi.org/10.3390/su11154206

GUPTA, Y. P., CHIN, D. C. W. (1994). Organizational life cycle: A review and proposed directions. *The Mid-Atlantic Journal of Business 30*(3), 269–295.

HABEK, P. (2017). Corporate Social Responsibility Reporting. Practices of Visegrad Group Countries. Gliwice: PA NOVA SA.

HANG, M., GEYER-KLINGEBERG, J., RATHGEBER, A. W. (2019). It is merely a matter of time : A meta-analysis of the causality between environmental performance and financial performance. *Business Strategy and the Environment 28*(2), 257–273. https://doi.org/10.1002/bse.2215

HAO, D. Y., QI, G. Y., WANG, J. (2018). Corporate social responsibility, internal controls, and stock price crash risk: The Chinese stock market. *Sustainability (Switzerland) 10*(5). https://doi.org/10.3390/su10051675

HAO, Y., ZHENG, S., ZHAO, M., WU, H., GUO, Y., LI, Y. (2020). Reexamining the relationships among urbanization, industrial structure, and environmental pollution in China—New evidence using the dynamic threshold panel model. *Energy Reports 6* 28–39. https://doi.org/10.1016/j.egyr.2019.11.029

HASAN, M. M., HABIB, A. (2017). Corporate life cycle, organizational financial resources and corporate social responsibility. *Journal of Contemporary Accounting and Economics 13*(1), 20–36. https://doi.org/10.1016/j.jcae.2017.01.002

HELFAT, C. E., PETERAF, M. A. (2003). The dynamic resource-based view： capability lifecycles. *Strategic Management Journal 1010*(10 SPEC ISS.), 997–1010. https://doi.org/10.1002/smj.332

HSU, F. J. (2018). Does corporate social responsibility extend firm life-cycles? *Management Decision 56*(11), 2408–2436. https://doi.org/10.1108/MD-09-2017-0865

JAWAHAR, I. M., MCLAUGHLIN, G. L. (2001). Toward a descriptive stakeholder theory: An organizational life cycle approach. *Academy of Management Review 26*(3), 397–414. https://doi.org/10.4324/9781315261102-24

JENKINS, H. (2006). Small business champions for corporate social responsibility. Journal *of Business Ethics 67*(3), 241–256. https://doi.org/10.1007/s10551-006-9182-6

JIRAPORN, P., WITHISUPHAKORN, P. (2016). The effect of firm maturity on corporate social responsibility (CSR): do older firms invest more in CSR? *Applied Economics Letters 23*(4), 298–301. https://doi.org/10.1080/13504851.2015.1071464

JO, H., HARJOTO, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics 103*(3), 351–383. https://doi.org/10.1007/s10551-011-0869-y

JO, H., NA, H. (2012). Does CSR reduce firm risk ? Evidence from controversial industry sectors. Journal *of Business Ethics 110*(4), 441–456. https://doi.org/10.1007/s10551-012-1492-2

JOSHI, G. S., HYDERABAD, R. L. (2019). Determinants of corporate social responsibility reporting in India. *Journal of Management 6*(1), 1–10.

KABIR, W., AHMAD, M. O., SWAMY, M. N. S. (2015). A novel normalization technique for multimodal biometric systems. In: *Proceedings of the 2015 IEEE 58th International Midwest Symposium on Circuits and Systems (MWSCAS)*. IEEE, pp. 1–4.

KANSAL, M., JOSHI, M., SINGH, G. (2014). Determinants of corporate social responsibility disclosures : Evidence from India. *Advances in Accounting 30*(1), 217–229. https://doi.org/10.1016/j.adiac.2014.03.009

KAPPAL, S. (2019). Data normalization using median & median absolute deviation MMAD based Z-score for robust predictions vs. min–max normalization. *London Journal of Research in Science: Natural and Formal 19*(4).

KARAMAN, A. S., AKMAN, E. (2018). Taking-off corporate social responsibility programs: An AHP application in airline industry. *Journal of Air Transport Management 68*, 187–197. https://doi.org/10.1016/j.jairtraman.2017.06.012

KHAN, A., MUTTAKIN, M. B., SIDDIQUI, J. (2013). Corporate governance and corporate social responsibility disclosures: Evidence from an emerging economy. *Journal of Business Ethics 114*(2), 207–223. https://doi.org/10.1007/s10551-012-1336-0

KHAN, F. U., ZHANG, J., DONG, N., USMAN, M., ULLAH, S., ALI, S. (2021). Does privatization matter for corporate social responsibility? Evidence from China. *Eurasian Business Review 11*(3), 497–515. https://doi.org/10.1007/s40821-020-00154-w

KHAN, I., FATMA, M. (2023). CSR Influence on Brand Image and Consumer Word of Mouth: Mediating Role of Brand Trust. *Sustainability 15*(4), 3409.

KSIEŽAK, P., FISCHBACH, B. (2017). Triple bottom line: The pillars of CSR. *Journal of corporate responsibility and leadership 4*(3), 95–110.

KRUKOWSKA, M. (2014). Determinants of corporate social responsibility in Japanese companies. *Management and Business Administration 22*(4), 39–57. https://doi.org/10.7206/mba.ce.2084-3356.117

LAMB, N. H., BUTLER, F. C. (2018). The influence of family firms and institutional owners on corporate social responsibility performance. *Business and Society 57*(7), 1374–1406. https://doi.org/10.1177/0007650316648443

LEE, W. J., CHOI, S. U. (2018). Effects of corporate life cycle on corporate social responsibility: Evidence from Korea. *Sustainability (Switzerland) 10*(10), 1–17. https://doi.org/10.3390/su10103794

LESTER, D. L., PARNELL, J. A., CARRAHER, S. (2003). Organizational life cycle : A five- stage empirical scale. *The International Journal of Organizational Analysis 11*(4), 339–354. https://doi.org/10.1108/eb028979

LI, Q., RUAN, W., SUN, T., XIANG, E. (2019). Corporate governance and corporate environmental investments: Evidence from China. *Energy and Environment* 31(6), 923–942. https://doi.org/10.1177/0958305X19882372

LI, X. (2020). The effectiveness of internal control and innovation performance: An intermediary effect based on corporate social responsibility. *PLoS ONE 15*(6), e0234506. https://doi.org/10.1371/journal.pone.0234506

LI, X., ZHENG, C., LIU, G., SIAL, M. S. (2018). The effectiveness of internal control and corporate social responsibility: Evidence from Chinese capital market. *Sustainability (Switzerland)*, *10*(11). https://doi.org/10.3390/su10114006

LI, W., LIU, Z. (2011). A method of SVM with normalization in intrusion detection. *Procedia Environmental Sciences 11*, 256–262. https://doi.org/10.1016/j.proenv.2011.12.040

LI, W., ZHANG, R. (2010). Corporate social responsibility, ownership structure, and political interference: Evidence from China. *Journal of Business Ethics 96*(4), 631–645. https://doi.org/10.1007/s10551-010-0488-z

LIN, Y., WU, L. (2014). Exploring the role of dynamic capabilities in firm performance under the resource-based view framework. *Journal of Business Research 67*(3), 407–413. https://doi.org/10.1016/j.jbusres.2012.12.019

LIU, J. Y. (2018). An internal control system that includes corporate social responsibility for social sustainability in the new era. *Sustainability (Switzerland) 10*(10). https://doi.org/10.3390/su10103382

LIU, K., LIN, B. (2019). Research on influencing factors of environmental pollution in China: A spatial econometric analysis. *Journal of Cleaner Production 206*, 356–364. https://doi.org/10.1016/j.jclepro.2018.09.194

LÓPEZ-GONZÁLEZ, E., MARTÍNEZ-FERRERO, J., & GARCÍA-MECA, E. (2019). Corporate social responsibility in family firms: A contingency approach. *Journal of Cleaner Production 211*, 1044–1064. https://doi.org/10.1016/j.jclepro.2018.11.251

MADDEN, L., MCMILLAN, A., HARRIS, O. (2020). Drivers of selectivity in family firms: Understanding the impact of age and ownership on CSR. *Journal of Family Business Strategy 11*(2), 100335. https://doi.org/10.1016/j.jfbs.2019.100335

MARGOLIS, J. D., WALSH, J. R. (2003). Misery loves rethinking companies : Social initiatives. *Administrative Science Quaterly 48*(2), 268–305. http://asq.sagepub.com/content/48/2/268.short

MARQUIS, C., QIAN, C. (2014). Corporate social responsibility reporting in China: Symbol or substance? *Organization Science 25*(1), 127–148. https://doi.org/10.1287/orsc.2013.0837

MCGUIRE, J. B., SUNDGREN, A., & SCHNEEWEIS, T. (1988). Corporate social responsibility and firm financial performance. *Academy of Management Journal 31*(4), 854–872. https://doi.org/10.5465/256342

MCGUIRE, J., DOW, S., IBRAHIM, B. (2012). All in the family? Social performance and corporate governance in the family firm. *Journal of Business Research 65*(11), 1643–1650. https://doi.org/10.1016/j.jbusres.2011.10.024

MCWILLIANS, A., VAN Fleet, D. D., CORY, K. D. (2002). Raising rivals' costs through political strategy: an extension of resource-based theory. *Journal of Management Studies 39*(5), 707–724.

MCWILLIANS, A., SIEGEL, D. (2001). Corporate social responsibility : A theory of the firm perspective. *Academy of Management Review 26*(1), 117–127.

MELO, T. (2012). Determinants of corporate social performance : the influence of organizational culture , management tenure and financial performance. *Social Responsibility Journal* 8(1), 33–47. https://doi.org/10.1108/17471111211196557

MILLER, D., FRIESEN, P. H. (1984). A longitudinal study of the corporate life cycle. *Management Science 23*(4), 1161–1183. https://doi.org/10.1287/mnsc.30.10.1161

MINOR, D., MORGAN, J. (2011). CSR as reputation insurance: Primum non nocere. *California Management Review 53*(3), 40–59. https://doi.org/10.1525/cmr.2011.53.3.40

MORAVCIKOVA, K., STEFANIKOVA, Ľ., & RYPAKOVA, M. (2015). CSR reporting as an important tool of CSR communication. *Procedia Economics and Finance 26*, 332–338. https://doi.org/10.1016/s2212-5671(15)00861-8

MORSING, M., SPENCE, L. J. (2019). Corporate social responsibility (CSR) communication and small and medium sized enterprises: The governmentality dilemma of explicit and implicit CSR communication. *Human Relations 72*(12), 1920–1947. https://doi.org/10.1177/0018726718804306

MUTTAKIN, M. B., KHAN, A. (2014). Determinants of corporate social disclosure : Empirical evidence from Bangladesh. *Advances in Accounting 30*(1), 168–175. https://doi.org/10.1016/j.adiac.2014.03.005

OH, W. Y., CHANG, Y. K., MARTYNOV, A. (2011). The effect of ownership structure on corporate social responsibility: Empirical evidence from Korea. *Journal of Business Ethics 104*(2), 283–297. https://doi.org/10.1007/s10551-011-0912-z

OLUWAFEMI, O. J., OYATOYE, E. O. (2012). Corporate social responsibility: are firms in Nigeria actually giving back or giving away? *International Journal of Business Excellence 5*(1/2), 116–128. https://doi.org/10.1504/IJBEX.2012.044576

ORLITZKY, M., SCHMIDT, F. L., RYNES, S. L. (2003). Corporate social and financial performance: A mete-analysis. *Organization Studies 24*(3), 403–441.

PAPKE, L.E., WOOLDRIDGE, J.M., (1996). Econometric methods for fractional response variables with an application to 401 (k) plan participation rates. *Journal of Applied Economics 11* (6), 619–632. https://doi.org/10.1002/(SICI)1099-1255(199611)11:63.0.CO;2-1

PARK, B. J. (2021). Corporate social and financial performance: the role of firm life cycle in business groups. *Sustainability (Switzerland) 13*(13). https://doi.org/10.3390/su13137445

PARK, E., JOON, K., JIB, S. (2017). Corporate social responsibility as a determinant of consumer loyalty : An examination of ethical standard, satisfaction, and trust. *Journal of Business Research 76*, 8–13. https://doi.org/10.1016/j.jbusres.2017.02.017

PARSA, S., DAI, N., BELAL, A., LI, T., TANG, G. (2021). Corporate social responsibility reporting in China: political, social and corporate influences. *Accounting and Business Research 51*(1), 36–64. https://doi.org/10.1080/00014788.2020.1780110

PATRO, S. G. K., KUMAR, K. (2015). Normalization : A preprocessing stage. In *arXiv preprint arXiv*: 1503.06462.

PENROSE, E. T. (1959). *The Theory of the Growth of the Firm*. New York: Wiley.

PRADHAN, A. K. (2021). The determinants of corporate social responsibility : Evidence from Indian firms, *Global Business Review 22*(3), 753–766. https://doi.org/10.1177/0972150918814318

QIU, X. (2013). Corporate philanthropic disaster response and post performance: Evidence from China. *International Journal of Management and Marketing Research 6*(2), 39–51.

RAUF, F., VOINEA, C. L., ROIJAKKERS, N., NAVEED, K., HASHMI, H. B. A., RANI, T. (2021). How executive turnover influences the quality of corporate social responsibility disclosure? Moderating role of political embeddedness: evidence from China. *Eurasian Business Review* 1–25. https://doi.org/10.1007/s40821-021-00187-9

REVERTE, C. (2009). Determinants of corporate social responsibility disclosure ratings by Spanish listed firms. *Journal of Business Ethics 88*(2), 351–366. https://doi.org/10.1007/s10551-008-9968-9

RODRÍGUEZ-ARIZA, L., CUADRADO-BALLESTEROS, B., MARTÍNEZ-FERRERO, J., GARCÍA-SÁNCHEZ, I. M. (2017). The role of female directors in promoting CSR practices: An international comparison between family and non-family businesses. *Business Ethics 26*(2), 162–174. https://doi.org/10.1111/beer.12140

SAATY, T. L., VARGAS, G. L. (2012). Models, Methods, Concepts & Applications of the Analytic Hierarchy Process (Second Edition). New York: Springer, pp. 5–8.

SHAHZAD, A. M., MOUSA, F. T., SHARFMAN, M. P. (2016). The implications of slack heterogeneity for the slack-resources and corporate social performance relationship. *Journal of Business Research 69*(12), 5964–5971. https://doi.org/10.1016/j.jbusres.2016.05.010

SHAHZAD, F., LU, J., FAREED, Z. (2019). Does firm life cycle impact corporate risk taking and performance? *Journal of Multinational Financial Management 51*, 23–44. https://doi.org/10.1016/j.mulfin.2019.05.001

SIAL, M. S., ZHENG, C., KHUONG, N. V., KHAN, T., USMAN, M. (2018). Does firm performance influence corporate social responsibility reporting of Chinese listed companies? *Sustainability (Switzerland) 10*(7). https://doi.org/10.3390/su10072217

SIMMOU, W., GOVINDAN, K., SAMEER, I., HUSSAINEY, K., SIMMOU, S. (2023). Doing good to be green and live clean! ─ Linking corporate social responsibility strategy, green innovation, and environmental performance: Evidence from Maldivian and Moroccan small and medium-sized enterprises. *Journal of Cleaner Production 384*, 135265.

SPIRA, L. F., PAGE, M. (2003). Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing & Accountability Journal 16*(4), 640–661. https://doi.org/10.1108/09513570310492335.

STINCHCOMBE, A.L. (1965). *Social structure and organisation*. Chicago: Rand McNally.

STUDENMUND, A. H. (2016). Using econometrics, a practical guide (Seventh Edition). Boston: Pearson, pp.92–93.

SUFIAN, M. A., ZAHAN, M. (2013). Ownership structure and corporate social responsibility disclosure in Bangladesh. *International Journal of Economics and Financial Issues 3*(4), 901–909.

SURROCA, J., TRIBÓ, J. A., WADDOCK, S. (2010). Corporate responsibility and financial performance: The role of intangible resources. *Strategic Management Journal 31*(5), 463–490. https://doi.org/10.1002/smj

SWANDARI, F., SADIKIN, A. (2016). The effect of ownership structure, profitability, leverage, and firm size on corporate social responsibility(CSR). *Binus Business Review 7*(3), 315. https://doi.org/10.21512/bbr.v7i3.1792

TAN-MULLINS, M., HOFMAN, P. S. (2014). The shaping of Chinese corporate social responsibility. *Journal of Current Chinese Affairs 43*(4), 3–18.

TATE, W. L., ELLRAM, L. M., KIRCHOFF, J. F. (2010). Corporate social responsibility reports: A thematic analysis related to supply chain management. *Journal of Supply Chain Management 46*(1), 19–44. https://doi.org/10.1111/j.1745-493X.2009.03184.x

TRIHERMANTO, F., NAINGGOLAN, Y. A. (2020). Corporate life cycle, CSR, and dividend policy: empirical evidence of Indonesian listed firms. *Social Responsibility Journal 16*(2), 159–178. https://doi.org/10.1108/SRJ-09-2017-0186

TUZZOLINO, F., ARMANDI, B. R. (1981). A need-hierarchy framework for assessing corporate social responsibility. *The Academy of Management Review 6*(1), 21. https://doi.org/10.2307/257137

UDAYASANKAR, K. (2008). Corporate social responsibility and firm size. *Journal of Business Ethics 83*(2), 167–175. https://doi.org/10.1007/s10551-007-9609-8

VILLADSEN, A.R., WULFF, J.N., (2021). Are you 110% sure? Modeling of fractions and proportions in strategy and management research. *Strategic Organization 19* (2), 312–337. https://doi.org/10.1177/1476127019854966.

WADDOCK, S. A., GRAVES, S. B. (1997). The corporate social performance-financial performance link. *Strategic Management Journal 18*(4), 303–319. https://doi.org/10.1108/IJCHM-04-2017-0195

WANG, Q., DOU, J., JIA, S. (2016). A meta-analytic review of corporate social responsibility and corporate financial performance: The moderating effect of contextual factors. *Business and Society 55*(8), 1083–1121. https://doi.org/10.1177/0007650315584317

WANG, Y., TANG, M., YU, X. (2015). Can the high quality of internal control promote the fulfillment of corporate social responsibility in energy enterprises? In: *Proceedings of the 2015 Asia-Pacific Energy Equipment Engineering Research Conference*. Atlantis Press, pp. 526–530. https://doi.org/10.2991/ap3er-15.2015.125

WERNERFELT, B. (1984). A resource-based view of the firm. *Strategic Management Journal 5*(2), 171–180.

WILHELM, M. M., BLOME, C., BHAKOO, V., PAULRAJ, A. (2016). Sustainability in multi-tier supply chains: Understanding the double agency role of the first-tier supplier. *Journal of Operations Management 41*, 42–60. https://doi.org/10.1016/j.jom.2015.11.001

WU, S., LIN, F., Wu, C. (2012). A study on taiwanese corporate social responsibility and ownership structures. *Corporate Ownership and Control 9*(3), 111–122. https://doi.org/10.22495/cocv9i3art9

WU, X., DLUHOŠOVÁ, D., ZMEŠKAL, Z. (2021). Corporate social responsibility and profitability: The moderating role of firm type in Chinese appliance listed companies. *Energies 14*(1), 227. https://doi.org/10.3390/en14010227

WU, X., DLUHOŠOVÁ, D., ZMEŠKAL, Z. (2023). The moderating role of a corporate life cycle with the impact of economic value-added on corporate social responsibility: Evidence from China's listed companies. *Emerging Markets Review, 55*, 101021

WU, X., HABEK, P. (2021). Trends in corporate social responsibility reporting. The case of Chinese listed companies. *Sustainability 13*(15), 8640.

WU, X. (2019). Research on the implementation of CSR of listed companies in Chinese household appliance industry. *Proceedings of the 21st International Conference Mekon 2019*. Ostrava, Czech Republic, pp. 255–262

XU, L., KUMAR, D. T., SHANKAR, K. M., KANNAN, D., CHEN, G. (2013). Analyzing criteria and sub-criteria for the corporate social responsibility-based supplier selection process using AHP. *International Journal of Advanced Manufacturing Technology 68*(1–4), 907–916. https://doi.org/10.1007/s00170-013-4952-7

YOUN, H., HUA, N., LEE, S. (2015). Does size matter? Corporate social responsibility and firm performance in the restaurant industry. *International Journal of Hospitality Management 51*, 127–134.

ZAHID, M., RAHMAN, H. U., MUNEER, S., BUTT, B. Z., ISAH-CHIKAJI, A., MEMON, M. A. (2019). Nexus between government initiatives, integrated strategies, internal factors and corporate sustainability practices in Malaysia. *Journal of Cleaner Production 241*, 118329. https://doi.org/10.1016/j.jclepro.2019.118329

ZHANG, R., REZAEE, Z., ZHU, J. (2010). Corporate philanthropic disaster response and ownership type: Evidence from Chinese firms' response to the Sichuan earthquake. *Journal of Business Ethics 91*(1), 51–63. https://doi.org/10.1007/s10551-009-0067-3

ZHAO，N., PATTEN, D. M. (2016). An exploratory analysis of managerial perceptions of social and environmental reporting in China: Evidence from state-owned enterprises in Beijing. *Sustainability Accounting, Management and Policy Journal 7*(1), 80–98.

ZHAO, T., XIAO, X. (2019). The impact of corporate social responsibility on financial constraints: Does the life cycle stage of a firm matter? *International Review of Economics and Finance 63*, 76–93. https://doi.org/10.1016/j.iref.2018.08.010

ZHONG, M., XU, R., LIAO, X., ZHANG, S. (2019). Do CSR ratings converge in China? A comparison between RKS and hexun scores. *Sustainability (Switzerland) 11*(14), 1–20. https://doi.org/10.3390/su11143921

ZHU, Q., ZHANG, Q. (2015). Evaluating practices and drivers of corporate social responsibility: The Chinese context. *Journal of Cleaner Production 100*, 315–324. https://doi.org/10.1016/j.jclepro.2015.03.053

ZHU, Y., SUN, Y. (2017). The impact of coupling interaction of internal control and CSR on corporate performance - Based on the perspective of stakeholder. *Procedia Engineering 174*, 449–455. https://doi.org/10.1016/j.proeng.2017.01.165

Additional sources

CSMAR (2022). CSMAR – China Stock Market and Accounting Research database. [Online], [accessed on 14. 1. 2022]. Available at: < https://www.gtadata.com/>

DIB (2022). DIB – Shenzhen DIB Internal Control and Risk Management Database. [Online], [accessed on 20. 1. 2022]. Available at: <http://www.ic-erm.com/pro2-6.html>

RKS (2018). RKS –Rankins CSR rating agency. [Online], [accessed on 14. 11. 2021]. Available at:< http://www.rksratings.cn/>

Index

The Effects of Selected Moderators on the Relationship Between CSR and Profitability: Evidence from China

Xiaojuan Wu

Summary

The causal relationship between corporate financial performance (profitability) and corporate social responsibility (CSR) has been a hot topic. Given that there is no conclusive answer, some scholars suggest exploring this relationship in a different context. Existing literature has focused on studying the impact of CSR on profitability in the context of various mediators or moderators, with little attention paid to the reverse effect, namely, the effect of profitability on CSR under various moderators.

The objective of the monograph is to study and verify whether the profitability of different types of companies, companies at different life cycle stages, and companies with different levels of internal control have a comparable impact on CSR engagement. The research samples are taken from Chinese home appliance listed companies from 2018 to 2020.

A specific multi-attribute AHP model is applied to determine the CSR engagement for Chinese home appliance listed companies' conditions. The interactive regression model is used to analyse the impact of the selected moderators on the relationship between profitability and CSR engagement.

First of all, the specific multi-attribute AHP model is proposed and validated as a suitable tool for evaluating the CSR engagement of Chinese home appliance listed companies. Secondly, the overall relationship between profitability and CSR engagement is tested through the multiple regression model without moderators, and the results suggest that profitability is not related to CSR engagement of Chinese home appliance listed companies. Thirdly, the influence of the moderators

on this relationship is verified. The first interactive regression model is designed to explore the moderating effect of company type on the relationship between profitability and CSR engagement. The results show that, like non-family companies, the profitability of family companies has no significant impact on CSR engagement. In addition, we unexpectedly find that family companies are less involved in CSR than non-family companies in the investigated Chinese sector. Then, the second interactive regression model is used to investigate the moderating effect of the corporate life cycle stage on the relationship between profitability and CSR engagement. The results indicate that for mature companies, profitability has a significant positive impact on CSR engagement, while for non-mature companies, profitability has a significant negative impact on CSR engagement. Moreover, we notice that the average CSR engagement of Chinese home appliance listed companies decreases from the introduction stage to the mature stage and increases slightly from the mature stage to the decline stage. Next, the third interactive regression model is employed to explore the moderating effect of internal control on the relationship between profitability and CSR engagement. The results imply that a higher level of internal control prompts the effect of profitability on CSR engagement, and directly helps Chinese home appliance listed companies to engage in more CSR.

Therefore, the monograph results provide more convincing evidence that when studying the impact of profitability on CSR engagement, it is essential to distinguish between different contexts, such as company types, corporate life cycle stage, and level of internal control. In comparison, the generalised findings are simplified and not valid.

Volume 1
Prokop, L., Medvec, Z., Zmeškal, Z. (2009). *Problematika oceňování nedodané energie v průmyslu,* SAEI, vol. 1. Ostrava: VSB – TU Ostrava.
Volume 2
Hrubý, P. a kol. (2010). *Víceúrovňové modelování podnikových procesů (systém REA),* SAEI, vol. 2. Ostrava: VSB – TU Ostrava.
Volume 3
Kutscherauer, A. a kol. (2010). *Regionální disparity. Disparity v regionálním rozvoji země, jejich pojetí, identifikace a hodnocení*, SAEI, vol. 3. Ostrava: VSB – TU Ostrava.
Volume 4
Hančlová, J. a kol. (2010). *Makroekonometrické modelování české ekonomiky a vybraných ekonomik EU*, SAEI, vol. 4. Ostrava: VSB – TU Ostrava.
Volume 5
Martiník, I. (2015). *Modelování objektově orientovaných programových systémů Petriho sítěmi,* SAEI, vol. 5. Ostrava: VSB – TU Ostrava.
Volume 6
Tichý, T. (2010). *Simulace Monte Carlo ve financích: Aplikace při ocenění jednoduchých opcí*, SAEI, vol. 6. Ostrava: VSB – TU Ostrava.
Volume 7
Doleželová, H., Halásek, D. (2011). *Služby v obecném hospodářském zájmu v EU. Komparace České republiky a Německa*, SAEI, vol. 7. Ostrava: VSB – TU Ostrava.
Volume 8
Machová, Z., Kaštan, M., Janíčková, L., Kotlán, I. (2011). *Tax Burden in OECD Countries: WTI Application*, SAEI, vol. 8. Ostrava: VSB – TU Ostrava.
Volume 9
Tichý, T. (2011). *Lévy Processes in Finance: Selected Applications with Theoretical Background*, SAEI, vol. 9. Ostrava: VSB – TU Ostrava.
Volume 10
Macurová, P. a kol. (2011). *Řízení rizik v logistice*, SAEI, vol. 10. Ostrava: VSB – TU Ostrava.
Volume 11
Dvoroková, K. a kol. (2012). *Ekonometrické modelování konvergence ekonomické a cenové úrovně. Analýza průřezových a panelových dat*, SAEI, vol. 11. Ostrava: VSB – TU Ostrava.
Volume 12
Melecký, M., Melecký, A. (2012). *Aplikované modelování pro potřeby hospodářské politiky*, SAEI, vol. 12. Ostrava: VSB – TU Ostrava.
Volume 13
Halásková, M. (2012). *Veřejná správa a veřejné služby v zemích Evropské unie*, SAEI, vol. 13. Ostrava: VSB – TU Ostrava.

Volume 14
Šebestíková, V. a kol. (2012). *Daňová a sociální optimalizace ve vztahu k nezaměstnanosti v České republice*, SAEI, vol. 14. Ostrava: VSB – TU Ostrava.
Volume 15
Pytlíková, M. a kol. (2012). *Gender Wage Gap and Discrimination in the* Czech R*epublic*, SAEI, vol. 15. Ostrava: VSB – TU Ostrava.
Volume 16
Hučka, M. a kol. (2012). *Správa společností v zemích střední a východní Evropy*, SAEI, vol. 16. Ostrava: VSB – TU Ostrava.
Volume 17
Vrabková, I. (2012). *Perspektivy řízení kvality ve veřejné správě*, SAEI, vol. 17. Ostrava: VSB – TU Ostrava.
Volume 18
Marček, D. (2013). *Pravděpodobnostné modelovanie a soft computing v ekonomike*, SAEI, vol. 18. Ostrava: VSB – TU Ostrava.
Volume 19
Čulík, M. (2013). *Aplikace reálných opcí v investičním rozhodování firmy*, SAEI, vol. 19. Ostrava: VSB – TU Ostrava.
Volume 20
Šnapka, P. a kol. (2013). *Rozhodování a rozhodovací procesy v organizaci (vybrané problémy)*, SAEI, vol. 20. Ostrava: VSB – TU Ostrava.
Volume 21
Šimíčková, M., Drastichová, M. (2013). *Ekonomie udržitelnosti – alternativní přístupy a perspektivy*, SAEI, vol. 21. Ostrava: VSB – TU Ostrava.
Volume 22
Kutscherauer, A., Šotkovský, I., Adamovský, J., Ivan, I. (2013). *Socioekonomická geografie a regionální rozvoj. Regionální analýzy v přístupech socioekonomické geografie k regionálnímu rozvoji,* SAEI, vol. 22. Ostrava: VSB – TU Ostrava.
Volume 23
Kutscherauer, A., Václavková, R., Malinovský, J. a kol. (2013). *Komplementární přístupy k podpoře regionálního a municipálního rozvoje,* SAEI, vol. 23. Ostrava: VSB – TU Ostrava.
Volume 24
Komárková, Z., Frait, J., Komárek, L. (2013). *Macroprudential Policy in a Small Economy,* SAEI, vol. 24. Ostrava: VSB – TU Ostrava.
Volume 25
Komárek, L. a kol. (2013). *Money, Pricing and Bubbles,* SAEI, vol. 25. Ostrava: VSB – TU Ostrava.
Volume 26
Tichý, T. (2013). *Backtesting of VaR Based Models: Methodological Review and Selected Applications,* SAEI, vol. 26. Ostrava: VSB – TU Ostrava.

Volume 27

Fojtíková, L. a kol. (2014). *Postavení Evropské unie v podmínkách globalizované světové ekonomiky*, SAEI, vol. 27. Ostrava: VSB – TU Ostrava.

Volume 28

Dluhošová, D. et al. (2014). *Financial Management and Decision-making of a Company. Analysis, Investing, Valuation, Sensitivity, Risk, Flexibility*, SAEI, vol. 28. Ostrava: VSB – TU Ostrava.

Volume 29

Zmeškal, Z. a kol. (2014). *Aplikace vícekriteriálních dekompozičních metod rozhodování v oblasti podnikové ekonomiky a managementu*, SAEI, vol. 29. Ostrava: VSB – TU Ostrava.

Volume 30

Toloo, M. (2014). *Introduction to Data Envelopment Analysis with Basic Models and Applications*, SAEI, vol. 30. Ostrava: VSB – TU Ostrava.

Volume 31

Janasová, E., Slavata, D., Ardielli, J. (2014). *Specifikace míry kapitalizace vybraného segmentu realitního trhu. Analyticko-statistická studie trhu s byty v Ostravě*, SAEI, vol. 31. Ostrava: VSB – TU Ostrava.

Volume 32

Tichý, T. (2015). *Simulation Monte Carlo In Finance. Pricing of (Exotic) Options*, SAEI, vol. 32. Ostrava: VSB – TU Ostrava.

Volume 33

Kresta, A. (2015). *Financial Engineering in Matlab: Selected Approaches and Algorithms*, SAEI, vol. 33. Ostrava: VSB – TU Ostrava.

Volume 34

Macháček, M. (2015). *Soumrak ekonomie? K problému formalizace a krize smyslu společenské vědy*, SAEI, vol. 34. Ostrava: VSB – TU Ostrava.

Volume 35

Macek, R. et al. (2015). *Effective Corporate Taxation in the European Union and the Czech Republic*, SAEI, vol. 35. Ostrava: VSB – TU Ostrava.

Volume 36

Vrabková, I., Vaňková, I. (2015). *Evaluation Models of Efficiency and Quality of Bed Care in Hospitals*, SAEI, vol. 36. Ostrava: VSB – TU Ostrava.

Volume 37

Bazsová, B., Křížová, A., Řeháček, P. (2015). *Teorie organizace. Přístupy, metody, nástroje, softwarová podpora*, SAEI, vol. 37. Ostrava: VSB – TU Ostrava.

Volume 38

Šotkovský, I. (2015*). Socioekonomické struktury v rozvoji regionu: Postavení obyvatelstva Moravskoslezska v prostorové struktuře regionů soudržnosti ČR*, SAEI, vol. 38. Ostrava: VSB – TU Ostrava.

Volume 39

Fojtíková, L., Vahalík, B. (2015). *Zahraniční obchod České republiky pod vlivem globalizačních jevů a procesů*, SAEI, vol. 39. Ostrava: VSB – TU Ostrava.

Volume 40

Melecký, A., Melecký, M. (2015). *Řízení vládního dluhu: strategie, riziko, alokace*, SAEI, vol. 40. Ostrava: VSB – TU Ostrava.

Volume 41

Hančlová, J. et al. (2015). *Optimization Problems in Economics and Finance*, SAEI, vol. 41. Ostrava: VSB – TU Ostrava.

Volume 42

Peterková, J., Ludvík, L. (2015). *Řízení inovací v průmyslovém podniku*, SAEI, vol. 42. Ostrava: VSB – TU Ostrava.

Volume 43

Kresta, A. (2016). *Finanční modelování s aplikacemi v prostředí MATLAB*, SAEI, vol. 43. Ostrava: VSB – TU Ostrava.

Volume 44

Melecký, L., Staníčková, M. (2015). *Soudržnost a konkurenceschopnost vybraných zemí a regionů Evropské unie*, SAEI, vol. 44. Ostrava: VSB – TU Ostrava.

Volume 45

Marček, D. (2016). *Supervizované a nesupervizované učení z dat: Statistický a soft přístup*, SAEI, vol. 45. Ostrava: VSB – TU Ostrava.

Volume 46

Friedrich, V. (2017). *Postojové a hodnoticí škály v marketing a managementu. Vybrané statistické metody a aplikace*, SAEI, vol. 46. Ostrava: VSB – TU Ostrava.

Volume 47

Vrabková, I., Vaňková, I., Bečica, J., Kryšková, Š. (2017). *Příspěvkové organizace. Postavení, úkoly a technická efektivnost*, SAEI, vol. 47. Ostrava: VSB – TU Ostrava.

Volume 48

Czudek, D., Dvořáková, P., Kozieł, M., Krügerová, M., Kubica, J., Závada, V. (2014). *Vybrané právní a ekonomické aspekty islámského finančnictví*, SAEI, vol. 48. Ostrava: VSB – TU Ostrava.

Volume 49

Peterková, J. (2018). *Využití konceptů inovací v průmyslovém podniku*, SAEI, vol. 49. Ostrava: VSB – TU Ostrava.

Volume 50

Velčovská, Š. (2018). *Zhodnocení mezigeneračních postojů českých spotřebitelů ke značkám kvality potravin*, SAEI, vol. 50. Ostrava: VSB – TU Ostrava.

Volume 51

Staníčková, M. (2018). *EU Competitiveness and Resilience: Evidenc-based on Regional Leve*l, SAEI, vol. 51. Ostrava: VSB – TU Ostrava.

Volume 52
Drastichová, M. (2018). *The Theory and Measurement of Sustainable Development*, SAEI, vol. 52. Ostrava: VSB – TU Ostrava.
Volume 53
Zapletal, F. (2018). *Optimization Models for Emissions Management*, SAEI, vol. 53. Ostrava: VSB –TU Ostrava.
Volume 54
Jenčová, S. (2018). *Aplikácia pokročilých metód vo finančno-ekonomickej analýze elektrotechnického odvetvia Slovenskej republiky,* SAEI, vol. 54. Ostrava: VSB – TU Ostrava.
Volume 55
Balcar, J. (2018). *Soft Skills on the Czech Labour Market*, SAEI, vol. 55. Ostrava: VSB – TU Ostrava.
Volume 56
Vitali, S. (2018). *Pension Fund Management in a Stochastic Optimization Framework*, SAEI, vol. 56. Ostrava: VSB – TU Ostrava.
Volume 57
Hozman, J. et al. (2018). *Robust Numerical Schemes for Pricing of Selected Options*, SAEI vol. 57. Ostrava: VSB – TU Ostrava.
Volume 58
Martiník, I. (2018). *Petriho sítě s časovými známkami*, SAEI vol. 58. Ostrava: VSB – TU Ostrava.
Volume 59
Kouaissah N., Ortobelli S., Tichý T. (2018). *Portfolio Theory and Conditional Expectations: Selected Models and Applications*, SAEI, Vol. 59. Ostrava: VŠB – TU Ostrava.
Volume 60
Hodula, M. (2019). *Stínové bankovnictví v Evropě: pojetí, regulace a faktory růstu*, SAEI, vol. 60. Ostrava: VŠB – TU Ostrava.
Volume 61
Cassader, M., Tichý, T., Vitali, S. (2019). *Benchmark Tracking Portfolio Problems with Stochastic Ordering Constraints*, SAEI, vol. 61. Ostrava: VSB – TU Ostrava.
Volume 62
Kovářová, E. a kol. (2019). *Společensko-ekonomické předpoklady sociálního vyloučení dětí a mládeže v České republice,* SAEI, vol. 62. Ostrava: VSB – TU Ostrava.
Volume 63
Komárek, L. et al. (2019). *Stabilization Policies: Selected Challenges in the International Context,* SAEI, vol. 63. Ostrava: VSB – TU Ostrava.
Volume 64
Krajňák, M. (2020). *Osobní důchodová daň v České republice se zaměřením na příjmy ze závislé činnosti,* SAEI, vol. 64. Ostrava: VŠB – TU Ostrava.

Volume 65
Seďa, P. (2020). *Teoretické aspekty hypotézy efektivního trhu a empirie na akciových trzích v zemích střední Evropy,* SAEI, vol. 65. Ostrava: VŠB – TU Ostrava.
Volume 66
Janků, J. (2020). *Ekonomické důsledky neinformovanosti voliče: Politicko-rozpočtový cyklus,* SAEI, vol. 66. Ostrava: VŠB-TUO.
Volume 67
Tománek, P. (2022). *Rozpočtové určení daní v ČR,* SAEI, vol. 67. Ostrava: VŠB-TUO.

THE IMPACT OF SELECTED MODERATORS ON THE RELATIONSHIP BETWEEN CSR AND PROFITABILITY: EVIDENCE FROM CHINA

he publication explores how the impact of profitability on corporate social responsibility (CSR) changes under the influence of moderators in the Chinese economic context.

With the increasing importance of CSR in corporate development, the relationship between profitability and CSR has become one of the research hotspots, but there is still no conclusion. Some experts suggested further research under some moderators or mediators. Therefore, the presented monograph selects company type, corporate life cycle stage and internal control level as moderator to study their moderating effects on the impact of corporate profitability on CSR from a theoretical and empirical perspective. A multi-criteria assessment of CSR is proposed and applied by the analytic hierarchy process. The moderating effects are studied by applying regression models with moderating variables. Finally, reasonable explanations are presented for the research results. The findings provide an updated understanding of the relationship between profitability and CSR.

The monograph is primarily intended for researchers and economists dealing with CSR worldwide, including emerging markets. It can also serve as a methodological source and economic analysis of the CSR issue in China.