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Users' perceptions of the drivers for corporate sustainability disclosures made by Chinese listed companies

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Abstract

China's economy and development over decades has achieved not only its national prosperity, but also a significant degree of concern about corporate sustainability. As a vehicle of communication to society, corporate sustainability disclosures (CSD) are considered the most effective and efficient, facilitating the empowerment and acknowledgement of stakeholders in the quest for, and understanding of, sustainability. Much research has investigated the influential factors of CSD based on theories developed from Western standards and economy; however, very limited research considers the driving forces created by cultural and political influences based on the understanding of the perceptions of corporate sustainability among stakeholders in China. This study aims to explore the users' perceptions and perceived importance of corporate sustainability disclosure (CSD), and to explain the driving forces of the quality of disclosure. In order to fully address the purpose of the study, an instrument for measuring the quality of sustainability disclosure was designed based on Global Reporting Index 4th generation. A survey questionnaire was used to collect information on the perception of CSD from the selected report user group; descriptive statistics, univariate analysis, as well as multivariate Ordinary Least Square regressions models were adopted in this study. Research modelling tested and differentiated the influence of Legitimacy Theory, Stakeholder Theory and Signalling Theory both separately and collectively. A pilot study was undertaken prior to the main study, to address the validity and feasibility of the application for the perception analysis. The responses from 128 registered financial analysts, and 238 stand-alone corporate sustainability reports issued in 2013, were collected for the main study.

The main study findings indicated that the hypotheses and theoretical framework proposed can be partially accepted in the Chinese context, and they suggest the following: 1. Environmental disclosure was perceived the most important, followed by social disclosure. Economic disclosure was perceived the least important. 2. Category wise, 'Energy', 'Water', 'Emissions' and 'Effluents and Waste' were perceived most important, and 'Customer health and safety', 'Customer privacy' and 'Compliance' were second-most important. 3. The quality of CSD in

Chinese listed companies in 2013 was generally low, just more than the information simply being disclosed. 4. The quality and the quantity of disclosure did not vary much across corporate sustainability disclosure, and they need to be examined together while investigating corporate sustainability as a whole. 5. Well disclosed corporate sustainability information from the sample companies was mainly driven by government policies, as political influence played a significant role in affecting the quality of CSD. 6. Research hypotheses are shown to be at different significance levels among different types of sustainability disclosures. 'Company location' and 'company size' are significant for almost all types of CSD. 'Foreign ownership' and 'industry' are highly significant in the environmental models and the combined CSD models. The overall correlations between predictors and criterion variables are from considerably low to moderate, which suggests that the hypotheses are partially accepted.

One major implication of the study is the instrument developed from the analysis of the Chinese report users' perceptions towards CSD. It helps CSD preparers and regulators to understand the difference in perceptions between the report users and the governing bodies, thereby increasing the effectiveness of the disclosures. Furthermore, Legitimacy Theory was shown to be the most significant in the Chinese context, followed by Stakeholder Theory and lastly, Signalling Theory. The study indicates that the quality of CSD from the state-owned companies was not very different from the non-state-owned companies, and they would be perceived highly sustainable even if they did not disclose. This indicates that political influence had a great impact on the perception of CSD. The content analyses and the regression analyses both provide valuable insights into the quality and practice of CSD. Consequently, this study motivates further research and contributes to the existing literature in this field of study in China.

Declaration

I hereby certify that this thesis does not, to the best of my knowledge and belief:

(i) incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education;

(ii) contain any material previously published or written by another person except where due reference is made in the text; or

(iii) contain any defamatory material.

Signature:

Date: 6/12/2016

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List of abbreviations

AFC: Asian financial crisis

CSD: corporate sustainability disclosure

CSDPI: corporate sustainability disclosure perceptions index

CSR: corporate sustainability reporting

CSRC: China Security and Regulation Commission

DJSI: Dow Jones Sustainability Indexes

G250: Global Fortune 250

G3: Global Reporting Initiative 3rd generation

G4: Global Reporting Imitative 4th generation

GFC: Global financial crisis

GRI: Global Reporting Initiatives

OECD: the Organisation for Economic Cooperation and Development

SETC: State Economic and Trade Commission

SSE: Shanghai Stock Exchange

SZSE: Shenzhen Stock Exchange

WCED: World Commission on Environment and Development

EN: environmental indicators in GRI

EC: economic indicators in GRI

LA: labour practice and decent work aspect of social indicators in GRI

HR: human rights aspect of social indicators in GRI

SO: society performance aspect of social indicators in GRI

PR: product responsibility aspect of social indicators in GRI

Publications

Conferences:

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Chapter 1

Introduction

1.1 Research background

The notion of corporate sustainability in China has attracted much attention over the past 20 years with the advent of globalisation and international trade. While governments in China have traditionally assumed sole responsibility for improvement on the sustainability of the living conditions of the population, society is increasingly calling for organisations to demonstrate corporate sustainability (Gao, 2009). Corporate sustainability, which is incorporated with triple-bottom line reporting, rather than solely related to economic responsibility, includes the interrelationship between environmental and social perspectives (GRI, 2013).

According to Freeman (1984), environmental and social accounting is an approach to reporting a company's activities that stresses the need for the identification of socially relevant behaviour, the determination of those to whom the company is accountable for its environmental and social performances, and the development of appropriate measures and reporting techniques. However, being sustainable or ecologically responsible is defined differently across cultures (Hofstede, 1980). In China, as part of triple-bottom line reporting, corporate environmental and social reporting has developed substantially since the 1990s, when the two main stock exchanges, Shenzhen Stock Exchange (SZSE) and Shanghai Stock Exchange (SSE) were established. Recent studies have indicated that investors and shareholders in China have become increasingly concerned about social and environmental policies. As a tool for managing public social and environmental image, corporate sustainability disclosures are largely perceived to be a response to external public pressures on corporate management (Gao, 2009). Subsequently, corporate sustainability through disclosure is a vehicle for corporations to report and communicates their economic, social and environmental performances to companies' stakeholders, thereby reducing information asymmetry; further, it is assumed that such disclosure will lower companies' capital costs (Li, Luo, Wang & Wu, 2013).

China has experienced rapid economic growth since 1978, just after the nation's economic reform and open-door policy were introduced (Shen, Lowe & Shu, 2009). In China, modernisation and globalisation of corporate management and the stock markets has provided help to the economy to expand 10% per annum for the four consecutive years to 2007 (Bezlova, 2007). As the world's largest developing country, with dramatic economic development, China

managed to survive the 1997 Asian financial crisis (AFC) and quickly recover from the 2008 global financial crisis (GFC) (Guo, Marinova, & Hong, 2013). However, in tandem with the significant boost in its economy in the past 15 years, China has experienced severe environmental deterioration and raised significant social issues, which have been criticised both nationally and internationally. While the boost in economy has attracted investors both domestic and international, the growing public concern about environmental protection, work safety and the associated social issues has become one of the most serious problems facing Chinese companies. For example, serious milk powder corporate scandals in mainland China have raised extreme concern for companies' social responsibility: Melamine was added into the formula of milk powder to boost the protein content by Sanlu Group in 2008. Infants who consumed this product were highly likely to develop kidney stones, or even an illness that was potentially fatal. Sanlu Group was one of the largest milk powder manufacturers and sellers in China over 15 continuous years, and it was once the biggest taxpayer. The revelation of the scandal caused the failure and bankruptcy of Sanlu, and, more importantly, it entirely destroyed people's confidence in the Chinese milk powder supply industry. The 300,000 victims triggered considerable social pressure, which consequently affected thousands of workers who lost their jobs and became redistributed in the labour market (Noronha, Tou, Cynthia, & Guan, 2013). The society, as a result, had to bear this significant social cost.

Another example that official reports and academic research have identified is that more than 90% of rivers close to cities are heavily polluted, and the air pollution in many cities is so serious that it may cause health consequences (Nie, 2009). The International Energy Agency (IEA), which gives advice to developing countries to ensure reliable, affordable and clean energy, suggests that in 2013 China's emission of greenhouse gases had exceeded those of the US. In the next 25 years, if this trend is not stopped, the amount of carbon dioxide from China alone will be twice as much or more than that which comes from all of the OECD countries (Bezlova, 2007). China had become the number one country in terms of total annual carbon emissions by 2013, and a crucial player in negotiations under the United Nations Framework Convention on Climate Change (Jost, 2013).

Therefore, Chinese enterprises are increasingly pressured by numerous stakeholders and by the external public to engage in social and environmental sustainability. Despite the increasing attention in recent years to corporate sustainability performance, enterprises' awareness is still at the infancy level, and there is very limited research evidence of completeness and comparability of sustainability reports in China. Diao (2013) reveals that there is significant variation among large companies in sustainability information disclosure. In addition, the ever-increasing Chinese economy, which has surpassed Japan to become the second-largest economy in the world, has a

completely different culture and political system than the West (Li-Hua & Lu, 2013). Chinese stakeholders' perceptions of corporate sustainability have been progressively more focused and driven by strong public sentiment due to the definition of corporate sustainability. Studies have investigated Chinese enterprises using initiatives based on Western theoretical foundations, which indicate that environmental reporting in the listed companies is growing worldwide, with most companies reporting 'material, energy, emission, effluents and waste' types of information (Yuan, 2007, Peng, 2009, Niu, 2009 & Zhang, 2013). This result may provide some indication of which aspects are more likely to be focused on when preparing an environmental disclosure; however, it is of interest to the regulators, practitioners, and the users of sustainability reports to understand whether the report users find this information useful and it meets their perception of a sustainability report.

Given this trend and the differences between cultures in voluntary sustainability reporting, it is significant for the researcher to examine how Chinese stakeholders perceive sustainability, and the level quality and type of corporate sustainability reporting in China based on the Global reporting initiative (GRI) framework in the listed companies. Subsequently, in this study the aims are to identify the drivers of the quality of corporate sustainability disclosure and corporate sustainability based on the report users' perceptions in China. The study also aims to investigate what drives the differences in perceptions in China, and the effectiveness of different theoretical frameworks based on the Western economy, if there are any. Based on testing and evaluation of the initiatives distilled from literature and sustainability disclosure practices that match the real needs of the GRI, the aims are to develop an appropriate measuring instrument that is particularly applicable and suitable for China.

1.2 Development of corporate sustainability in China

The China Security and Regulation Commission (CSRC) and the State Economic and Trade Commission (SETC) jointly published the 'Standards of Governance for the Listed Companies' in 2002. It was the first government regulation for companies to have a clear understanding of, and to take a strong focus on, social responsibility. In Chapter Six of the standards, it lists provisions that specify that corporations should disclose certain formations to respective banks, debtors, employees, customers, supplies and social communities. While companies try to maximise shareholder value, environmental protection and public social warfare should be considered.

Shenzhen Stock Exchange (SZSE) and Shanghai Stock Exchange (SSE) have made a great effort to promote corporate governance initiatives in past years. Since their establishment in 1990 and 1991, SZSE and SSE have gained recognition in the international financial market, where

SZSE rivals the Hong Kong Stock Exchange as Asia's second-largest stock market, and SSE is already the world's sixth-largest stock market. Ho (2013) indicates that the rapid growth of these markets is significantly influenced by two essential pieces of legislation: the Company Law and the Securities Law, enacted in 1993 and 1998. The Company Law provides the legal requirement for the transformation of state-owned enterprises into private or listed enterprises. The legislation requires companies in China to form a statutory corporate governance body and five statutory corporate positions, which are the shareholders, the board of directors, the board of supervisors, the chair of board of directors and the chief executive officer. The Securities Law provides authority to implement a centralised and unified regulation of the nationwide securities market in order to ensure companies are lawful.

In order to conform to the two legislations, the stock exchanges in China have implemented guidelines for their listed corporations to take responsibility for their stakeholders. The SZSE issued the CSR Guidelines for Listed Companies in 2006, and the SSE issued similar guidelines, 'Notice on Strengthening Listed Companies of Social Responsibility', in 2008. These guidelines require the listed companies to fulfil social responsibility, address interests of stakeholders, and commit themselves to promoting sustainable economic and social development.

The idea of corporate sustainability is also supported by the Chinese Central Government. The Chinese Government emphasised the importance of corporate sustainability in its tenth Five-Year Plan (2001–2005), asserting that the establishment of an effective corporate governance system is also one of the important tasks in establishing the modern enterprises system. Due to this emphasis, many researchers started to believe that the listed corporations were being treated as part of the administrative hierarchy of the government, and the implementation of corporate sustainability had become a mandatory requirement for the listed companies (Xu & Wang, 1999, Jia & Tomasic, 2010). However, the guidelines from the stock exchanges are broad advocacy initiatives that do not indicate to what extent a listed company should implement its sustainability; nor is there any indication of what to disclose. Therefore, sustainability reporting remains voluntary in China.

1.3 CSD guidelines and Global reporting initiative

The Global Reporting Initiative (GRI) was formed in 1997 by the Coalition for Environmentally Responsible Economies in collaboration with the Tellus Institute. The initiative attempts to provide a sound conceptual basis for a sustainability disclosing framework, which is designed to improve the quality, accuracy and usefulness of corporate environmental and social reporting (Frost, 2007). Nowadays the emerging trend for companies is to disclose social, economic and environmental information concurrently in a format similar to the Triple Bottom

Line. Therefore, it is significant for research to work on information transparency and discussion on companies' viability, strategy and operations. Not being socially responsible creates companies' vulnerability to lawsuits, boycotts, and loss of reputation and brand value, which in turn, results in negative impacts on market acceptance, positioning and demand (Schaltegger & Burritt, 2005). There have been various guidelines developed by several organisations, which propose sustainability reporting models and frameworks. These include Dow Jones Sustainability Indexes (DJSI); ISO 14000 Series by the ISO; SA 8000 by Social Accountability International; AA1000 Accountability Ability Principles Standard 2008 by the Account Ability (AA); FTSE4 Good Index Series by the Financial Times and London Stock Exchange Group (FTSE); and Global Reporting Initiative Sustainability Reporting Guidelines, third generation (G3) by the GRI.

Since the conception of sustainability, the GRI rapidly became the leader among voluntary worldwide sustainability reporting systems based on three institutional innovations: initiating a multi-stakeholder process for developing reporting guidelines, institutionalising the process for producing successive generations of the guidelines, and creating an organisation to serve as the steward of the guidelines and of the process (Brown, Jong & Lessidrenska, 2007). The formation of and amendments to the GRI are largely dependent on its annual meeting in Amsterdam, where "over a thousand representatives of global business, investment capital, civil society organisational, professionals, and idea entrepreneurs, politicians, corporate CEOs and high-level members of multilateral institutions" attend (Brown et al., p.2, 2009). However, although the editing process involves many multi-national influences and consideration of the needs of different countries, the concepts from many GRI perspectives are initially based on the needs and circumstances of Western countries. The framing of the GRI has been considered by many studies as "an efficiency gain for all actors" because the foundation of the initiatives is Stakeholder Theory, in which it allows balancing sets of competing objectives. According to Brown et al. (2007), those objectives include individual and collective interests, broad consultation and efficient pursuit of technical objectives, and a vision of social change and attainable instrumental goals, as well as building a new institution and not challenging the existing institutions and power relations. Consequently, it is clear that the GRI is developed based on a number of corporate behaviour theories, including Legitimacy Theory, Institutional Theory and Stakeholder Theory under Political Economy Theory.

Although compliance with the guidelines is entirely voluntary, in its 2008 survey of the Global Fortune 250 (G250) and the 100 largest companies measured by revenue in 22 countries (N100), KPMG found that there are 75% of G250 and 70% of N100 companies using these initiatives. In China, the GRI gains high praise as the most comprehensive guideline for social

reporting from both industries and academics. SZSE published the social disclosure instructions in 2006 based on the frame of the GRI, yet many Chinese scholars employed it to measure the extent and the degree of the CSD (Chu, 2007; Yuan, 2007; Nie, 2009; Peng, 2009; Xue. 2011).

1.4 Research motivation

From a practical point of view, China's development over recent decades has heavily depended on burning coal to fuel its economic growth. While Chinese corporations have gradually achieved prosperity, a significant degree of concern about their corporate sustainability has been raised on an international basis, criticising the unprecedented environmental pollution, health risks and social issues in China (Zhang, 2007). As a vehicle of communication to society, CSD is considered the most effective and efficient way to facilitate the empowerment and acknowledgement of stakeholders in their quest for, and understanding of, sustainability. The concept of corporate sustainability was only introduced in the 1990s by multinational companies, but no attention was given by anyone at that time. In 2001, China had entry to the World Trade Organisation, and a significant number of Chinese companies became members of the global supply chain (Zhang, 2013). Due to compatibility in the global market and national demand, the Chinese President Hu Jin Tao proposed the concept of a "Harmonic Society" in 2005, which first set corporate sustainable problems, together with companies' social responsibility, on top of the governmental agenda (Zhou, Quan and Jiang, 2012). However, the legal concept was never included in the Company Law in China, and China will have to wrestle with these environmental and social issues and solve them by emphasising the importance of corporate sustainability. Accountability requires a greater extent of understanding of the quality of CSD in the context of China. In addition, although a great number of sustainability disclosing guidelines have been recommended by Chinese literature, they are not strictly applicable on a global basis, especially in China, which is the root of the "Confucius Connect" (Ling, 2009). The degree of influences of corporate policies about being sustainably orientated can be significantly different between Western contexts and Asian countries. Hence, it is of importance and interest for researchers to understand the Chinese perceptions and understanding of corporate sustainability, and it provides evidence to build the most up-to-date and accurate instrument suitable for empirical studies of CSD in China.

In addition, there has been very limited research investigating to what extent the culture in China influences the quality of companies' disclosing practices and understanding of corporate sustainability between Western countries, especially applying Western-developed theories to countries that have a considerable amount of cultural influences. China has a unique feature within its economic background which is driven significantly by the state-government. Although many studies have tried to identify the differences in CSD between countries, the specific effects

of culture on corporate sustainability are still unknown (Diao, 2013). Furthermore, the GRI has been adopted widely both internationally and nationally in China. While this set of initiatives remains one of the most authoritative existing guidelines, the standard and frame are built and made based on the fundamentals and the perceptions from Western countries. Subsequently, the categories in GRI can be weighted differently by the Chinese users and preparers due to culture differences. Hence, this study seeks to fill a gap in the literature by providing up-to-date evidence on the quality of CSD and the understanding and perceptions of the Chinese CSD users.

1.5 Research questions

The main research questions of the study are as follows:

1. What is the users' (financial analysts) perceived importance of sustainability disclosure in China?

2. To what extent do the users perceive sustainability indicators in GRI differently from what was intended?

3. What is the quality of CSD in Chinese listed companies?

4. What drives the quality of corporate sustainability disclosure in Chinese listed companies?

5. Do the theories developed from the Western economy explain the quality of CSD in China? If not, which theory explains CSD in China the best, and to what degree do the selected theories explain the quality of CSD differently?

The study has three objectives. The first research objective is to determine the Chinese report users' perceptions towards CSD. In addition, this study seeks to identify the quality and the drivers of CSD. The final objective is to compare the effectiveness of the three theories developed from the Western economy when explaining the driving forces.

1.6 Contribution of the study

Chinese culture is heavily influenced by Confucianism and Taoism, and this idea of societal harmony has been widely considered in all companies throughout China (Lin, 2008). Under this circumstance, information asymmetry may exist between the Chinese companies and the report users. The research gap is to understand the perceptions of CSD users, as well as how they interpret sustainability and sustainability information disclosed. Therefore, the study aims to understand the users' perceptions of corporate sustainability from within companies. Subsequently, it provides a more sophisticated and deeper insight into the focus of Chinese companies when disclosing sustainability. The results help to identify the Chinese report users'

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(financial analysts) perceptions. The existing research in China focuses on the report preparers' perceptions rather than the users', thus, there is only a little attention given in the literature to the latter group. Also, this study provides empirical evidence to both the practitioners (the industries) and the regulators (the government) and discusses whether achieving improved CSD should rely on the GRI, which has not been extensively investigated according to the literature. Since industries are analysed later in the study, the result of it contributes to the government in modifying and developing a sustainability guideline based on Chinese industrial type. In addition, this study provides evidence to reveal the quality and the drivers of CSD under the current report users' perceptions in listed companies in China. This fills the research gap in the Chinese literature, where existing studies have not incorporated both the perceptions and the quality of disclosures.

1.7 Organisation of the study

This study is organised in the following manner: Chapter one introduces the research background and the institution background, research questions, research objectives and significance, as well as a brief description of GRI. Chapter two reviews existing critical literature in CSD, including a critical analysis of the application of GRI and a review of the theories adopted in CSD study. It also includes revising the key literature of the internal and external driving forces of the quality of CSD, and how it is different and limited in the Chinese context. Chapter three discusses the theoretical framework adopted in this study, in which the framework for the pilot study and the main body of the study are presented separately. Chapter four shows the research methodology. Chapter five presents the analysis of the users' perceptions of CSD and the development of the research instrument. A pilot study is conducted and shown in this chapter. Key statistical analyses include descriptive statistics and one ample t-test. Chapter six examines the quality of CSD, where economic, environmental and social dimensions are discussed separately first, then combined to draw a result and a conclusion. Chapter seven is the major analysis chapter on the driving forces of CSD. Research models developed are examined. Key statistical analyses include descriptive statistics, univariate analysis (Pearson correlation test), and multivariate analysis (Ordinary least square models). For robustness checks, binary logistic regression models and stepwise backwards regression models are used. Chapter 8 is the final chapter, which concludes the study and indicates the implications and limitations of the study, as well as providing suggestions for future research. A diagram that shows the research frame of the study is shown on the next page in Figure 1.1.
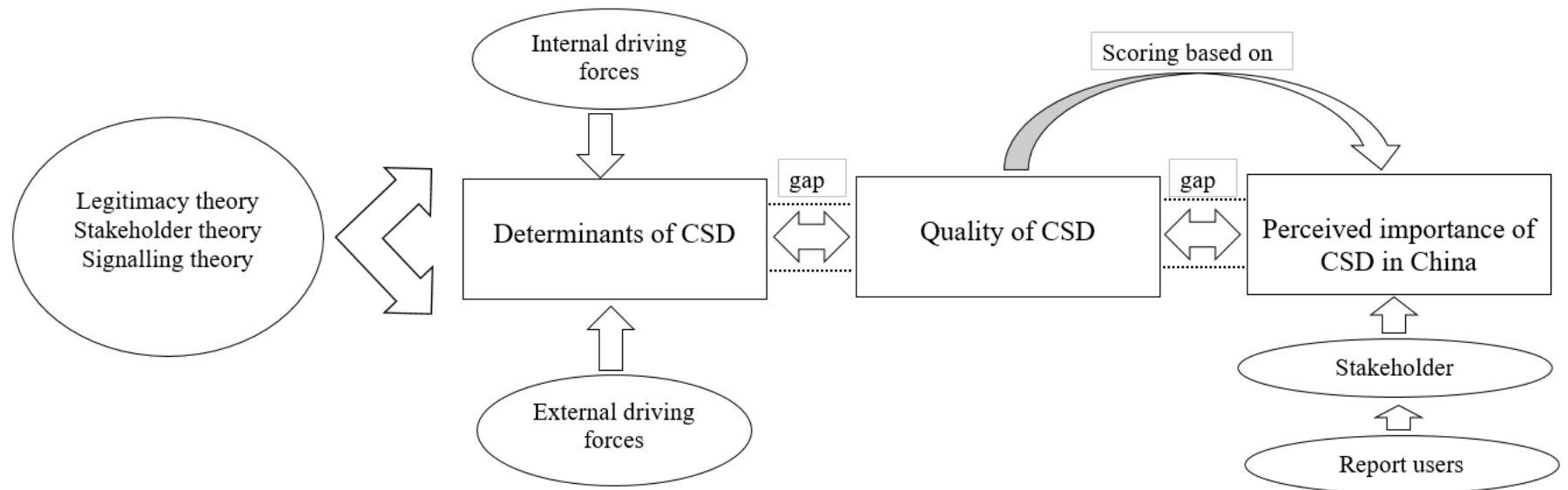
Figure 1.1: Research framework

Chapter 2

Literature review

2.1 Introduction

In this section the researcher reviews prior literature relevant to the major purpose of the study, which is to explore how Chinese report users perceived importance of corporate sustainability disclosure (CSD), as well as to research and examine the quality and the driving forces of CSD. Disclosure of sustainability issues in reports may often be considered by management to legitimise companies' activities (Chauvey, Giordano-Spring, Cho & Patten, 2015). However, due to culture differences between regions, it is difficult to determine whether users from a global perspective differ with respect to their intentions and perceptions of corporate sustainability (Chow & Chen, 2012). Nevertheless, disclosing corporate sustainability information has become an international trend since the 1990s, including for Chinese enterprises. Consequently, the literature review is limited to studies that analyse impact due to cultural change and the driving forces of CSD conducted in China.

2.2 Defining the concept of corporate sustainability

The concept of corporate sustainability was derived from the broader concept of sustainability, which was shaped from political, public and academic influence (Orlitzky, Siegel & Waldman, 2011). However, the inconsistency of a proper definition of corporate sustainability has impeded the progress of understanding the antecedents and consequences of this activity (Orlitzky, et al., 2011). Corporate sustainability, which is also referred to as social responsibility, was exclusively associated with companies' financial perspectives initially, but its essential objective is to maximise shareholders' value (Friedman, 1962), from which companies will benefit in the long run from being sustainable. In 1963, McGuire proposed that corporate sustainability should also include responsibility towards the environment that should go beyond companies' legal and economic obligations (McGuire, 1963). Later, in the 1990s, corporate sustainability was defined as a process to achieve sustainable development in societies (Hopkins, 2004). Hopkins equates corporate sustainability with treating the stakeholders of a company or an organisation ethically or in a responsible manner, where he defines being ethical or responsible as a key manner deemed acceptable according to international norms. The Hopkins study further explains that sustainability includes environmental, social and economic perspectives. While preserving the profitability of the corporation or the integrity of the institution for stakeholders

from the outer and inner, companies should be considered and be provided profitability (Hopkins, 2004). This idea was supported until 2001, when Maignan and Ferrell (2001) suggested that corporate sustainability should be considered as a broad concept relating to the role of business in society. Corporate sustainability incorporates the moral obligations that maximise the positive impact of the firm on its social environment and minimise the negative impact (Maignan & Ferrell, 2001). The concept most frequently referred to nowadays by Chinese researchers is Carroll's (1979) model combined with Stakeholders Theory, where Carroll considered that corporate sustainability should be comprised of economic, legal, ethical and philanthropic obligations towards a company's business environment.

The contemporary perception of sustainability on an international level was initially discussed by the World Commission of Environment and Development (WCED) in 1987. It is defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED, 1987, p.43). Consequently, sustainable development was then closely associated with environmental integrity and social equity, as well as corporate economic prosperity.

2.3 Three stages of corporate sustainability development in China

The development of corporate sustainability in China is often considered in three stages, based on the policies introduced during a specific period of time. Initially, a series of corporate sustainability oriented policies was developed and implemented in China in the 1970s (Bai, Sarkis & Dou, 2015). The first stage is referred to as the end-of-pipe control stage, from 1973 to 1992. The first national conference for the nation's environmental protection was held in 1973, and the second one was held in 1983 to discuss two possible and basic policies for protecting the environment. Six years later, in 1989, the Environmental Protection Law of the People's Republic of China was introduced to provide some ideas to existing firms for being green (Wang & Chen, 2010). Until the end of 1992, China's Agenda 21 took sustainability development into action by officially ending the 'pipes', and it set an agenda to develop technology to reduce the pollution in air, water and soil from industries. Nevertheless, this was the very first stage of CSD development in China. The stakeholders of the Chinese companies in any form did not perceive that sustainability might become an issue (Bai et al., 2015).

The second stage of corporate sustainability development in China is referred to as the whole-process control stage, lasting from 1993 to 2005 (Shi, Chertow & Song, 2010). During this period, regulators attempted to shift focus from end-of-pipe treatment to a whole-process control strategy of environmental protection. In 1997, the Law of Promoting Cleaner Production was issued by the National Environmental Protection Agency of China, in which the focus of ending

pipes shifted to having feasible treatment for environmental damage from industry. Since then, many laws have been introduced to encourage companies to take action on environmental issues and to control any possible wastes; however, during the second stage, there was no indication in law about how and what companies should report on sustainability issues that they had encountered.

The final stage, from 2005 to the present, is defined as the regional control stage, in which regulations and policies were introduced to focus on the balance of economic development and environmental protection (Bai et al., 2015). In 2005, policy strategies on energy savings and pollution reduction were introduced. Ecological modernisation theory was the main foundation for the regulators to adopt when making policies. Many laws had incentives by creating subsides to motivate companies to be sustainable. In 2009, the stage Council set up nation-wide goals to reduce the intensity of the emission of carbon dioxide. A further policy on having a low-carbon economy was later set in March 2010, during the third session of China's NPC. Figure 2.1 shows a timeline for the development of corporate sustainability and the relevant policies.
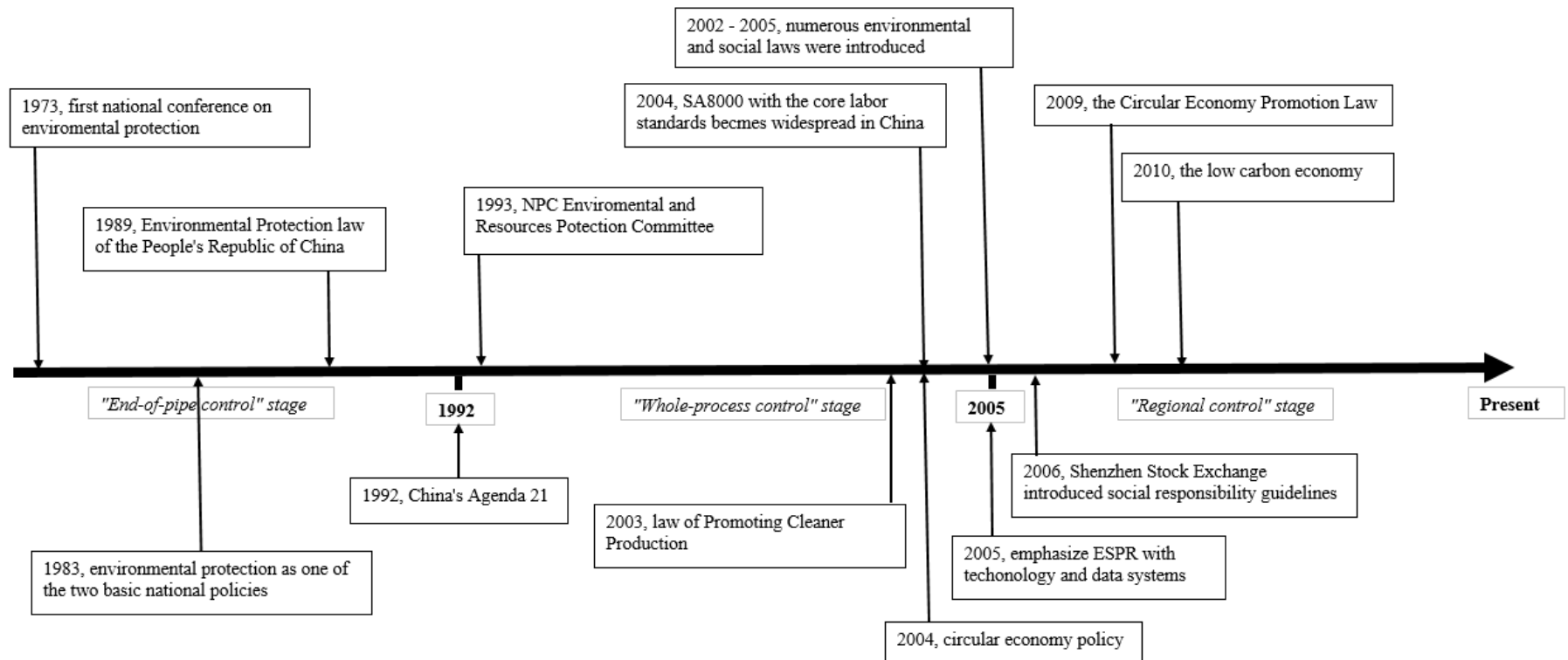
Figure 2.1: Timeline of corporate sustainability oriented policies in China

Note: Adapted from Bai, Sarkis & Dou, 2015, Corporate sustainability development in China: review and analysis, p.8

2.4 Sustainability reporting

Sustainability reporting is also referred to as corporate social responsibility reporting, which was involved solely with social issues at the very beginning stage in the early 1960s (Lin, 2010). Elkington (1994) suggested that there are six stages of corporate sustainability development, which include ignorance, awakening, denial, guilt reduction, displacement behaviour and tokenism, conversion, and finally, integration. In 2003, this development was further extended and re-summarised by Dunphy. Dunphy, Griffiths and Benn (2003) developed more sophisticated concepts for each of the six stages of CSD development, which include rejection, non-responsiveness, compliance, efficiency, strategic proactivity, and the sustaining corporation.

After the emergence of Triple Bottom Line (TBL) reporting, the number of companies that issued corporate social sustainability disclosure increased, with different names to show different areas of focus. Reynolds and Yuthas (2008) explained this early stage of reporting sustainability as companies owing a duty to the society in which they are bonded with a social contract. The idea of sustainability disclosures was initially delivered from Western literature. Jones (1980) proposed that corporate sustainability is the notion in which "companies have an obligation to constituent groups in society other than stakeholders and beyond that prescribed by law or union contract, indicating that a stake may go beyond mere ownership" (Jones 1980, p.60). Deegan (2002) refers to corporate sustainability as an impact beyond the role of maximising profitability by a firm on the environment and society. In Europe, corporate sustainability is regarded as a concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with their stakeholders on a voluntary basis (Chiu & Wang, 2015).

In China, the notion of corporate sustainability reporting was first proposed in 2006 in the amendment of the Company Law of the People's Republic of China, Article 5 of the General Law. Later in 2006, in the Chinese Communist Party Sixth Plenary Session, it was proposed to create a harmonious society with the focus of being socially responsible, particularly for business enterprises (Gao, 2010). As a response to the national plan, the Shanghai Stock Exchange and Shenzhen Stock Exchange issued social reporting guidelines in 2006 and 2008 respectively, to create an appropriate system for corporate sustainability reporting. Although a number of policies were introduced after the two stock exchange markets announced their guidelines, the meaning and definition of corporate sustainability was not specified, neither did the guidelines provide any indication of how and what to report in a CSD. Therefore, the standardisation and the regulations of corporate sustainability in China are in great need of development (Bai et al., 2015).

The concept of corporate sustainability has become much clearer in recent times; however, there is no agreed-upon definition of CSD, and Chinese scholars have various approaches to the idea of corporations being sustainable. Liu (2007) states that maximising shareholders' value and financial profit should not be the only goal of making corporations sustainable, but companies must consider the other stakeholders' perspectives. Lu (2002) claimed that corporate sustainability is the duty that a firm owes to society, to maintain its existence and gain social benefit while maximising shareholders' value. Zhou (2005) explains that corporate sustainability should be a combined concept, including the responsibility towards economic, legitimate and ethical responsibilities that a firm must have. Both Western and Chinese literature indicates that corporate sustainability is, to some degree, directly related to shareholders' and companies' values, as well as being legitimate and ethical in order to fulfil companies' social contracts.

2.5 Global Reporting Initiative

The Global Reporting Initiative (GRI) was established in 1997, initially as a joint project between the US Coalition for Environmentally Responsible Economies and the UN Environmental Programme (Chauvey et al., 2015). According to GRI (2013), the aim of this initiative is essentially to satisfy both the companies and stakeholders through disclosing economic, environmental and social performance. Firms that adopt GRI need to report firstly their strategy in the company profiles, as well as to disclose, their management approach as to how they address corporate sustainability practices, and lastly, indicators regarding company sustainability (economic, environmental and social) performance (Hahn & Luffs, 2014). GRI overall provides companies with specific information on how and what to report in CSD. While GRI provides such comprehensive sets of guidelines on CSR, it ultimately aims to enhance companies' information transparency and overall accountability. This made the GRI Sustainability Reporting Guidelines to be the most commonly used framework internationally (Hahn & Luffs, 2014). The KPMG Survey into Corporate Social Responsibility (KPMG, 2008) examined the 250 top companies listed on the Global Fortune 500, and the 100 largest firms by revenue in 22 countries. The results showed that there were more than 75% of companies from the Global Fortune 500 and 70% of the 100 largest revenue firms that applied the GRI. On the other hand, GRI is also practical for firms to use as report preparers are able to self-examine their own level of corporate sustainability performance. The grades of A, B or C are described in much detail in the guidelines, and companies can show their grades in their disclosures.

As suggested by Brown, de Jong and Lessidrenska (2009), GRI is significant in terms of its broad range of stakeholder approach, as well as institutionalising multi-stakeholders on

reporting and accountability. However, Drori, Meyer and Hwang (2006) indicated that GRI is mostly presented by multinational companies on a global basis, and international accounting firms have a large influence on standardising the guidelines. Western multinational firms, therefore, helped to set the agenda on corporate sustainability reporting based on their own interests (Vigneau, Humphreys and Moon, 2015). It is suggested that "the guidelines' lack of universal applicability creates a perceived unfairness inherent in imposing Western standards of social behaviour and associated reporting practices" (Adams and McNicholas, 2007, p.484). In addition, GRI is standardised as a business practice. As suggested by Etzion and Ferraro (2010), GRI has placed great emphasis on reporting its principles rather than providing detailed templates and metrics to be used in reports, and it is now providing guidelines on what to report instead of how to report.

Nevertheless, GRI has been a very successful institution, and the guidelines remain highly authoritative globally due to their context, language, concepts and assumptions (Brown et al, 2009). It highlights the importance of corporate sustainability reporting and has led to new practices of corporate sustainability and responsibility (Vigneau et al, 2015). Moreover, GRI is highly praised in China since it is the basis of the SZX guidelines because of its comprehensiveness. Hopkins (2003) contends that the GRI includes some aspects of the popular environmental and social guidelines, such as the ISO 14000 and the Global Sullivan Principles. Chu (2007) claims that the creation of the GRI guidelines provides companies with prestigious standards in preparing their sustainability reports, and the guidelines offer stakeholders the opportunity to visualise the transparency of the implementation of corporate environmental and social responsibility. For these reasons, the GRI guidelines are used in this study to examine the extent of environmental and social reporting.

2.6 Global Reporting Initiative 4th generation (G4)

The most up-to-date version of the GRI guidelines is called G4, which is the fourth generation of the guidelines, launched in May 2013 (GRI, 2013). It marked the culmination of two years of extensive stakeholder consultation and dialogue with hundreds of experts across the world from a wide variety of sectors, such as companies, civil society, labour organisations, academia and finance. G4 has a more appropriate and substantial set of requirements for corporate social and environmental information due to its multi-stakeholder engagement process, which ensures that the reporting standard is universal. G4 has been widely adopted since its launch.

G4 includes 46 aspects and categories, in which there are 4, 12 and 30 categories in economic, environmental and social disclosure respectively. For social disclosure, there are four sub-categories grouped by GRI, which are labour practices and decent work, human rights, society and product responsibility. A summary of the categories in G4 is presented in table 2.1.

Table 2.1: Categories and aspects in G4

	Economic	**Environmental**
Aspects	● Economic performance ● Market presence ● Indirect economic impacts ● Procurement practices	● Materials ● Energy ● Water ● Biodiversity ● Emissions ● Effluents and waste ● Products and services ● Compliance ● Transport ● Overall ● Supplier environmental assessment ● Environmental grievance mechanisms

Table 2.1: Categories and aspects in G4 (Cont'd)

Category	Social			
Sub-categories	**Labour Practices and decent work**	**Human rights**	**Society**	**Product responsibility**
Aspects	● Employment ● Labour/ management relations ● Occupational health and safety ● Training and education ● Diversity and equal opportunity ● Equal remuneration for women and men ● Supplier assessment for labour practices ● Labour practices grievance mechanisms	● Investment ● Non-discrimination ● Freedom of association and collective bargaining ● Child labour ● Forced or compulsory labour ● Security practices ● Indigenous rights ● Assessment ● Supplier human rights assessment ● Human rights grievance mechanisms	● Local communities ● Anti-corruption ● Public policy ● Anti-competitive behaviour ● Compliance ● Supplier assessment for impacts on society ● Grievance mechanisms for impacts on society	● Customer health and safety ● Product and service labelling ● Marketing communication ● Customer privacy ● Compliance

Note: Adapted from G4 Sustainability Reporting Guidelines 2013. Amsterdam: Global Reporting Initiatives.

The economic dimension of corporate sustainability relates to the impacts from an organisation on the economic conditions of its stakeholders, and on economic systems at local, national and global levels. There are nine economic sustainability indicators included in G4. A summary of economic indicators is presented in table 2.2.

Table 2.2: Global Reporting Initiative guidelines (G4) – economic indicators

Indicators	Description
Economic performance	
EC1	Direct economic value generated and distributed
EC2	Financial implications and other risks and opportunities for the organisation's activities due to climate change
EC3	Coverage of the organisation's defined benefit plan obligations
EC4	Financial assistance received from government
Market presence	
EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation
EC6	Proportion of senior management hired from the local community at significant locations of operation
Indirect economic impacts	
EC7	Development and impact of infrastructure investments and services supported
EC8	
	Significant indirect economic impacts, including the extent of impacts
Procurement practice	
EC9	Proportion of spending on local suppliers at significant locations of operation

The environmental dimension of corporate sustainability concerns the impact from an organisation on living and non-living natural systems, such as land, air water and ecosystems. It includes 34 environmental disclosing items to be reported by companies, categorised into 12 groups: material, energy, water, biodiversity, emissions, effluents and waste, products and services, compliance, transport, overall, supplier environmental assessment, and environmental grievance mechanisms. A summary of environmental indicators is presented in table 2.3.

Table 2.3: Global Reporting Initiative guidelines (G4) – environmental indicators

Indicators	Description
Materials	
EN1	Materials used by weight or volume
EN2	Percentage of materials used that are recycled input materials
Energy	
EN3	Direct energy consumption by primary energy source
EN4	Indirect energy consumption by primary source
EN5	Energy saved due to conservation and efficiency improvements
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives
EN7	Initiatives to reduce indirect energy consumption and reductions achieved
Water	
EN8	Total water withdrawal by source
EN9	Water sources significantly affected by withdrawal of water
EN10	Percentage and total volume of water recycled and reused
Biodiversity	
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas
EN12	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas
EN13	Habitats protected or restored
EN14	Total number of IUCH red list spices and national conservation list species with habitats in areas affected by operations, by level of extinction risk
Emission	
EN15	Total direct and indirect greenhouse gas emissions by weight
EN16	Other relevant indirect greenhouse gas emissions by weight
EN17	Other indirect greenhouse gas emissions
EN18	Greenhouse gas emissions intensity
EN19	Reduction of greenhouse gas emissions
EN20	Emission of ozone-depleting substances
EN21	NOx, SOx, and other significant air emissions

Table 2.3: Global Reporting Initiative guidelines (G3) – environmental indicators (Cont'd)

Indicators	Description
Effluents and waste	
EN22	Total water discharge by quality and destination
EN23	Total weight of waste by type and disposal method
EN24	Total number and volume of significant spills
EN25	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally
EN26	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organisation's discharges of water and runoff
Products and Services	
EN27	Extent of impact mitigation of environmental impacts on products and services
EN28	Percentage of products sold and their packaging materials that are reclaimed by category
Compliance	
EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations.
Transport	
EN30	Significant environmental impacts of transporting products and other goods and materials used for the organisation's operations, and transporting members of the workforce
Overall	
EN31	Total environmental protection expenditures and investments by type
Supplier environmental assessment	
EN32	Percentage of new suppliers that were screened using environmental criteria
EN33	Significant actual and potential negative environmental impacts in the supply chain and actions taken
Environmental grievance mechanisms	
EN34	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanisms

The G3 social indicators consist of four subcategories, including labour practices and decent work, human rights performance, society performance and product responsibility performance. Table 2.4 presents the summary of social indicators for the G3 index.

Table 2.4: Global Reporting Initiative guidelines (G3) – social indicators

Indicators	Description
Labour Practice and Decent Work	
LA1	Total workforce by employment type, employment contract, and region
LA2	Total number and rate of employee turnover by age group, gender, and region
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations
LA4	Percentage of employees covered by collective bargaining agreements
LA5	Minimum notice period(s) regarding operational changes, including whether this is specified in collective agreements
LA6	Percentage of total workforce represented in formal joint management–worker health and safety committees that help monitor and advise on occupational health and safety programs
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work related fatalities by region
LA8	Education, training, counselling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases
LA9	Health and safety topics covered in formal agreements with trade unions
LA10	Average hours of training per year per employee, by employee category
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings
LA12	Percentage of employees receiving regular performance and career development reviews
LA13	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity
LA14	Ratio of basic salary of men to women by employee category
Human Rights	
HR1	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening.
HR2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained
HR4	Total number of incidents of discrimination and actions taken
HR5	Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights
HR6	Operations identified as having significant risk for incidents of child labour, and measures taken to contribute to the elimination of child labour

Table 2.4: Global Reporting Initiative guidelines (G3) – social indicators (Cont'd)

Indicators	Description
HR7	Operations identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of forced or compulsory labour
HR8	Percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken

Society Performance

SO1	Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting
SO2	Percentage and total number of business units analysed for risks related to corruption
SO3	Percentage of employees trained in organisation's anti-corruption policies and procedures
SO4	Actions taken in response to incidents of corruption
SO5	Public policy positions and participation in public policy development and lobbying
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country
SO7	Total number of legal actions for anticompetitive behaviour, anti-trust, and monopoly practices and their outcomes
SO8	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with laws and regulations

Product Responsibility

PR1	Life cycle stages in which health and safety impacts of products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcome
PR3	Type of product and service information required by procedures and percentage of significant products and services subject to such information requirements

Table 2.4: Global Reporting Initiative guidelines (G3) – social indicators (Cont'd)

Indicators	Description
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcome
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcome
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data
PR9	Monetary value of significant fines for noncompliance with laws and regulations concerning the provision and use of products and services

2.7 Relevant theories to CSD studies

As a result of the significant growth of attention to corporate sustainability, a number of theoretical frameworks have been developed to explain CSD practices, such as Political Economy Theory, Stakeholder Theory, Legitimacy Theory, Institutional Theory, Agency Theory and Signalling Theory. They provide a theoretical foundation to explanatory CSD studies. However, the question of whether companies should voluntarily disclose corporate sustainability information is still provocative in developing countries like China (Qian, Gao and Tsang, 2015). According to the classical view, which is also known as the stockholder prime perspective, the only responsibility of a firm is maximising value for shareholders (Chiu & Wang, 2015), therefore any other sustainable information is irrelevant. In contrast, CSR is considered part of the responsibilities of a company, as it goes beyond the pure economic and legal dimensions (Kaspersen & Johansen, 2016). This section reviews major theories that have been adopted by existing studies when investigating CSD.

2.71 Political Economy Theory

Political Economy Theory is the starting point to discuss theories related to CSD. According to Deegan (2014), Legitimacy Theory, Stakeholder Theory and Institutional Theory are all derived from a broader theory which has been called Political Economy Theory. The theory was defined by Gray et al. (1996) as the social, political and economic framework within which human life takes place. This perspective highlights the significance of social, political and economic factors which take place when investigating corporate sustainability reporting. It is suggested that when considering the co-influences of society, politics and the economy,

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researchers are able to think more broadly about issues that impact on the operation of a firm, as well as what information is more likely disclosed (Deegan, 2014). Consequently, according to Political Economy Theory, CSD serves as a tool that constructs, sustains and legitimises economic and political arrangements, as well as institutions and ideological themes which contribute to the corporation's private interest (Lin, 2010).

2.72 Stakeholder Theory

Stakeholder Theory considers that corporate sustainability does not only relate to its shareholders/debt holders, but also any relevant stakeholders (Corderio & Tewari, 2015). Stakeholders are defined in the GRI as 'entities or individuals that can reasonably be expected to be significantly affected by the organisation's activities, products, and/or services; and whose actions can reasonably be expected to affect the ability of the organisation to successfully implement its strategies and achieve its objectives' (GRI, 2013). In consideration of how stakeholders are defined, different opinions are shown in prior literature. From a normative theory perspective, the Stakeholder Theory asserts that 'regardless of whether stakeholder management leads to improved financial performance, managers should manage the business for the benefit of all stakeholders' (Hasnas, 1998, p.32); however, from the managerial branch of the theory, the more salient the stakeholder, the more efforts will be exerted in terms of satisfying their needs (Mitchell, Agle and Wood, 1997). Consequently, in this context, one major facet of Stakeholder Theory involves recognising and identifying the association between the behaviour of a company and its impact on company stakeholders (Rodrigue, 2014).

2.73 Legitimacy Theory

Two definitions of legitimacy are often reviewed when analysing CSD. First, the legitimacy of an entity depends on what the society considers rather than how the entity defines itself (Deegan, 2002). Moreover, legitimacy exists when the value system of an entity matches with the value system of the larger society where it operates (Vigneau et al., 2015).

According to Deegan (2002), Legitimacy Theory is often considered as a system-oriented theory which identifies that organisations are social creations where "firms are recognised by performing various social actions". This ultimately guarantees firms' continued existence or operation within the society. Deegan (2002) also pointed out that social, political and economic issues could not be separate. Each of the issues could be significant and meaningful, and must be linked with another when investigated. Under this approach, the organisations are assumed to be influenced by their continued operations, as well as the society where they operate. In addition, Hu (2009) indicated that Legitimacy Theory could also be explained from the resource

dependence approach. Milne and Patten (2002) argued that organisations would receive more attention if they occupied many crucial and scarce resources. Therefore, the larger social system plays a significant role which determines the organisation's utilisation of the resources as legitimate or not (Hu, 2009).

Another important term in Legitimacy Theory is social contract. Mathews (1993) stated that the social contracts exist between entities and individual members of society, because entities are entitled to utilise various resources, such as legal standing, and to hire employees. Entities' continued existence would be in jeopardy once the contact is breached. Therefore, corporate entities should always consider operating in an acceptable and legitimate manner to comply with the contract.

A legitimacy gap can exist under two circumstances. One situation is when unknown information becomes known to the public. The other situation is the change in social expectations over time. In both cases, the status of firm's legitimacy are difficult to justify (O' Donovan, 2002). Therefore, disclosure becomes the essential tool that determines the variation of firms' performance and changes in firms' activities (Deegan, 2009; O' Donovan, 2002).

2.74 Signalling Theory

Signalling Theory was initially developed from information asymmetry theory, and it has been applied and used widely to explain CSD practices (Ross, 1977). According to the theory, companies signal corporate sustainability information to show a competitive advantage in the market in order to attract investments and to enhance potential reputation (Shan & Taylor, 2014). Rather than mandatory information, disclosing corporate sustainability information helps a company to show their capability of implementing, monitoring and practicing its associated environmental, economic and social responsibilities. This further contributes to the creation of corporate sustainability reputation, which builds the image of a company in a different way from its financial performance. Hasseldine, Salama and Toms (2005) and Thorne, Mahoney and Manetti (2014) both showed that positive correlations exist between the quality of CSD and corporate sustainability image.

2.75 Institutional Theory

According to Deegan (2009), there are two main dimensions to Institutional Theory: isomorphism and decoupling, and both dimensions are important and relevant in terms of explaining voluntary CSD practices. Isomorphism is defined as "organisations that adopt structures or processes that are at variance with other organisations which might find that the

differences attract criticism" (Deegan, 2009). Dimaggio and Powell (1983) stated that there are three isomorphism processes: coercive, mimetic and normative isomorphism. Coercive isomorphism indicates that organisations are using voluntary disclosure to address the "economic, social, environmental and ethical values and concerns" to the stakeholders who have the most power (Deegan, 2009). However, mimetic isomorphism was defined as organisations tending to imitate the institutional practices of other organisations for reasons of competitive advantages (Dimaggio and Powell, 1983). Explained by Dimaggio and Powell (1983), normative isomorphism relates to the "pressure arising from group norms to adopt particular institutional practices". In essence, this pressure could arise depending on the culture and working practices managers developed within their workplace. The second dimension, 'decoupling', implies that managers may seem to adopt certain institutional practices and formal processes, though the actual organisational practices can be difficult to formalise and implement (Deegan, 2009). Overall, Institutional Theory explains that management will be subject to coercive, mimetic and normative pressures to adopt certain voluntary reporting policies.

In general, Institutional Theory explains why the behaviour and actions of organisations tend to be similar within a particular 'organisational field' (Deegan, 2009). Studies that focus on legal frameworks regarding voluntary social and environmental disclosure often adopt Institutional Theory on the management level. Rowe and Guthrie (2010) state that institutional process are important to consider when analysing public environmental management because "political influence is known to have some bearing on organization life" (Rowe and Guthrie, 2010). Since there is no evidence to define the most operative way to achieve environmental compliance, greater compliance with environmental legislation by organisations can be enhanced through the great sanctioning power of state agencies (Rowe and Guthrie, 2010). However, the research found that the lack of monitoring and enforcement of environmental laws and rules impedes the success of the central government's environmental policy. As a result, coercive governmental institutional involvement emerged as the major influencing factor in corporate environmental reporting, and Chinese companies are disclosing environmental information mainly to alleviate government concerns (Liu and Anbumozhi, 2009). This concept is also explained by Song and Zu (2009); however, the research shows that manager's assertion can be more business-oriented than morally led due to industry competitiveness. Therefore, firms' economic incentives are the most important determinants of CSD from the Institutional Theory perspective.

2.76 Agency Theory

According to Belkaoui and Karpik (1989), Agency Theory is becoming an explanatory model that focuses on monetary or wealth considerations among agents who trade in efficient markets.

Agency Theory states that managers disclose voluntary corporate social and environmental information only if it increases their welfare, particularly when the benefits of the disclosure outweigh the cost created by disclosing associated information (Ness and Mirza, 1991). When costs result in the separation of ownership and management due to the agency relationship, then agency costs rise (Deegan, 2009). As defined by Jensen and Meckling (1976), agency costs consist of the monitoring expenditures set by the principal, the bonding expenditures by the agent and the residual loss, arising in any situation involving cooperative effort. Additionally, managers who bear agency costs often wish to be seen as acting in the best interest of the shareholders (Jensen and Meckling, 1976). One way to satisfy this situation is to issue company annual reports, because accounting information is a primary source indicating the agent's behaviour towards the principals.

As defined by Chan (2003), agency costs are part of contracting costs, which also include transaction costs, information costs, renegotiation costs and bankruptcy costs. However, the concept and influence of contracting costs is not explained thoroughly in existing Chinese literature. Agency costs are often considered by the voluntary social and environmental reporting research when applying Agency Theory (Chu, 2007; Reverte, 2009). According to Chu (2007), the ultimate goal of issuing corporate sustainability information is to maximise firm value from all perspectives, including the interests of both principals (debt holders and shareholders) and agents. Voluntary CSD can first reduce agency costs, such as monitoring costs, bonding costs and residue loss, subsequently strengthening contractual relationships and minimising the costs associated with conflicts of interest between the parties (Chan, 2003). Besides, companies differ in the amount of information disclosed due to information asymmetry. Chu (2007) demonstrated empirically that companies with better financial performance tend to disclose more than other companies in China. It is shown that large firms disclose higher levels of social and environmental information, especially the companies with better relationships between principals and agents. Although social and environmental information may facilitate shareholders and debt holders with future predictions, the results from Chu (2007) were not shown to be consistent. Recently, many companies are facing the similar situations, where independent directors are set to deal with solely environmental and social issues (Nie, 2009). These directors are often the shareholders too.

2.77 Theories related to the study

Research on CSD has generated different categories of literature which engage a diverse body of theoretical perspectives in support of voluntary sustainability disclosure. Stakeholder Theory offers the resolution to the conflicting expectations of different stakeholders. In contrast, Agency

Theory focuses on the monetary terms. It views a firm as a nexus of contract where agents act opportunistically, and consequently causes conflicting interests among agents and principals. Consequently, CSD proves useful in monitoring activities and information transparency. The concept of Institutional Theory is similar to Legitimacy Theory; however, it specifies how the expectations of society are met through institutionalising norms and rules. This creates a "positive organisation-society boundary" (Uadiale, 2011) because of the existence of some code of institutional behaviour that maintains societal expectations. Legitimacy Theory, as defined by Deegan (2002), is value system centred, and companies need to balance between the value system of organisations and of the society. Therefore, legitimacy exists at the organisational level when there is equivalence between the organisation and society value systems.

The recent Chinese literature shows how voluntary reporting information and the expectations of the society are met from various perspectives. Firms will most likely fulfil the expectations of stakeholders in order to gain long-term benefits, such as increasing firm value from company market performance. Li et al. (2009) and Dai & Dong (2010) applied stakeholder theories and concluded that voluntary social and environmental reporting generates positive values to a firm's financial performance. Yuan (2007) also demonstrated how such disclosure can, in the long run, influence company stakeholders, which implicitly improves a firm's activities. Therefore, a considerable amount of Chinese research has shown how corporate sustainability information influences and impacts stakeholders. In addition, Rowe & Guthrie (2010) and Song & Zu (2009) applied Institutional Theory and emphasised the importance of enhancing the Chinese legal framework and management perception on environmental disclosure. They both found that even though government plays a significant role in directing companies to implement their environmental responsibility plans, managers issuing environmental disclosures are essentially because of their financial pursuit which voluntary information offers (Song & Zu, 2009). For Agency Theory, Chu (2007) employed multiple theoretical frameworks that include Stakeholder Theory, Efficient Market Theory and Agency Theory. Although the results that reflect the expense contributed to social and environmental activities increased the level of quality of disclosure, no relationship was defined and explanations were not relevant to issues created by corporate governance and agents' contracting costs.

Legitimacy Theory is widely considered in Chinese literature, due to political reasons. In China, an inseparable relationship between the State and its firms generates important social roles for the state-owned firms. This enables Chinese companies, particularly the state-owned companies, to have a tradition of taking social and environmental responsibilities (Li, 2012). This legacy of the 'iron rice bowl' concept regarding lifetime employment and welfare persists (Whiteley, Cheung and Quan, 2000), although it can be observed to a lesser degree in modern China. In addition, the

managers of the state sector are often appointed by the Communist Party; subsequently, decisions made by the state-owned firms are interfered in by the Party leader. As a result, the management level of the appointed firms would always be the Communist Party members, and they would naturally share their ideology with the state in favour of the communist tradition. In other words, their "social existence" is correspondent with the existence of the state (Song and Zu, 2010); therefore, legitimacy is one of the most suitable theoretical foundations to consider.

Existing literature indicated that one testable perspective of Signalling Theory is through analysing the market stability of a firm (Shan & Taylor, 2014). Firms with lower market risk on equity are more likely to undertake a higher extent of CSR activities due to their stable pattern of market-share return (Rimmel & Jonall, 2013). Disclosing corporate sustainability information allows such companies to influence the decisions made by management, and in turn, this strengthens the reputation of a firm for contributing to the community. Secondly, Roberts (1992) suggested that disclosing CSR practices increases companies' access to capital, as well as employees' morale and productivity. A better corporate sustainability reporting is more likely to be viewed as a well-managed firm, and it builds a positive and responsible image for the firm to convey to its equity holders that it is well operated and profitable. However, results did not show consistency in prior studies (see Yang, 2009; Nie, 2009; Shan & Taylor, 2014). China has experienced transitional economy over the past 20 years. During such a period, a shift of corporate structure is one key factor that influences the equity holders' response of the signal created by issuing corporate sustainability disclosures. Another reason, suggested by Shan & Taylor (2014), is that in periods of bearish equity market, firms that encounter profitability reductions are less likely to produce high quality CSD, because investors in these periods are more likely to speculate on short-term profit rather than long-term corporate sustainability performance. In consideration of the unique institutional background of China and the inconsistency in the results from the theory, Signalling Theory is the most suitable theory to be used in this study.

Stakeholder Theory is also well-adopted and widely used in existing corporate sustainability studies. While the term CSR in the past focused on maximising shareholders' economic value, the recent literature shows a positive trend to stakeholders' value and contracting costs-related activities becoming more associated, which influences CSD informational dynamics that are composed of different related patterns among stakeholders (Rodrigue, 2014). Due to the increased demand for sustainability information and the prospect that this information will improve financial performance and firm value, CSD is growing in importance. According to the definition of voluntary disclosure, superior environmentally- and socially-performing companies will attempt to disclose information emphasising their favourable performance in order to

distinguish themselves from their peers. Therefore, this effect indirectly improves firm value. Yuan (2007) employed Stakeholder Theory and concluded that CSD was significantly associated with firm value. Yuan (2007) reflected that a significant positive signalling effect can be generated from issuing CSD, and such an effect, although indirectly, can be observed from companies' financial performance. These results are strongly echoed by Nie (2009), Li et al. (2009) and Dai & Dong (2010). However, Li (2006) adopted similar methods and theoretical frameworks as Yuan (2007), and a negative correlation was concluded between CSD and firms' market performance. In addition, Niu (2009) emphasised the importance of issues and costs generated by corporate governance. It is stated that contracting costs are becoming significant in modern industries, where an increasing number of independent directors are set to solely deal with social and environmental problems (Niu, 2009). Ma & Zhao (2007) and Chen (2010) focused on corporate governance terms, and their studies examined the functions on the management level. Importantly, their results showed no significance from their corporate governance (number of independent directors) hypothesises. However, hypothesises focusing on the monetary terms and financial performance show positive trends.

2.8 The influence of Chinese culture on corporate sustainability disclosure

CSD is heavily influenced by both the external and internal environmental factors of a nation. Hofstede (1980) defines culture as "a collective mental programming", which has been indicated as a variable that significantly affects the corporate disclosure environment in a country. Diao (2013) suggests that companies being profitable while maintaining sustainability are directly influenced by an old Chinese paradox of being rich and generous. He explains that the social structure of China was strongly associated with the male-controlled clan system and family blood relationship of all types of business, in which an intense degree of ethical qualities issues would exist (Diao, 2013). The moral standard is heavily influenced by Confucius, who lived in the sixth and fifth century BC and took the view that harmonising was in the best interest of each member in a society. This idea proposes that wealth may not be well appreciated and meaningful if people do not live harmoniously, and questions the essential component of the paradox and the belief of the Chinese, because "moral problems and social philosophy override questions of logic, epistemology and metaphysics, and these are featured by a strong conservativeness and closed character" (Qu & Leung, 2006, p. 245). Therefore, the transparency of corporate disclosure made by Chinese publicly listed companies has always been an issue that significantly influences both the corporate sustainability reporting systems and stakeholders' perceptions of it.

The empirical studies in China into Chinese culture and corporate sustainability explore profits from righteousness (Yi) from Confucius. Xia, Li & Long (2009) support the idea of righteousness before profits, where they state that business values should be reflected by the fundamental value of being ethical. Concerns should all be closely related to customers' values, employees' values and shareholders' values. Liu (2008) considered the Confucian perspective from three different layers, and set standards and categories in the culture that a Chinese firm may be adapted to.

Table 2.5: Confucius – three different layers

Category	Value	Focus
Bottom standard	Not tempted by profit	Business operating, managing, ethical activities. No profit, no action.
Medium standard	Profit after righteousness*	Social development through accumulated social capital, while maintaining a certain amount of economic benefit.
Top standard	Everything after righteousness	Benefit transferred from corporate stakeholders.

righteousness describes the world where peace prevails, order abounds and the social and natural harmony result in material wellbeing for everyone (Liu, 2008).

Under a commodity economic market, culture differences have created different perceptions between the West and the East. Most of the Western firms value profits over righteousness, whereas Chinese firms, the government-owned ones in particular, consider both social welfare and financial profit. Profit after righteousness explains that people are kind and generous to others because they see profits, which is why profits exist before righteousness. Wang & Juslin (2009) found that the Western CSR corporate sustainability concepts do not adapt well to the Chinese market, because they have rarely defined the primary reason for corporate sustainability. The etic approach to the corporate sustainability concept does not take the Chinese reality and culture into consideration. The Wang & Juslin research was conducted purely based on reviewing literature and defining terms in differences between the West and East contexts. Under this perception, Wang & Juslin (2009) point out that corporate sustainability is a term that can be legitimately interpreted within the Chinese culture; however, Confucianism and Taoism, which emphasise the "cultivation of virtue and morality, as well as the core of its harmony notion" (Wang & Juslin, 2009, p. 446), offers a better understanding of corporate sustainability in the Chinese context.

Overall, studies of Chinese culture linked with corporate sustainability provide insight into self-cultivation of virtues that may guide companies to a new way of improving their corporate sustainability performance. The studies also point out the differences in understanding of

sustainability between the West and the East. Although the previous studies may seem to be significant to explain the economics, they are not practical for setting standards to corporate disclosure activities; either cultural influence towards companies' reporting systems was considered.

2.9 Ownership structure in its influence on CSD of Chinese companies

Corporate governance is defined by Cadbury & Coad (1992) as the system by which companies are directed and controlled, which is often used to explain the differences in finance and the role of the market for corporate control. The divergence of corporate governance can further influence and determine CSD practices due to differences in political, social and environmental backgrounds among nations (Wang, Zhou, Lei and Fan, 2016). Aguilear, Williams, Conley & Ripp (2006) found differences between corporate governance in insurance companies in the UK and the US by examining their corporate governance and CSD activities in both contexts. It was found that difference in the composition of investors had a significant impact on the attitude of firms' disclosing activities and practices, as well as performance strategies, as they could exert discrete pressure onto the firms. It was concluded by Aguilear et al (2006) that corporate governance, particularly the ownership structure of a firm, is crucial to a company's strategy and attitude to CSD practices.

Existing research on ownership structure of firms in China has shown evidence that listed firms are generally associated with complicated indirect ownership, which is referred to as pyramidal ownership structure. As defined by Wang et al. (2016), this form of ownership structure is used as an important mechanism by the ultimate owners to separate their cash flow ownership from their control rights in order to receive more benefit from control rights. It was generally found that a significant relationship exists between the level of pyramidal ownership structure and the quality of information disclosure due to the need to satisfy stakeholders at different layers of the structure (Fan and Wong, 2002). As indicated by Fan and Wong (2002), CSD reporting provide signals to the stakeholders at different layers of the structure in regards to companies' sustainability performance, thereby reducing the degree of information asymmetry between stakeholders and corporate management. However, the degree of influence of this form of ownership structure differs in different contexts. A large number of listed companies in China (around 63.15%) are controlled by the state government, either directly occupying shares of more than 80% or indirectly subsidising these companies (Wang et al, 2016). The state-owned pyramidal structure is essentially to decentralise control rights over the firms to firm management instead of selling shares. In comparison, privately owned firms or foreign owned firms are to discharge their external financing constraints by creating internal capital markets (Fan and Wong, 2002). Empirical evidence was provided by Li and Zhang (2010) that state-owned firms adopted a

completely different attitude to foreign owned or privately owned firms, and significant differences in the strategies and attitudes of disclosing corporate sustainability were shown among different types of ownership structure. Government-owned companies may often set out to fulfil a range of social objectives rather than maximise profits due to political interference, whereas foreign owned and privately owned companies are more motivated to disclose sustainability information by mandatory regulations (Wang et al, 2016). Consequently, ownership structure is one of the most important factors to consider when studying CSD in China.

2.10 Content analysis in Chinese CSD empirical studies

Content analysis is widely used in many Chinese CSD accounting research studies (Chen, 2010). It is suggested by Smith (2011) that content analysis is used to reveal the considerable potential and valid inferences from text for analysing reports, representations and narratives used to communicate the outcomes of accounting activates. A number of studies have used content analysis to investigate the narrative part of annual reporting in order to determining the level of CSD, such as Chen (2010), Ling (2009) and Zhang (2013). Since corporate sustainability activities and information are often reported in the chairman's statement or president's letter or announcement, these sections are often to be focused on to obtain corporate sustainability information. Subsequently, information related to a particular research instrument is collected for further analysis. However, content analysis procedures that restrict themselves to manifest content alone would be of very limited value; hence, it is argued that the attributions expressed are the true beliefs or fair adjustment from researchers, as they involve subjectivity in analysis (Smith, 2010). In this situation, studies showed that an independent person or a group for checking content analysis has been essential to a study (Li, Luo, Wang & Wu, 2013; Nie, 2009; Zhang, 2013).

2.11 The external driving forces of corporate sustainability disclosure

2.111 The external driving forces from stakeholders

Stakeholders of a company include shareholders, debtors, employees, customers, suppliers, social communities and the government (Deegan, 2009). Freeman (1984) defines a stakeholder as any group or individual who can affect or is affected by the achievement of the firm's objectives. Nie (2009) indicated that the stakeholder approach emphasises the importance of investing in relationships with those who have a stake in the firm. Management will subsequently formulate and implement strategies to manage the potential demands of the more powerful stakeholder groups.

Cui (2009) investigated corporate social reports from 346 listed companies in their 2008 annual reports. She found that when companies feel pressure from the public media, they are more likely to disclose a higher extent of social information. Yu & Cheng (2010) stated that companies underline mostly the interest of employees and shareholders while paying relatively less attention to the interest of competitors and community. Interests addressed from state-owned companies are very similar to private-owned companies, where government and community are considered to be the most important. Foreign companies, however, address government and community exclusively, and consider shareholder, employee and consumer to be the most important parties.

2.112 The external driving force from regulation and standards

In order to survive in society, a company must put effort into its public image and not breach the social contract. Much research has indicated that companies disclosing sustainable information are to fulfil what the laws and regulations require in China (Nie, 2009; Li, 2006). Although the standards are still advocacy guidelines and do not provide any specific indication of what to disclose, they play vital roles in encouraging the listed companies to pay excessive attention to sustainability reporting. Shen & Jin (2006) used the KLD400 social index and found significant improvement in terms of the quantity of social and environmental information in annual reports from the announcement of the Standards of Governance for the Listed Companies in 2002 to 2005.

Following Shen & Jin (2006), Ling (2009) suggested that the guidelines provided from SZSE and SSE have a significant positive relationship to the quantity of corporate social and environmental disclosure. This study adopted the GRI as an instrument to examine the extent of CSED of listed companies. Ling stated that regulations and guidelines provide significant guidance to companies' CSED, particularly the environmentally and socially sensitive industries, such as mining, manufacturing and chemical companies (Ling, 2009). The industrial associations made guidelines, and paid close attention to those companies when reporting, and especially to the types of information that should be included in disclosure throughout 2005 to 2008. This piece of research used the dichotomous index method to attain a score for CSED under the G3, but the author believed that although the GRI is adjusted to be most suitable and applicable internationally, it has bias when measuring disclosures in China.

Bu, Liu, Wagner & Yu (2013) tested the pollution haven hypothesis by examining the relationship between environmental regulation and foreign investment with consideration of the role of corporate social responsibility. The study uses a conditional logit model, which is grounded in microeconomic utility and profit maximisation, to estimate the location choice of

multinationals in China. Samples were selected on multinationals' location choices that were sourced from the Fortune Global 500 Company investment database from 1998 to 2007. The full sample was 217 multinational companies. The authors supported the pollution haven hypothesis, that less stringent environmental regulation makes investing in China more attractive for multinationals. However, the multinational companies with higher social responsibility are less likely to be attracted by weak environmental regulation.

2.113 The external driving force from environment and society backgrounds

Grey, Owen & Adam (1996) pointed out that politics and social influences have significant impacts on the information disclosed by companies. Information included is influenced by the social and economic background in which a company resides. Chinese researcher Chen (2010) examined the external environment with samples from 2003 to 2005 involving listed companies in food and beverage sections. The author applied content analysis to annual reports from 372 companies, and concluded that factors such as marketing development and the degree of companies' corporate governance have a significant positive influence on the quality of information disclosed.

Taylor & Shan's (2007) study is based on a sample of the largest H-share and Red-chip companies that are considered to be leaders amongst Chinese-controlled companies in attracting local and international equity. Both qualitative and quantitative scores have been considered in this study, and firm size, media attention, Beta risk and charitable donation are the independent variables. The study indicated that the voluntary CSED in annual reports is limited, and it means that government encouragement to corporate boards and management to voluntarily disclose a greater range and quality of CSED is not effective in China. The authors also suggested that Legitimacy Theory is less effective than Stakeholder Theory as an explanation of the quantity and quality of CSED in the Chinese context. The study used both Legitimacy Theory and Stakeholder Theory to identify the determinants of CSED. The conclusion points to a need for regulations to enforce mandatory CSED disclosure, and suggests that government financial incentives should be tied to requirements for CSED.

2.12 The internal driving forces of corporate sustainability disclosure

2.121 The impact of firm performance on corporate sustainability disclosure

Shareholders are the primary stakeholders of companies, who are closely related with firm profitability. Using this approach, companies with outstanding performance need to show their contribution to social and community welfare and provide quality disclosure of their sustainability activities. However, the existing literature shows mixed evidence. Gray &

Bebbington (2007) pointed out that the mixed results may be affected by the differences in cultural and institutional factors among nations. China has unique cultural and institutional features that influence significant managerial incentives to report corporate sustainability. The concept of allocating the majority of profits to shareholders may still be dominant in Chinese companies. Zu & Song (2009) used a questionnaire and tested whether Chinese companies prioritise stakeholders' value. This study confirms that Chinese management perceives that corporate sustainability activities are an economic aim for a company, where the profit is considered before deciding the level and quality of CSD. This includes management decisions on whether or not to issue CSD, and how much information to disclose.

Peng (2009) identified that larger firms are more likely to disclose better-quality information, and demonstrated that companies are more active in responding to sustainability information when facing negative news from public media. This study attempted to find the determinants of corporate social and environmental disclosure in annual reports and stand-alone reports, and how these relate to firms' performance. Subsequently, driving forces were focused on by testing 100 companies that had the most sales revenue in 2008. GRI was used in the research, and it was combined with the SZSE guidelines. The author concludes that the level of corporate social information was significantly higher for the state-owned companies, indicating that the relevant regulatory bodies promoting social responsibility information disclosure have a significant effect.

Following Peng (2009), Zhang (2013) measured the type and the extent of corporate environmental and social reporting across the Chinese mining, electricity and chemical industries' annual reports. Companies' financial performance was also taken into account to indicate the level of CSED. Larger and more profitable companies were found to be more likely to disclosure better CSED information. Interestingly, the author indicated that all three industries demonstrate similar patterns in their disclosing manner and information disclosed. This posits that companies that are included in the sensitive industries are more likely to disclose similar information.

2.122 The impact of corporate ownership on corporate sustainability disclosure

Li, Luo, Wang & Wu (2013) examined the effect of firm performance corporate social responsibility disclosure in terms of disclosure frequency and quality among Chinese listed firms and the possible mediating effect of corporate ownership on the relationship between firm performance and CSR disclosure. This study consisted of 1574 non-financial listed firms, and used the 2009 Blue Book of Corporate Social Responsibility Reporting by A-Share Listed Firms. The authors posit that shareholder primacy is dominant in the decision of Chinese firms to disclose CSD. State ownership creates more attention on the stakeholders of state-owned

companies, and it influences the CSD behaviour of those firms. Li et al. (2013) shows that when a firm performs well, it is more likely to issue CSD, proving a higher level of disclosure.

While the type and level of control interventions for each industry are suggested to take separate measures, economic behaviour of corporate sustainability information causes more environmental impact, thus creates a higher degree of attention from the government and environmental protection group (Bowen, 2000). Kou, Yeh and Yu (2012) examined the information quality of corporate environmental disclosure in Chinese companies, and particularly looked at whether environmentally sensitive and ownership patterns are factors influencing the content and level of environmental disclosure. Kou et al. (2012) applied the content analysis method and used the Expert Assessment System for CSR China Honor Roll as a coding table. The authors had 529 research samples from 2008 and 2009 environmental responsibility reports from the China Corporate Responsibility website. The samples were categories of environmentally sensitive enterprises, privately-owned and government-owned enterprises. Interestingly, 41.4% of the sample companies failed to provide CSR activities listed in the Expert Assessment System, and the authors explained that the Chinese government and the media did not have more CSR reports and discussion until 2008. This means that CSD in China is still at an early stage of reporting, and most of the sample companies did not engage in CSR activities but are required to disclose sustainability information in order to meet regulations by external pressure. The authors also suggested that the sample companies had no idea about how and what to disclose.

2.13 Summary

The literature review indicates, first, that a proper concept of corporate sustainability has yet to be clearly understood; a certain definition was neither delivered by Western or Chinese studies. However, corporate sustainability, according to keystone literature, has been shown to be a combination of environmental, social and economic aspects (please see Freidman, 1962; Hopkin, 1993; Deegan, 2002). Subsequently, it is essential for researchers to consider all three perspectives when analysing corporate sustainability. In addition, Chinese culture is heavily influenced by Confucianism and Taoism, and this idea of societal harmony has been widely considered in all companies throughout China (Lin, 2008). Subsequently, the feasibility of using theories developed based on Western economies has been left with a question mark. Taylor & Shan (2007) point out that some theories are more effective, but some are not as useful when explaining CSD in China. Additionally, this culture effect may create issues affecting companies' decisions when reporting, particularly when information transparency is badly affected by Chinese conservatism. Under this circumstance, information asymmetry may exist between the Chinese companies and the report users. The research gap here is to understand the perceptions of CSD users, as well as how they interpret sustainability and sustainability information disclosed.

Since there are cultural differences in ideas of corporate sustainability, the understanding from the West and the East is different. Subsequently, it is not practical or significant to adopt standards directly from the Western context (Taylor & Shan, 2007).

Studies reviewed regarding the external driving forces suggest that the Chinese disclosing system is under stakeholder primacy, where the government and community are deemed to be the most important (Gao, 2009). This means that disclosure users are the most focused group when the CSD reports are prepared. Regulation, standards, environmental and social background are also significant influencers of a company's CSD. However, the existing studies examined only social disclosure, environmental disclosure, or social and environment disclosure. None of the studies considered the sustainable economic aspect, combined with the environmental and social perspective.

Internal forces that drive CSD in China were reviewed, including performance factors and corporate capital structure. A number of guidelines have been used by previous studies, such as the Expert Assessment System for CSR China Honour Roll, the SZSE, the Chinese Corporate Governance Guidelines, the KLD 400 social index and the GRI. Similarly to the studies of external driving forces, internal forces research does not cover the sustainable economic aspect.

This review of the literature highlights the increasing concerns from the stakeholders on corporate sustainability disclosure, and the influences of misunderstanding of the disclosure users' perceptions, which creates bias when investing in the driving forces of CSD. The existing literature has only been based on the Western understanding of corporate sustainability and international standards. This disregards the influence of Chinese culture and the Chinese government when analysing CSD. In addition, the GRI still remains highly praised and authoritative in Chinese corporate sustainability reporting, however, it is important to note that Western multinational firms are helping set the agenda on reporting based on their own interests. Consequently, adopting the GRI directly as a research instrument is not suitable for investigating CSD in the Chinese context. The literature review also emphasised the theoretical frameworks used in the existing studies, and indicated that there is a gap for adopting a combined theoretical framework of Stakeholder Theory, Legitimacy Theory and Signalling Theory investigating the driving forces of CSD, with the understanding of the perceptions of the disclosure users. The effectiveness of each theory selected is also measured and compared. In addition, the studies in China focus on the tests of quantitative measure, but qualitative measures based on the GRI have not been thoroughly considered. The GRI is the most authoritative set of standards and guidelines in China, because the government incorporated these guidelines in creating the SZSE and SSE social and environmental guidelines. However, in order to understand the Chinese users' understanding of GRI, a new instrument that considers the perceived importance of CSD users in

China for measuring the quality of CSD will be designed based on the GRI. This study is designed to overcome the shortcomings of the existing Chinese literature on corporate sustainability reporting

In conclusion, this review has identified gaps, methodology and inconsistencies in results caused by under-estimation of the influences by perceptions in the literature. These are considered to design a study of corporate sustainability disclosure in China based on a sound theoretical framework and research methodology.

Chapter 3

Theoretical framework and research hypotheses

3.1 Introduction

In this chapter, the researcher describes Legitimacy Theory, Stakeholder Theory, Signalling Theory and the correspondent theoretical frameworks relevant to the study. The researcher commences by describing the theoretical understanding and the process of developing the instrument from the analysis of the users' perceived importance of corporate sustainability disclosure (CSD). The instrument will be used later in the research to examine the quality of CSD in the Chinese context based on the CSD users' perceptions. Therefore, this chapter details the theoretical foundation for developing the research instrument, and presents the theoretical framework of the hypotheses related to the purpose of the study.

Overall, this chapter includes the process of developing the research instrument based on Signalling Theory. Legitimacy Theory, Stakeholder Theory and Signalling Theory were considered by the researcher as the foundation for developing the research hypotheses and the control variable. An overview is provided at the end of this chapter.

3.2 Developing the instrument

Signalling Theory starts with the premise that information asymmetry typically exists in a capital market. Under this assumption, information obtained from the management level is much more accurate and reliable than information obtained from the market (Shan & Taylor, 2014). Therefore, investors seek information transparency through corporate sustainability information; without it, they cannot respond quickly enough to make rational decisions about the most effective investment (Shan & Taylor, 2014). As a result, market resources are not allocated efficiently. Signalling Theory delivers the most reliable and valuable information to investors, because it suggests that companies disclose information that is unknown by the market (Yang, 2011). Companies with sound performance will deliver their positive image to the public and be distinguished examples among their peers. However, if investors do not receive this information because a company chooses not to disclose negative images, the market value of a company may decrease in the long run.

Signalling Theory has been getting attention in corporate disclosure studies in recent years, because it assumes that people send and explain signals to reduce information asymmetry (Lin,

2010). Companies that disclose non-financial information signal their willingness to communicate with their stakeholders about sustainability issues, and companies produce stand-alone reports when the benefit of providing such disclosure outweighs the related costs. Lin (2010) suggested that sustainability disclosure should be considered with signals of companies' sustainable performance as well as profitability to stakeholders of a company.

This theory is important for testing the perception of CSD in China because ordinary companies in China are not willing to disclose voluntary information (Shan & Taylor, 2014); therefore, every single indicator is considered important to disclose. However, companies who choose not to disclose may exert significant pressure from the public, the government and industrial associations. Consequently, based on the theoretical assumptions from this theory, all the indicators from GRI will be perceived to be important for CSD users. The users of CSD, in general, include a broad range of company stakeholders, such as socially conscious customers, employees, NGOs, regulators, investors, financial analysts etc. (Cordeiro & Tewari, 2015). In this study, financial analysts were particularly focused on representing CSD users.

The research assumes that understanding the users' perceived importance of CSD is important. If users perceive a strong and significant relationship between sustainability reports and long-term corporate performance, they will use data in these reports to predict the long-term survival of companies. Consequently, CSD improves the transparency and accuracy of the reports. Therefore, in order to answer research question two, the question is divided into three parts:

Question 2a: What is the users' perceived importance of environmental disclosure, and to what extent do users perceive the environmental indicators in GRI differently from what GRI intended?

To answer this question, statistical data needs to show whether there is a difference between the users' perceived importance of environmental disclosure and what was intended by GRI.

Question 2b: What is the users' perceived importance of economic disclosure, and to what extent do users perceive the economic indicators in GRI differently from what GRI intended?

To answer this question, statistical data needs to show whether there is a difference between the users' perceived importance of economic disclosure and what was intended by GRI.

Question 2c: What is the users' perceived importance of social disclosure, and to what extent do users perceive the sustainable social indicators by GRI differently from what GRI intended?

To answer this question, statistical data needs to show whether there is a difference between the users' perceived importance of social disclosure and what was intended by GRI.

3.3 Theoretical framework for the main study - Legitimacy Theory

Legitimacy Theory has long been thought to be explanatory when investigating the quality of corporate suitability (Chauvey, Giordano-Spring, Cho & Pattern, 2015). Guo (2009) conducted a review of the theoretical framework and Chinese regulations for explaining corporate sustainability, and concluded that Legitimacy Theory is one of the most dominating perspectives applied in the Chinese context. Legitimacy is defined by Deegan (2002) as a generalised perception and assumption in which the activities of an entity are desirable, proper and appropriate within some socially constructed system of norms, values, beliefs, and definitions. He considered that companies continually seeking to ensure that their activities are perceived by outside parties as legitimate, where social creations are recognised only by performing various social actions and reported through disclosure. Legitimacy, therefore, is considered to be the most fundamental concept on which an organisation is dependent for survival within a society. Thus, organisations are assumed to be influenced by their continuing operations and the society where they operate.

Many prior studies on corporate disclosure have shown evidence of companies voluntarily disclosing information in annual reports as a strategy to manage their legitimacy (Hutchings & Taylor, 2000; Taylor & Shan, 2007; Zhang, 2013). Legitimacy Theory assumes that economic, environmental and social information are closely bonded with each other, and in response to corporate sustainability factors and the information, legitimises management and its activities (Cho, Michelon, Pattern & Roberts, 2015). Companies attempt to establish coexistence between their social value and the society in the short-run, but different communities have various definitions of legitimate corporate behaviour (Zhang, 2013). Much research has investigated the management's motivations to disclose voluntary information and the results varied across different nations and culture (Chiu & Wang, 2015).

Legitimacy Theory is significant and relevant for the research to apply in the Chinese context, because there is an inseparable relationship between the state government and companies that create important social roles for the stated-owned firm (Zhang, 2013). Often, the ideology of the 'iron rice bowl' enables the state-owned companies to provide for the stakeholders' welfare, with tools such as lifetime employment; however, a lesser degree of disclosure on such activities has been observed in China (Zu & Song, 2010).

3.31 Industry Type (IND)

In China, industries with different environmental and social sensitivity are regulated and regarded by the public differently. For example, sensitive industries are often supervised and monitored by industrial associations, and are more likely to face media exposure and political

pressure from the government. Under Legitimacy Theory, environmental and socially sensitive industries are more likely to lose legitimacy that will threaten their social existence (Deegan, 2002). Previous researchers have built solid foundations and concepts for this hypothesis (Yuan, 2007, Zhang 2013). Therefore, in this study the research assumes that companies within environmentally and socially sensitive sectors will be more likely to produce better quality CSD. Companies' industrial type is shown on the CSRC website, which was used as the database to obtain information for this variable.

H1a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to industry type.

H1b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to industry type.

H1c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to industry type.

H1d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to industry type.

3.32 Company Location (AREA)

Regional economic development in China has long been imbalanced. The level of economic development in China's eastern coastal areas has been much higher than in the central and western regions. Companies' disclosing manners and systems are strongly influenced by their duty to fulfil obligations for political and financial objectives. Under Legitimacy Theory, companies have to comply with what society requires and expects, in order to survive. Subsequently, there is a difference in the quality of disclosure among regions in China. Wang (2007) examined the degree of influence across different regions in China. He pointed out that companies located in economically developed areas with higher market orientation were more likely to have complete and mature reporting manners and systems. This is because these companies are required to provide better information transparency in order to remain competitive in the market.

Previous researchers considered that company location should be set as a dummy variable (Ling, 2009; Yang, 2011), where a company is given a score of 1 if it is located in an economically developed region; otherwise the score is 0. The list of cities that are defined as within economically developed regions is available from the CSRC website. Therefore, in this hypothesis, company location is set as a dummy variable.

H2a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to company location.

H2b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to company location.

H2c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to company location.

H2d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to company location.

3.33 Firm age (AGE)

Organisations' societal existence depends on the acceptance of the society where they operate. As the organisations can be influenced by, and have influence on, the society, legitimacy is assumed as an important resource determining their survival (Deegan, 2002). Older companies with longer societal existence may have more legitimacy. According to Yang (2009), these older companies usually have longer performance experience and histories, and are mature. Subsequently, organisations' reputations and involvement in social responsibility may become ingrained (Kong, 1996). As a company operates for longer, it will need to be more communicative with the outside community. Communication provides companies with wide social networks, affecting their public image (Yang, 2009). In sensitive industries, the public and the media can be quickly alerted if a mature company reduces the extent of its social activities. Consequently, such negative social image will result in company regulations and political pressure from the outside to encourage disclosing social responsibility and practices (Yuan, 2007). CSD reporting is a way that management can actively overcome this pressure from the public. The longer a company has been listed on the stock exchange, the more likely the company is to disclose sustainability information. Other studies have found positive significant correlation between company age and the extent of CSD (Roberts, 1992; Yang, 2009). The following hypotheses are tested to determine the relationship between company age and the quality of CSD. In order to be consistent with previous research, the number of years a company has been listed is considered a proxy for this variable.

H3a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to firm age.

H3b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to firm age.

H3c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to firm age.

H3d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to firm age.

3.4 Stakeholder Theory

Stakeholder Theory defines the stakeholder as any group or individual who can affect or is affected by the achievement of an organisational goal (Deegan, 2009). Deegan defined stakeholders as investors, creditors, employees, analyst advisers, business contacts, customers, suppliers, public interest groups, the government and the community. These people bear the risks of a firm and pay a price for the business' activity, and they have a degree of ownership of a firm. Thus, a corporation should be socially responsible for all its stakeholders instead of shareholders only.

Since stakeholders may be interested in different forms of information, a firm should provide sustainable information to meet the different purposes of stakeholders (Klettner, Clarke and Boersma, 2014). CSD helps stakeholders to make financial and investment decisions. The disclosure enables stakeholders to understand the firms' performance towards environmental objectives, from which the stakeholders are able to perceive corporate growth and profitability (Garegnani, Merlotti and Russo, 2015). The dynamics of stakeholders' influence on corporate decisions were discussed in chapter two. Roberts (1992) concluded that a majority of corporate managers need to meet the demands of the stakeholders in order to achieve the objective of a firm. Therefore, as the level of stakeholder power increases, the importance of meeting stakeholder demands increases (Roberts, 1992).

The stakeholder model is an important concept in Stakeholder Theory when applied to corporate sustainability. It consists of three dimensions: stakeholder power, strategic posture, and economic performance (Ullmann, 1985). Stakeholder power refers to the degree that a firm is responsive to the intensity of stakeholder demands (Ullmann, 1985). Stakeholder power to influence corporate management is often viewed as a function of the stakeholder's degree of control over resources required by the corporation. Strategic posture concerns how active the response of an entity's key decision maker is regarding social activity. Roberts (1992) described economic performance as entities' "past and current economic performance", which directly affects the financial capability of a company's sustainability program. Therefore, the intensity of sustainability and disclosure of a firm are closely related to the levels of stakeholder power, strategic posture and economic performance.

Recently in China, firm value was considered to be linked with stakeholders, and there have been increasing concerns with stakeholder value since the 1980s. Stakeholder Theory is also often applied when analysing the relationships between the levels of voluntary social and environmental disclosure and financial performance (Li et al, 2009; Dai & Dong, 2010). According to Chu (2007), one of the effective ways to ensure firm value maximisation is to

increase the future return. This can be satisfied firstly by issuing voluntary social and environmental responsibility disclosure (Chu, 2007). Chu (2007) stated that if voluntary social and environmental information creates significant positive value for a company, there will be a direct influence on the company's market performance. Sustainability information is used mostly by external investors and stakeholders, such as the government, customers, employees etc. (Li, 2006). Therefore, a firm's higher level of corporate sustainability creates positive value for stakeholders and builds a sound public image. On one hand, reporting sustainability information will decrease firm value because of associated costs for issuing CSD (Yuan, 2007); however, from the stakeholders' perspective in China, when companies fulfil their social and environmental responsibilities, they can improve their future earnings. Therefore, firm value can be added in a number of ways, such as being supported by the government; reducing corresponding expenses like tax; gaining trust from customers and public; raising company consumer products market share, etc. (Chu, 2007; Yuan, 2007).

3.41 Government ownership (GOWN)

The ownership structure in the Chinese stock exchange market creates different investor categories, including state investors, legal-person investors, foreign investors and domestic public investors. According to Stakeholder Theory, ownership structure is expected to lead to changes of stakeholder power in relation to each ownership category's impact on companies' decisions on disclosure. China has a unique institutional background where the majority (60%) of the listed companies are, or are at least partially, owned by the government (Li, et al., 2013). According to stakeholder power, differences in ownership structures and concentrations may influence stakeholder–company relationship towards quality disclosure. With a much higher degree of impact from political interference on company behaviours, corporate activities from state-owned enterprises (SOEs) are always expected to lead to a greater effort by management to meet expectations from the government. As the largest shareholder of SOEs, the government has incentives to produce wealth and obtain social stability by improving corporate sustainability. Concentrated state-ownership provides significant incentives for higher level managers (CEOs) to obtain non-financial targets related to government policies and objectives (Li, et al., 2013). In addition, state-owned companies have different goals from other types of companies. Traditionally in China under the Danwei system, SOEs are bound with responsibilities to their employees to provide safety nets and social protection, such as lifetime employment. This may not maximise shareholders' value, but it provides a great degree of social welfare to employees. Subsequently, the objectives for SOEs, in comparison with other types of ownership, are to achieve profit, and deliver a higher degree and quality of information about distinct social aims

and communications to stakeholders (Li et al., 2013). The hypotheses for GOWN are listed below.

> *H4a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to government ownership.*

> *H4b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to government ownership.*

> *H4c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to government ownership.*

> *H4d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to government ownership.*

To be consistent with previous research (Nie, 2009; Li et al., 2013), this research has made the percentage of shares held by the state government a proxy for this hypothesis.

3.42 Legal-person ownership (LOWN)

Legal-person shareholders have more experience with industry knowledge and management skills, and are likely to be economically orientated towards profit maximisation. From the perspective of corporate governance of a listed company's, legal-person shareholders can monitor management more effectively than other types of shareholders because of their participation on the board of directors and presence in regular business operations (Diao, 2013). Since legal-person ownership plays a positive role in improving corporate governance and the alignment of interest between mangers and shareholders, it is expected that legal-person ownership will have a positive influence on the quality of CSD. In order to be consistent with the previous research (Diao, 2013) the presence of legal-person shareholders on a company's board is considered in this study as a dummy variable.

> *H5a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to legal-person ownership.*

> *H5b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to legal-person ownership.*

> *H5c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to legal-person ownership.*

> *H5d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to legal-person ownership.*

3.43 Foreign ownership (FOWN)

Foreign joint ventures in the Chinese stock exchanges are more politically visible and subject to more public scrutiny in China. Political costs may potentially be reduced if companies with foreign ownership are shown to be politically visible and transparent. Taylor & Shan (2007)

found that foreign companies listed on the Hong Kong Stock Exchange had higher quality disclosure in terms of strategy and goals in the voluntary information. Subsequently, by providing better information quality and transparency, foreign companies were good corporate citizens in the market in China. To be consistent with previous studies (Li et al., 2013; Diao, 2013), the percentage of shares held by foreign companies is considered in this study.

> *H6a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to foreign ownership.*

> *H6b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to foreign ownership.*

> *H6c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to foreign ownership.*

> *H6d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to foreign ownership.*

3.5 Signalling Theory

The explanation of CSD regarding its perception through Signalling Theory was discussed at the beginning of the chapter. In addition to the previous explanation, the extent of companies' sustainability disclosure is often referred to as signal observability in this theory, and it measures the validity of the signals. Existing researchers have found positive correlation between sustainability management of a company and performance on corporate sustainability practices (Kou, Yu and Chang, 2013). Other researchers have indicated a positive relationship between sustainability management and signal observability (Al-Tuwaijri, Christensen and Hughes, 2004). Signal observability refers to whether a signal is easy to capture and interpret for the receivers; therefore, higher signal observability suggests a higher degree of information transparency, which effectively reduces companies' financial costs, thereby achieving higher business performance. Therefore, the sets of hypotheses in subsections 3.51 and 3.52 are developed in consideration of the relationship between the level of CSD measured by quality and firms' intentions of making positive signals.

3.51 Performance (PERF)

According to Signalling Theory, companies that make voluntary disclosure are to be distinguished from companies with a relatively lower level of performance. In this context, CSD delivers a positive signal to the market, and can attract investors in order to increase firm value (Yang, 2009; Cordeiro & Tewari, 2015). Disclosing companies are more likely to gain benefits from this implementation and create a virtuous cycle for both sustainability reporting and financial performance. In addition, companies providing positive news may facilitate investors' decision-making processes, and encourage them to build trust for management. In return, this will

reflect on management's compensation because a substantial increase in profit is shown to the shareholders, and so managers are more likely to disclose voluntary social information. Several researchers have shown that financial performance was positively associated with the level of CSD. For example, Yuan (2007) and Nie (2009) both found that companies that performed better financially, in terms of the returns to shareholders, were more likely to have a higher level of sustainability disclosure. Peng (2009) adopted return on equity as a proxy, and suggested that companies were sometimes willing to disclose their intention to be sustainable and socially responsible; however, financially well performing companies provided more information for their actions conducted for sustainability. Hence, it is not only in response to the society; more profitable companies will be more likely to disclose sustainability information.

> *H7a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to financial performance.*
>
> *H7b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to financial performance.*
>
> *H7c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to financial performance.*
>
> *H7d: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to financial performance.*

Consistent with previous research, the research in this study uses return on equity (ROE) to represent profitability.

3.52 Corporate sustainability expenditure (CSE)

CSD is a voluntary form of disclosure, regarding how companies obtain and distribute profits in terms of economic, social and environmental impacts. It is argued that profit-based intentions for sustainability activities are not ethical, because companies undertake sustainability activities to be beneficial for society, expecting nothing in return (Lys, Naughton & Wang, 2012). This idea does not contribute to firm value in the short-run, but management's decisions for sustainable investment in a firm strongly impact the association between the level of corporate sustainability activities and firm performance (Lys et al., 2012). Corporate sustainability spending has been indicated as a type of expenditure that is considered by companies who wish to have a strong financial performance in return. The result of such expenditure on sustainability signals information about the future prospects of a firm, and it has been suggested as a direct determinant of the level of CSD. China has promulgated a few charity-related laws and policies that directly guarantee the development of charities. A company with higher sustainable expenditure, in this case, making charitable donations towards the corporate social aspect, is more likely to generate a better quality of CSD (Nie, 2009). Consequently, CSD signals that the company has performed

well both financially and sustainably. Therefore, in this study the research assumes that companies with higher corporate sustainability expenditure (CSE) will be more likely to provide a better quality of sustainability information. To be consistent with previous research, the researcher has chosen the proxy for this variable to be charitable donations. Data for this variable is available from annual reports.

> *H8a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to charitable donations.*

> *H8b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to charitable donations.*

> *H8c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to charitable donations.*

> *H8d: the quality of corporate sustainability disclosures in the stand-alone reports of Chinese listed companies is positively related to charitable donations.*

3.6 Control variables

There are two control variables in this study: firm size and leverage set. These variables are set as control variables because there is potential collinearity with the other independent variables. This is detected in later data analysis. However, these variables are significant to the dependent variables, and they are set control variables.

3.61 Firm Size (SIZE)

According to Legitimacy Theory, large companies face greater public exposure for their economic, social and environmental performance, and are subsequently subject to higher external interference (Watts and Zimmerman, 1978). Firm size will influence management's decision to voluntarily provide CSD in order to reduce or avoid political cost. Therefore, larger firms are more likely to adopt accounting policies to reduce political costs, such as producing higher quality CSD. Large companies are also expected to comply with and fulfil social contracts. One of the most effective ways that they can present is to report corporate sustainability through annual reports. Under Legitimacy Theory, larger firms are assumed to have more incentive to produce better quality CSD.

> *H9a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to firm size.*

> *H9b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to firm size.*

> *H9c: the quality of corporate environmental disclosure in the stand-alone reports of Chinese listed companies is positively related to firm size.*

H9d: the quality of corporate sustainability disclosure in the stand-alone reports of Chinese listed companies is positively related to firm size.

To be consistent with the previous research, this research measures firm size by total assets. A transformation of the natural logarithm of total assets is considered in order to satisfy the assumption of normality.

3.62 Leverage (LEV)

Leverage ratio represents a company's ability to meet financial obligations, and can capture the importance of creditors as stakeholders in a firm's wealth (Ma & Zhao, 2009). Because creditors and financial institutions may share potential liabilities, they may demand information in order to meet their debt obligations. Potentially, there can be conflicts between disclosing social information and incentives of management. From the shareholders' perspective, disclosure of corporate sustainability information may be perceived as a confession of guilt, so that managers are reluctant to issue CSD in order to maintain their own value (Ma & Zhao, 2009). According to Christopher & Filipovic (2008) and Ma & Zhao (2009), the higher the leverage, the more likely the company is to disclose social information. This also implies that if creditors are concerned with social responsibility activities, the company will be more likely to disclose corporate sustainability information. Therefore, the following hypothesis will be tested to determine the relationship between leverage and the quality of CSD. In order to be consistent with previous research, the research proxy for this variable is debt to equity ratio.

H10a: the quality of corporate economic disclosure in the stand-alone reports of Chinese listed companies is positively related to leverage.

H10b: the quality of corporate social disclosure in the stand-alone reports of Chinese listed companies is positively related to leverage.

H10c: the quality of corporate environmental disclosure in the stand alone reports of Chinese listed companies is positively related to leverage.

H10d: the quality of corporate sustainability disclosure in the stand-along reports of Chinese listed companies is positively related to leverage.

3.7 Summary

From assessing Legitimacy Theory, Stakeholder Theory, Signalling Theory and reviewing the literature, ten testable hypotheses, including two control variables, have been formulated to test voluntary reporting on CSD. The independent variables related to the ten hypotheses are: firm size, industry type, firm age, company location, government ownership, legal-person ownership, foreign ownership, financial performance, corporate sustainable expenditure, and firm size and leverage, where firm size and leverage are control variables. Figure 3.1 summarises the hypotheses and relationships among variables.

Figure 3.1: The hypothesised drivers of CSD

Legitimacy theory

Industry type (IND):
+dummy/environmentally or socially sensitive

Location (AREA): +dummy/located in economically developed area

Firm age (AGE): +number of years listed

[Control variables]

Firm size (SIZE): +total asset

Leverage (LEV): +debt to equity ratio

Stakeholder theory

Government ownership (GOWN): +% of government-holding shares

Legal-person ownership (LOWN): +legal-person share-holding rate

Foreign ownership (FOWN): +% of shares held by foreign investors

Signalling effect theory

Performance (PERF): +ROE

Corporate sustainable expenditure (CSE): +economic sustainable expenditure/+charitable donation/+environmental expenditure

Chapter 4

Research methodology

4.1 Introduction

In this chapter, the researcher outlines the procedures and analyses used in this study. Sample selection, data collection, research instruments, coding methods, research design, tests of reliability and validity, statistical analyses and tests of robustness are described.

4.2 Sample selection and data collection for the research instrument

As discussed in the previous chapters, the research instrument was built based on GRI and report users' perceived importance of CSD. A questionnaire based on GRI was created prior to building the instrument. For recruiting report users who are financial analysts, the samples were solicited from the listed securities organisations provided by CSRC (http://www.csrc.gov.cn). There were 114 companies registered on CSRC, and 200 designed questionnaires were sent out to the managers of these registered security companies in China by email. Each manager was asked to provide five responses for the surveys, and then send them back. The response rate was 64.5%, with 129 responses that were statistically significant.

The rationale for choosing financial analysts was that corporate sustainability information has always been a useful input for financial analysts to evaluate and to predict firm value, which consists of a number of financial factors influencing companies' performances, such as sales, costs, operational efficiency, financing and litigation risk (Dhaliwal, Radhakrishnan, Tsang & Yang, 2012). A better corporate sustainability reputation captured by financial analysts will improve companies' brand value and reputation, which in turn significantly enhances the appeal of firm products to consumers (Brown & Dacin, 1997), and leads to increased sales (Dhaliwal, et al., 2012). According to a survey of 400 mainstream fund managers and financial analysts in Europe, conducted by Deloitte in 2003, approximately 80% of the respondents indicated that CSD

had positive impacts on companies' market value due to the influence from financial analysts. Hence, it is clear that financial analysts' use of CSD is a vital resource that significantly influences investors' decision-making processes. In addition, Lin (2010) suggested that financial analysts are experts who assess corporate policies and performance on various issues of sustainability in China, and that financial analysts are considered to be the prime CSD users who influence other investors extensively. Therefore, because this study solely considers the users' perceptions, financial analysts were the primary respondents to the survey questionnaire.

4.3 Sample selection and data collection for corporate sustainability disclosure

According to the Shenzhen Stock Information Co., Ltd (CNinfo) database, there were 2467 listed Chinese companies in both the SZSE and SSE markets in 2013. The year of 2013 is selected due to two reasons: first, the users' perceived importance of CSD was measured in 2013 to 2014. In order to match the validity, companies' 2013 corporate sustainability stand-alone reports were selected. Stand-alone reports were reports that are not part of any request set or any document set, i.e. the report should not be spawned from any other process, such as it is not included in annual report. Also, 2013 is the most up-to-date data available from the data source.

Companies were categorised into 21 industries by CSRC, and 1231 stand-alone corporate sustainability reports were issued in 2013. However, 1107 companies listed in the Chinese stock exchange markets are in the manufacturing industry, and this makes up two thirds of the entire population. In this study, the HeXun Social Responsibility Ranking was used because better data quality could be obtained in higher ranked firm. The ranking also mix the industry category, thereby reducing sampling bias due to the large proportion of manufacturing companies. A sample of the top 238 listed companies in HeXun was selected due to the statistical significance for 10 predictor variables, where it satisfies $N = 50 + 8K$ (K is the number of predictor variables) (Tabachnick and Fidell, 2007). Sample stand-alone sustainability reports from these companies in 2013 were used as the source of information to obtain the quality of CSD. Therefore, a sample company for this study had to satisfy the following:

1. must be listed in 2013

2. must have disclosed a stand-alone and annual report in 2013

3. must be listed in the HeXun Social Responsibility Ranking.

Data collection for the quality of CSD for this study involved gathering data from stand-alone reports. It is indicated in Zhang (2013) that most of the listed companies were reluctant to disclose corporate environmental and social information in annual reports if they had already issued stand-alone sustainability reports during a financial year. Consequently, corporate sustainability stand-alone reports are adopted in this study to examine the quality of disclosure. With regard to the predictor variables, data was collected from annual reports because these were either available in financial reports or companies' profiles in annual reports. Both types of report were accessed from the CNinfo Database. This database provided comprehensive data that corresponds with the information announced in the Chinese stock exchange markets. There are both domestic and foreign companies listed on the stock exchange markets in China. The foreign companies may issue English and Chinese annual reports; however, the domestic companies issue Chinese annual reports only. In addition, the English annual reports are not available in the CNinfo database – they can only be obtained from companies' webpages. Hence, due to data availability, accessibility and completeness, Chinese annual reports for the year 2013 were used as the main source. Stand-alone reports were also collected because the companies that issue these reports may include very limited sustainability information in their annual reports (Zhang, 2013), and they were also available in the CNinfo database.

4.4 Research design

This study was divided into two main parts. The first part was to build a research instrument in order to answer the research questions in the study. Research question one involves research on report users' perceptions of sustainability disclosure in China. To investigate this topic, the researcher built a new research instrument based on the report users' perceived importance of the listed items on the GRI, which was developed from sound theoretical and empirical foundations. The perception of corporate sustainability refers to how the reports users considered, expected

and understood corporate sustainability. In order to answer this question, questionnaires for weighting the perceived importance of listed items in the GRI were sent out to the CSD users, (i.e. to financial analysts), which included open-ended questions at the end of the questionnaire. Then, the responses from the questionnaires were used to resolve research question 1, and part of research question 2. When the responses were collected, descriptive statistics and one sample t-test were used to examine whether the report users perceived the indicators in GRI differently from what was intended by GRI. Research question 2 was answered in this analysis. Research question 2 asked 'to what extent do the users perceive sustainability indicators in GRI differently from what was intended?' The answer could be either that the users' perceived importance of CSD was the same as it was intended by GRI, or that they were different. The difference in results would have an influence on the coding method of this study. If the report user perceived the importance of CSD differently from what was intended by GRI, the quality of CSD would be coded in terms of the CSD perceptions index – the research instrument, representing the report users' perceived importance of CSD in China; otherwise the quality was coded by the 'importance'/score of the listed items in GRI (G4).

The second part of the design included the analysis of the stand-alone CSD reports, and the analysis of the relationships between the driving forces. There were two coding methods for the dependent variables – the quality of CSD by CSD perceptions index and the quality of CSD by GRI. Since the quality of CSD was coded by the researcher in two methods, the difference between the users' perceived importance of CSD and what was intended by GRI could be compared and determined from an empirical level, thereby fully addressing research question 2. After scoring the quality of CSD, the researcher tested the hypotheses' variables for the relationship between the independent variables and the dependent variables, in order to answer research questions 3 and 4. Since the hypotheses were developed based on three theories, the research models, which were introduced in this chapter, were designed to test against the quality of economic, social, environmental disclosure and overall CSD. The models were compared and analysed to determine their explanatory power of CSD in the context of China. The result answered research question 5.

To analyse the quality and driving forces of CSD in China, stand-alone reports constituted the main primary source. The stand-alone reports of the sample companies during the financial period of 2013 (from 1 January to 31 December in China) were used to extract the sustainability disclosure, because this was the most recent period available. Some companies disclosed corporate sustainability information in both stand-alone reports and annual reports. However, typically if a company issued a stand-alone report, there was very limited information about sustainability in its annual report (Nie, 2009; Zhang, 2013). Therefore, in order to obtain the best data quality, the researcher used stand-alone reports to test the quality of CSD. Since the stand-alone reports from the sample companies were in Chinese, this required the use of GRI in Chinese, in order to accurately examine the quality of CSD.

Information for independent variables extracted from the annual reports was: industry type, company location, firm age, government ownership, legal-person ownership, foreign ownership, return on equity, corporate sustainability expenditure, total assets and leverage.

4.5 Research method for developing the instrument

As discussed in the previous section, the first part of the study involved the development of a research instrument based on GRI and the Chinese report users' perceived importance of CSD. Therefore, with respect to developing the instrument, the following subsections report the survey design, test of reliability and validity, pilot study, and the statistical analysis for making the instrument.

4.51 Survey design

With respect to the development of the research instrument for measuring the quality of CSD, survey questions were chosen to collect the report users' perceived importance of different forms of corporate sustainability. Billing & Halstead (2005) suggested that one of the best ways to obtain information about beliefs, behaviours, views and perceptions of individuals in the business world is to ask questions with closed ends. This survey method is cost-effective, valid, easy and time-efficient. The survey method also adds benefit to reliability by providing higher consistency

than the interview method because data to be collected will be more measureable (Lin, 2010). Therefore, the survey was selected for this study to formulate the instrument.

The survey measurement included questions based on the Likert scale, which is one of the three most commonly adopted scales for addressing attitudinal dimensions (Brace, 2004). A five-point scale was adopted because it provides sufficient discrimination for most purposes and can be easily understood by respondents (Brace, 2004). Subsequently, this study employed this scale to indicate the degree to which the respondents agreed or disagreed, or found items important or not important. In order to measure the GRI, respondents were asked to write a number from 1 to 5 (1 for least important/completely disagree, 5 for most important/completely agree). The second part of the survey involved an open-ended question, where the respondents were encouraged to write anything that they thought should be added to sustainability guidelines or standards.

Since the survey was designed based on the structure of Global Reporting Initiatives G4, there were 11 questions about environmental disclosure, 4 questions about economic disclosure and 28 questions about social disclosure. For each type of disclosure, there was an open-ended question. The questionnaire had a total of 47 questions. See Appendices B, C and D for the survey design.

4.52 Tests of reliability and validity

Tests and reliability and validity were conducted to ensure the results were accurate and reliable for answering the research questions, and to consistently measure the constructs of the study. Cronbach's alpha was used to determine the reliability of the instrument, whereas a pilot study was undertaken to ensure the validity (Lin, 2010).

4.53 Pilot study

A pilot study is often referred to by researchers as a mini version of a full-scale study, as well as being the pre-testing of a particular research instrument for a questionnaire (Saunders, Lewis & Thornhill, 2003). Since this study was largely relying on the questionnaire to design an instrument,

the pilot study was considered to be a crucial element to test the validity of the research design. Although conducting a pilot study may not guarantee success in the main study, it increases the likelihood and fulfills a range of important functions, as well as providing valuable insights before undertaking the full-scale study (Saunders, et al., 2003). Therefore, in the pilot study, the questionnaires were sent to 30 financial analysts to ensure that there was no ambiguity and confusion in the questions, thereby obtaining an acceptable level of validity. When the responses came back from the respondents, statistical analysis was employed to test the significant items from GRI and whether they were perceived differently by the report users from what was intended by GRI in the pilot study. The email sent to the financial analysts is shown in Appendix B, and the questionnaires designed for the pilot study are shown in Appendices C, D and E.

The rationale for a sample of 30 was that, according to the central limit theorem, a sample of 30 is sufficient to draw numeric conclusions. The central limit theorem considers that only the mean of a sufficiently large number of independent random variables, each with finite mean and variance, will be approximately normally distributed (Chakrapani, 2011). The theorem states that a sample number of 30 can converge to normality, and this statement has been empirically tested with profound implications for business and social research. Because the central limit theorem is based on purely random samples, they are not subject to coverage, non-response, and non-sampling errors (Chakrapani, 2011). Hence, a sample of 30 in the pilot study was statistically significant, because it showed that the t-test values were close to the z-scores based on the normal curve.

4.54 Data analysis for the research instrument

There were two main statistical analyses used in the process of developing the instrument: descriptive statistics and one sample t-test. The data was analysed using Statistical Progress for Social and Science (SPSS). Descriptive statistics were adopted first to show the frequencies and the percentages of the scores given by the financial analysts in the survey questionnaire. This was to provide an overview of how important the indicators were as perceived by the report users. The second part of the analysis involved the use of one sample t-test model, where the default value was set to '4' because all indicators were intended to be 'important' by GRI. Thus, the indicators

with higher mean values of 4 were perceived as more important, and vice versa. The p value of an indicator showed its statistical significance, and it determined whether it was perceived as more important than what was intended by GRI statistically. The indicators were regarded as 'different' only when their p values showed significance at 0.1 level at least. If indicators were statistically different from the importance perceived by the users and what was intended by GRI, the coefficient from the t-test was used as the indicators' CSD perceptions index. This factor showed how much it was perceived as more or less important than what was intended by GRI. The research instrument, CSD perceptions index, was developed based on the results from this analysis.

4.6 Instrument and coding methods

Content analysis was employed for coding the dependent variables, where quality of CSD was measured with scores ranging from poor (1) to excellent (5) (Nelson, Banks & Fisher, 2003). An independent person with experience using content analysis was asked to recheck the sample of annual reports and stand-alone reports. This was essential because it overcame the weakness of content analysis conducted by a single researcher when coding (Krippendorff, 2004). As the reports were in Chinese, this independent person had to be a fluent Chinese language speaker.

The G4 corporate sustainability initiatives included a number of subcategories. In order to satisfy the research objective, the study did not investigate the subcategories in detail, because it was to focus on the quality of economic, environmental and social disclosure. Thus, scores were given solely to economic, environmental and social aspects overall.

4.7 Dependent variables

There were eight dependent variables for this study, as follows:

- corporate economic discourse index (CEco)
- corporate environmental disclosure index (CEn)
- corporate social disclosure index (CSo)
- overall corporate sustainability disclosure index (CSD)

- weighted corporate economic disclosure index (WEco)

- weighted corporate environmental disclosure index (WEn)

- weighted corporate social disclosure (WSo)

- weighted corporate sustainability disclosure (WCSD).

The weighted dependent variables are the quality of sustainability disclosure measured by users' perceived importance, whereas the other index was purely measured by GRI. In order to satisfy the research objective, CEco was measured by the quality of economic disclosure and CEnv was measured by the quality of environmental disclosure. The proxy for CSo is the quality of social disclosure, and CSD is the overall quality of all three types of disclosure. These variables were measured initially by GRI, but the weighted index was measured by the instrument designed based on the users' perceived importance. The variables were classified because it made a better comparison between disclosure quality by GRI and by report users' perception. Data for the dependent variables was collected based on G4 and the weighted and adjusted G4 guidelines – the instrument designed for this study.

The dependent variables, which are the quality of CSD, for this studies were examined through content analysis of stand-along corporate sustainability reports using the instrument developed and G4. In the analysis, sustainability reports were examined by the researcher from item to item of the instrument. For the coding method, the researcher used an ordinal scale. According to Nelson, Banks & Fisher (2003), the quality of economic/social/environmental disclosure is measured by the presentation of an item listed in the coding instrument. If an item was present, it is further scored on an ordinal scale based on the perceived quality of the disclosures, with scores ranging from poor (1) to excellent (5) (see Appendix A). If not, a score of 0 was given. The scoring of quality for economic, social and environmental disclosure was subsequently the dependent variable for this study.

4.8 Data analysis for CSD

Descriptive statistics were adopted to first explore the data collected, and frequencies and percentages of occurrence were provided to summarise and analyse the intensity of sustainability

disclosure. Second, univariate analysis and correlation analysis were used to test the relationship between each independent variable and the dependent variable. The third step involved the Ordinary Least Square (OLS) multi-regressions model to identify the contribution to the significance of each added independent variable, and to determine the key influential characteristics. Prior to using the regression model, the research had to test the assumptions in order to ascertain if they were true, for example normality and multicollinearity. A regression model was considered to provide more robust results, because it examined the combined influence of all variables to explain their relationships with corporate environmental disclosure and social disclosure, and how each variable influenced disclosure (Coakes, Steed & Ong, 2010). According to Hair, Anderson, Tatham and Black (1995), the multi-regression model evaluates the predictive power of explanatory variables objectively, while improving the prediction of dependent variables. Thus, it demonstrates statistical significance as to how each independent variable affects the extent of corporate environmental and social disclosure. Another reason for choosing this method was that the majority of independent variables were either ratio or continuous variables, whereas the dependent variables were additive and non-continuous (Mendenhall, Reinmuth, Beaver & Duhan, 1988).

This study examined the quality of CSD, and compared the driving forces derived from three theories that have been developed under the Western economy – Legitimacy Theory, Stakeholder Theory and Signalling Theory different. Subsequently, the influential factors derived from integrated theories, Legitimacy Theory, Stakeholder Theory and Signalling Theory were run. The factors were then compared based on their quality as examined by GRI and the research instrument based on report users' perceptions. Since CSD includes economic, environmental and social perspectives, each disclosure was tested by both the GRI model and the CSD perceptions index model; therefore, overall, there were 8 models in this study. After running OLS regressions, the models were compared in order to obtain the differences created by different models. The sample consisted of the listed companies in China from various industrial types, which were expected to behave in the same manner according to Legitimacy Theory, Stakeholder Theory and Signalling Theory. The models to be tested are shown in table 4.1.

Table 4.1: Research hypotheses

Economic aspect	Social aspect	Environmental aspect	Corporate sustainability disclosure	Definition	Expected association	Theory foundation
H1a: industry type	H1b: industry type	H1c: industry type	H1d: industry type	Whether a company is in a high profile industry	+	Legitimacy Theory
H2a: company location	H2b: company location	H2c: company location	H2d: company location	Whether a company is located in an economically developed area	+	Legitimacy Theory
H3a: firm age	H3b: firm age	H3c: firm age	H3d: firm age	Years a company has been listed	+	Legitimacy Theory
H4a: government ownership	H4b: government ownership	H4c: government ownership	H4d: government ownership	Percentage of shares owned by the government	+	Stakeholder Theory
H5a: legal-person ownership	H5b: legal-person ownership	H5c: legal-person ownership	H5d: legal-person ownership	Whether the legal person of a company is a board member	+	Stakeholder Theory
H6a: foreign ownership	H6b: foreign ownership	H6c: foreign ownership	H6d: foreign ownership	Percentage of shares owned by foreign companies	+	Stakeholder Theory
H7a: performance	H7b: performance	H7c: performance	H7d: performance	ROE	+	Signalling Theory
H8a: charitable donation	H8b: charitable donation	H8c: charitable donation	H8d: charitable donation	Donations made to charities	+	Signalling Theory
H9a: firm size (control variable)	H9b: firm size (control variable)	H9c: firm size (control variable)	H9d: firm size (control variable)	Total assets	+	Legitimacy Theory
H10a: leverage (control variable)	H10b: leverage (control variable)	H10c: leverage (control variable)	H10d: leverage (control variable)	Debt to equity ratio	+	Stakeholder Theory

Model 1

$$CEco = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 2

$$CSoc = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 3

$$CEnv = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 4

$$CSD = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 5

$$WCEco = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 6

$$WCSoc = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 7

$$WCEnv = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

Model 8

$$WCSD = \beta_0 + \beta_1 IND + \beta_2 AREA + \beta_3 AGE + \beta_4 GOWN + \beta_5 LOWN + \beta_6 FOWN + \beta_7 PERF + \beta_8 CSE + \beta_9 SIZE + \beta_{10} LEV \varepsilon i$$

CEco	Corporate economic disclosure index by GRI
CSoc	Corporate social disclosure index by GRI
$CEvn_c$	Corporate environmental disclosure index by GRI
CSD	Overall corporate sustainability disclosure index by GRI
WCEco	Corporate economic disclosure index by weighted index
WCSoc	Corporate social disclosure index by CSD perceptions index
$WCEvn_c$	Corporate environmental disclosure index by CSD perceptions index
WCSD	Overall corporate sustainability disclosure index by CSD perceptions index
CSD	A parameter from the research instrument based on report users' perceived

perceptions   importance of sustainability disclosure

index

IND   Whether a company is environmentally/socially sensitive (dummy)

AREA   Whether a company is located in an economically developed area

                   (dummy)

AGE   Years a company has been listed

GOWN   Percentage of shares held by the state-government

LOWN   Whether the legal person of a company is a board member

FOWN   Percentage of shares held by foreign investor(s)

PERF   Return on equity

CSE   Charitable donation

SIZE   Total assets

LEV   Debt to equity ratio

$\beta 0$ is a constant value

βn   represents the coefficient of predictive values

ei   is a residual value

4.9 Summary

The research methodology has been elaborated on in this chapter. This included the process of data selection and data collection, the development of the research instrument, coding methods, research design, tests of reliability and validity, statistical analyses, and tests of robustness. The analysis of report users' perceived importance of CSD was conducted first in order to develop the research instrument. For analysing the quality of CSD, both bivariate and multivariate analyses were used in the study to address the correspondent research questions using the SPSS program. The development of the instrument will be described in the following chapter, through the analysis of the report users' perceived importance of CSD in comparison with what was intended by GRI.

Chapter 5

Analysis of the users' perception of CSD and instrument development

5.1 Introduction

This section shows the analyses that answer research questions 1 and 2. Corporate sustainability includes environmental, economic and social aspects, and each aspect was examined independently. This chapter describes the development of the research instrument through analysis of the users' perceived importance of CSD. Tests of reliability and validity are shown first, followed by results from descriptive statistic and one sample t-test. The research instrument is developed at the end of the chapter.

5.2 Pilot study

Validity refers to the accuracy of the data. This measurement shows the extent to which the survey information is relevant to the conclusion that the researchers are expecting (Diao, 2013). There are a few measurements of validity: first, content validity, which represents how well the items on the research instrument representing the knowledge are being tested. Another measurement is face validity, which measures the structure and build of the survey, such as the length of the questionnaire (Mat Roni, 2014).

In this study, a pilot study was conducted before the survey for the full study. The pilot study tested three sustainability aspects, which were corporate environmental, economic and social disclosures. The results of this study were based on a smaller questionnaire designed using the GRI guidelines. Statistical analyses for the pilot study included descriptive statistics and one sample t-test. The questionnaire for the pilot study can be found in Appendices C, D and E. The full results for the statistical analyses are shown in Appendix G, including descriptive statistics and the t-test for all three sustainability perspectives. Differences in the results between the two tests were not shown to be significant.

The results from the t-test in the pilot study showed that, for the environmental indicators, responses to "water", "emissions", "effluents and waste", "compliance", "transportation" and "environmental grievance mechanisms" were different, and these categories were regarded as more important than was intended in the GRI guidelines. Under the economics heading, all four indicators, "economic performance", "indirect economic impact", "procurement practices" and "market presence" are statistically different, and they were regarded as less important than what was intended by GRI. For social indicators, "labour practice" and "society" ranked as less important, whereas "product responsibility" was rated the most important.

Table 5.1: Significant categories from the t-test in the pilot study

Category	t	Sig. (2-tailed)	Type of CSD
Water	3.016	0.005***	Environmental
Emissions	2.175	0.037**	Environmental
Effluents and waste	2.385	0.023**	Environmental
Compliance	2.098	0.044**	Environmental
Transportation	-3.384	0.002***	Environmental
Environmental grievance mechanisms	-3.699	0.001***	Environmental
Economic performance	-3.066	0.004***	Economic
Market presence	-2.978	0.005***	Economic
Indirect economic impacts	-5.167	0.000***	Economic
Procurement practices	-6.018	0.000***	Economic
Labour practice	-1.963	0.058*	Social
Society	-3.016	0.005***	Social

*Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$*

Regarding the question of the users' perceived importance of environmental reporting in China, table 5.1 shows that "Water", "Emissions", "Effluents and waste", "Compliance", "Transportation" and "Environmental grievance mechanisms" are statistically significant; in particular, "water", "emissions", "effluents and waste" and "compliance" were perceived as more important by the pilot study respondents, whereas "transportation" and "environmental grievance mechanisms" were perceived as less important.

In relation to the users' perceived importance of economic reporting, Table 5.1 from the t-test later showed that all indicators were not significant, and their importance rank below the test value by GRI; therefore, the economic indicators are different from the GRI guidelines, and they are much less important in CSD in the Chinese context.

For social indicators, the t-test indicated that "labour practice" and "society" are less important in China than what GRI intended. "Product responsibility" should be focused on when disclosing sustainability. However, due to the small sample size of this study, this is only an indication that what is perceived as important by GRI may not be considered so important by Chinese report users; and what is perceived to be important by Chinese report users may not be as important to users from other countries with different cultural backgrounds.

At the end of the questionnaire, some respondents suggested having specific social categories instead of "labour practice and decent work", "human rights", "society" and "product responsibility" due to the broad nature of these concepts. No amendment was made to the questionnaire for environmental and economic disclosure. Therefore, in the full-scale study, the questionnaire was extended in order to reduce the ambiguity, and to fully address the perceived importance of CSD from the report users' perspectives. The refined and extended questionnaire for the full study are shown in Appendices C, D and F for environmental, social and economic disclosure, respectively. Overall, the pilot study provides a brief indication of users' perceived importance of corporate sustainability disclosure in China, with a small sample size. Importantly, the pilot study ensured the validity of the questionnaire which was later used to develop the research instrument for the main study. Consequently, the assessment and assurance of content validity was satisfied.

5.3 Instrument reliability

Studies that involve a survey must consider the reliability and validity of data collected from respondents, because reliability and validity ensure the results are accurate and reliable for answering the research questions (Lin, 2010). Reliability measures whether the data collecting process is dependable, predictable and consistent It ensures the responses from participants of the

survey are reliable. The higher the consistency of answers over time, the more reliable the data is. According to Yi (2008), one of the most common measurements for reliability is Cronbach's alpha, which tests how well a set of variables measures a single and one-dimensional latent construct. For social accounting research, when α is greater than or equal to 0.7, the obtained data provides higher reliability; data reliability is moderate when α is smaller than and equal to 0.35; and when α is smaller than 0.35, the data is of lower reliability, which suggests an amendment of the survey (Diao, 2013). A reliability test for this study was conducted by SPSS, and the alpha value from the pilot study and the full survey were both over 0.9, which satisfied the requirement for internal consistency.

5.4 Descriptive statistics

This section describes the results of descriptive statistics for the full study of the analysis of the users' perceived importance of CSD. As CSD includes three aspects, each aspect was analysed separately first, and the integrated perception of CSD was discussed.

5.41 Environmental indicators

Table 5.2 shows descriptive statistics of the perceived importance of environmental disclosure indicators. The respondents were asked to rate the importance of the disclosure items. There were 5 levels in the answers they had chosen. The highest was 5 (the most important) and the lowest was 1 (the least important). All items were major environmental performance indicators suggested by GRI guidelines.

The results reveal that, of the 13 indicators, 4 were rated "most important" and the remaining 8 were rated "important". "Water" had the highest number of "most important" responses, being chosen by 74 respondents (57.4%). This was followed by "Emissions" and "Effluents and Waste", from 73 respondents (56.6%) for both indicators. "Compliance" also had a mode of "most important", to a lesser extent, with a score of 59 (45.7%). Therefore, it is evident that the reports users consider these indicators to be more important than the others. For other indicators, most of the responses were "important". However, it is worth noting that "Biodiversity",

"Transportation" and "Environmental grievance" had 2 (1.6%), 1 (0.8%) and 3 (2.3%) responses marked as "least important", respectively. In opposition, "Effluents and Waste", "Products and services" and "Compliance" had no response in the "least important" and "not important" categories.

In the open-ended question, two respondents included two suggestions for CSD environmental guidelines. The first response stated "Waste of raw material in operation caused by technology issues", and the second response said that "An overview of how a company affects the environment throughout a year, including the level of risk and any potential affect when there is a severe incident or natural disaster". These responses need to be considered when doing further CSD analysis.

In summary, the results in descriptive statistics show that these 12 environmental indicators should be included in a sustainability report or environmental reporting. "Water", "Emissions", "Effluents and waste" and "Compliance" should be of more weight when examining environmental disclosure, because they were considered more important than the other indicators. Nevertheless, the means of the tested indicators will be used in further weighted analyses.

Table 5.2: Frequency of environmental indicators (sample size N = 129)

	Least IMP	**Not IMP**	**Neutral**	**IMP**	**Most IMP**	**Mode**
Material usage	0	4 (3.1%)	20 (15.5%)	64 (49.6%)	41 (31.8%)	IMP
Energy	0	1 (0.8%)	20 (15.5%)	60 (46.5%)	48 (37.2%)	IMP
Water	0	1 (0.8%)	6 (4.7%)	48 (37.2%)	74 (57.4%)	Most IMP
Biodiversity	2 (1.6%)	4 (3.1%)	14 (10.9%)	70 (54.3%)	39 (30.2%)	IMP
Emissions	0	3 (2.3%)	8 (6.2%)	45 (34.9%)	73 (56.6%)	Most IMP
Effluents and Waste	0	0	11 (8.5%)	45 (34.9%)	73 (56.6%)	Most IMP
Products and services	0	0	23 (17.8%)	75 (58.1%)	31 (24%)	IMP
Compliance	0	0	14 (10.9%)	56 (43.4%)	59 (45.7%)	Most IMP
Transportation	1 (0.8%)	6 (4.7%)	30 (23.3%)	59 (45.7%)	33 (25.6%)	IMP
Environmental overall sustainability	0	2 (1.6%)	24 (18.6%)	66 (51.2%)	37 (28.7%)	IMP
Supplier environmental assessment	0	4 (3.1%)	19 (14.7%)	66 (51.2%)	40 (31%)	IMP
Environmental grievance	3 (2.3%)	2 (1.6%)	21 (16.3%)	64 (49.6%)	39 (30.2%)	IMP

Q13: Waste of raw material in operation caused by technology defaults; an overview of how a company affects the environment throughout a year, including the level of risk and any potential affect when there is a severe incident or natural disaster.

Note: IMP = important

5.42 Economic indicators

Table 5.3 presents the descriptive statistics of the economic indicators. The results overall show that the mode for the indicators is "important". While the majority of the responses were "important", a considerable proportion of the respondents considered the economic indicators "neutral".

Table 5.3" Frequency of economic indicators (sample size N = 129)

	Least IMP	**Not IMP**	**Neutral**	**IMP**	**Most IMP**	**Mode**
Economic performance	2 (1.6%)	1 (0.8%)	26 (20.2%)	74 (57.4%)	26 (20.2%)	IMP
Market presence	0	2 (3.9%)	31 (24%)	69 (53.5%)	24 (18.6%)	IMP
Indirect economic impacts	0	6 (4.7%)	41 (31.8%)	69 (53.5%)	13 (10.1%)	IMP
Procurement practices	0	12 (9.3%)	39 (30.2%)	61 (47.3%)	17 (13.2%)	IMP
Q5: CPI of employees within a company; accumulated unemployment						

Note: IMP = important

"Economic performance" obtained the highest score for "most important", chosen by 26 respondents (20.2%). It also had the most "important" responses. However, 26 (20.2%), 1 (0.8%) and 2 (1.6%) respondents chose "neutral", "not important" and "least important" respectively, which may suggest that the mean for this indicator is below what was intended by GRI. For other indicators, although 69 (53.5%), 69 (53.5%) and 61 (47.3%) responses were obtained for "market presence", "indirect economic impacts" and "procurement practices", there are large percentages in the not-so-important categories.

There were two responses for Q5, which was an open-ended question on economic sustainability. The report users responded that they would like to see a Consumer Price Index (CPI) of the employees within a company and the accumulated unemployment in companies'

sustainability reports. It is important to see that financial analysts are linking the financial perspective with corporate sustainability when examining CSD.

Overall, the result suggests that all of the economic indicators may be included in sustainability reports, but the weight of these indicators must be reconsidered, because almost half of the respondents considered them less than important. Companies may also need to consider including a CPI of their employees, as well as unemployment data, in their sustainability reports.

5.43 Social indicators – labour practice and decent work

Corporate social disclosure is a major focus in sustainability reporting outlined in GRI. There are four main categories of social indicators – labour practice and decent work, human rights, society, and product responsibility. Each category consists of a series of indicators, and all four categories were examined.

Table 5.4 shows the results of the responses from the users' most desired labour practice and decent work indicators. Overall, the modes are "important", which means the majority of respondents chose "important". However, it is worth noting that "occupational health and safety" and "equal remuneration for women and men" had 49 and 39 responses for "most important", which is over 30% (38% and 30.2% respectively). In contrast, "employment" and "diversity and equal opportunity" had 40 and 41 responses in "neutral" – over 30% of the total responses – meaning that respondents did not care so much about these indicators.

Table 5.4: Frequency of social indicators – labour practice and decent work (sample size N = 129)

	Least IMP	**Not IMP**	**Neutral**	**IMP**	**Most IMP**	**Mode**
Employment	0	1 (0.8%)	40 (31%)	64 (49.6%)	24 (18.6%)	IMP
Labour/management relationship	0	2 (1.6%)	27 (20.9%)	64 (49.6%)	36 (27.9%)	IMP
Occupational health and safety	0	3 (2.3%)	15 (11.6%)	62 (48.1%)	49 (38%)	IMP
Training and education	0	4 (3.1%)	27 (20.9%)	65 (50.4%)	33 (25.6%)	IMP
Diversity and equal opportunity	1(0.8%)	6 (4.7%)	41 (31.8%)	49 (38%)	32 (24.8%)	IMP
Equal remuneration for women and men	2(1.6%)	6 (4.7%)	29 (22.5%)	53 (41.1%)	39 (30.2%)	IMP
Q7: Sexism						

Note: IMP = important

In the open-ended question (Q7), one respondent wrote "sexism". Although the GRI guidelines include an item about sexism (equal remuneration for women and men), this suggests that companies may consider focusing more on gender in their sustainability reports.

5.44 Social indicators – human rights

There are 10 indicators in the human rights category, and the results for this part of the questionnaire are shown in table 5.5. Similarly, to the previous category, the modes for human rights indicators are also "important", which means the majority had chosen "important".

For "most important", the top rated indicator is "security practice" (51 responses, 39.5%), followed by "child labour" (49 responses, 38%) and "forced compulsory labour" (43 responses, 33.3%). These indicators obtained over 30% more than the "important" answers, and have higher mean values. Significantly, in contrast, all of the indicators were rated "least important" and "not

important" by at least one respondent. "Supplier human rights assessment" obtained the highest percentage (3 responses, 2.3%) for "least important", and the second-highest percentage for "not important" (8 responses, 6.2%). It is followed by "non-discrimination" with 2 responses (1.6%) for "least important". For "not important", "assessment" obtained the most responses (9 responses, 7%), followed by "supplier human rights" and "human rights grievance mechanisms" (both had 8 responses, 6.2%).

As the results show, human rights indicators are likely to be perceived as considerably less important than other aspects, due to the large proportion of responses in the not-so-important categories. There were no responses to the open-ended question.

Table 5.5: Frequency of social indicators – human rights (sample size N = 129)

	Least IMP	Not IMP	Neutral	IMP	Most IMP	Mode
Investment	1 (0.8%)	4 (3.1%)	35 (27.1%)	70 (54.3%)	19 (14.7%)	IMP
Non-discrimination	2 (1.6%)	4 (3.1%)	38 (29.5%)	54 (41.9%)	31 (24%)	IMP
Freedom of association and collective bargaining	1 (0.8%)	6 (4.7%)	30 (23.3%)	71 (55%)	21 (16.3%)	IMP
Child labour	1 (0.8%)	4 (3.1%)	18 (14%)	57 (44.2%)	49 (38%)	IMP
Forced or compulsory labour	1 (0.8%)	2 (1.6%)	23 (17.8%)	60 (46.5%)	43 (33.3%)	IMP
Security practice	1 (0.8%)	4 (3.1%)	20 (15.5%)	53 (41.1%)	51 (39.5%)	IMP
Indigenous rights	1 (0.8%)	5 (3.9%)	34 (26.4%)	66 (51.2%)	23 (17.8%)	IMP
Assessment	1 (0.8%)	9 (7%)	33 (25.6%)	60 (46.5%)	26 (20.2%)	IMP
Supplier human rights assessment	3 (2.3%)	8 (6.2%)	45 (34.9%)	52 (40.3%)	21 (16.3%)	IMP
Human rights	1 (0.8%)	8 (6.2%)	32	65	23	IMP

grievance mechanisms		(24.8%)	(50.4%)	(17.8%)	
Q11: Nil					

Note: IMP = important

5.45 Social indicators – society

In the society category, "compliance" obtained the most responses for "most important" (40 responses, 31%), and significantly, it has no responses for "least important" or "not important". "Anti-corruption" also had 39 responses, which is above 30%, for "most important".

For the "neutral" ranking, "public policy" and "supplier assessment for impact on society" have the most responses, both 41 (31.8%). This result is followed by "anti-competitive behaviour" and "local community", with 36 (27.9%) and 35 (27.1%) respectively. There are also responses in "not important", where "supplier assessment for impact on society" obtained the most responses (7, 5.4%). "Grievance mechanism for impacts on society", "local community", and "public policy" each have 1 response in "least important".

Overall, the modes of social indicators are "important"; however, as the statistics suggest, more than half of the responses are "neutral", "not important" or "least important". This may suggest that this category is perceived as less important. Nevertheless, "compliance" is shown to be the most important among the other indicators in this category.

Table 5.6: Frequency of social indicators – society (sample size N = 129)

	Least IMP	**Not IMP**	**Neutral**	**IMP**	**Most IMP**	**Mode**
Local community	1 (0.8%)	5 (3.9%)	35 (27.1%)	71 (55%)	17 (13.2%)	IMP
Anti-corruption	0	4 (3.1%)	27 (20.9%)	59 (45.7%)	39 (30.2%)	IMP
Public policy	1 (0.8%)	4 (3.1%)	41 (31.8%)	56 (43.4%)	27 (20.9%)	IMP
Anti-competitive behaviour	0	2 (1.6%)	36 (27.9%)	66 (51.2%)	25 (19.4%)	IMP
Compliance	0	0	19 (14.7%)	70 (54.3%)	40 (31%)	IMP

Supplier assessment for impacts on society	0	7 (5.4%)	41 (31.8%)	63 (48.8%)	18 (14%)	IMP
Grievance mechanism for impacts on society	1(0.8%)	1(0.8%)	28(21.7%)	65(50.4%)	34(26.4%)	IMP
Q8: Nil						

Note: IMP = important

5.46 Social indicators – product responsibility

Product responsibility is the last sub-category in the social category. There are 5 indicators in total. Overall, "customer health and safety" has the most responses for "most important", and "marketing communication" has the most responses for "not important". It is worth noting that the mode for "customer health and safety" is "most important", whereas modes for the other indicators are "important".

Table 5.7: Frequency of social indicators –pProduct responsibility (sample size N = 129)

	Least IMP	Not IMP	Neutral	IMP	Most IMP	Mode
Customer health and safety	1 (0.8%)	2 (1.6%)	9 (7%)	55 (42.6%)	62 (48.1%)	Most important
Product and service labelling	1 (0.8%)	2 (1.6%)	22 (17.1%)	65 (50.4%)	39 (30.2%)	Important
Marketing communications	1 (0.8%)	5 (3.9%)	33 (25.6%)	66 (51.2%)	24 (18.6%)	Important
Customer privacy	1 (0.8%)	1 (0.8%)	11 (8.5%)	60 (46.5%)	56 (43.4%)	Important
Compliance	0	1 (0.8%)	13 (10.1%)	68 (52.7%)	47 (36.4%)	Important
Q6: Nil						

Note: IMP = important

For "most important", 62 responses (48.1%) were obtained for "customer health and safety", followed by "customer privacy" (56 responses, 43.4%) and "compliance" (47 responses, 36.4%). For "important", "product and service labelling", "marketing communications" and

"compliance" obtained scores over 50% - 50.4% (65), 51.2% (66) and 52.7% (68) respectively. Importantly, "marketing communications" had the most responses for both "neutral" (33 responses, 25.6%) and "not important" (5 responses, 3.9%). All indicators except "compliance" had 1 response for "least important".

In summary, all four categories of social aspects are important in sustainability reports; however, the weighting for each category definitely needs consideration in application, because the categories are not equally important.

5.5 One sample t-test

A t-test is used to determine if there is any significant difference between two sets of scores. One sample t-test is considered when only a single sample of the participants and the questions is used to determine whether the mean of the population from which the sample is drawn in the same as the hypothesised mean (Coake, 2010). In this study, one sample t-test was adopted because the mean values drawn from the users' perceived importance of each type of sustainability disclosure were compared with the level of importance intended by GRI.

As discussed in chapter 4, one sample t-test was used to answer research question two, which is 'to what extent do the users perceive sustainability indicators in GRI differently from what was intended?' This question was later divided into three parts, as CSD includes three different perspectives. Therefore, research question 2 is broken down into the following questions, which were answered partially in this section:

Question 2a: What is the users' perceived importance of environmental disclosure, and to what extent do users perceive the environmental indicators in GRI differently from what GRI intended?

Question 2b: What is the users' perceived importance of economic disclosure, and to what extent do users perceive the social indicators in GRI differently from what GRI intended?

Question 2c: What is the users' perceived importance of social disclosure, and to what extent do users perceive the sustainable economic indicators by GRI differently from what GRI intended?

5.51 Environmental indicators

Table 5.8: T-test for environmental indicators (sample size N = 129)

	Mean	Std. Deviation	t	Sig. (2-tailed)
Material usage	4.1	0.769	1.488	0.139
Energy	4.2	0.722	3.170	0.002***
Water	4.51	0.626	9.276	0.000***
Biodiversity	4.09	0.820	1.181	0.240
Emissions	4.46	0.718	7.233	0.000***
Effluents and Waste	4.48	0.651	8.389	0.000***
Products and services	4.06	0.647	1.089	0.278
Compliance	4.35	0.669	5.922	0.000***
Transportation	3.91	0.861	-1.227	0.222
Environmental overall sustainability	4.07	0.731	1.084	0.280
Supplier environmental assessment	4.10	0.759	1.509	0.134
Environmental grievance	4.04	0.861	0.512	0.610

*Note: t-test at 95% confidence interval; ***Significant at 0.01 level.*

Table 5.8 presents the results from the t-test for environmental indicators, and partially answers research questions 1 and 2. Evidently, there are 5 indicators that are statistically significant at 0.01 level: "Energy", "Water", "Emissions", "Effluents and waste" and "Compliance". The results suggest that these indicators are perceived differently from what was intended by GRI. "Water" presents the highest mean value of 4.51. The t-statistic is 9.276 and the p-value is 0.000, meaning that the result is significant, and it is perceived as more important than what was intended by GRI. This result is followed by "Effluents and waste", "Emissions", "Compliance" and "Energy", with mean values of 4.48, 4.46, 4.35 and 4.2, respectively. As their mean values are greater than the t-test value of 4 (the level intended by GRI), the null hypotheses for these indicators are rejected. These results further suggest that, when measuring and analysing

sustainability reports in China, the weight and importance of the items included in these questions must be reconsidered.

For "Emissions", "Effluents and waste" and "Compliance", the results were consistent with the recent trend of carbon offsets and the serious carbon emissions in many major cities in China, which gradually gained significant international attention during the data collection period. Carbon offset refers to a monetary investment that abates greenhouse gas emission or sequesters carbon from the atmosphere that is used to compensate for greenhouse gas emission from companies' own activities. To combat severe air pollution, Beijing recently had "APEC-blue" sky, because the government temporarily shut down the industrial area in Hebei. In order to achieve long-term performance, reporting 'Emissions' are important to reflect firm value.

In summary, the results for "Energy", "Water", "Emissions" "Effluents and waste" and "Compliance" showed that the users' perceived importance of CSD was different from what was intended by GRI. On the contrary, there were statistical differences in "Material usage", "Biodiversity", "Products and services", "Transportation", "Environmental overall sustainability", "Supplier environmental assessment" and "Environmental grievance".

5.52 Economic indicators

Table 5.9: T-test for economic indicators (sample size N = 129)

	Mean	Std. Deviation	t	Sig. (2-tailed)
Economic performance	3.94	0.758	-0.929	0.354
Market presence	3.87	0.754	-1.985	0.049**
Indirect economic impacts	3.69	0.716	-4.920	0.000***
Procurement practices	3.64	0.827	-4.896	0.000***

*Note: t-test at 95% confidence interval; **Significant at 0.05 level; ***Significant at 0.01 level.*

Table 5.9 shows the results of the t-test for economic indicators. "Indirect economic impacts" and "Procurement practices" are statistically significant at 0.01 level, and "Market presence" is significant at 0.05 level. Interestingly, the mean values for all 4 indicators are below the test value

of 4, suggesting that the perceptions of economic indicators were not as important as they were intended to be in the GRI guidelines.

"Market presence" and "Procurement practices" are significant at 0.01 level, with mean values of 3.69 and 3.64, respectively. Their t-stat and p-value are both evidential, showing these are statistically significant. "Market presence" has a t-stat of -1.985 and p-value of 0.049, which means that it is also significant.

In summary, the users considered the economic indicators less important. Since the results are statistically significant, this shows that all indicators for economic disclosure were perceived differently by the users from what was intended by GRI.

5.53 Social indicators

5.531 Labour practice and decent work

Table 5.10 shows the results of the t-test for social indicators in the sub-category of labour practice and decent work. Overall, there are 3 indicators shown to be statistically significant, among the total 6.

Table 5.10: T-test for social indicators – labour practice and decent work (sample size N = 129)

	Mean	Std. Deviation	t	Sig. (2-tailed)
Employment	3.86	0.715	-2.216	0.028**
Labour/management relationship	4.04	0.744	0.592	0.555
Occupational health and safety	4.22	0.739	3.335	0.001***
Training and education	3.98	0.770	-0.229	0.820
Diversity and equal opportunity	3.81	0.891	-2.373	0.019**
Equal remuneration for women and men	3.94	0.925	-0.762	0.448

*Note: t-test at 95% confidence interval; **Significant at 0.05 level; ***Significant at 0.01 level.*

The results shown in Table 5.10 reveal that "Occupational health and safety", "Diversity and equal opportunity" and "Employment" reject the null hypotheses. "Occupational health and safety" had an average of 4.22, indicating that the report users perceived this indicator as more important. The t-stat and p-value are 3.335 and 0.001, showing that this indicator is statistically significant. Therefore, "Occupational health and safety" is more important than what was intended by GRI.

In contrast, "Diversity and equal opportunity" and "Employment" had mean values less than their t-test value, meaning that they are less important. The t-stats and p-values for these indicators are -2.373, 0.019, and -2.216, 0.028, respectively. This suggests that "Diversity and equal opportunity" and "Employment" are statistically significant at 0.05 level, and they were perceived as less important. The other indicators, "Labour/management relationship", "Training and education" and "Equal remuneration for women and men", are not statistically significant due to their p-values greater than 0.1.

In summary, "Occupational health and safety", "Diversity and equal opportunity" and "Employment" are significant at 0.01, 0.05 and 0.05 levels respectively, and they were perceived differently by the users from what was intended by GRI.

5.532 Human rights

As shown in table 5.11, there are 10 indicators in Human rights, and 9 indicators are statistically significant at either 0.05 level or 0.01 level. However, the mean values show that some indicators are important, while the others are not so important.

In regards to indicators that were perceived as important by the report users, "Child labour", "Security practice" and "Forced or compulsory labour" obtained higher mean values than the t-test value of 4. "Child labour" and "Security practice" are statistically significant at 0.05 level, with t-stats and p-values of 2.113, 0.037 and 2.067, 0.041, respectively. The mean values for both indicators are identical at 4.16, which indicates that they are perceived as more important than intended by GRI. In contrast, "Forced or compulsory labour" is not statistically significant.

Table 5.11: T-test for social indicators – human rights (sample size N = 129)

	Mean	Std. Deviation	t	Sig. (2-tailed)
Investment	3.79	0.757	-3.140	0.002***
Non-discrimination	3.84	0.882	-2.096	0.038**
Freedom of association and collective bargaining	3.81	0.788	-2.681	0.008***
Child labour	4.16	0.833	2.113	0.037**
Forced or compulsory labour	4.10	0.799	1.433	0.154
Security practice	4.16	0.852	2.067	0.041**
Indigenous rights	3.81	0.798	-2.648	0.009***
Assessment	3.78	0.875	-2.819	0.006***
Supplier human rights assessment	3.62	0.912	-4.732	0.000***
Human rights grievance mechanisms	3.78	0.838	-2.941	0.004***

*Note: t-test at 95% confidence interval; **Significant at 0.05 level; ***Significant at 0.01 level.*

In contrast, the remaining 7 indicators have less perceived importance than what was intended by GRI, as their mean values are below the t-test value, and they are significant at 0.05 and 0.01 levels. "Supplier human rights assessment" has the lowest mean, showing it is the indicator of least concern to the report users. The mean value is 3.62, and the t-stat and p-value are -4.732 and 0.000, showing the significance level is at 0.01. This is followed by "Human rights grievance mechanisms", "Assessment" and "Investment", with mean values and t-stats of 3.78 and -2.941, 3.78 and -2.819, and -3.140 and -3.140 respectively. The significance levels for these indicators are 0.01. Lastly, "Indigenous rights", "Freedom of association and collective bargaining" and "Non-discrimination" have slightly higher mean values of 3.81, 3.81 and 3.84. All 3 indicators are statistically significant at 0.01, 0.01 and 0.05 levels.

In summary, "Child labour" and "Security practice" are perceived as more important by the users, which is shown by their statistical significance. "Supplier human rights assessment", "Human rights grievance mechanisms", "Assessment", "Investment", "Indigenous rights",

"Freedom of association and collective bargaining" and "Non-discrimination" are perceived as less important by the report users than was intended by GRI.

5.533 Society

Table 5.12: T-test for social indicators – society (sample size N = 129)

	Mean	**Std. Deviation**	**t**	**Sig. (2-tailed)**
Local community	3.76	0.758	-3.601	0.000***
Anti-corruption	4.03	0.800	0.440	0.662
Public policy	3.81	0.830	-2.652	0.009***
Anti-competitive behaviour	3.88	0.725	-1.822	0.071*
Compliance	4.16	0.659	2.806	0.006***
Supplier assessment for impacts on society	3.71	0.773	-4.217	0.000***
Grievance mechanism for impacts on society	4.01	0.765	0.115	0.909

*Note: t-test at 95% confidence interval; *Significant at 0.1 level; ***Significant at 0.01 level.*

In the society category, there are 5 indicators that are statistically significant. In particular, the mean value of "Compliance", at 4.16, is greater than the t-test value. The t-stat and p-value are 2.806 and 0.006, so "Compliance" is perceived as more important than was intended by GRI. Although "Anti-corruption" and "Grievance mechanism for impacts on society" are more than "important", they are not statistically significant.

In contrast, the mean values of "Supplier assessment for impact on society", "Public policy", "Local community" and "Anti-competitive behaviour" are below the t-test value of 4, scoring 3.71, 3.81, 3.76 and 3.88 respectively, and their p-values are significant at 0.1 and 0.01 levels. This suggests that these indicators are perceived as less important than was intended by GRI.

Overall, "Compliance", "Supplier assessment for impact on society", "Public policy", "Local community" and "Anti-competitive behaviour" were perceived differently by the users.

"Compliance" was perceived as more important than GRI intended, whereas the other significant indicators were perceived important to a much lesser extent.

5.534 Product responsibility

In this category, most of the statistically significant indicators were perceived as more important than intended by GRI, except "Marketing communication". Table 5.13 presents the results of the t-test for product responsibility, which is the last category under social sustainability.

"Customer health and safety" obtained the highest mean, 4.36, of the 5 indicators, with t-stat and p-values of 5.415 and 0.000. "Customer privacy" and "Compliance" also showed high mean values of 4.31 and 4.25. They were both at 0.01 significance level, hence, they were perceived differently by the users. In comparison, "Marketing communications" had a mean of 3.83, and its was perceived important to a lesser extent. Due to its p-value of 0.017, this indicator also showed statistical significance. Although the mean for "Product and service labelling" is more than 4, the p-value for this indicator is not statistically significant.

Table 5.13: T-test table for social indicators – product responsibility (sample size N = 129)

	Mean	**Std. Deviation**	**t**	**Sig. (2-tailed)**
Customer health and safety	4.36	0.748	5.415	0.000***
Product and service labelling	4.08	0.777	1.134	0.259
Marketing communications	3.83	0.802	-2.416	0.017**
Customer privacy	4.31	0.727	4.846	0.000***
Compliance	4.25	0.662	4.257	0.000***

*Note: t-test at 95% confidence interval; **Significant at 0.05 level; ***Significant at 0.01 level.*

In summary, the mean value for "Marketing communications" is less than 4, whereas the other indicators are greater than 4. Most of the indicators are shown to be statistically significant, except for "Product and service labelling".

5.6 Research instrument

The mean values of the environmental, economic and social sustainability indicators were used to develop the research instrument to be suitable and appropriate to investigate CSD in the Chinese context. Existing studies also considered the mean value as a tool representing the difference in weight of the importance of CSD items (Taylor and Shan, 2007; Taylor and Shan, 2010; Hutomo, 1998). As the results showed in the previous sections, there were some indicators perceived differently from what was intended by GRI, whereas the importance of the other indicators did not change. Consequently, the weight of importance of sustainability indicators changes only for the ones that are statistically significant. If indicators are perceived the same as was intended by GRI, the weighted importance is 4, which is the same as the t-test value. The weight of importance was also referred to as the CSD perceptions index (CSDPI) in this study, which represents the research instrument. Table 5.14 shows CSDPI for the environmental indicators, and table 5.15 and table 5.16 show CSDPI for economic and social disclosure, respectively. The full version of the instrument adopted in the study is presented in Appendix H.

Table 5.14: CSD perceptions index - environmental disclosure

Environmental indicators	CSD perceptions index (Mean)
Material usage	4
Energy	4.2
Water	4.51
Biodiversity	4
Emissions	4.46
Effluents and Waste	4.48
Products and services	4
Compliance	4.35
Transportation	4
Environmental overall sustainability	4
Supplier environmental assessment	4
Environmental grievance	4
Waste by technology defaults	4
Impacts on environment overview	4

Table 5.15: CSD perceptions index - economic disclosure

Economic indicators	CSD perceptions index (Mean)
Economic performance	4
Market presence	3.87
Indirect economic impacts	3.69
Procurement practices	3.64
CPI of employees	4
Accumulated unemployment	4

Table 5.16: CSD perceptions index - social disclosure

Labour practice (social) indicators	CSD perceptions index (Mean)
Employment	3.86
Labour/management relationship	4
Occupational health and safety	4.22
Training and education	4
Diversity and equal opportunity	3.81
Equal remuneration for women and men	4
Sexism	4

Table 5.16: CSD perceptions index - social disclosure (Cont'd)

Human rights (social) indicators	CSD perceptions index (Mean)
Investment	3.79
Non-discrimination	3.84
Freedom of association and collective bargaining	3.81
Child labour	4.16
Forced or compulsory labour	4
Security practice	4.16
Indigenous rights	3.81
Assessment	3.78
Supplier human rights assessment	3.62
Human rights grievance mechanisms	3.78

Table 5.16: CSD perceptions index - social disclosure (Cont'd)

Society (social) indicators	CSD perceptions index (Mean)
Local community	3.76
Anti-corruption	4
Public policy	3.81
Anti-competitive behaviour	3.88
Compliance	4.16
Supplier assessment for impacts on society	3.71
Grievance mechanism for impacts on society	4

Table 5.16: CSD perceptions index - social disclosure (Cont'd)

Product responsibility (social) indicators	CSD perceptions index (Mean)
Customer health and safety	4.36
Product and service labelling	4
Marketing communications	3.83
Customer privacy	4.31
Compliance	4.25

5.7 Findings and discussion

The purpose of this section is essentially to answer research questions 1 and 2, showing users' perceived importance of CSD in china, and the extent to which this differs from what was intended by GRI. The results are from descriptive statistics and one-sample t-test, based on 129 responses to the questionnaire designed using GRI guidelines from financial analysts.

For environmental indicators, as shown in descriptive statistics, "Water", "Emissions", "Effluents and Waste" and "Compliance" were perceived as more important than the other indicators. These results are partially correspondent with those of the t-test, in which "Energy" is shown as statistically significant. Since the mean values for these indicators are above 4, they are perceived as more important than intended by GRI. In the open-ended questions, responses included "waste of raw material" and "an overview of impact on environment of a company". So, later in the study, these two additional indicators from the open-ended questions must be included.

For economic indicators, "Procurement practices", "indirect economic impacts" and "Market presence" are perceived as less important than what was intended by GRI. Overall, the mean values for economic performance are below "important" (4). The reason for this is partially that information regarding economic perspectives is included in annual reports. If users were interested in this form of information, they would read annual reports instead of CSD. Also, "CPI from employees" and "unemployment" were indicated in the open-ended questions, which were included as a part of the instrument, and they were considered "important" when examining companies' CSD.

Regarding social disclosure, "occupational health and safety", "child labour", "security practice", "compliance in society", "customer health and safety", "customer privacy" and "compliance in product responsibility" were perceived as more important than intended by GRI, where their CSDPI result was greater than 4. A number of indicators showed less importance, including "employment", "diversity and equal opportunity", "investment", "non-discrimination", "freedom of association and collective bargaining", "indigenous rights", "assessment", "supplier

human rights assessment", "human rights grievance mechanisms", "local community", "public policy", "anti-competitive behaviour", "supplier assessment for impacts on society" and "marketing communications". The rest of the categories did not show statistical significance in the t-test, therefore they remain as '4' in CSDPI.

According to the results from the descriptive statistics and t-test, it is apparent that there are moderate differences among economic disclosure, environmental disclosure and social disclosure. In particular, categories within each main aspect were also different statistically, or through visualisation of the descriptive statistics results. Environmental disclosure was perceived as most important among the three aspects, followed by social disclosure and, lastly, economic disclosure. Looking more closely, categories that were perceived as more important were often the most publicly concerning issues, such as energy, water, emission, effluents and waste in environmental disclosure in China. Information regarding these indicators was included in the 12th Five Years Sustainability Plan announced by the Chinese government, in which companies were encouraged to disclose use of material, energy consumption and general environmental performance. Although adherence to the plan is on a voluntary basis, many users wanted to see information regarding these areas being included in sustainability reports. With regard to social disclosure, the changes among the categories were not as significant as they were in environmental disclosure, where no category was perceived as "not important". The weight of each social category was considerably mild, and the average was approximately '4'. This indicates that the Chinese report users did not perceive social disclosure as important as environmental disclosure, due to external reasons such as government policy and public or media concerns. However, it is notable that "production responsibility" indicators generally received high attention. Production responsibility is another area of concern in China, due to recent severe food product faults and the milk powder scandal in the community. Economic disclosure was perceived as least important in comparison with the other two types of disclosure. As discussed previously, this was primarily because economic information could be fully obtained from companies' annual reports. The purpose of economic disclosure, as indicated in GRI, is to show information that is less frequently reported, but often desired by readers of sustainability reports.

An organisation may be financially viable, but this may have been achieved by creating significant externalities that impact other stakeholders. Therefore, information included in economic disclosure presents a measurement of the economic outcomes of a company and the effect and relevance of these outcomes on a broad range of stakeholders. Nevertheless, as this information can still be obtained from annual reports, the users might find it less important, in comparison with the other two types of disclosure. The analysis of report users' perceived importance of CSD in China, as well as the research instrument, was fundamentally conducted to answer research question 1, and partially research question 2, revealing what the users' perceived importance of CSD was, and to what extent it was different from their importance in GRI. Research question 2 was further answered in the multiple regression models, where the models developed based on GRI and CSDPI were compared to determine their differences by employing empirical data.

5.8 Summary

This chapter outlines the process of the pilot study to ensure the feasibility of conducting the main study. It also shows the analysis of the Chinese reports users' perceived importance of CSD through descriptive statistics and one sample t-test. The results were further used, analysed and discussed for the development of the research instrument. From the next chapter onward, this thesis will focus on the analyses of CSD using the research instrument developed in this chapter and the list items from GRI (G4).

Chapter 6

Corporate sustainability disclosure analyses

6.1 Introduction

In this chapter, the researcher presents the CSD analyses using the methodology outlined in Chapter 4. Because CSD incorporates three perspectives, the quality of economic, environmental and social disclosure is examined separately. The combined CSD reports that include all three aspects are also examined. The quality of disclosure was measured firstly by the GRI, and by the CSDPI, which was based on the instrument discussed in the previous chapter. In this chapter, an overview of CSD is presented first, followed by the individual analyses of economic, environmental and social disclosure. The disclosures are also compared with the weighted quality, using the users' perceived importance.

6.2 Quality of corporate sustainability disclosure

The results from the descriptive statistics of the quality of CSD are shown in table 6.1. There were 238 sample Chinese listed companies considered in this analysis, and their stand-alone corporate sustainability reports were viewed and examined. Information from the stand-alone reports is generally more comprehensive than other sources of sustainability disclosure, because many companies had sections for specific sustainability indicators. In data collection, the researcher found that in order to make their reports reader-friendly, a minority of 16% of sample companies stated that they followed the GRI as a guideline. Table 6.1 shows the key figures from examining the quality and the current status quo of CSD in Chinese listed companies.

In general, the results from table 6.1 show that the quality of CSD in Chinese listed companies was low in all types of disclosure, and disclosure of better quality was not necessarily perceived important by the users. In essence, higher values in the CSDPI did not lead to better quality of CSD. As indicated in the chapter four, stand-alone reports were

examined based on an ordinal scale from 0 to 5, where 5, in brief, means to have comprehensive sections that show items in all dimensions and in a given frame, and 0 means these sections were omitted. The average CSD per indicator was 0.55 for GRI and 0.52 for CSDPI. Both figures showed the inadequacy of the quality of CSD, because the mean value for the quality of an item barely passed the score for simply being disclosed. The range for GRI shows the minimum and maximum scores, which ranged from 0 to 229, out of the full score by GRI of 445. The top score in quality was 51.46%, suggesting once again that the quality of CSD in Chinese listed companies was still low in 2013. Indicators for the CSDPI indicated the report users' perceived importance, and additional responses collected from the questionnaire were also used. The range of values for CSDPI is similar to the range for GRI, from 0 to 921.91, where the amount for quality was 51.4%, out of the full score of 100%. In comparison, the quality of CSD for CSDPI was lower than it was for GRI. Therefore, this shows that the companies disclosed limited information of the users' desire. Since there was not enough information that was perceived important by the users, the quality for CSDPI was slightly lower than it was for GRI.

Table 6.1: Descriptive statistics for corporate sustainability disclosure for Chinese listed companies (N = 238)

	Economic disclosure	Environmental disclosure	Social disclosure	Sustainability disclosure
CSDPI	3.89	4.22	3.97	4.03
mean by GRI	0.905	0.43	0.50	0.55
mean by GRI and additional indicators	0.78	0.46	0.50	0.52
range by GRI	0 – 33	0 – 92	0 - 107	0 – 229
full score by GRI	50	160	235	445
range by CSDPI	0 – 128.37	0 – 388.24	0 – 424.79	0 – 921.91
full score by CSDPI	194.5	675.2	932.95	1793.35
non-disclosing companies in %	0.4	30.3	0.4	0
disclosing companies in %	99.6	69.7	99.6	100
total number of GRI indicators	10	32	47	89
number of additional	2	2	1	5

| indicators from report |
| users |

Note: Mean values were measured per indicator

6.3 Economic sustainability disclosure analyses

6.31 Economic disclosure by categories

The GRI defines and classifies economic indicators into 4 categories: "economic performance", "market presence", "indirect economic impact", and "procurement practice". In the previous chapter, 2 additional indicators were suggested by report users: CPI from employees and accumulated unemployment. Thus, there were 6 categories in total. Table 6.2 shows the quality of economic disclosures in 2013 for the 238 Chinese listed companies. The figures contained in the table were raw data, and the scores were examined before applying CSDPI. In addition, the scores were in ordinal scale from 0 to 5. A statement of objective for ordinal scale is shown in Appendix A, and the research instrument is presented in Appendix H.

The results from table 6.2 show that "indirect economic impact" was the best-disclosed category among the 5, with an average quality per indicator of 1.84. There are two indicators included in this category: Eco8 and Eco9. Eco8 required companies to report "development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement". It is also the second-best disclosed indicator, with an average quality of 2.53. Eco9 required companies to report "understanding and describing significant indirect economic impacts, including extent of impacts", and has a mean value of 1.15. The third disclosed category was "economic performance", which included 4 indicators. Notably, Eco1 had the highest mean value, 3.14, of the 12 economic indicators, and it increased the mean value for the entire category significantly, to 0.95. This indicator required companies to report "direct economic value generated and distributed, including revenue, operating costs, employee compensation, donations and other community investments, retained earnings and payments to capital providers and government". The rest of the "economic performance" indicators were generally not disclosed well; Eco2, Eco3 and Eco4 obtained mean values of 0.39, 0.17 and 0.09, respectively. "Market presence", "procurement practice" and

"additional economic indicators" were also disclosed inadequately, with an average quality score of 0.45, 0.23 and 0.16 respectively.

Importantly, the research found that higher average quality of disclosure was not thought to be important by report users. "Indirect economic impact", was the best-disclosed category, but it obtained only 3.69 for users' perceived importance, which was the one of the lowest scores in economic categories. Although the quality from this category is relatively sound, the users did not perceive this category as "important". Furthermore, the additional indicators that the users suggested to add onto the research instrument only had a mean of 0.16. Consequently, economic information that was perceived as less important by the report users generally had a higher quality of disclosure, which indicates that there is a potential inverse relationship between the users' perceived importance of CSD and the actual quality of CSD.

Table 6.2: Economic disclosure in Chinese listed companies by categories (N = 238)

Category	CSD perceptions index	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
Eco1	4	224	14	11	45	73	47	48	3.14	0 – 5
Eco2	4	51	187	24	17	6	3	1	0.39	0 – 5
Eco3	4	19	219	6	8	3	0	2	0.17	0 – 5
Eco4	4	14	224	8	4	2	0	0	0.09	0 – 3
Economic Performance									0.95	0 – 15
Eco5	3.87	36	202	17	13	5	1	0	0.26	0 – 4
Eco6	3.87	47	191	21	15	8	3	0	0.37	0 – 4
Eco7	3.87	67	171	13	23	20	5	6	0.71	0 – 5
Market Presence									0.45	0 – 11
Eco8	3.69	193	45	15	51	56	37	34	2.53	0 – 5
Eco9	3.69	133	105	45	48	30	7	3	1.15	0 – 5
Indirect Economic impact									1.84	0 – 10
Eco10	3.69	34	204	22	6	4	1	1	0.23	0 – 5
Procurement Practice									0.23	0 – 5
AQn1	4	2	236	0	2	0	0	0	0.02	0 – 2
AQn2	4	31	207	12	7	6	4	2	0.29	0 – 5
Additional economic indicators									0.16	0 – 5

Table 6.3: Ranking of economic indicators

Rank	Economic indicators	Total score by CSDPI	Total score by GRI	Mean by CSDPI per company	% firms disclosed
1	WEco1	2992	748	12.57	94.12
2	WEco8	2225.07	603	9.35	81.09
3	WEco9	1011.06	274	4.25	55.88
4	WEco7	654.03	169	2.75	28.15
5	WEco2	372	93	1.56	21.43
6	WEco6	336.69	87	1.41	19.75
7	AQn2	280	N/P	1.18	13.03
8	WEco5	239.94	62	1.01	15.13
9	WEco10	200.20	55	0.84	14.29
10	WEco3	372	41	1.56	7.98
11	WEco4	88	22	0.37	5.88
12	AQn1	16	N/P	0.07	0.84

6.32 Best reported indicators in economic disclosure

The ranking order of the 12 economic indicators is presented in table 6.3, and is measured by an indicator's total score by CSDPI or mean by CSDPI, so "WEco" presents weighted economic indicators. The total score by GRI and percentage of firms' disclosure are also shown in table 6.3. As seen from the table, WEco1 was the best-reported indicator, with an average weighted quality of 12.57. Due to the broad definition and relevance of WEco1 to economic performance, many companies disclosed ample information about it, as most of the information could already be viewed in company annual reports. WEco1 also attained 94.12% of disclosed firms. This, again, shows how common it was for companies to report on WEco1. WEco8 and WEco9, with average weighed quality values of 9.35 and 4.25, were the second- and third-best disclosed indicators. It is noted that these indicators are from the indirect economic impacts category and are related to government economic policies at a macro level. The reason could be that companies voluntarily report this type of information under engagement and encouragement from the government and associated industrial authorities. This can also be explained by Stakeholder Theory in terms of the dimension of stakeholder power. Eco7 and Eco2 are from the market presence and economic performance categories, with average weighed quality values of 2.75 and 1.56 respectively, and a weaker mean than the previous three indicators. Eco7 describes "procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation", whereas Eco2 requires firms to report "financial implications and other risks and opportunities for the organisation's activities due to climate change".

Interestingly, additional indicators AQn1 and AQn2 ranked fairly low, at 12th and 7th respectively. The mean for AQn2, which is about accumulated unemployment, was 1.12, and only 13.03% companies disclosed this information. The quality for AQn1, CPI from employees, was even less – only 0.84% of companies disclosed.

In summary, three general trends were shown in this section: first, indicators with high disclosure quality are usually defined broadly, and companies might disclose these in their annual reports; second, there is a positive relationship between disclosure quality and

engagement and policies from the government at a macro, basic level; lastly, the additional indicators in the economic section obtained considerably low scores.

6.4 Environmental sustainability disclosure analyses

6.41 Environmental disclosure by categories

Eleven categories were defined in GRI for environmental disclosure, which comprised 32 environmental performance indicators. According to the responses from the questionnaire analysed in the previous chapter, many report users suggested that there should be separate categories for "emissions" and "effluents and waste", whereas in GRI these are one category. Therefore, this study used a total of 13 environmental categories, including "material usage", "energy", "water", "biodiversity", "emissions", "effluents and waste", "products and services", "compliance", "transportation", "environmental overall", "supplier environmental assessment", "environmental grievance" and "additional environmental indicators". For the additional indicators, "waste by technological defaults" and "impacts on environment overall" were included in the instrument as one category to represent a group that was perceived to be important by the report users.

Table 6.4 shows the results of the quality of environmental disclosure by categories. The highest quality is determined by the average quality of disclosure per indicator, due to the different numbers of indicators that were included in the categories. As the table shows, "environmental overall" scored the highest average quality of 1.3 per indicator. This category suggests that companies report "total environmental protection expenditures and investments by type", which includes any spending on environmental protection. Companies that disclosed this indicator were not necessarily high profile, and many sample firms presented information about their policies and future plan to maintain environmental sustainability, as well as spending associated to these activities. In addition, the second-highest indicator was "additional environmental indicators", which had a mean of 0.91. Notably, one indicator included in this category, AQn4, which is about "impacts on environment overall", significantly raised the mean value for all categories, with an average quality of 1.81. This indicator was rather broad,

because it required companies only to disclose an overall environmental impact. Therefore, when the coding was undertaken, many companies obtained a quality score of 1 or 2, which eventually increased the mean for this indicator. The third-best disclosed indicator was "energy", with a mean of 0.85, followed by "products and services" and "emissions".

Similarly to the trend presented in the previous economic disclosure, the more importantly perceived categories by report users generally had lower quality. "Water" had the highest CSDPI, but its average quality was 10th among the total 13 categories. "Effluents and waste" also showed a relatively low mean value compared with its CSDPI. In contrast, "environmental overall", with its CSDPI of 4, obtained the highest quality score. Therefore, in general for environmental categories, there was an inverse relationship between the average quality of environmental disclosure and the users' perceived importance.

Table 6.4: Environmental disclosure in Chinese listed companies by categories (N = 238)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean (per company/per indicator)	Range
EN1	4	33	205	13	9	5	2	4	0.31	0 – 5
EN2	4	28	210	6	14	4	4	0	0.26	0 – 4
Materials									0.29	0 – 9
EN3	4.2	72	166	16	29	12	9	6	0.74	0 – 5
EN4	4.2	69	169	15	29	12	9	4	0.69	0 – 5
EN5	4.2	103	135	26	37	26	6	8	1.02	0 – 5
EN6	4.2	91	147	31	26	21	9	4	0.85	0 – 5
EN7	4.2	102	136	34	37	15	10	6	0.94	0 – 5
Energy									0.85	0 – 25
EN8	4.51	26	212	10	3	7	3	3	0.27	0 – 5
EN9	4.51	7	231	2	3	1	1	0	0.06	0 – 4
EN10	4.51	32	206	7	7	12	3	3	0.35	0 – 5
Water									0.23	0 – 10
EN11	4	14	224	5	3	4	0	2	0.14	0 – 5
EN12	4	14	224	5	7	0	1	1	0.12	0 – 5
EN13	4	8	230	2	3	2	0	1	0.08	0 – 5
EN14	4	16	222	4	6	3	2	1	0.16	0 – 5
EN15	4	4	234	0	3	0	0	1	0.05	0 – 5

Table 6.4: Environmental disclosure in Chinese listed companies by categories (N = 238) (Cont'd)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
Biodiversity									0.11	0 – 20
EN16	4.46	64	174	16	21	11	8	8	0.68	0 – 5
EN17	4.46	66	172	20	20	11	8	7	0.67	0 – 5
EN18	4.46	96	142	37	27	16	10	6	0.88	0 – 5
EN19	4.46	30	208	8	10	8	2	2	0.29	0 – 5
EN20	4.46	40	198	13	12	10	3	2	0.37	0 – 5
Emissions									0.58	0 – 25
EN21	4.48	61	177	23	15	11	4	8	0.60	0 – 5
EN22	4.48	54	184	16	17	10	6	5	0.54	0 – 5
EN23	4.48	6	232	1	1	2	2	0	0.07	0 – 4
EN24	4.48	2	236	0	1	1	0	0	0.02	0 – 3
EN25	4.48	4	234	0	0	0	1	3	0.08	0 – 5
Effluents and Waste									0.26	0 – 16
EN26	4	93	145	26	27	17	12	11	0.98	0 – 5
EN27	4	60	178	21	21	11	3	3	0.54	0 – 5
Products and services									0.76	0 – 10
EN28	4.35	6	232	1	2	2	0	1	0.07	0 – 5

Table 6.4: Environmental disclosure in Chinese listed companies by categories (N = 238) (Cont'd)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
Compliance									0.07	0 – 5
EN29	4	19	219	0	10	3	1	5	0.24	0 – 5
Transport									0.24	0 – 5
EN30	4	110	128	14	37	29	15	15	1.30	0 – 5
Overall									1.30	0 – 5
EN31	4	39	199	16	12	6	2	3	0.34	0 – 5
Supplier environmental assessment									0.34	0 – 5
EN32	4	9	229	5	4	0	0	0	0.05	0 – 2
Environmental grievance									0.05	0 – 2
AQn3	4	11	227	7	3	0	1	0	0.07	0 – 4
AQn4	4	166	72	33	61	30	24	18	1.81	0 – 5
Additional environmental indicators									0.91	0 – 8

6.42 Best-reported indicators in environmental disclosure

Table 6.5 shows the ranking order of the indicators for environmental disclosure. There were 34 indicators in total, including two additional indicators suggested by report users. The rank was measured by total score for CSDPI or mean values for CSDPI. This is because both the users' perceived importance and the disclosure quality had to be taken into consideration. 'WEn' means weighted environmental indicators.

As seen from table 6.5, AQn4 showed the highest average quality of environmental disclosure. AQn4 is additional indicator 4, in which companies needed to disclose "an overview of environmental impact" that occurred in 2013. It had a total score of 1724 and an average of 7.24. A total of 69.75% of the sample companies disclosed information for this indictor. The reason could be the broad definition of this indicator. AQn4 was the indicator with the most scores of 5, 4, 3 and 2, suggesting that the quality of disclosure was higher than the other indicators. WEn30 was the second-most disclosed indicator in environmental information, with a mean of 5.21, and 46.22% of the sample companies disclosed this item. EN30 required companies to disclose "total environmental protection expenditures and investments by type". As with the previous discussion, many companies not in high-profile industries chose to disclose this item because of spending that occurred on environmental protection. WEn5 (4.27) and WEn7 (3.94) also obtained considerably high average quality disclosure, and 43.28% and 42.86% of sample companies disclosed these items. EN5 reported "energy saved due to conservation and efficiency improvements" and EN7 reported "initiatives to reduce indirect energy consumption and reductions achieved".

WEn26 described "initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation". It was the fifth-most highly disclosed indicator, with a mean of 3.93 and 39.08% disclosing rate. However, it is interesting to note that the total score by GRI for this indicator was 234, which was higher than the fourth-most highly disclosed indicator WEn7, and it was still ranked at a lower level. According to table 5.4, the perceived importance for WEn7 and WEn26 were 4.2 and 4 respectively. Consequently, when comparing the total scores by CSDPI between the two, the results of WEn7 outweighed those of WEn26

considerably. Similarly, for WEn4 and WEn17, due to the impact from CSDPI, there was some degree of influence on their mean values, which affected their rank order.

Indicators that ranked 22 and below showed their quality as being inadequate, and they were minor items. Interestingly, AQn3 obtained a mean of 0.29, and only 4.62% companies disclosed. This once again shows an inverse relationship between disclosure quality and users' perceived importance.

Table 6.5: Ranking of environmental indicators

Rank	Environmental indicators	Total score by CSDPI	Total score by GRI	Mean by CSDPI per company	% of firms disclosing
1	AQn4	1724	N/P	7.24	69.75
2	WEn30	1240	310	5.21	46.22
3	WEn5	1016	242	4.27	43.28
4	WEn7	936.6	223	3.94	42.86
5	WEn26	936	234	3.93	39.08
6	WEn18	932	209	3.92	40.34
7	WEn6	848.4	202	3.56	38.24
8	WEn3	739.2	176	3.11	30.26
9	WEn16	726.98	163	3.05	26.89
10	WEn17	713.6	160	3.00	27.73
11	WEn4	693	165	2.91	28.99
12	WEn21	636.16	142	2.67	25.63
13	WEn22	577.92	129	2.42	22.69
14	WEn27	512	128	2.15	25.21
15	WEn20	396.94	89	1.67	16.81
16	WEn10	378.84	84	1.59	13.45
17	WEn31	324	81	1.36	16.39
18	WEn19	312.2	70	1.31	12.6
19	WEn1	296	74	1.24	13.87
20	WEn8	288.64	64	1.21	10.92

Table 6.5: Rank of environmental indicators (Cont'd)

Rank	Environmental indicators	Total score by CSDPI	Total score by GRI	Mean by CSDPI per company	% of firms disclosing
21	WEn2	248	62	1.04	11.76
22	WEn29	232	58	0.97	7.98
23	WEn14	152	38	0.64	6.72
24	WEn11	132	33	0.55	5.88
25	WEn12	112	28	0.47	5.88
26	WEn25	85.12	19	0.36	1.68
27	WEn23	76.16	17	0.32	2.52
28	WEn13	76	19	0.32	3.36
29	WEn28	69.6	16	0.29	2.52
30	AQn3	68	N/P	0.29	4.62
31	WEn9	67.65	15	0.28	2.94
32	WEn32	52	13	0.22	3.78
33	WEn15	44	11	0.18	1.68
34	WEn24	22.4	5	0.09	0.84

6.5 Social sustainability disclosure analyses

6.51 Social disclosure by categories

There are four main aspects in GRI social disclosure initiatives – "Labour practice and decent work", "Human rights", "Society" and "Product responsibility". All four subcategories were considered under social sustainability disclosure, where the total number of indicators in social disclosure is 49, including one extra indicator suggested by the financial analysts regarding "sexism". It was determined by whether a company had a specific section about equal rights for males and females.

Table 6.6 shows the results of descriptive statistics, in which CSDPI, frequencies of reports of different quality, average quality of reports and range are included. The table also includes the number of companies that disclosed. With regard to "Labour practice and decent work" (LA), overall for average quality disclosed per company, the extent of social disclosure is considerably low. As the quality was measured in an ordinal scale from 0 to 5, the highest score obtained was 1.85 from LA1 in the "Employment" subcategory, which is just above the score for simply disclosed. LA1 describes "total workforce by employment type, employment contract, and region, broken down by gender". A total of 148 companies disclosed this indicator, but mostly it was in brief words, not in specific sections. Although the disclosure rate was more than 50%, the scores obtained are evidently low on average. The second-most disclosed indicator is LA11, with 1.82 scores in the "Training and education" subcategory. The number of reporting companies for LA11 is slightly more than that of LA1; however, the mean value is lower, indicating the quality of LA11 is considerably low. LA8, LA12 and LA10 from "Occupational health and safety" and "Training and education are the last three indicators with means greater than 1 under "Labour practice and decent work", in which the average quality of these indicators is 1.22, 1.16 and 1.02 respectively.

There are two least-reported indicators – LA15, "return to work and retention rates after parental leave, by gender" and LA5, "minimum notice period(s) regarding operational changes, including whether it is specified in collective agreements". They both had 0.2 for the means and minimal values of the disclosure rate. Similarly to the previous sections, it is evident that an inverse relationship between report users' perceived importance and the quality of disclosures can be observed in social LA aspects, to some extent.

With regard to "Human rights" (HR), there is only one indicator with a mean above 1, of the 12 total indicators. HR8 describes "percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations", with an average quality of 1.31. The remaining indicators from this aspect mostly score below 0.5, which leads to the overall HR mean of 0.21, which is the worst-reported main category among the four.

There are 12 and 9 indicators for "Society" (SO) and "Product responsibility" (PR) respectively, and their means are 0.4 and 0.42, which are slightly more than HR. Similarly, they both have one indicator with a mean above 1. For SO, indicator 6 regarding "total value of financial and in-kind contributions to political parties, politicians, and related institutions by country" has an average quality of 2.19, which is the highest score in the category. Interestingly, it was perceived as the second-least important indicator in SO. With regard to PR, indicator 5 about "practices related to customer satisfaction, including results of surveys measuring customer satisfaction" obtains the highest average quality. Similarly, PR5 from the subcategory "product and service labelling" was not perceived as important as the other indicators. The least-reported indicators for these aspects are SO7 and PR9, and the means and CSDPI scores for these indicators are 0.03 and 0.02, and 3.88 and 4.25 respectively.

In general, similarly to economic and environmental disclosure, indicators in social sustainability disclosure mostly show inverse relationships between the quality of disclosure and users' perceived importance. It is evident from the results that the majority of highly-disclosed

items have relatively low CSDPI scores. However, according to these results, the least-reported indicators, such as SO7, HR12 and LA15, do not necessarily have high CSDPI values. It is interesting that the results show such trends, but as this study did not purely focus on the relationship between these two factors, there is no further analysis of this.

Table 6.6: Social disclosure in Chinese listed companies by categories (N = 238)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
LA1	3.86	148	90	27	37	27	27	30	1.85	0 – 5
LA2	3.86	73	165	26	25	12	8	2	0.65	0 – 5
LA3	3.86	62	176	23	17	10	7	5	0.59	0 – 5
LA15	3.86	24	214	11	5	5	3	0	0.20	0 – 4
Employment									0.82	0 – 15
LA4	4	114	124	53	42	16	0	3	0.84	0 – 5
LA5	4	27	211	12	12	1	2	0	0.20	0 – 4
Labour/management relationship									0.52	0 – 9
LA6	4.22	48	190	16	13	12	4	3	0.46	0 – 5
LA7	4.22	80	158	41	22	11	4	2	0.61	0 – 5
LA8	4.22	121	117	32	37	30	15	7	1.22	0 – 5
LA9	4.22	60	178	12	19	15	9	5	0.66	0 – 5
Occupational health and safety									0.74	0 – 20
LA10	4	96	142	29	25	19	8	15	1.02	0 – 5
LA11	4	169	69	36	58	39	15	21	1.82	0 – 5
LA12	4	119	119	25	46	38	4	6	1.16	0 – 5
Training and education									1.34	0 – 15
LA13	3.81	72	166	27	21	18	2	4	0.63	0 – 5

Table 6.6: Social disclosure in Chinese listed companies by categories (N = 238) (Cont'd)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
Diversity and equal opportunity									0.63	0 – 5
LA14	4	40	198	10	16	9	1	4	0.39	0 – 5
Equal remuneration for women and men									0.39	0 – 5
AQn5	4	40	198	13	12	5	3	7	0.42	0 – 5
Additional social indicator									0.42	0 – 5
Labour practice and decent work									**0.82**	**0 – 55**
HR1	3.79	36	202	11	11	11	3	0	0.33	0 – 4
HR2	3.79	33	205	14	16	2	1	0	0.24	0 – 4
HR3	3.79	33	205	11	16	3	2	1	0.27	0 – 5
Investment									0.28	0 – 10
HR4	3.84	6	232	2	2	1	1	0	0.05	0 – 4
Non-discrimination									0.05	0 – 4
HR5	3.81	10	228	7	1	1	1	0	0.07	0 – 4
Freedom of association and collective bargaining									0.07	0 – 4
HR6	4.16	7	231	5	2	0	0	0	0.04	0 – 2
Child labour									0.04	0 – 2
HR7	4	14	224	6	4	2	1	1	0.12	0 – 5
Forced or compulsory labour									0.12	0 – 5

Table 6.6: Social disclosure in Chinese listed companies by categories (N = 238) (Cont'd)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
HR8	4.16	127	111	30	37	40	12	8	1.31	0 – 5
Security practice									1.31	0 – 5
HR9	3.81	4	234	2	0	0	1	1	0.05	0 – 5
Indigenous rights									0.05	0 – 5
HR10	3.78	4	234	1	1	2	0	0	0.04	0 – 3
Assessment									0.04	0 – 3
HR11	3.62	2	236	1	0	1	0	0	0.02	0 – 3
Supplier human rights assessment									0.02	0 – 3
HR12	3.78	2	236	1	1	0	0	0	0.01	0 – 2
Human rights grievance mechanisms									0.01	0 – 2
Human rights									**0.21**	**0 – 17**
SO1	3.76	79	159	28	30	11	6	4	0.69	0 – 5
SO9	3.76	25	213	13	6	5	1	0	0.18	0 – 4
SO10	3.76	31	207	19	8	3	1	0	0.20	0 – 4
Local community									0.36	0 – 13
SO2	4	23	215	4	12	5	1	1	0.22	0 – 5
SO3	4	35	203	4	16	10	3	2	0.37	0 – 5
SO4	4	38	200	11	12	9	5	1	0.37	0 – 5

Table 6.6: Social disclosure in Chinese listed companies by categories (N = 238) (Cont'd)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
Anti-corruption									0.32	0 – 11
SO5	3.81	29	209	10	11	6	1	1	0.25	0 – 5
SO6	3.81	177	61	23	41	58	33	22	2.19	0 – 5
Public policy									1.22	0 – 10
SO7	3.88	4	234	2	1	1	0	0	0.03	0 – 3
Anti-competitive behaviour									0.03	0 – 3
SO8	4.16	8	230	5	1	0	2	0	0.06	0 – 4
Compliance									0.06	0 – 4
SO11	3.71	24	214	13	5	4	0	2	0.19	0 – 5
Supplier assessment for impacts on society									0.19	0 – 5
SO12	4	7	231	2	3	0	2	0	0.07	0 – 4
Grievance mechanism for impacts on society									0.07	0 – 4
Society									**0.40**	**0 – 27**
PR1	4.36	81	157	23	26	20	8	4	0.79	0 – 5
PR2	4.36	16	222	7	3	5	1	0	0.13	0 – 4
Customer health and safety									0.46	0 – 9
PR3	4	37	201	6	20	10	1	0	0.34	0 – 4
PR4	4	18	220	5	9	3	1	0	0.15	0 – 4

Table 6.6: Social disclosure in Chinese listed companies by categories (N = 238) (Cont'd)

Category	CSDPI	No. of reporting companies	No. of non-reporting companies	No. of quality 1 reporting companies	No. of quality 2 reporting companies	No. of quality 3 reporting companies	No. of quality 4 reporting companies	No. of quality 5 reporting companies	Mean per company (per indicator)	Range
PR5	4	105	133	19	25	29	12	20	1.28	0 – 5
Product and service labelling									0.58	0 – 10
PR6	3.83	89	149	33	37	13	3	3	0.73	0 – 5
PR7	3.83	46	192	30	12	3	1	0	0.28	0 – 4
Marketing communications									0.51	0 – 8
PR8	4.31	7	231	2	1	2	2	0	0.08	0 – 4
Customer privacy									0.08	0 – 4
PR9	4.25	3	235	2	1	0	0	0	0.02	0 – 2
Compliance									0.02	0 – 2
Product responsibility									**0.42**	**0 – 24**

6.52 Best-reported indicators in social disclosure

The ranking order of 49 social indicators is presented in table 6.7. The mean value by CSDPI per company indicates the ranked positions for the quality of indicators disclosed by the companies. There are three most significant indicators in social disclosure, which are SO6, LA11 and LA1. As discussed, the CSDPI values for the three indicators are relatively low, with 3.81, 4 and 3.86 respectively for SO6, LA11 and LA1. However, their extents of disclosure are quite sound, with average quality by CSDPI of 8.34, 7.29 and 7.14. Many companies reported CSD with quality greater than 3. For instance, 113, 75 and 84 companies disclosed SO6, LA11 and LA1 with scores more than 3 by GRI.

There are another five indicators that are considered well-reported because their means by CSDPI per company are greater than 4, meaning that they are more than the indicators for simply being present in disclosure. These indicators are: HR8, LA8, PR5, LA12 and LA10. HR8 is from the "security practices" subcategory, and it describes "percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations"; LA8 is from the "occupational health and safety" sub-category, and it is to show "education, training, counselling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases"; PR5, under "product and service labelling", describes "practices related to customer satisfaction, including results of surveys measuring customer satisfaction". LA12 and LA10 are both from the "training and education" subcategory, and they describe "percentage of employees receiving regular performance and career development reviews, by gender" and "average hours of training per year per employee by gender, and by employee category", respectively.

The remaining indicators are not considered to be important or highly-disclosed items, in terms of their mean per company and total score by CSDPI. Several indicators obtained means of less than 0.1, showing that these indicators are approaching the level of not being disclosed.

However, it is interesting that all social indicators were disclosed in companies' stand-alone reports, even though they were considerably low in quality in reports.

Table 6.7: Ranking of social indicators

Rank	Social indicators	Total score by CSDPI	Total score by GRI	Mean by CSDPI per company	% of firms disclosing
1	WSO6	1985	521	8.34	0.74
2	WLA11	1736	434	7.29	0.71
3	WLA1	1698	440	7.14	0.62
4	WHR8	1298	312	5.45	0.53
5	WLA8	1228	304	5.16	0.51
6	WPR5	1216	304	5.11	0.44
7	WLA12	1108	291	4.66	0.5
8	WLA10	972	277	4.08	0.40
9	WPR1	815	243	3.43	0.34
10	WLA4	800	200	3.36	0.47
11	WPR6	663	187	2.78	0.32
12	WLA9	658	173	2.77	0.25
13	WSO1	620	165	2.61	0.33
14	WLA7	608	156	2.55	0.33
15	WLA2	594	154	2.50	0.30
16	WLA13	575	151	2.42	0.30
17	WLA3	540	144	2.27	0.26
18	WLA6	460	140	1.93	0.20
19	WAQ5	396	N/P	1.66	0.17
20	WLA14	372	93	1.56	0.17

Table 6.7: Ranking of social indicators (Cont'd)

Rank	Social indicators	Total score by CSDPI	Total score by GRI	Mean by CSDPI per company	% of firms disclosing
21	WSO3	352	88	1.48	0.14
22	WSO4	348	87	1.46	0.15
23	WPR3	320	80	1.34	0.15
24	WHR1	296	78	1.24	0.15
25	WPR7	257	67	1.08	0.19
26	WHR3	246	65	1.04	0.13
27	WSO5	225	59	0.94	0.12
28	WHR2	212	56	0.89	0.13
29	WSO2	208	52	0.87	0.09
30	WLA5	188	48	0.79	0.11
31	WLA15	185	48	0.78	0.10
32	WSO10	180	47	0.76	0.13
33	WSO11	167	45	0.70	0.10
34	WSO9	165	44	0.70	0.10
35	WPR4	144	36	0.61	0.07
36	WPR2	140	32	0.59	0.07
37	WHR7	116	29	0.49	0.06
38	WPR8	78	18	0.33	0.03
39	WSO12	64	16	0.27	0.03
40	WSO8	62	16	0.26	0.03

Table 6.7: Ranking of social indicators (Cont'd)

Rank	Social indicators	Total score by CSDPI	Total score by GRI	Mean by CSDPI per company	% of firms disclosing
41	WHR5	61	15	0.26	0.04
42	WHR4	50	13	0.21	0.03
43	WHR9	42	11	0.18	0.02
44	WHR6	37	9	0.16	0.03
45	WHR10	34	9	0.14	0.02
46	WSO7	27	7	0.11	0.02
47	WPR9	17	4	0.07	0.01
48	WHR11	14	4	0.06	0.01
49	WHR12	11	3	0.05	0.01

6.6 Reported corporate sustainability disclosure by category

Table 6.8 shows a combined ranking order of economic, environmental and social sustainability disclosure by categories, measured by average quality of disclosure per indicator. These are ranked on a per-indicator basis, because there are different numbers of indicators in each category. As can be seen from the rank order, it is apparent that only 5 categories by GRI obtained an average quality above 1 per indicator, showing that the quality of CSD in the sample Chinese listed companies is generally low. The quality was examined based on companies' stand-alone reports; it is not possible to measure the extent of CSD as a whole as the companies would definitely disclosure sustainable information in their stand-alone CSD; however, it is evident from the rank order that the quality of CSD reporting in Chinese listed companies was still at the embryonic stage in 2013.

In the disclosed categories, the best-reported category is "indirect economic impact" under economic disclosure, with an average quality of disclosure of 1.84 – significantly higher than the second-highest indicator, "training and education" from social disclosure, by 0.5. "Security practice", "environment overall" and "public policy" are also ranked in the top five indicators, with average quality values of 1.31, 1.3 and 1.22 respectively. The rest of the categories are not considered, because their average quality is below 1, meaning that the extent of disclosure is slightly more than being omitted. Compared to the rank order of users' perceived importance, the "most important" category ranked 28th in terms of average quality of disclosure, whereas "indirect economic impact" was ranked 45th out of 47. Nevertheless, this is not significant because "training and education", "security practice" and "environmental overall" were perceived as moderately important, with rank positions of 13, 10 and 13 for users' perceived importance respectively. Therefore, it is difficult to determine the relationship between the quality of disclosure and the importance by visualisation, but it does show a general trend of a possible inverse relationship between the two.

Table 6.8: Ranking of corporate sustainability disclosure by categories

CSD category	Rank (average quality of disclosure)	Rank (users' perceived importance)	Type of CSD
Indirect Economic impact	1 (1.84)	45 (3.69)	economic
Training and education	2 (1.34)	13 (4)	social
Security practice	3 (1.31)	10 (4.16)	social
Overall	4 (1.3)	13 (4)	environmental
Public policy	5 (1.22)	36 (3.81)	social
Economic Performance	6 (0.95)	13 (4)	economic
Environmental additional questions	7 (0.91)	13 (4)	environmental
Energy	8 (0.85)	9 (4.2)	environmental
Employment	9 (0.82)	33 (3.86)	social
Products and services	10 (0.76)	13 (4)	environmental
Occupational health and safety	11 (0.74)	8 (4.22)	social
Diversity and equal opportunity	12 (0.63)	36 (3.81)	social
Emissions	13 (0.58)	3 (4.46)	environmental
Product and service labelling	13 (0.58)	13 (4)	social
Labour/management relationship	15 (0.52)	13 (4)	social
Marketing communications	16 (0.51)	35 (3.83)	social
Customer health and safety	17 (0.46)	4 (4.36)	social
Market Presence	18 (0.45)	32 (3.87)	economic
Equal remuneration for women and men	19 (0.42)	13 (4)	social
Additional social questions	19 (0.42)	13 (4)	social
Local community	21 (0.36)	43 (3.76)	social

Table 6.8: Ranking of corporate sustainability disclosure by categories (Cont'd)

CSD category	Rank (average quality of disclosure)	Rank (users' perceived importance)	Type of CSD
Supplier environmental assessment	22 (0.34)	13 (4)	environmental
Anti-corruption	23 (0.32)	13 (4)	social
Materials	24 (0.29)	13 (4)	environmental
Investment	25 (0.28)	40 (3.79)	social
Effluents and Waste	26 (0.26)	2 (4.48)	environmental
Transport	27 (0.24)	13 (4)	environmental
Procurement Practice	28 (0.23)	46 (3.64)	economic
Water	28 (0.23)	1 (4.51)	environmental
Supplier assessment for impact on society	30 (0.19)	44 (3.71)	social
Additional Eco questions	31 (0.16)	13 (4)	economic
Forced or compulsory labour	32 (0.12)	13 (4)	social
Biodiversity	33 (0.11)	13 (4)	environmental
Customer privacy	34 (0.08)	6 (4.31)	social
Compliance	35 (0.07)	5 (4.35)	environmental
Freedom of association and collective bargaining	35 (0.07)	13 (4)	social
Grievance mechanism for impacts on society	35 (0.07)	36 (3.81)	social
Compliance	38 (0.06)	10 (4.16)	social
Environmental grievance	39 (0.05)	13 (4)	environmental

Table 6.8: Ranking of corporate sustainability disclosure by categories (Cont'd)

CSD category	Rank (average quality of disclosure)	Rank (users' perceived importance)	Type of CSD
Non-discrimination	39 (0.05)	34 (3.84)	social
Indigenous rights	39 (0.05)	36 (3.81)	social
Child labour	42 (0.04)	10 (4.16)	social
Assessment	42 (0.04)	41 (3.78)	social
Anti-competitive behaviour	44 (0.03)	31 (3.88)	social
Supplier human rights assessment	45 (0.02)	7 (4.25)	social
Compliance	45 (0.02)	47 (3.62)	social
Human rights grievance mechanisms	47 (0.01)	41 (3.78)	social

6.7 Findings and discussion

In general, as the results showed, the quality of information disclosed varied across different types of disclosure, where economic sustainability information was disclosed with much higher quality than environmental and social disclosure. This was determined by the average quality per indicator of each type of disclosure. Economic disclosure obtained the highest average quality of 0.905, followed by social disclosure (0.50) and environmental disclosure (0.43), and these eventually lead to the average quality of CSD of 0.55 by GRI. These results indicate that the status of corporate sustainability reporting in China was considerably low, as the scores were given based on an ordinal scale from '0' to '5'. All sustainability disclosure was scored below 1, suggesting that, on average, corporate sustainability information was disclosed just above the level of information being omitted. The results also suggest that there was no significant difference in terms of quality among economic,

environmental and social disclosure, even though economic information was disclosed to a slightly greater extent.

Environmental and social information were often disclosed together in corporate sustainability reporting, and they were often considered a form of disclosure in many existing CSD studies (Guanawan, Djajadikerta and Smith, 2009; Setyorini and Ishak, 2012). In 2006, the central regions stock exchange market in China, the Shenzhen Security Exchange, issued the Shenzhen Stock Exchange (SZX) Guidelines on Corporate Social Responsibility (CSR) based on the laws, standards, regulations, rules under the supervision of the Chinese Governments (Wang, Qin & Cui, 2010), and provided guidelines for both environmental and social information as a whole. This may explain why the quality of environmental and social disclosure was shown to be at the same level.

Interestingly, the CSD disclosing rate among the sample companies was 100%, and the rates were 99.6%, 69.7% and 99.6% for economic, environmental and social disclosure respectively, where environmental disclosure was reported to a lesser extent. This indicates that companies which are not in environmentally sensitive industries might choose not to disclose. In addition, the Chinese National Environmental Protection Agency published the Bulletin on Disclosure of Corporate Environmental Performance in 2003, which mandated disclosure of environmental information for two types of companies. First, companies that discharged pollutants above levels indicated by the government must report relevant environmental information from the previous year by March every year (Bai et al., 2015). The second type includes companies in 13 selected industrial sectors when applying for public listing or refinancing exchange markets. As indicated by the executive orders of 2010 and 2013 issued by the Chinese National Environmental Protection Agency, these companies must have their environmental reports audited and show their publicised environmental audit reports (CSMAR, 2013). This explains the relatively low rate of environmental disclosure, compared with the other two categories. In addition, when looking specifically into categories, general environmental information was disclosed to a much better extent than specific environmental information. The policies from the government also explain why the quality of general environmental information

is higher than the other categories. According to Stakeholder Theory, as companies were driven by external pressures, stakeholders' power from the government extensively influenced management strategy and attitudes to CSD practices, resulting in a higher quality of general environmental information (Shan & Taylor, 2014). Therefore, companies that were in these industries would be more likely to disclose environmental information, as a way to alleviate the government's environmental concerns (Zeng, Xu, Yin and Tam, 2012). However, environmental information that was not encouraged to be disclosed from the government, or related to significant social events, was less like to be disclosed.

Moreover, information regarding energy was disclosed considerably well in environmental disclosure. This is because the Chinese government set goals for energy saving and carbon reduction in its 12th five-year plan, and enacted the Circular Economy Promotion Law in 2009. These were being undertaken within the next five years, and still being adopted in 2013. As the listed firms were influenced by government policies, many firms tended to disclose information about their environmental management and practices in CSD, in order to show their stakeholders that they had been implementing sustainability, and they were compliant with the policies under a legitimate background. Therefore, the quality of "energy" information was higher than the other types of specific environmental information.

With respect to economic and social disclosure, information regarding economic impacts, economic performance, social security and product responsibility was disclosed to a higher level, which was primarily because of the change in government control and the effect of significant social events. In March 2013, Xi Jinping officially became the president of China, and completed a process that began in the previous fall, when he assumed the chairmanship of the Communist Party and the control of China's Control Military Commission (CASS, 2016). While the president proved his successful consolidation by a series of initiatives tackling corruption, the party created two new governing task forces in the Third Plenary session in November 2013, which included economic development and national and social security. Due to the change of government leadership, companies were encouraged to have positive economic influences on the local area. This is crucial to explain why "indirect economic impact" and "economic performance" were

highly disclosed in sustainability reporting – due to the intensity of stakeholder power owned by the Chinese government, according to Stakeholder Theory. However, the users' perceived importance of these categories were generally low, due to the fact that this was economic information which could be also obtained from annual reports. As additional costs would not be generated when producing this form of information, companies would be more likely to disclose such information.

"Training and education", "security practice", "employment" and "public policy" were ranked in the top 10 CSD categories with respect to information in social disclosure. The former three categories were described in "Labour and decent work" whereas the latter was included in "Product responsibility". All four categories were disclosed with much higher quality than to the other social categories, due to their being affected by mandatory requirements in annual reporting and it subsequent effect on CSD, as well as influence caused by significant social events. Listed Chinese companies were required to disclose employees' information in annual reports, particularly regarding the number of full-time and part-time employees, training or education provided, and any relevant information regarding compensation, welfare, superannuation and other related costs on employees (CSMAR, 2013). This essentially explains why information regarding "training and education", "security practice" and "employment" was disclosed relatively well. Although this was a mandate on firms' annual reports by the Chinese Security Commission, it was reported on a voluntary basis in CSD. However, according to Legitimacy theory, in order to fulfil their social contract, companies would implement a social responsibility to provide disclosure to a level of acceptance in the society where they operate. The Commission has the power to significantly influence listed companies, due to external political effects, therefore, even if requirements are not mandatory on the CSD level, companies may choose to disclose in order to alleviate concerns from the governing bodies. "Public policy" includes two indicators, where SO6 regarding "total value of financial and in-kind contributions to political parties, politicians, and related institutions by country" had a high value of average quality per company. Although it was included as a social indicator, the definition was extensively related to economic contributions to the political party in China. The high disclosure

quality once again explains that the quality of CSD in 2013 was mainly driven by government policies and political influences.

The relationship between the quality of CSD and the report users' perceived importance of CSD was also shown in this chapter. Although a method of visualisation from the results was only adopted in this section, it was found that highly disclosed indicators were generally perceived as not so important by the report users. This was mainly due to the difference in interests between disclosing firms and financial analysts. As discussed in previous sections, firms are more likely to be driven by stakeholder power and the duty of fulfilling "social contracts" in the society in which they operate. They may also experience extensive political pressure and disclose information in order to alleviate political attention or concerns from the government. In opposition, the report users were interested in how and what type of sustainability information would reflect the performance of the company, and they considered how information would impact the society from a broader viewpoint, as well as its influence on other types of stakeholders (Lin, 2010). Therefore, the users' perceived importance of CSD was influenced by government policies and significance social events. The results showed that more importantly-perceived categories, such as "water", "emissions", "effluents and waste", "compliance" and "supplier human rights assessment" were generally disclosed badly. These areas were in fact sensitive social issues which concerned the Chinese community since 2006 with the milk power scandal, and China's long-term environmental issues. Due to companies' reluctance to disclose sensitive information, it is evident that the report users were more interested in this type of information (Yeh et al., 2011). However, as the scope of this study is not to investigate the correlations between these two factors, further analyses were not considered in the study.

To summarise, there are four primary findings in this chapter. First, the quality of CSD in Chinese listed companies in 2013 was generally low, just more than the information simply being disclosed. Second, the quality and the extent of disclosure did not vary much across CSD, and these factors need to be examined together while investigating corporate sustainability as a whole. In addition, well disclosed corporate sustainability information from the sample

companies was mainly driven by government policies, and political influence played a significant role in affecting the quality of CSD. Lastly, there was a difference between the purposes of the companies for issuing CSD and the interests of the financial analysts who were the report users, i.e., well disclosed information was generally not perceived as so important by the users. This was because the users were also affected by the interests of other types of stakeholders.

6.8 Summary

This chapter presented the quality of CSD in Chinese listed companies in 2013. Corporate economic sustainability disclosure, environmental disclosure and social disclosure were also examined separately in terms of categories where best-reported categories and indicators were specifically analysed. At the end of the chapter, the ranked order for quality of CSD was also compared with the ranking of report users' perceived importance by visualisation, providing a general view of their relevance. The next chapter shows regression analyses of the quality of CSD.

Chapter 7

Regression analyses and results

7.1 Introduction

This chapter shows and discusses the outcomes of the statistical analyses of the hypotheses formulated in Chapter 3, and the research methodology described in Chapter 4, answering research questions 4 and 5. Overall, in accordance with the results, the associations between the qualities of CSD are only partially explained by the hypothesised theories. As eight models are derived from CSD, incorporating economic, environmental and social aspects, each model is explained separately in this chapter to show the outcomes from these models. Therefore, this chapter answers the fourth and the fifth research questions, regarding the drivers of the quality of CSD and the significance of the hypothesised theories.

7.2 Descriptive statistics

Descriptive statistics were firstly employed to determine the central tendency and the distribution of the variables. This is a crucial and importance process for parametric analysis, due to the assumptions of normality, independence of errors, constant variance of error terms and non-collinearity in the data analysis. Indicators for the 10 independent variables and 8 dependent variables were collected for descriptive statistics. These included mean, median, standard deviation, skewness and kurtosis.

7.21 Normality check

Data normality is one of the major assumptions for most statistical analyses. Normality can be measured in a number of ways, both graphically and non-graphically (Stevens, 1992). A graphical approach to data normality can be done through observing the trends and distributions from histograms, boxplots and scatterplots, etc. Stevens (1992) stated that non-graphical measures are more convincing in terms of interpreting data normality, such as the combination of Kolmogorov-Smirnov and Shapiro-Wilk tests that are often treated as the most powerful in

detecting data normality. As the panel data has a sample size greater than 100, normality can be determined by the Kolmogorov-Smirnov test, whereas the Shapiro-Wilk test requires a sample size of less than 100. Alternatively, data normality can also be tested by observing skewness or conducting a kurtosis test. The Kolmogorov-Smirnov statistic with a Lilliefors significance level for testing normality is often produced with the normal probability of 90 and probability plots (Coakes et al., 2010). Data is recognised as normally distributed when the significance level is greater than 0.5, and it is acceptable if it approaches 0.5. This can also be confirmed by skewness and kurtosis tests, where skewness is acceptable when it falls between -1 and 1, and kurtosis when it falls between -2 and 2 (Coakes et al., 2010).

7.22 Descriptive statistics for CSD in Chinese listed companies

Table 7.1: Descriptive statistics for CSD in Chinese listed companies – raw data

Variable	Mean	Median	Std. Deviation	Skewness	Kurtosis
IND	0.21	0.00	0.41	1.43	0.05
AREA	0.41	0.00	0.49	0.36	-1.89
AGE	13.52	14	5.92	0.00	-1.20
GOWN	0.28	0.29	0.26	0.22	-1.42
LOWN	0.68	1.00	0.47	-0.76	-1.44
FOWN	0.54	0.00	0.13	3.04	10.38
PERF	0.12	0.11	0.68	0.938	0.958
CSE	4221907.84	1008596.5	8940606.37	3.797	16.01
SIZE	2.36E11	1.22E10	1.407E12	8.818	83.277
LEV	2.03	1.13	2.99	3.28	11.09
CEco	9.36	8.00	6.23	1.61	3.70
CEvn	15.66	7.5	19.01	1.68	2.79
CSoc	23.86	16.00	21.10	1.65	3.01
CSD	48.88	34.00	41.52	1.60	2.96
WCEco	36.05	30.57	24.6	1.65	3.90
WCEvn	65.82	30.96	80.58	1.68	2.75
WCSoc	94.92	64.19	83.92	1.65	2.99
WCSD	196.79	136.46	168.82	1.60	2.91

Note: N = 238

Table 7.1 presents the results from descriptive statistics, and the distributions of the dependent and independent variables for the Chinese listed companies. It is evident from the table that most of the variables depart from normality. From a graphic approach, for independent variables, IND (industry type), AREA (company location), AGE (years that a company have been listed), GOWN (percentage of government ownership), LOWN (legal person ownership) and PERF (return on equity) satisfy the test of normality, where skewness is between -1 and 1, and kurtosis falls between -2 and 2. None of the dependent variables satisfy a graphic approach, because skewness and kurtosis results do not fall between the legitimate ranges. The results in table 7.2 show the data normality from a non-graphic test, confirming that the data departs from normality. Only 6 variables satisfy the test of normality, therefore, data transformation is required for the rest of the data.

Table 7.2: Test of normality for CSD in Chinese listed companies – raw data

	Kolmogorov-Smirnov	
Variable	**Statistic**	**Sig.**
AREA	0.39	0.00
AGE	0.10	0.00
GOWN	0.20	0.00
LOWN	0.43	0.00
FOWN	0.40	0.00
PERF	0.08	0.00
CSE	0.32	0.00
SIZE	0.46	0.00
LEV	0.26	0.00
CEco	0.14	0.00
CEvn	0.21	0.00
CSoc	0.17	0.00
CSD	0.16	0.00
WCEco	0.88	0.00
WCEvn	0.79	0.00
WCSoc	0.83	0.00
WCSD	0.84	0.00

Note: N = 238

7.3 Homoscedasticity, linearity and outliers

A visualisation approach to analysing homoscedasticity, which is an assumption of multivariate analysis, is often adopted by researchers. This includes looking at a particular scatter plot or residual histogram, which is indicated as the most informative approach. The assumption of multiple regressions is homogenetic, which is also called homoscedasticity in regressions. It is assumed that the difference between the obtained and predicted dependent variable scores are normally distributed (Cohen & Cohen, 1983). In addition, it is assumed that the residuals have a linear relationship with the predicted dependent variable scores, and the variance of the residuals is the same for all predicted scores. In order to detect this relationship, therefore, data homoscedasticity between the predicted dependent variable and the independent variables was performed by examining the residuals of scatter plots, which is the standardised regression residual against the standardised regression predicted value (Cohen & Cohen, 1983). Figure 7.1 shows the scatterplot for testing homoscedasticity for the dependent variables.

Figure 7.1 presents the scatterplot for dependent variable CEco, which is the quality of economic disclosure by GRI. The graph suggests that homoscedasticity is rejected because a pattern cannot be seen from the scatterplot. The data is tighter at the start, from left to right, but it starts to disperse as it moves across to the right x-axis, and eventually falls apart. Therefore, the data for CEco is conventional heteroscedasticity. In general, homoscedasticity exists when there is a clear patter along the equation line, starting from the origin in the x-axis and y-axis, and the distance to the equation line between the data is approximately equivalent. Nevertheless, as indicated in the previous section, even though the variables do not violate the assumption of homoscedasticity, data transformation is required due to data normality.

Figure 7.1: Homoscedasticity for economic disclosure by GRI

Scatterplot

Dependent Variable: CEco
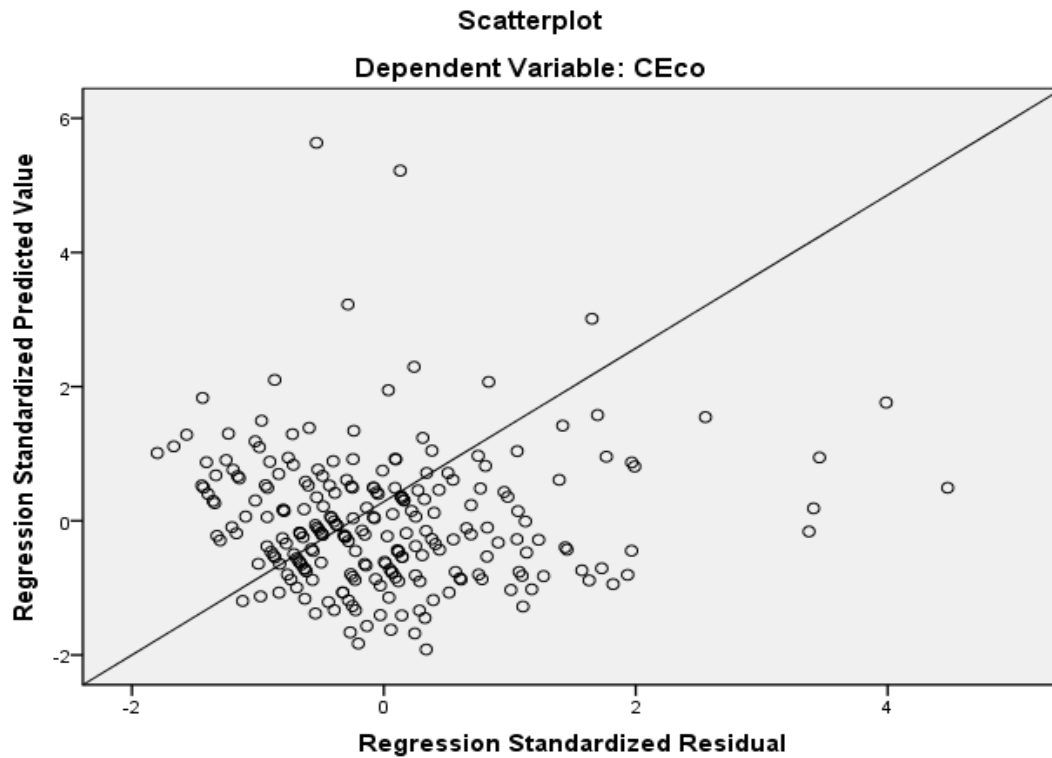
Figure 7.2 through 7.8 show the scatterplots for dependent variables CEnv, CSoc, CSD, WCEco, WCEnv, WCSoc and WCSD. As seen from the graphs, the data for these variables disperse along the equation as they move along. Thus, the patterns of the dependent variables suggest that the variable of error terns were not constant, violating homoscedasticity. However, as was previously indicated, most of the data violates normal distribution, thus required data transformation.

Another purpose of a scatterplot is to show univariate outliers, which can be presented by visualising normal probability plots and scatter plots of each variable. There are a few outliers clearly shown in the figures. However, as the distribution of both independent and dependent variables was not normal, which violates the assumption of linearity, transformation of data was considered first, rather than deleting outliers to possibly improve data linearity. In addition, coding errors and missing data were checked by an experienced content analysis expert, and no errors were detected. Therefore, transformation of data was the first priority for data originality.

Figure 7.2: Homoscedasticity for environmental disclosure by GRI
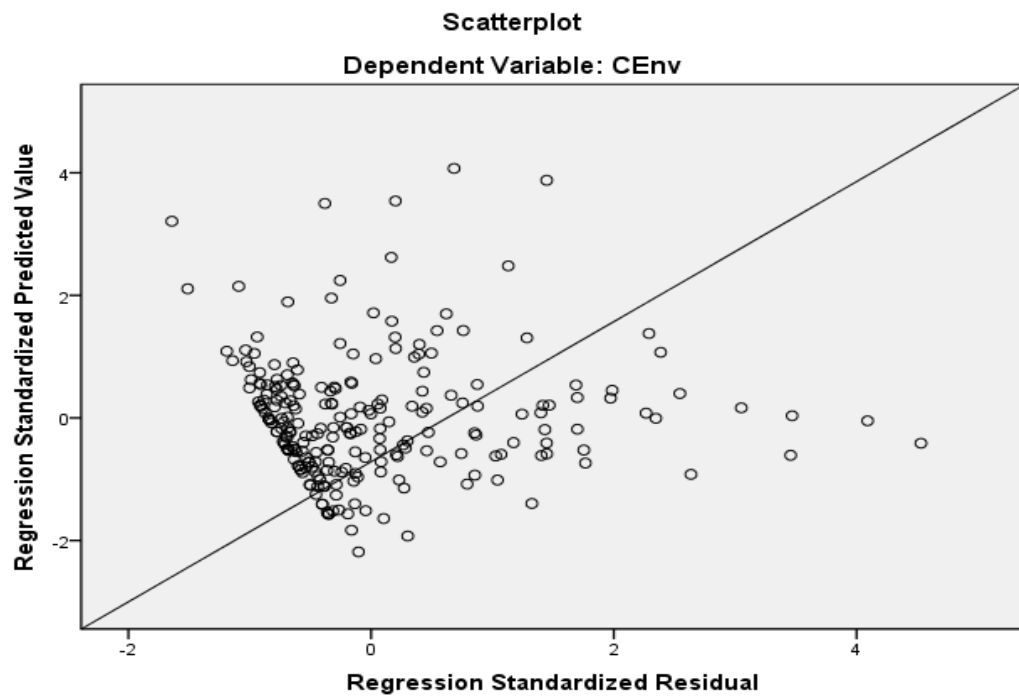
Figure

7.3: Homoscedasticity for social disclosure by GRI
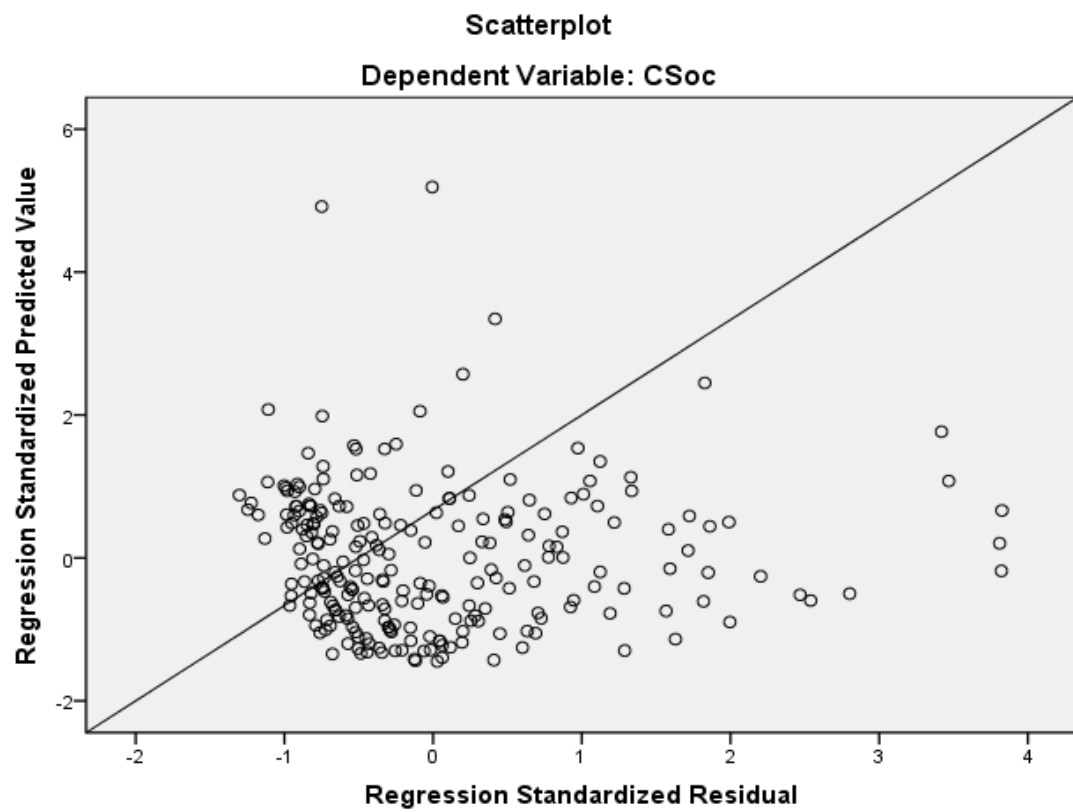
Figure 7.4: Homoscedasticity for corporate sustainability disclosure by GRI
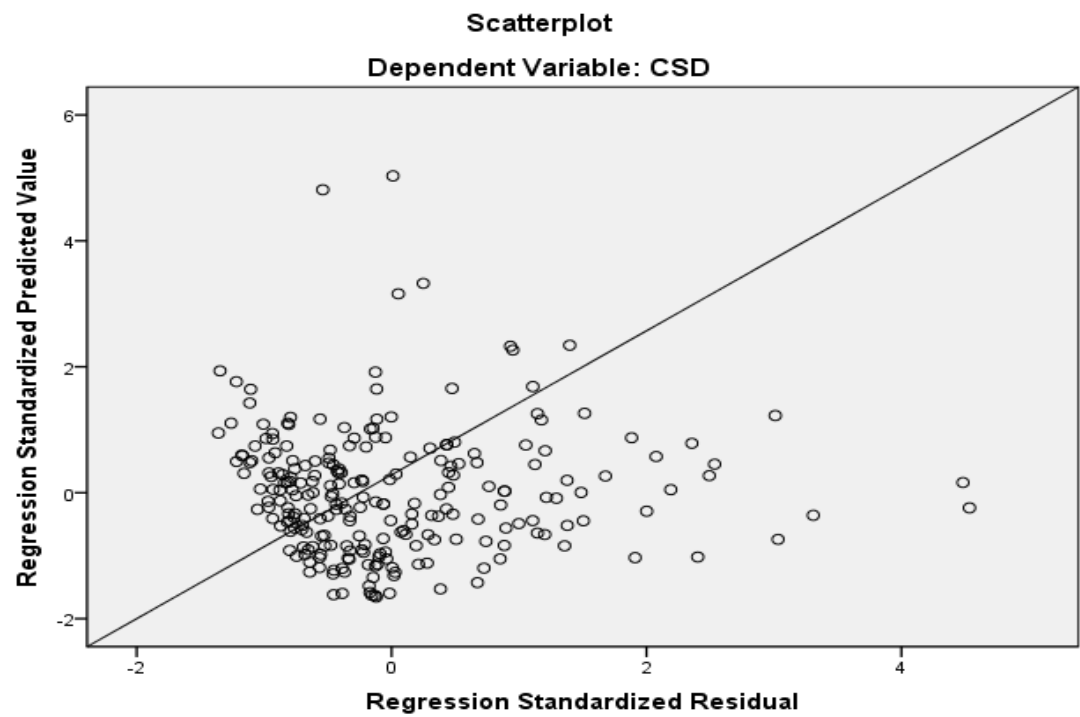
Figure 7.5: Homoscedasticity for economic disclosure by CSDPI
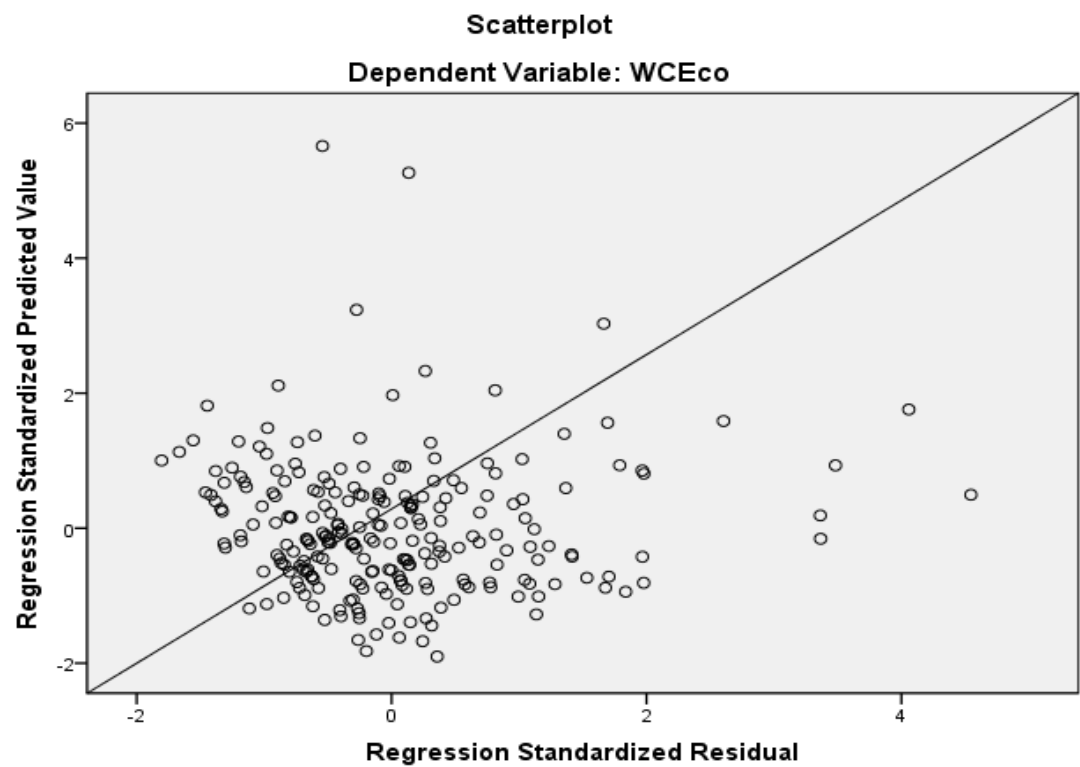
Figure 7.6: Homoscedasticity for environmental disclosure by CSDPI

Scatterplot
Dependent Variable: WCEnv
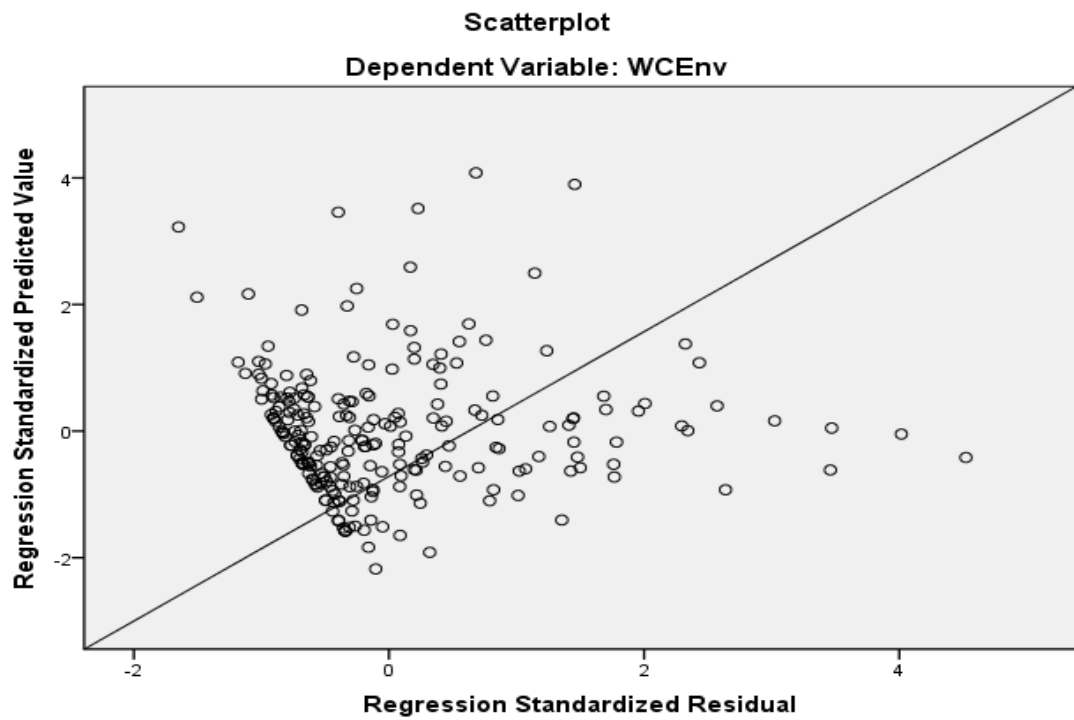
Figure 7.7: Homoscedasticity for social disclosure by CSDPI

Scatterplot
Dependent Variable: WCSoc
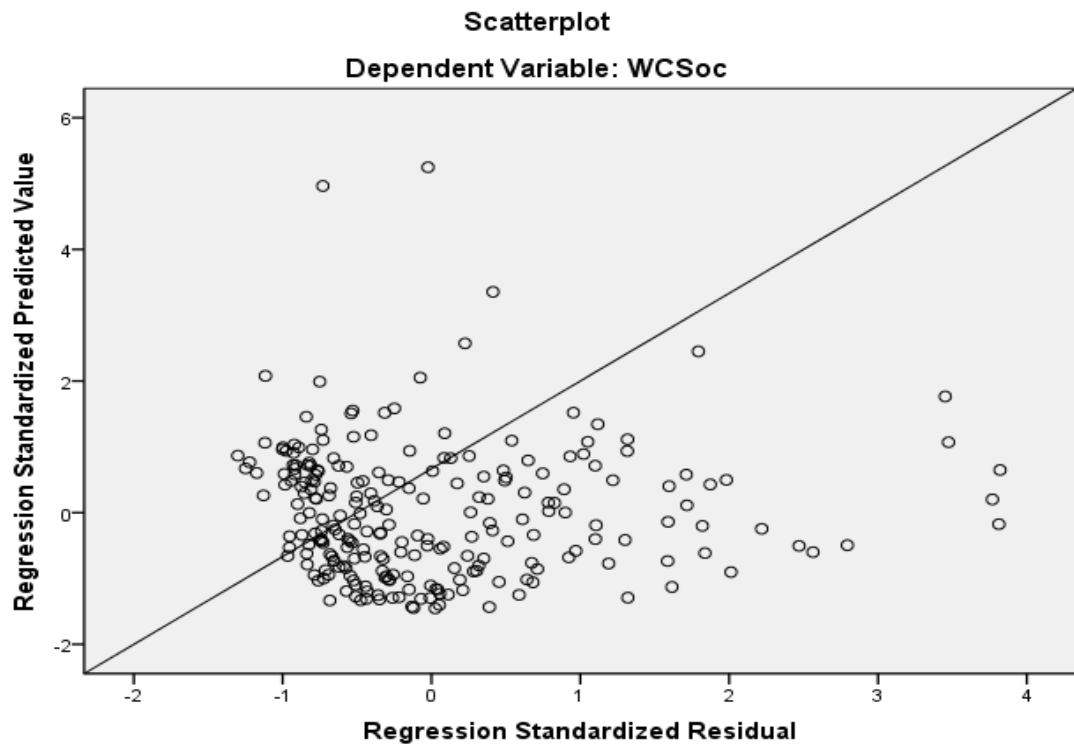
Figure 7.8 Homoscedasticity for corporate sustainability disclosure by CSDPI
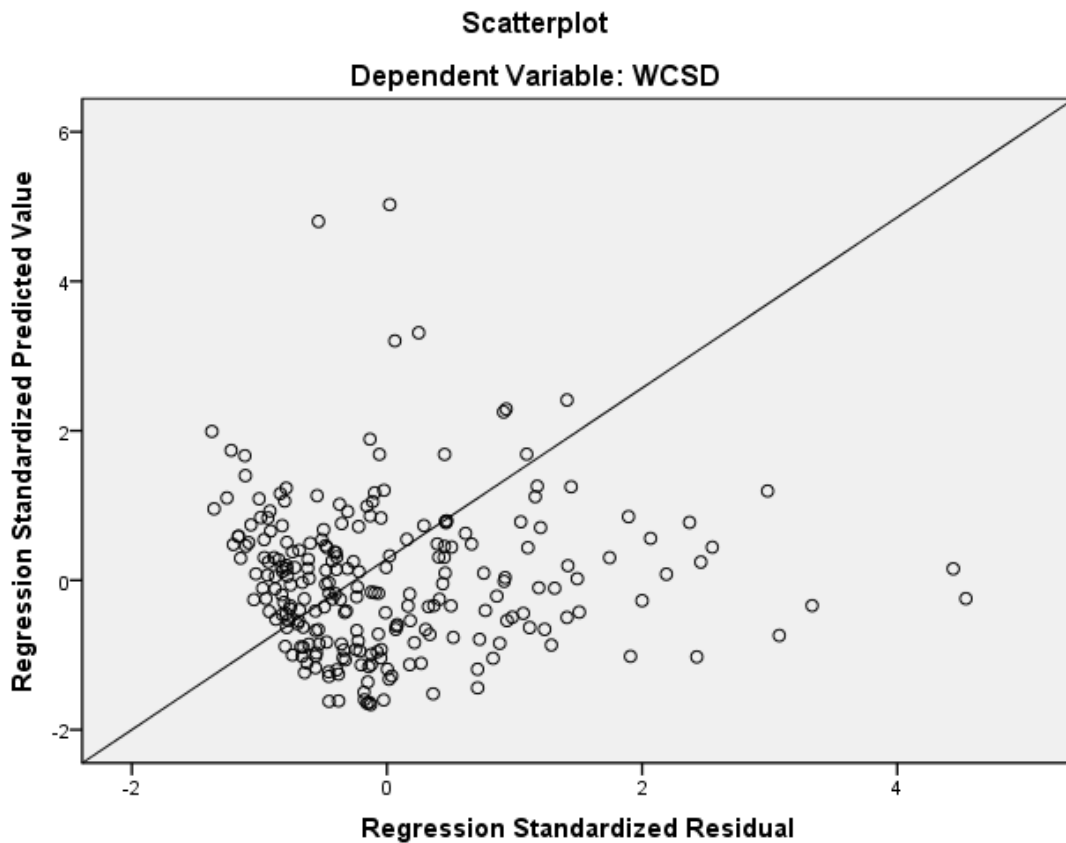
7.4 Transformation of data

Variables rarely conform to a classic normal distribution and, more often, distributions are skewed and display varying degrees of kurtosis. When skewness and kurtosis are extreme, transformation is an option. Tabachnick and Fidell (2007) suggest that data transformation can be conducted under square root, natural logarithmic or inverse transformation. As the results in the previous section show, data that required transformation is positively skewed, and therefore natural logarithmic transformation is used for these variables. Transformations were performed for both dependent and independent variables which did not have normal distribution in this study. Table 7.3 shows the transformation of data that was undertaken for each variable, and the results from descriptive statistics are shown in table 7.4.

Table 7.3: Data transformation for variables not normally distributed

Variable	Transformation
CSE	Log: LN(CSE)
SIZE	Log: LN(SIZE)
LEV	Log: LN(LEV)
CEco	Log: LN(CEco)
CEnv	Log: LN(CEnv)
CSoc	Log: LN(CSoc)
CSD	Log: LN(CSD)
WCEco	Log: LN(WCEco)
WCEnv	Log: LN(WCEnv)
WCSoc	Log: LN(WCSoc)
WCSD	Log: LN(WCSD)

Note: N = 238

As the distribution of the data for CSE (charitable donation), SIZE (total asset), LEV (debt to equity ratio), CEco (economic disclosure by GRI), CEnv (environmental disclosure by GRI), CSoc (social disclosure by GRI), CSD (sustainability disclosure by GRI), WCEco (economic disclosure by CSDPI), WCEnv (environmental disclosure by CSDPI), WCSoc (social disclosure by CSDPI) and WCDS (sustainability disclosure by CSDPI) is severely positively skewed, natural logarithmic transformation was employed. As the results show, both skewness and kurtosis were reduced to close to normality. This was further confirmed by a Kolmogorov-Smirnov test, in which LN(LEV), LN(CSoc), LN(WCEnv), LN(CSD) and LN(WCSD) were found significant and assumed normality. The remaining variables are close to normality, which was confirmed by both graphic and non-graphic normality tests.

Table 7.4: Descriptive statistics for CSD in Chinese listed companies – data transformation

Variable	Mean	Median	Std. Deviation	Skewness	Kurtosis
LN(CSE)	13.69	13.82	2.08	-0.59	0.48
LN(SIZE)	23.38	23.22	1.79	1.153	2.024
LN(LEV)	0.07	0.12	1.12	0.03	0.19
LN(CEco)	2.02	2.08	0.69	-0.78	0.47
LN(CEnv)	1.83	1.95	1.41	-0.03	-1.34
LN(CSoc)	2.79	2.79	0.92	-0.35	-0.00
LN(CSD)	3.55	3.53	0.86	-0.13	-0.57
LN(WCEco)	3.37	3.42	0.71	-0.78	2.043
LN(WCEnv)	3.10	3.39	1.80	-0.49	-0.9
LN(WCSoc)	4.17	4.16	0.95	-0.56	1.03
LN(WCSD)	4.93	4.91	0.87	-0.12	-0.59

Note: N = 238

Table 7.5: Test of normality – data transformation

	Kolmogorov-Smirnov	
Variable	Statistic	Sig.
LN(CSE)	0.08	0.00
LN(SIZE)	0.08	0.00
LN(LEV)	0.05	0.20*
LN(CEco)	0.09	0.00
LN(CEnv)	.014	0.00
LN(CSoc)	0.06	0.75*
LN(CSD)	0.08	0.00
LN(WCEco)	0.13	0.00
LN(WCEnv)	0.06	0.06*
LN(WCSoc)	0.05	0.20*
LN(WCSD)	0.05	0.20*

*Normality is assumed when the significance level is greater than 0.5.

7.5 Univariate statistics

Univariate analysis was employed to provide the relationships between the dependent and the independent variables (Coakes et al., 2010). In particular, it focuses on the correlation between the dichotomous variable and continuous variables, as well as the strength of the relationships and the possibility of multicollinearity (Field, 2009). Since collinearity is another important assumption in OLS regression models, Pearson Correlation between each independent variable was drawn first, to detect multicollinearity.

7.51 Test of multicollinearity in a univariate setting

The presence of multicollinearity is considered to be problematic when analysing multivariate regressions. In this setting, a correlation matrix was employed to indicate the existence of multicollinearity. Coakes et al. (2010) suggest that multicollinearity is identified if any of the squared multiple correlations are near or equal to 1. Field (2009) further explains that if correlations are above 0.8 or 0.9, multicollinearity exists. Nonetheless, the inclusion of the offending variables needs to be reconsidered. Table 7.6 presents the correlations between the independent variables in the univariate setting. As shown in the table, all variables obtained correlations less than 0.8. It is noted that LN(SIZE) and LN(LEV) were both statistically significant to the majority of the other independent variables. As discussed in Chapter 3, these two variables were control variables, because the results showed that they were significantly influential on many other indicators. This is consistent with many existing studies (Nie, 2009; Peng, 2007). Therefore, all independent variables do not include any harmful multicollinearity in the regression models.

Table 7.6: Test of multicollinearity – univariate

		IND	AREA	AGE	GOWN	LOWN	FOWN	PERF	LN(CSE)	LN(SIZE)	LN(LEV)
IND	Pearson Correlation	1									
	Sig. (1-tailed)										
AREA	Pearson Correlation	-0.03	1								
	Sig. (1-tailed)	0.31									
AGE	Pearson Correlation	-0.01	0.12*	1							
	Sig. (1-tailed)	0.42	0.04								
GOWN	Pearson Correlation	0.09	0.13*	0.06	1						
	Sig. (1-tailed)	0.78	0.02	0.18							
LOWN	Pearson Correlation	0.05	-0.04	0.02	-0.32**	1					
	Sig. (1-tailed)	0.23	0.26	0.37	0.00						
FOWN	Pearson Correlation	-0.08	0.03	-0.02	-0.04	-0.03	1				
	Sig. (1-tailed)	0.11	0.3	0.41	0.26	0.33					
PERF	Pearson Correlation	-0.06	0.09	0.018	-0.02	-0.03	-0.01	1			
	Sig. (1-tailed)	0.19	0.09	0.39	0.40	0.35	0.42				
LN(CSE)	Pearson Correlation	0.06	0.01	0.01	0.00	-0.02	0.01	0.18**	1		
	Sig. (1-tailed)	1.18	0.45	0.45	0.50	0.38	0.42	0.00			
LN(SIZE)	Pearson Correlation	-0.09	0.36**	0.134*	0.39**	-0.14*	0.19**	0.12**	0.33**	1	
	Sig. (1-tailed)	0.09	0.00	0.02	0.00	0.01	0.00	0.03	0.00		
LN(LEV)	Pearson Correlation	-0.14*	0.27**	0.28**	0.29**	-0.14*	0.09	0.023	0.17**	0.70**	1
	Sig. (1-tailed)	0.16	0.00	0.00	0.00	0.02	0.08	0.36	0.00	0.00	

*Correlation is significant at the 0.05 level (1-tailed)

**Correlation is significant at the 0.01 level (1-tailed)

7.6 Univariate analysis

Pearson correlation was employed in this section to determine the relationships between the dependent and independent variables, including IND (industry type), AREA (company location), AGE (the number of years a company has been listed), GOWN (percentage of shares owned by the government), LOWN (legal-person ownership), FOWN (percentage of shares owned by foreign companies), PERF (ROE), CSE (charitable donation), SIZE (total asset), LEV (debt to equity ratio), CEco (economic disclosure by GRI), CEnv (environmental disclosure by GRI), CSoc (social disclosure by GRI), CSD (sustainability disclosure by GRI), WCEco (economic disclosure by CSD perceptions index), WCEnv (environmental disclosure by CSDPI), WCSoc (social disclosure by CSDPI) and WCDS (sustainability disclosure by CSDPI). Since there are 8 dependent variables which lead to 8 models, this section is divided into different subsections, and each model is examined individually. For Pearson correlation analysis, the absolute value of r is the determinants which indicate whether there are strong relationships between the predictor variables and the dependent variable. According to Cohen (1988), weak correlations exist when the absolute value of r falls between 0.1 and 0.299; moderate correlations exist when the absolute value of r falls between 0.3 and 0.499; strong correlations exist when the absolute value of r falls from 0.5 to 1.

7.61 Pearson correlation for economic disclosure by GRI

As the results in table 7.7 show, LN (LEV) (debt to equity ratio) (r = 0.12) is the only variable which moderately correlated with the dependent variable LN (CEco). Two predictor variables show significant correlation with LN (CEco) – AREA (company location) (r = 0.22) and LN (SIZE) (r = 0.23). However, the other variables do not show any statistically significant relationship with LN (CEco). It is noted that the correlation of variables is statistically significant when the significance, which is the p value, is at 0.01 level, and it is moderately significant when it is at 0.05 level. The results from Pearson correlation indicate that LN (LEV), AREA and LN (SIZE) are significantly correlated with LN (CEco), whereas IND, AGE,

GOWN, LOWN, FOWN, PERF and LN (CSE) were not found to be statistically significant in the analysis.

Table 7.7: Results from Pearson correlation – economic disclosure by GRI

		Expected sign	**LN (CEco)**
IND	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.15
AREA	Pearson correlation	+	0.22**
	Sig. (1-tailed)		0.00
AGE	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.14
GOWN	Pearson correlation	+	0.01
	Sig. (1-tailed)		0.48
LOWN	Pearson correlation	+	0.04
	Sig. (1-tailed)		0.29
FOWN	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.13
PERF	Pearson correlation	+	0.10
	Sig. (1-tailed)		0.44
LN (CSE)	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.18
LN (SIZE)	Pearson correlation	+	0.23**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.12*
	Sig. (1-tailed)		0.03

*Note: *$p < 0.05$; **$p < 0.01$*

7.62 Pearson correlation for environmental disclosure by GRI

Table 7.8 shows Pearson correlations between the predictor variables and LN (CEnv). Four variables are moderately significant to LN (CEnv) at 0.05 level, which are IND (industry type) (r = 0.13), AREA (r = 0.12), AGE (firm age) (r = 0.11) and GOWN (percentage of shares owned by the government). Three variables are strongly correlated with LN (CEnv) – FOWN (percentage of shares owned by foreign companies), LN (SIZE) and LN (LEV). LOWN, PERF and LN (CSE) were found not significant in the analysis.

Table 7.8: Results from Pearson correlation – environmental disclosure by GRI

		Expected sign	**LN (CEnv)**
IND	Pearson correlation	+	0.13*
	Sig. (1-tailed)		0.02
AREA	Pearson correlation	+	0.12*
	Sig. (1-tailed)		0.03
AGE	Pearson correlation	+	0.11*
	Sig. (1-tailed)		0.05
GOWN	Pearson correlation	+	0.15*
	Sig. (1-tailed)		0.01
LOWN	Pearson correlation	+	-0.01
	Sig. (1-tailed)		0.42
FOWN	Pearson correlation	+	0.22**
	Sig. (1-tailed)		0.00
PERF	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.13
LN (CSE)	Pearson correlation	+	0.02
	Sig. (1-tailed)		0.38
LN (SIZE)	Pearson correlation	+	0.25**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.16**
	Sig. (1-tailed)		0.01

*Note: *p < 0.05; **p < 0.01*

7.63 Pearson correlation for social disclosure by GRI

The results in table 7.9 show that three variables are strongly correlated with the dependent variable LN (CSoc) and only one variable shows moderate correlation. AREA, LN (SIZE) and LN (LEV) are significant, with r values of 0.21, 0.28 and 0.16, respectively. LN (CSE) (charitable donation) (r = 0.13) is moderately correlated with LN (CSoc). IND, AGE, GOWN, LOWN, FOWN and PERF are not statistically significant.

Table 7.9: Results from Pearson correlation – social disclosure by GRI

		Expected sign	**LN (CSoc)**
IND	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.46
AREA	Pearson correlation	+	0.21**
	Sig. (1-tailed)		0.00
AGE	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.16
GOWN	Pearson correlation	+	0.04
	Sig. (1-tailed)		0.29
LOWN	Pearson correlation	+	-0.03
	Sig. (1-tailed)		0.31
FOWN	Pearson correlation	+	0.08
	Sig. (1-tailed)		0.12
PERF	Pearson correlation	+	0.05
	Sig. (1-tailed)		0.23
LN (CSE)	Pearson correlation	+	0.13*
	Sig. (1-tailed)		0.02
LN (SIZE)	Pearson correlation	+	0.28**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.16**
	Sig. (1-tailed)		0.01

*Note: *$p < 0.05$; **$p < 0.01$*

7.64 Pearson correlation for corporate sustainability disclosure by GRI

Pearson correlation for CSD by GRI is shown in table 7.10, in which four variables, AREA (r = 0.20), FOWN (r = 0.16), LN (SIZE) (r = 0.27) and LN (LEV) (r = 0.16) were found to have strong correlations with the dependent variable LN (CSD). The rest of the variables, IND, AGE, GOWN, LOWN, PERF, and LN (CSE) were found statistically insignificant.

Table 7.10: Results from Pearson correlation – corporate sustainability disclosure by GRI

		Expected sign	**LN (CSD)**
IND	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.19
AREA	Pearson correlation	+	0.20**
	Sig. (1-tailed)		0.00
AGE	Pearson correlation	+	0.08
	Sig. (1-tailed)		0.11
GOWN	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.29
LOWN	Pearson correlation	+	-0.01
	Sig. (1-tailed)		0.48
FOWN	Pearson correlation	+	0.16**
	Sig. (1-tailed)		0.01
PERF	Pearson correlation	+	0.04
	Sig. (1-tailed)		0.28
LN (CSE)	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.13
LN (SIZE)	Pearson correlation	+	0.27**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.16**
	Sig. (1-tailed)		0.01

*Note: *p < 0.05; **p < 0.01*

7.65 Pearson correlation for economic disclosure by CSDPI

Table 7.11 presents the correlation between the predictors and LN (WCEoc), which is economic disclosure by CSDPI. Only one variable, LN (LEV), was found to have a moderate correlation, with r = 0.13. LN (SIZE) (r = 0.23) and AREA (r = 0.22) are strongly correlated with the dependent variable. IND, AGE, GOWN, LOWN, FOWN, PERF and LN (CSE) show statistical insignificance.

Table 7.11: Results from Pearson correlation – economic disclosure by CSDPI

		Expected sign	**LN (WCEoc)**
IND	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.14
AREA	Pearson correlation	+	0.22**
	Sig. (1-tailed)		0.00
AGE	Pearson correlation	+	0.08
	Sig. (1-tailed)		0.11
GOWN	Pearson correlation	+	0.01
	Sig. (1-tailed)		0.42
LOWN	Pearson correlation	+	0.05
	Sig. (1-tailed)		0.23
FOWN	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.13
PERF	Pearson correlation	+	0.01
	Sig. (1-tailed)		0.42
LN (CSE)	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.14
LN (SIZE)	Pearson correlation	+	0.23**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.13*
	Sig. (1-tailed)		0.02

*Note: *p < 0.05; **p < 0.01*

7.66 Pearson correlation for environmental disclosure by CSDPI

Significant correlations between the variable and LN (WCEnv) are shown in table 7.12, in which GOWN, FOWN and LN (SIZE) are strongly correlated with LN (WCEnv) with r values of 0.15, 0.19 and 0.21, respectively. AGE (r = 0.140) and LN (LEV) (r = 0.14) are moderately significant to LN (WCEnv). AREA, LOWN, PERF, LN (CSE) are not significant to any extent.

Table 7.12: Results from Pearson correlation – environmental disclosure by CSDPI

		Expected sign	**LN (WCEnv)**
IND	Pearson correlation	+	0.12*
	Sig. (1-tailed)		0.04
AREA	Pearson correlation	+	0.11
	Sig. (1-tailed)		0.05
AGE	Pearson correlation	+	0.14*
	Sig. (1-tailed)		0.02
GOWN	Pearson correlation	+	0.15**
	Sig. (1-tailed)		0.01
LOWN	Pearson correlation	+	-0.04
	Sig. (1-tailed)		0.27
FOWN	Pearson correlation	+	0.19**
	Sig. (1-tailed)		0.00
PERF	Pearson correlation	+	0.08
	Sig. (1-tailed)		0.13
LN (CSE)	Pearson correlation	+	0.02
	Sig. (1-tailed)		0.39
LN (SIZE)	Pearson correlation	+	0.21**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.14*
	Sig. (1-tailed)		0.01

Note: *p < 0.05; **p < 0.01

7.67 Pearson correlation for social disclosure by CSDPI

Table 7.13 present the results from the Pearson correlation for social disclosure by CSDPI. Three variables were found strongly correlated with LN (WCSoc); these were AREA (r = 0.21), LN (SIZE) (r = 0.28) and LN (LEV) (r = 0.16). One variable shows moderate significance – LN (CSE) (r = 0.13). IND, AGE, GOWN, LOWN, FOWN and PERF were not found to have statistical significance.

Table 7.13: Results from Pearson correlation – social disclosure by CSDPI

		Expected sign	**LN (WCSoc)**
IND	Pearson correlation	+	0.01
	Sig. (1-tailed)		0.45
AREA	Pearson correlation	+	0.21**
	Sig. (1-tailed)		0.00
AGE	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.18
GOWN	Pearson correlation	+	0.04
	Sig. (1-tailed)		0.26
LOWN	Pearson correlation	+	-0.03
	Sig. (1-tailed)		0.30
FOWN	Pearson correlation	+	0.08
	Sig. (1-tailed)		0.11
PERF	Pearson correlation	+	0.05
	Sig. (1-tailed)		0.23
LN (CSE)	Pearson correlation	+	0.13*
	Sig. (1-tailed)		0.02
LN (SIZE)	Pearson correlation	+	0.28**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.16**
	Sig. (1-tailed)		0.01

*Note: *p < 0.05; **p < 0.01*

7.68 Pearson correlation for corporate sustainability disclosure by CSDPI

With regard to Ln (WCSD) (corporate sustainability disclosures by CSDPI), table 7.14 shows that there are four predictors, which are AREA (r = 0.2), FOWN (r = 0.17), LN (SIZE) (r = 0.27) and LN (LEV) (r = 0.16), that are strongly correlated with LN (WCSD). The rest of the variables, IND, AGE, GOWN, PERF, and LN (CSE) were not found to have statistical significance. None of the variables are moderately significant.

Table 7.14: Results from Pearson correlation – corporate sustainability disclosure by CSDPI

		Expected sign	**LN (WCSD)**
IND	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.18
AREA	Pearson correlation	+	0.20**
	Sig. (1-tailed)		0.00
AGE	Pearson correlation	+	0.08
	Sig. (1-tailed)		0.11
GOWN	Pearson correlation	+	0.06
	Sig. (1-tailed)		0.18
LOWN	Pearson correlation	+	-0.01
	Sig. (1-tailed)		0.49
FOWN	Pearson correlation	+	0.17**
	Sig. (1-tailed)		0.01
PERF	Pearson correlation	+	0.04
	Sig. (1-tailed)		0.27
LN (CSE)	Pearson correlation	+	0.07
	Sig. (1-tailed)		0.13
LN (SIZE)	Pearson correlation	+	0.27**
	Sig. (1-tailed)		0.00
LN (LEV)	Pearson correlation	+	0.16**
	Sig. (1-tailed)		0.01

*Note: *p < 0.05; **p < 0.01*

7.7 Multivariate statistics

Multiple regression analysis is used when independent variables are correlated with one another and with the dependent variables (Coakes et al., 2010). Therefore, multivariate statistics were conducted to test the directional hypotheses variables.

7.71 Testing of multicollinearity in a multivariate setting

A number of assumptions underpin the use of regressions: ratio of cases to independent variables, outliers, multicollinearity and singularity, normality, linearity, homoscedasticity and independence of residual (Coakes et al., 2010). Ratio of cases to independent variables means that a sample size is only acceptable when it satisfies the equation 'n = 50 + 8k' where k is the number of predictor variables (Tabachnick and Fidell, 2007). In this study, the sample size is 238, which is larger than the required benchmark of 130. Apart from multicollinearity, the other assumptions have been previously discussed; therefore, they will not be specifically introduced again in this section. Multicollinearity refers to high correlations existing among the independent variables. These problems affect the interpretation of relationships between the predictors and the dependent variables. To maintain the quality of the multiple regressions, a test of multicollinearity is considered to detect the magnitude of the variance inflation factor (VIF). Coakes et al. (2010) indicate that the regression model may be biased by multicollinearity when the VIF is greater than 10. Another indicator for multicollinearity is tolerance. Yuan (2007) suggests that high collinearity exists when the tolerance coefficient is less than 0.2 and close to zero.

Table 7.15 shows the results of the tests of multicollinearity for the independent variables. Overall, the tables show that the T values and VIF fall in the acceptable range, and no harmful indicators can be obtained from the results. By looking at both tolerance and VIF, all independent variables are accepted for the regression model, and they are not materially affected by multicollinearity.

Table 7.15: Test of multicollinearity for independent variables – multivariate

| Variable | Collinearity Statistics | |
	Tolerance	VIF
IND	0.94	1.07
AREA	0.85	1.18
AGE	0.91	1.10
GOWN	0.73	1.38
LOWN	0.89	1.13
FOWN	0.93	1.08
PERF	0.94	1.06
LN (CSE)	0.82	1.22
LN (SIZE)	0.37	2.70
LN (LEV)	0.47	2.15

7.72 Multiple regressions

OLS regression models employing alternate forms of the dependent and independent variables were used to test the hypotheses. The results from the ordinary least square multiple regression analyses are presented in this subsection, and those from economic, environmental, social and sustainability disclosure by GRI or CSDPI are shown and discussed separately. Since LN (SIZE) and LN (LEV) were set as control variables, each model was run twice, with and without the control variables, and the results are shown sequentially.

7.73 Multiple regressions for economic disclosure by GRI

The first multiple regression test was run with the control variables. With respect to economic disclosure by GRI, company size, which is measured by total assets, was strongly significant at the $p < 0.01$ level. The b value from LN (SIZE) is 0.110, which represents the gradient of the CEco regression line, indicating the change in outcome resulting from a unit change in the predictor LN (SIZE). It is seen from the results that company size is statistically significant, and H9 is accepted. The other very significant variable is AREA as a dummy variable, measured by whether a company is located in an economically developed region. It is highly significant at the $p < 0.05$ level with a b value of 0.214, indicating that the

unstandardised coefficient is highly influential on the model. As the both the b and beta values show positive correlations, the results are consistent with the hypothesis, therefore supporting H10. The rest of the independent variables were not found to have statistical significance.

It is noted that b values for GOWN (percentage of shares owned by the government), PERF (return on equity), LN (CSE) (charitable donation) and LN (LEV) (debt to equity ratio) are negative, and are in a different direction from the expected signs, suggesting that an inverse relationship may potentially exist between these variables and CEco. In particular, GOWN and PERF are highly influential, with b values of -0.278 and -0.288. As the results show, statistical insignificance was detected, and there may be distortion within the regression, causing b values to be negative. Nevertheless, it is worth investigating why these variables are seemingly negatively correlated with CEco.

According to Tabachnick and Fidell (2007), the critical value of multiple r squared being statistically significant for this study is 10% with an f value between 2 and 3 at 0.01 significance level. For satisfying statistical significance at 0.05, multiple r squared for this study needs to be over 0.06 with an f value between 2 and 3 (Tabachnick & Fidell, 2007). Multiple r is the coefficient of multiple correlation. R squared describes the distribution of the scatter around the regression line, which is interpreted as the percentage of variance in the dependent variable that can be explained by the predictors, and is often used as a parameter measuring the explanatory power of a model (Cohen & Cohen, 1983). The r squared and f values of 0.100 and 2.524 for CEco indicate that the predictors partially explain the model, and the model is statistically significant at 0.01 level.

Table 7.16: Results for multiple regressions for economic disclosure by GRI with control variables

Model	R^2	F	Sig. (1-tailed)
CEco	0.100	2.524	0.007

Table 7.16: Results of multiple regressions for economic disclosure by GRI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	-0.573	N/A	-0.670	0.504
IND	H1	+	0.161	0.096	1.475	0.142
AREA	H2	+	0.214	0.153	2.244	0.026**
AGE	H3	+	0.005	0.667	0.667	0.506
GOWN	H4	+	-0.278	-1.401	-1.401	0.163
LOWN	H5	+	0.050	0.507	0.507	0.613
FOWN	H6	+	0.132	0.370	0.370	0.712
PERF	H7	+	-0.288	-0.437	-0.437	0.663
LN (CSE)	H8	+	-0.007	-0.307	-0.307	0.759
LN (SIZE)	H9	+	0.110	2.783	2.783	0.006***
LN (LEV)	H10	+	-0.052	-0.923	-0.923	0.357

Note: N = 238; **p < 0.05; ***p < 0.01

The second test run of the CEco model was undertaken without the control variables, due to their high correlation with the other independent variables. As the results show, only one variable, AREA, was found statistically significant at 0.01 level, with a p value of 0.001. Comparing this with the previous test run, the significance level increased from highly correlated with strong correlation, and the influence of the coefficient b value also increased from 0.214 to 0.304. GOWN and PERF were found to have negative correlation again in the second test. The multiple r squared and f values dropped slightly, to 0.065 and 2.006, due to the reduced number of independent variables; however, the model is still statistically significant at 0.05 level according to Tabachnick and Fidell's critical values for squared multiple correlation r^2.

Table 7.17: Results for multiple regressions for economic disclosure by GRI without control variables

Model	R^2	F	Sig. (1-tailed)
CEco	0.065	2.006	0.047

Table 7.17: Results for multiple regressions for economic disclosure by GRI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	1.523	N/A	4.684	0.000
IND	H1	+	0.128	0.076	1.175	0.241
AREA	H2	+	0.304	0.218	3.347	0.001***
AGE	H3	+	0.005	0.046	0.719	0.473
GOWN	H4	+	-0.052	-0.019	-0.284	0.777
LOWN	H5	+	0.056	0.038	0.562	0.575
FOWN	H6	+	0.389	0.071	1.104	0.271
PERF	H7	+	-0.144	-0.014	-0.217	0.829
LN (CSE)	H8	+	0.018	0.055	0.845	0.399

*Note: N = 238; ***p < 0.01*

7.74 Multiple regressions for environmental disclosures by GRI

With respect to model 2, showing environmental disclosures by GRI with control variables, IND (whether a company is in the high-profile industry) (p = 0.010) and FOWN (percentage of shares held by a foreign company) (p = 0.002) are strongly significant variables at the p < 0.1 level, supporting H1 and H6. The unstandardised coefficient b of 0.573 for IND shows that it is moderately influential on CEnv. The b value for FOWN, which is 2.213, suggests a much stronger correlation with CEnv. Another very significant variable is LN (SIZE) (p = 0.050, b = 0.156), which is highly significant at 0.05 level. The rest of the independent variables did not show statistical significance.

Table 7.18: Results for multiple regressions for environmental disclosure by GRI with control variables

Model	R²	F	Sig. (1-tailed)
CEnv	0.138	3.621	0.000

Table 7.18: Results of multiple regressions for environmental disclosure by GRI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	-1.994	N/A	-1.158	0.248
IND	H1	+	0.573	0.166	2.602	0.010***
AREA	H2	+	0.084	0.029	0.439	0.661
AGE	H3	+	0.020	0.083	1.283	0.201
GOWN	H4	+	0.395	0.072	0.990	0.323
LOWN	H5	+	0.101	0.034	0.512	0.609
FOWN	H6	+	2.213	0.196	3.072	0.002***
PERF	H7	+	1.508	0.072	1.139	0.256
LN (CSE)	H8	+	-0.047	-0.069	-1.010	0.134
LN (SIZE)	H9	+	0.156	0.199	1.962	0.050**
LN (LEV)	H10	+	-0.014	-0.011	-0.121	0.904

*Note: N = 238; **$p < 0.05$; ***$p < 0.01$*

Notably, LN (CSE) (b = -0.047) and LN (LEV) (b = -0.014) showed negative gradients to CEnv, indicating slightly negative correlations; nonetheless, the p values were not statistically significant. The regression overall showed statistical significance at $p < 0.005$ level, with r squared = 0.138 where f = 3.621.

Table 7.19 indicates the results from multiple regressions for CEnv without the control variables. IND (p = 0.023, b = 0.500) and FOWN (p = 0.000, b = 2.261) are highly significant and strongly significant at $p < 0.05$ level and $p < 0.01$ level, respectively. Comparing this model with the previous model (with control variables), IND reduced its significance. Interestingly, GOWN (percentage of shares owned by the government) (p = 0.035, b = 0.781) is highly significant to CEnv without the control variables, at $p < 0.05$ level. Thus, H1, H4 and H6 are supported. The rest of the variables also show no statistical significance.

LN (CSE) again showed slightly negative correlation in the analysis, even though it did not approach statistically significant levels. Similarly to the model with control variables, PERF has a relatively high b value of 1.675, stating that more profitable firms are likely to issue better quality environmental disclosure. However, statistical significance was not detected.

The model is statistically significant with an r squared value of 0.116 when f = 3.752 at p < 0.005 level. Compared to model 2 with control variables, r squared once again decreased slightly due to the number of independent variables being reduced. However, importantly, f increased slightly to 3.752, indicating that the predictors' explanatory power on the dependent variable increased slightly, even though the value is still considerably low.

Table 7.19: Results for multiple regressions for environmental disclosure by GRI without control variables

Model	R^2	F	Sig. (1-tailed)
CEnv	0.116	3.752	0.000

Table 7.19 Results for multiple regressions for environmental disclosure by GRI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	0.847	N/A	1.304	0.194
IND	H1	+	0.500	0.145	2.292	0.023**
AREA	H2	+	0.239	0.084	1.318	0.189
AGE	H3	+	0.023	0.096	1.529	0.128
GOWN	H4	+	0.781	0.142	2.124	0.035**
LOWN	H5	+	0.103	0.034	0.520	0.604
FOWN	H6	+	2.261	0.233	3.720	0.000***
PERF	H7	+	1.675	0.080	1.261	0.209
LN (CSE)	H8	+	-0.005	-0.007	-0.114	0.909

Note: N = 238; **p < 0.05; ***p < 0.01

7.75 Multiple regressions for social disclosure by GRI

Table 7.20 shows the results for model 3, which is social disclosure by GRI with the control variables. LN (SIZE) ($p = 0.008$, $b = 0.144$) was strongly significant at $p < 0.01$, and the b value indicates its moderate influence on CSoc, supporting H9. Another significant variable is AREA, which is moderately significant at 0.1 level with a p value of 0.052 and a b value of 0.250. Thus, H2 is accepted. The other independent variables were found not to be statistically significant in the analysis.

Table 7.20: Results for multiple regressions for social disclosure by GRI with control variables

Model	R^2	F	Sig. (1-tailed)
CSoc	0.103	2.603	0.005

Table 7.20: Results of multiple regressions for social disclosure by GRI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	-0.917	N/A	-0.798	0.426
IND	H1	+	0.080	0.035	0.544	0.587
AREA	H2	+	0.250	0.133	1.956	0.052*
AGE	H3	+	0.005	0.033	0.504	0.614
GOWN	H4	+	-0.299	-0.083	-1.123	0.262
LOWN	H5	+	-0.044	-0.022	-0.334	0.739
FOWN	H6	+	0.168	0.023	0.350	0.727
PERF	H7	+	-0.049	-0.004	-0.055	0.956
LN (CSE)	H8	+	0.020	0.046	0.661	0.509
LN (SIZE)	H9	+	0.144	0.279	2.698	0.008***
LN (LEV)	H10	+	-0.049	-0.059	-0.641	0.522

*Note: N = 238; *$p < 0.1$; ***$p < 0.01$*

It is noted that GOWN ($b = -0.299$), LOWN ($b = -0.044$), PERF ($b = -0.049$) and LN (LEV) ($b = -0.049$) showed negative gradients to CSoc, indicating inverse correlations, as opposed to the expected signs of positive correlation, even though the p values for these variables were not significant. The model ($r^2 = 0.103$, $f = 2.603$) overall shows statistical significance at 0.005 level with r squared barely past the legitimate benchmark of 10%.

In regards to model 3 without the control variables, AREA (p = 0.002, b = 0.376) showed strong statistical significance at p < 0.01, with a considerably high b value. Compared to the test with control variables, the significance level increased from high to strong. Interestingly, Ln (CSE) shows moderate significance in the analysis, with a p value of 0.058 and a b value of 0.055. This was not found in the model with all variables. In addition, GOWN (b = 0.016) and PERF (b = 0.127) were positively correlated with CSoc without LN (SIZE) and LN (LEV), which is completely different from the results from the previous test where both variables were shown positive. The rest of the variables showed consistent results with the previous test, and no statistical significance was detected. With regard to the significance of regression, since r squared is slightly above 0.06, it falls within the critical value when f is between 2 and 3, and is significant at 0.05 level.

Table 7.21: Results for multiple regressions for social disclosure by GRI without control variables

Model	R²	F	Sig. (1-tailed)
CSoc	0.068	2.078	0.039

Table 7.21: Results for multiple regressions for social disclosure by GRI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	1.769	N/A	4.050	0.000
IND	H1	+	0.029	0.013	0.196	0.845
AREA	H2	+	0.376	0.201	3.084	0.002***
AGE	H3	+	0.006	0.041	0.637	0.525
GOWN	H4	+	0.016	0.004	0.063	0.950
LOWN	H5	+	-0.038	-0.019	-0.286	0.775
FOWN	H6	+	0.516	0.070	1.090	0.277
PERF	H7	+	0.127	0.009	0.142	0.887
LN (CSE)	H8	+	0.055	0.124	1.904	0.058*

Note: N = 238; *p < 0.1; ***p < 0.01

7.76 Multiple regressions for corporate sustainability disclosure by GRI

Model 4 is an integrated model that combines sustainability disclosure of all three aspects. Table 7.22 shows the results for this model with all control variables, where LN (SIZE) (p = 0.011, b = 0.127), unsurprisingly, was highly significant at p < 0.05 level. Another two significant independent variables include AREA (p = 0.079, b = 0.209) and FOWN (p = 0.067, b = 0.819) which were significant at p < 0.1 level. Notably, the explanatory power of FOWN was considerably high among all independent variables. In addition, GOWN (b = -0.161), LN (CSE) (b = -0.005) and LN (LEV) (b = -0.037) showed their correlations with CSD as negative, which is in the opposite direction from the hypotheses, even though they are not statistically significant. The rest of the variables did not show statistical significance. With respect to the significance of model 4, the r squared value of 0.113 is generally low; however, it falls within the legitimate range of 0.1 when f is between 2 and 3, therefore it is significant at 0.01 level.

Table 7.22: Results for multiple regressions for corporate sustainability disclosure by GRI with control variables

Model	R²	F	Sig. (1-tailed)
CSD	0.113	2.886	0.002

Table 7.22: Results of multiple regressions for corporate sustainability disclosure by GRI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	0.409	N/A	0.385	0.701
IND	H1	+	0.199	0.094	1.462	0.145
AREA	H2	+	0.209	0.119	1.763	0.079*
AGE	H3	+	0.007	0.049	0.740	0.460
GOWN	H4	+	-0.161	-0.048	-0.652	0.515
LOWN	H5	+	0.028	0.015	0.228	0.820
FOWN	H6	+	0.819	0.119	1.840	0.067*
PERF	H7	+	0.074	0.006	0.091	0.928
LN (CSE)	H8	+	-0.005	-0.013	-0.186	0.853
LN (SIZE)	H9	+	0.127	0.264	2.571	0.011**
LN (LEV)	H10	+	-0.037	-0.048	-0.523	0.602

*Note: N = 238; *p < 0.1; **p < 0.05*

Model 4 was run for the second time without control variables. Overall, both r squared (0.08) and f values (2.492) dropped to a small extent, which can be explained by the reduced number of independent variables. The decrease in f value indicates that the model without the control variables has less prediction power. Nevertheless, despite the relatively low r squared value, the model was still significant at 0.05 level, as it was barely over the critical value of 0.06.

Independent variables AREA and FOWN were both strongly significant at 0.01 level, with p values equal to 0.005 and 0.010 respectively, supporting H2 and H6. In particular, FOWN showed a highly influential correlation to CSD with a b value of 1.131, whereas AREA showed this to a lesser extent, with a b value of 0.323. The rest of the variables did not show statistical significance, and the signs from the analysis were the same as expected.

Table 7.23: Results for multiple regressions for corporate sustainability disclosure by GRI without control variables

Model	R^2	F	Sig. (1-tailed)
CSD	0.08	2.492	0.013

Table 7.23: Results for multiple regressions for corporate sustainability disclosure by GRI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	2.767	N/A	6.848	0.000
IND	H1	+	0.151	0.072	1.113	0.267
AREA	H2	+	0.323	0.185	2.861	0.005***
AGE	H3	+	0.008	0.058	0.903	0.367
GOWN	H4	+	0.124	0.037	0.541	0.589
LOWN	H5	+	0.032	0.018	0.262	0.794
FOWN	H6	+	1.131	0.165	2.582	0.010***
PERF	H7	+	0.225	0.018	0.273	0.785
LN (CSE)	H8	+	0.026	0.063	0.970	0.333

Note: N = 238; ***p < 0.01

In comparison with the first run, AREA and FOWN increased their significance extensively, from $p < 0.1$ level to $P < 0.01$ level. Also, GWON and LN (CSE) changed their signs due to controlling variables LN (SIZE) and LN (LEV). Even though the explanatory power of the model dropped slightly, this is significant to the study.

7.77 Multiple regressions for economic disclosure by CSDPI

Table 7.24: Results for multiple regressions for economic disclosure by CSDPI with control variables

Model	R^2	F	Sig. (1-tailed)
WCEco	0.102	2.584	0.006

Table 7.24: Results for multiple regressions for economic disclosure by CSDPI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	0.747	N/A	0.849	0.397
IND	H1	+	0.170	0.098	1.512	0.321
AREA	H2	+	0.222	0.154	2.265	0.024**
AGE	H3	+	0.006	0.052	0.788	0.432
GOWN	H4	+	-0.243	-0.088	-1.193	0.234
LOWN	H5	+	0.075	0.050	0.749	0.455
FOWN	H6	+	0.165	0.029	0.447	0.655
PERF	H7	+	-0.251	-0.024	-0.371	0.711
LN (CSE)	H8	+	-0.003	-0.010	-0.141	0.888
LN (SIZE)	H9	+	0.107	0.271	2.622	0.009***
LN (LEV)	H10	+	-0.043	-0.069	-0.747	0.456

Note: N = 238; *p < 0.1; ***p < 0.01

Models 5 represents the regression for economic disclosure by CSDPI. The regression model WCEco, in general, is statistically significant at 0.01 level, where the multiple r squared = 0.102 and f = 2.584. Regarding independent variables, two very significant variables AREA ($p = 0.024$, $b = 0.222$) and LN (SIZE) ($p = 0.009$, $b = 0.107$) were found highly correlated and strongly correlated with WCEco at $p < 0.05$ level and $p < 0.01$ level respectively. The b values for both variables were found to be moderately influential on the model.

Notably, GOWN (b = -0.243), PERF (b = -0.251), LN (SIZE) (b = -0.003) and LN (LEV) (b = -0.043) were negatively correlated with WCEco, and were in the opposite direction from the expected signs. Nonetheless, statistical significance was not detected in the analysis. The other variables also showed no statistical significance. Therefore, H2 and H9 were accepted and the other hypotheses were rejected.

Table 7.25: Results for multiple regressions for economic disclosure by CSDPI without control variables

Model	R²	F	Sig. (1-tailed)
WCEco	0.070	2.167	0.031

Table 7.25: Results for multiple regressions for economic disclosure by CSDPI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	2.761	N/A	8.272	0.000
IND	H1	+	0.135	0.078	1.205	0.230
AREA	H2	+	0.312	0.218	3.350	0.001***
AGE	H3	+	0.007	0.057	0.884	0.378
GOWN	H4	+	-0.017	-0.006	-0.089	0.929
LOWN	H5	+	0.081	0.053	0.791	0.430
FOWN	H6	+	0.418	0.074	1.156	0.249
PERF	H7	+	-0.116	-0.011	-0.170	0.865
LN (CSE)	H8	+	0.022	0.064	0.986	0.325

*Note: N = 238; ***p < 0.01*

With respect to model 5 without control variables, the regression ($r^2 = 0.070$, f = 2.167) barely satisfies the critical value of r squared greater than 0.06, and it is significant at 0.05 level. Only one variable was found strongly correlated with WCEco, where AREA (p = 0.001, b = 0.312) was statistically significant at $p < 0.01$ level. GOWN (b = -0.017) and PERF (b = -0.116) were once again found to have negative correlations to WCEco. Ln (CSE) became positively correlated in the second run of the model, with a slightly higher b value of 0.022. All in all, apart from LN (SIZE), most of the independent variables did not show statistical significance.

7.78 Multiple regressions for environmental disclosure by CSDPI

Table 7.26: Results for multiple regressions for environmental disclosure by CSDPI with control variables

Model	R^2	F	Sig. (1-tailed)
WCEnv	0.117	3.000	0.001

Table 7.26: Results for multiple regressions for environmental disclosure by CSDPI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	-1.122	N/A	-0.506	0.613
IND	H1	+	0.638	0.145	2.249	0.025**
AREA	H2	+	0.081	0.022	0.329	0.743
AGE	H3	+	0.036	0.118	1.798	0.073*
GOWN	H4	+	0.583	0.083	1.135	0.257
LOWN	H5	+	0.019	0.005	0.072	0.943
FOWN	H6	+	2.547	0.178	2.746	0.007***
PERF	H7	+	1.970	0.074	1.155	0.249
LN (CSE)	H8	+	-0.048	-0.056	-0.810	0.419
LN (SIZE)	H9	+	0.158	0.157	1.536	0.123
LN (LEV)	H10	+	-0.029	-0.018	-0.195	0.846

Note: N = 238; *p < 0.1; **p < 0.05; ***p < 0.01

Model 6 (r^2 = 0.117, f = 3.000), which represents environmental disclosure by CSDPI, is statistically significant at 0.01 level. Two very significant variables, IND (p = 0.025, b = 0.638) and FOWN (p = 0.007, b = 2.547), are highly significant and strongly significant at p < 0.05 level and p < 0.01 level, respectively. The b value is, interestingly, very high at 2.547, which is much greater than those of the other variables, indicating its substantial correlation with WCEnv. PERF was also detected with a considerably high b value of 1.970, suggesting a potentially high correlation, even though it is not significant in terms of the p value. LN (CSE) and LN (LEV) showed slightly negative signs for correlation. Apart from IND and FOWN, the rest of the independent variables did not show statistical significance.

Table 7.27 presents the results for model 6 without the control variables. Four independent variables showed statistical significance to WCEnv. FOWN ($p = 0.001$, $b = 2.948$) was strongly significant at $p < 0.01$ level, with a substantial influence of 2.948 on the model. Three very significant variables, IND ($p = 0.042$, $b = 0.571$), AGE ($p = 0.048$, $b = 0.038$) and GOWN ($p = 0.043$, $b = 0.956$), were highly significant at 0.05 level. The rest of the variables did not show statistical significance. The model ($r^2 = 0.104$, $f = 3.326$) overall is statistically significant at 0.005 level.

Compared to the first run of the analysis with the control variables, r squared dropped slightly due to the reduced number of independent variables; however, f increased considerably from 3 to 3.326, indicating that the model without the control variables was explained slightly better by the independent variables. In terms of the variables, the significance levels generally improved and GOWN became significant in the second run. Both test run showed LN (CSE) slightly negative correlated with WCEnv.

Table 7.27: Results for multiple regressions for environmental disclosure by CSDPI without control variables

Model	R^2	F	Sig. (1-tailed)
WCEnv	0.104	3.326	0.001

Table 7.27: Results for multiple regressions for environmental disclosure by CSDPI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	1.774	N/A	2.131	0.034
IND	H1	+	0.571	0.130	2.041	0.042**
AREA	H2	+	0.231	0.063	0.993	0.322
AGE	H3	+	0.038	0.126	1.992	0.048**
GOWN	H4	+	0.956	0.136	2.031	0.043**
LOWN	H5	+	0.022	0.006	0.087	0.931
FOWN	H6	+	2.948	0.206	3.266	0.001***
PERF	H7	+	2.148	0.081	1.262	0.208
LN (CSE)	H8	+	-0.008	-0.009	-0.136	0.862

*Note: N = 238; **p < 0.5; ***p < 0.01*

7.79 Multiple regressions for social disclosure by CSDPI

With regard to model 7, WCSoc, the regression overall is statistically significant at 0.01 level, with r squared at 0.102 and f at 2.565. Only two variables, AREA (p = 0.050, b = 0.259) and LN (SIZE) (p = 0.009, b = 0.144), showed significance to the model with moderate b values, supporting H2 and H9. Four variables showed negative correlations to WCSoc, which were GOWN (b = -0.282), LOWN (b = -0.044), PERF (b = -0.044) and LN (LEV) (b = -0.047). The signs were therefore different from the hypotheses. Apart from AREA and LN (SIZE), the other independent variables did not show statistical significance.

Table 7.28: Results for multiple regressions for social disclosure by CSDPI with control variables

Model	R²	F	Sig. (1-tailed)
WCSoc	0.102	2.565	0.006

Table 7.28: Results for multiple regressions for social disclosure by CSDPI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	0.445	N/A	0.378	0.706
IND	H1	+	0.087	0.037	0.574	0.566
AREA	H2	+	0.259	0.135	1.975	0.050*
AGE	H3	+	0.004	0.028	0.419	0.675
GOWN	H4	+	-0.282	-0.076	-1.034	0.302
LOWN	H5	+	-0.044	-0.022	-0.324	0.746
FOWN	H6	+	0.191	0.025	0.388	0.698
PERF	H7	+	-0.044	-0.003	-0.048	0.961
LN (CSE)	H8	+	0.020	0.045	0.648	0.518
LN (SIZE)	H9	+	0.144	0.273	2.639	0.009***
LN (LEV)	H10	+	-0.047	-0.055	-0.598	0.550

Note: N = 238; *p < 0.1; ***p < 0.01

With regard to model 7 without the control variables, r squared increased slightly to 0.067, barely past the critical variable of 0.06, and the model is significant at 0.05 level. Only one independent variable, AREA (p = 0.002, b = 0.386) was found strongly significant at 0.01 level. LOWN (b = -0.038) was once again detected to have a negative correlation with WCSoc, but no statistical significance was found. The other variables also did not show statistical significance.

Table 7.29: Results for multiple regressions for social disclosure by CSDPI without control variables

Model	R^2	F	Sig. (1-tailed)
WCSoc	0.067	2.070	0.040

Table 7.29: Results for multiple regressions for social disclosure by CSDPI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	3.134	N/A	7.005	0.000
IND	H1	+	0.034	0.015	0.227	0.821
AREA	H2	+	0.386	0.201	3.091	0.002***
AGE	H3	+	0.006	0.036	0.557	0.578
GOWN	H4	+	0.036	0.010	0.142	0.888
LOWN	H5	+	-0.038	-0.019	-0.279	0.780
FOWN	H6	+	0.542	0.072	1.117	0.265
PERF	H7	+	0.130	0.009	0.143	0.887
LN (CSE)	H8	+	0.056	0.122	1.873	0.062*

Note: N = 238; *p < 0.1; ***p < 0.01

7.710 Multiple regressions for corporate sustainability disclosure by CSDPI

Table 7.30: Results for multiple regressions for corporate sustainability disclosure by CSDPI with control variables

Model	R^2	F	Sig. (1-tailed)
WCSD	0.113	2.887	0.002

Table 7.30: Results for multiple regressions for corporate sustainability disclosure by CSDPI with control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant	N/A	N/A	1.786	N/A	1.659	0.098
IND	H1	+	0.204	0.096	1.485	0.139
AREA	H2	+	0.209	0.118	1.746	0.082*
AGE	H3	+	0.007	0.048	0.734	0.464
GOWN	H4	+	-0.152	-0.045	-0.608	0.544
LOWN	H5	+	0.034	0.018	0.276	0.783
FOWN	H6	+	0.848	0.122	1.882	0.061*
PERF	H7	+	0.104	0.008	0.125	0.900
LN (CSE)	H8	+	-0.006	-0.013	-0.195	0.846
LN (SIZE)	H9	+	0.127	0.261	2.541	0.012**
LN (LEV)	H10	+	-0.036	-0.046	-0.500	0.618

Note: N = 238; *p < 0.1; ***p < 0.01

Model 8 was run once again without the control variables, and the regression showed statistical significance at 0.05 level with r squared of 0.081 when f = 2.511, barely past the critical value of multiple r squared, 0.06. Regarding independent variables, two variables, AREA (p = 0.005, b = 0.324) and FOWN (p = 0.009, b = 1.160) were strongly significant to the model. Compared to the first run with the control variables, the significance levels of both variables increased extensively from $p < 0.1$ level to $p < 0.01$. All variables were detected with the expected sign; however, apart from AREA and FOWN, the rest of the variables did not show statistical significance.

Table 7.31: Results for multiple regressions for corporate sustainability disclosure by CSDPI without control variables

Model	R²	F	Sig. (1-tailed)
WCSD	0.081	2.511	0.012

Table 7.31: Results for multiple regressions for corporate sustainability disclosure by CSDPI without control variables (Cont'd)

Variable	Hypothesis number	Expected sign	B	Beta	T	Sig. (1-tailed)
Constant			4.140		10.135	0.000
IND	H1	+	0.156	0.073	1.137	0.257
AREA	H2	+	0.324	0.183	2.837	0.005***
AGE	H3	+	0.008	0.058	0.901	0.368
GOWN	H4	+	0.134	0.039	0.581	0.562
LOWN	H5	+	0.038	0.021	0.307	0.759
FOWN	H6	+	1.160	0.167	2.620	0.009***
PERF	H7	+	0.254	0.020	0.304	0.761
LN (CSE)	H8	+	0.026	0.062	0.952	0.342

Note: N = 238; ***p < 0.01

7.8 Findings and discussion

Multiple regression analyses in CSD by GRI and CSDPI were conducted in this chapter. The results showed that all eight hypothesised models were statistically significant with acceptable levels of r squared. While the results indicated that some variables from the theories were able to explain the quality of CSD in listed Chinese companies, the other ones were less able to perform this function.

The results across the models by GRI and the models by CSDPI indicated that they had almost identical statistically significant variables across economic, environmental, and social disclosure models, as well as the integrated CSD models. In terms of the signs of the variables, the results also showed consistency in models developed from both measures; however, a slight difference was found in the environmental disclosure models. There are two reasons for this trend in the results. As indicated in the previous chapter, the report users' perceived importance was different from the level of importance intended by GRI. In other words, some indicators in GRI were not considered as important by the report users. The results from the t-test suggested that while some indicators were more important, the other ones were important to a lesser extent. Based on these results, the instrument used in this study – the CSDPI – was built to measure the quality of CSD. However, the importance of CSD indicators perceived by the users did not vary significantly because the top importance value was 4.51 (Water, Environment) and the bottom value was 3.62 (Supplier human rights assessment, Social). Besides, about 50% of the indicators showing importance from the users' perspectives did not change from what was intended by GRI. So, the users' perceived importance was not dramatically different from what was intended by GRI, although certain areas were of more interest to the report users.

In addition to the disturbance from the CSDPI, the relatively low quality of CSD also explained why the significant variables from the models by both measures were the same. Descriptive statistics of the quality of CSD in Chinese listed firms indicated that the quality of disclosure was generally low across all three types of disclosure, where the highest average per indicator was economic disclosure at 0.905. The quality of the other two sustainability disclosures was 0.50 and 0.43, for social disclosure and environmental disclosure, respectively. These eventually made the average quality of CSD as low as 0.55 – the level just above information being omitted. Due to the limited level of CSD in Chinese listed firms in 2013, the CSDPI was not substantial enough to show statistical significance when comparing the models by GRI, considering that the CSDPI was not dramatically different from GRI. As a consequence from both causes, the significant variables in the models by GRI and the CSDPI showed consistency.

Regarding the results from the models across economic, environmental, social and integrated

corporate sustainability disclosure, the significant variables were mostly the same across CSD/WCSD, CEco/WCEco, Soc/WCSoc, and partially with CEnv/WCEnv. Independent variables that were found common in economic disclosure, social disclosure and CSD were AREA, FOWN and SIZE. However, the significant variables found in environmental disclosure models were IND, AGE, FOWN, GOWN and AREA, where AGE and AREA were at 0.1 level. In order to explain why common variables were obtained from CSD/WCSD, CEco/WCEco and Soc/WCSoc, it is important to look at the results from descriptive statistics of the quality of CSD. The average quality was detected to vary across disclosure, where economic and social information were disclosed better than environmental disclosure. As the quality of CSD was measured by the sum of all three types of disclosures, it was more affected by the values contributed by economic and social disclosure, due to their quality being higher than environmental disclosure. This explains why there were common statistically significant variables obtained from economic disclosure models, social models and the integrated CSD models. Moreover, in the previous section, it was indicated that environmental information must be disclosed only by listed companies from certain industries with the required standards. This suggests that companies that chose to disclose environmental information could be completely different from those that disclosed economic or social information.

It is notable that the results from the multivariate analyses suggested including corporate economic disclosure, environmental disclosure and social disclosure as one whole when analysing Chinese corporate sustainability reports, due to the similarity in variable significance shown in the models. However, the types of disclosure may be investigated separately depending on the purpose of a study, where in particular, environmental disclosure shall be looked at individually due to its partial inconsistency of results with the other types of disclosure in China.

With respect to the predictors in the models developed based on the hypotheses, consistent with Legitimacy Theory expectations, the study found SIZE statistically significant in all CSD models, which suggested that larger companies were more like to disclose CSD with higher quality. This results are consistent with the existing studies (Ni, Qian and Crilly, 2014; Zeng, Xu, Yin and Tam, 2011), as larger companies face more political pressure and public exposure about

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their operation, performance and sustainability. According to Hackston and Milne (1996) larger companies disclose a high quality of CSD in order to mitigate the risk and pressure they face. AREA was also found to be consistent with the expectation from Legitimacy Theory, where statistically significant positive correlations were found in the sustainability disclosure models, and this was also consistent with existing studies (Yeh, Juo and Yu, 2011; Kuo, Yu and Chang, 2015). The regional economically developed area was usually along the eastern China coast line, where there was a strong degree of political pressure and companies were more likely to face extra pressure from governing bodies. Under Legitimacy Theory, companies had to comply with what society requires and meet their social expectations in order to fulfil the social contract under tighter control from the government. This explains why a higher quality of CSD was obtained from companies located in the economically developed regions of China.

Foreign ownership was found to be statistically significant in the quality of environmental disclosure and the integrated CSD model, whereas significance was not indicated in the other models. Listed companies with foreign ownership were under greater competitive pressure and retained a higher degree of administrative efficiency than state-owned firms (Zu and Song, 2009). Therefore, the need to meet expectations from society and dominant stakeholders reduces political costs by providing visible and transparent environmental information. However, in the models of economic and social disclosure, statistical significance was not shown. This is because China is still in an early stage of balancing between economic and sustainability interests, during a transitional economic system. Corporate sustainability was not yet set as a fundamental goal for many companies. As China's regulations and policies regarding sustainability reporting were still at an early stage, it may take time for companies with foreign ownership to synthesise China's regulations and engage in legitimising tactics.

Government ownership was coded as a dummy variable, and it was only found significant in the quality of environmental disclosure. No statistical significance was obtained from the models of economic disclosure, social disclosure and integrated sustainability disclosure. Also, negative signs were shown in the multiple regressions, which were entirely different from what was hypothesised. One possible explanation is that in the context of the unique Chinese political

background, encouragement from the government often has more influence on listed companies, as they are more likely to follow encouragement from the government in the consideration of stakeholder power from a theoretical perspective. However, for state owned enterprises, showing their sustainability practices in CSD increases only the richness of their disclosure. It does not grant extra credit from the government, but additional costs for preparing such disclosure are generated (Zhou, 2005). This explains why the results from the regression model showed a potential negative correlation between the quality of CSD and the government ownership of a company. Overall, the results showed very limited evidence about government owned firms, which were under pressure from the government to provide an advanced quality of CSD as well as good CSD behaviour. In opposition, the models of CSD, economic disclosure and social disclosure showed negative correlations with government ownership. However, it is notable that GOWN showed strongly significant correlation in CEnv models due to the mandatory requirement from the governing body. In the previous section, it was indicated that industrial companies that exceeded the pollution standard must disclose environmental sustainability information. Although according to Legitimacy Theory, government owned firms may choose not to disclose as much as other types of companies, the results showed that a significant correlation exists between the quality of environmental disclosure and the government ownership of a company. In addition, by re-examining the sample firms, it was found that the majority of the listed high-profile government owned firms exceeded the standard from mandatory requirements. As the firm size of these companies was also considerably greater, this explains why GOWN was significant at $p < 0.05$ level when control variables SIZE and LEV were excluded. Consequently, this suggested a positive effect from mandatory and regulatory pressure on government-owned firms to provide implications on policies from environmental disclosure. However, it was only an effective tool to encourage CSR reporting, particularly for economic and social disclosure, where the requirements were not mandatory in the Chinese context.

Industry type was also coded as a dummy variable, which measured whether a company operated in a high-profile industry. The results from OLS showed that industry type was significant in the environmental disclosure model at $p < 0.05$ level, in both models, with or

without the control variables. This is consistent with prior research. Several existing studies indicated that the level of CSD tends to be higher in high-profile industries (Ni et al., 2014) in China, as a result of the Chinese government's great effort to regulate environmentally sensitive industries in recent years (Wang et al, 2004). In addition to the regulations published by the Chinese National Environmental Protection Agency, many companies in these industries would choose to disclose environmental information in order to alleviate the government's concerns, according to Stakeholder Theory. Therefore, the results from environmental disclosure models showed consistency with the existing studies where a positive correlation exists between the quality of environmental discourse and whether a company is in a high profile industry. However, the results from the models of CSD, economic disclosure and social disclosure did not show statistical significance, due to the lack of mandatory regulations as required in environmental disclosure activities.

AGE was found significant in the models of environmental disclosure at $p < 0.1$ level and $P < 0.05$ level, with and without the control variables respectively. The result shows consistency with the expectation from Legitimacy Theory, in which older firms tend to have higher social reputations and involvement in disclosure of sustainability activities. The public might then expect more environmental information to be issued by these companies, due to their longer time being listed (Robert, 1992). This is consistent with previous studies, and therefore, legitimacy theory explains the correlation between firm listed age and the quality of corporate environmental disclosure. However, results from other models indicated that AGE was not significant to explain CSD, economic disclosure and social disclosure. One possible explanation for this could be the significant effect of the mandatory reporting requirements in environmental disclosure, which played an important role for older companies to disclose. As discussed previously, companies that had been listed for longer were more likely to attract political pressure and public attention. As required by regulations, they must disclose in order to meet expectations from society (Zhang, 2013). This would make environmental sustainability a priority compared to economic and social responsibility. In addition, China's 12th Five Year Plan for National Economic and Social Development was being implemented in 2013, in which environmental issues and constraints

were considered a primary focus. This also explains why environmental disclosure for companies that have been listed longer was made a priority among corporate sustainability disclosure.

Corporate sustainability expenditure (CSE) was measured by the amount of charitable donations made in 2013. This variable was found only in the social disclosure model without the control variables SIZE and LEV. By definition, charitable donation reflects love for mankind and integrity from the intangible assets of a company in the business context. This variable was previously shown in existing studies to have a valid relationship between firm financial performance and firm size (Crampton and Pattern, 2008), and it was also shown to have a direct relationship with the market value of a firm (Yeh et al, 2011). As an indirect signal, companies with more charitable donations were more like to have a higher level of CSD shown for firm performance. The results of this study are consistent with the existing literature, in that charitable donation is positively correlated with the quality of corporate social disclosure with statistical significance. However, it is notable that this variable was not significant in the integrated CSD model, even though it showed statistical significance in social disclosure in particular. One explanation is that the significance of CSE is not sufficiently strong in the social disclosure models, as it was significant at only $p < 0.1$ level. This is not statistically significant enough to be shown in the integrated CSD models which included all three economic, environmental and social perspectives.

PERF measured companies' profitability in terms of ROE, and it was not found statistically significant in any of the models; therefore, signalling effect theory fails to explain the influence from profitability. However, from another perspective of Legitimacy Theory, profitability can be regarded either positively or negatively to the level of CSD. This is due to the fact that CSD may be used as a vehicle for management to adopt strategies for repairing, maintaining or obtaining legitimacy (Neu et al, 1988). When a company is profitable, a higher level of CSD is able to explain the financial performance of the company by reflecting the degree of its corporate sustainability; on the contrary, when a company is not making profit, CSD could be used as a strategy to explain and convince financial stakeholders that the current sustainability investments will result in long-term benefit, or perhaps divert concerns from its poor financial performance

(Reverte, 2009). Moreover, profitability was not found to be significant in the research models. This can perhaps be explained by Agency Theory during 2013, when the Chinese listed companies were still experiencing economic downturn from the previous period. The equity holders and debt holders of these companies were subsequently more likely to desire information about corporate financial performance in the short-run, rather than long-term corporate sustainability (Shan & Taylor, 2014). It is then reasonable to suggest that firms with high leverage generated less CSD, in order to minimise associated costs and reserve solvency for their creditors. Nevertheless, profitability has been found to be inconsistent to explain the level of CSD in recent studies (Tilling & Tile, 2010; Mukherjee et al., 2010; Chu et al., 2013).

LOWN represents legal person ownership, which describes whether the majority of shares of a company were owned by a legal person. This may include an individual or parties whose interests may not coincide with the interests of other investors or those of employees and managers (Shleifer and Vishny, 1997). LOWN was not found to be statistically significant in any of the models, but it showed negative correlations with CSD, which is opposite to the hypothesis. This can be explained by the difference in interest between legal person ownership and other investors. Luo (2006) indicated that inappropriate transactions to expropriate benefits at the expense of the minority for the legal person party were always considered. It is very likely that the controlling shareholder would divert wealth through mechanisms such as inter-corporate loans (Li, et al 2012), and in the long-run, neglect disclosure of corporate sustainability. If stakeholder theory is considered in this context, as the Chinese government takes great control over listed companies disclosing policies, the major shareholder of an organisation must consider terms of stakeholder power to a great extent, especially in 2013 when the leader of the party changed, causing significant influence on the focus of national development and its policies. Therefore, if this is taken into account, it is less likely that legal person ownership would have had a significant influence on CSD reporting during this special period of time.

Statistical significance was not found in Leverage, and it showed a slight negative coefficient with all corporate sustainability models. The hypothesis based on Legitimacy Theory suggested that highly leveraged firms would be more like to disclose sustainability information to show their

capability of being profitable, and to reduce the tension from their debt holders. However, a negative sign was obtained from the study. The rationale for this could be that there could be close relationships between highly leveraged firms and their debt holders. Consequently, firms may disclose corporate sustainability information through vehicles other than stand-alone corporate sustainability reports.

7.9 Robustness checks

A robustness check examines the certainty of the regression coefficients by estimating their behaviour when the regression specification is modified from adding or removing variables (Lu and White, 2014). If the coefficients are plausible and robust, this is commonly interpreted as evidence of structural validity. Two types of robustness check were employed in the study in order to eliminate any extreme variables, which reduced the distortion from the samples, thereby making sure of the validity of the analyses (Shan and Taylor, 2014). A binary logistics regression analysis was first used as an alternative technique for data not being normally distributed (Hair, Anderson, Tatham and Black, 1995). As for a logistics regression model, the dependent variables need to be categorical, and the quality of the disclosure was transformed from continuous to dichotomous, where 0 was given to disclosure below the median value of the sample, otherwise coded as 1. Appendix I shows the robustness test results from binary logistics regression for the eight models. Only LEV was found statistically significant, with negative correlations in model 1 and model 5, due to the transformation of data for the dependent variables. Nevertheless, the results from the test did now show significant differences from the primary findings.

The second robustness check was done through stepwise backwards regression analysis based on the multiple linear regression models developed. In this analysis, all independent variables were initially involved, and they were tested one by one for statistical significance. The models deleted the ones that were not significant. Appendices J, K, L, M, N, O, P and Q show the results from the stepwise backwards regression analysis for the 8 models in the study. The results were shown to be the same as the primary findings.

7.10 Summary

This chapter overall showed empirical support for the hypotheses developed by Legitimacy Theory, Stakeholder Theory and Signalling Theory, and the findings in this study are expected to contribute valuable evidence to this CSD research area. The main statistical tests adopted were descriptive statistics, univariate analysis and multivariate analysis, where OLS multiple regression models were used to examine the hypotheses. A logistic regression model and stepwise backward regression model were also employed for robustness tests. The results suggest that the hypotheses can only partially be accepted, and that 'firm size' and 'company location' have constantly influenced CSD as driving forces in all CSD models. The other variables also had different degrees of influence among the models. Legitimacy and stakeholder theories were shown to play essential and important roles in explaining different parts of the findings, whereas Signalling Theory was shown to have influence to a lesser extent. Overall, all three theories were evidently complementing each other, and explained different parts of the study. The robustness showed no difference from the main OLS regression analysis. The next chapter presents summaries of all chapters in this study. Further conclusions, implications, limitations and suggestions for future studies are also included.

Chapter 8

Conclusion

8.1 Introduction

This final chapter provides summaries of the previous chapters, and major findings and discussions of the study. It also provides answers to the research questions in regards to the users' perceived importance of CSD in China and the current status of the quality of CSD in Chinese listed firms, as well as its driving forces. Implications of the study, limitations and suggestions for future studies are also presented in this chapter.

8.2 General review and chapter summaries

The study overall has shown empirical findings of the Chinese report users' perceived importance of CSD in the Chinese listed companies. It also examined the quality of CSD using the CSDPI developed in the study as an instrument, and by GRI. Comparisons from both instruments were made to draw a conclusion, showing the differences between the models. The final analyses provide the degree of influence from the driving forces hypothesised based on the perspectives of Legitimacy Theory, Stakeholder Theory and Signalling Theory. The following sections provide summaries of each chapter (excluding Chapter 1).

Chapter 2 presented a review of the literature on empirical studies of CSD. This chapter particularly reviewed the concept and definition of CSD in the Chinese context, where a strong degree of influence impacted on Chinese stakeholders, causing different understandings and perceptions of CSD. It also reviewed the influence on corporate sustainability reporting from GRI in China, as well as how GRI had an impact on the ownership structures of the listed Chinese firms. The empirical studies reviewed were grouped into internal driving forces and external driving forces on CSD. The literature review provided conceptual and theoretical resources from which the author was able to develop appropriate theoretical frameworks and methodology for this study.

In the first part of Chapter 3, the Signalling Theory framework was elaborated on, and its importance and relevance for the development of the research instrument was justified, analysing the users' perceived importance of CSD. With respect to the driving forces of the quality of CSD, the second part of the chapter developed 10 hypotheses based on three key theoretical frameworks – Legitimacy Theory, Stakeholder Theory and Signalling Theory. Hypotheses developed from Legitimacy Theory included industry type, company location, firm age, firm size and leverage, where firm size and leverage were control variables. Three hypotheses were developed from Stakeholder Theory, including government ownership, legal person ownership and foreign ownership. Two hypotheses were developed from Signalling Theory: performance and corporate sustainability expenditure.

Chapter 4 outlined the methodology employed for the three main analyses for this study – the development of the research instrument, the analysis of the quality of CSD and the driving forces of CSD. Sample selection and data collection for all analyses were presented first, followed by a description of the instrument, and the coding method based on the instrument. This chapter also described research design, data analyses and the research models used in this study.

Chapter 5 described the analyses of the users' perceptions of CSD and the instrument development. The analyses examined how important the Chinese report users perceived CSD in the listed Chinese companies, and this was compared with the results from the importance intended by GRI. A set of survey questionnaires was developed to collect data on the users' perceptions, and a pilot study was first conducted to ensure its validity for a full study survey. Data collected was shown by descriptive statistics and analysed by one sample t-test. The research instrument was developed based on the results from the analyses, and was referred to as CSDPI later in the study. This chapter answered research question 1, and partially answered research question 2.

Chapter 6 showed and discussed the analyses of CSD of the Chinese listed companies in 2013. The analyses examined the type and the quality of CSD, based on GRI and CSDPI. This

chapter also showed the quality of CSD in terms of economic disclosure, environmental disclosure, social disclosure and the integrated corporate sustainability disclosure. Research question 3 was answered in this chapter.

Chapter 7 presented a series of statistical analyses to examine the association between the quality of CSD and the driving forces hypothesised in Chapter 2. There were a total of 8 research models, and each model was examined twice, with or without the control variables. Data analyses included in this chapter were descriptive statistics, univariate analysis – Pearson correlation analysis, Multivariate analysis – OLS, logistic regression and stepwise backward regressions. Comparisons between the model by the CSDPI and by GRI were made based on the statistical results. This chapter answered research questions 4 and 5, and addressed the unanswered part of research question 2.

8.3 Major findings

This section presents the conclusive findings, organised in the order of the research questions.

8.31 The Chinese report users' perceived importance of CSD

In general, the results of the analyses of the users' perceived importance of CSD indicated that the importance of CSD perceived by the report users was partially different from what was intended by GRI. The degree of difference varied across disclosure categories. The trends in results showed that while environmental disclosure was perceived the most important aspect in sustainability, social and economic disclosure were considerably less important. It was noted that economic disclosure was perceived as less important by the users than was intended by GRI. The results from this analysis are consistent with what the study hypothesised, due to the unique cultural and political background of the Chinese context, and it provides much relevance to existing research into China's corporate sustainability or social responsibility practices and reporting mechanisms.

With respect to the individual aspect of sustainability, all the categories from environmental disclosure were perceived as more important than was intended by GRI. Both the results from the t-test and descriptive statistics showed evidence that none of the environmental categories obtained a CSDPI score less than GRI's default importance value of '4'. This can be explained due to the success of implementation of the 12th Five Year Plan of National Economic and Social Development, announced by the Chinese government in 2011. Similar findings were highlighted by existing research, showing that the implementation of the national sustainability plan was successful in terms of raising people's awareness and understanding of environmental protection and national sustainability development (CSMAR, 2013). In terms of the importance of environmental disclosure by category, items included in the 12th Five Year Plan had significant influence on the users' perceived importance of environmental disclosure. The results indicated that "Energy", "Water", "Emissions", "Effluents and Waste" and "Compliance" were perceived as more important than the other indicators. The relevant items in the Five Year Plan include information disclosure on emissions and pollutants containing carbon dioxide, sulphur dioxide, chemical oxygen demand and nitrogen oxide, where emissions of CO_2 was listed as the primary pollution to be reduced (CASS, 2016). It is known in the context of China that around 60% to 70% of energy is generated from burning coal, which causes enormous amounts of carbon emission and air pollution. The 12th Five Year Plan extends the mission from the 11th Five Year Plan by beginning a low-carbon economy, and it also lists details of promoting energy-saving and carbon reduction in major industries (CASS, 2016). The tendency in the results shows that the Chinese government had been making an effort to promote a carbon reduction policy, which consequently raised people's understanding of the seriousness of national environmental issues.

Categories from economic disclosure and social disclosure were perceived as less important by the report users, compared to environmental disclosure. Items related to significant social events or exposed by media showed more importance in the results, particularly when they were related to faulty products and the milk power scandal of 2006. The three sub-categories under "Product Responsibility": "Customer health and safety", "Customer privacy" and "Compliance" showed significant importance in the results. Economic disclosure was perceived least important

in comparison to the other two types of disclosure, due to the fact that its information could be obtained from companies' annual reports. However, as it shows the less frequently reported information that is often desired by readers of sustainability reports, report users could still obtain information that they could not often find in annual reports. Nonetheless, the users might find it less important in comparison with the other two types of disclosure because information was available from annual reports.

A research instrument was developed based on the findings from the analyses. Consequently, the following categories obtained higher weightings in the CSDPI: energy, water, emissions, effluents and waste, compliance, child labour, security practice, environmental compliance, customer health and safety, customer privacy and social compliance. On the contrary, the following items were perceived as having less importance: market presence, indirect economic impacts, procurement practices, human rights investment, non-discrimination, freedom of association and collective bargaining, indigenous rights assessment, supplier human rights assessment, human rights grievance mechanisms, local community, public policy, anti-competitive behaviour, supplier assessment for impact on society, marketing communications, employment, and diversity and equal opportunity. The rest of the categories in G4 retained their importance as intended by GRI in the research instrument.

8.32 The extent and quality of CSD in Chinese listed companies

The results of the study suggest that the overall level of CSD quality was low, and the information disclosed was limited to descriptions of positive sustainability practices. This is made evident by the level of the average quality per indicator in CSD, which was barely above information being omitted. A minority of the sample firms obtained a high quality of disclosure, with scores of '4' or '5'; however, as this was only the case for the minority of the companies selected, it was not significant enough to have a strong influence on the final results. In terms of specific sustainability disclosure, economic disclosure was best-disclosed among environmental disclosure and social disclosure, even though the average quality per indicator (0.9) was still less than an acceptable level. Social disclosure was the second-best reported, slightly better than the quality of environmental disclosure with an average quality of 0.5 and 0.43 for social and

environmental respectively. This result indicates that there was not much difference in terms of the scores obtained for each type of disclosure, and as the scores were below 1, it suggests that, overall, the quality of CSD was fairly low in 2013. The extent of CSD, which was measured by CSD disclosing rate, indicated that economic and social information was disclosed to a significantly greater extent than environmental disclosure. As discussed in chapter seven, this was due to the introduction of the Bulletin of Disclosure of Corporate Environmental Performance in 2003, stating that companies only needed to disclose when they exceeded the level of discharged pollutant set in the Bulletin. Also, companies from the 13 high-profile industries were more likely to report environmental information, whereas if a company was not so environmentally sensitive, it was less likely to disclose. There was not much restriction in terms of company industries on disclosing economic and social information. Consequently, as the results show, it is necessary to combine economic, environmental and social disclosure when analysing CSD as a whole.

In terms of the specific categories in CSD, it was generally found that items relevant to policies and requirements from government and governing bodies, as well as significant social events, were more likely to be disclosed. There were 9 categories in the instrument shown to have a significantly higher quality of disclosure, due to their average quality being well above the mean of total CSD. These include indirect economic impact, training and education, security practice, environmental overall, public policy, economic performance, environmental impact (additional question), energy and employment. The highly disclosed economic and social categories that were in association with economic impacts, economic performance and social security, were influenced by the formation of two new governing task forces in the Third Plenary session in November 2013. The national tasks were to focus on economic development and national and social security due to the change of government leadership. With regard to energy and environmental overall, the categories being highly disclosed were affected by the 12th Five Year National Plan which enacted the Circular Economy Promotion Law, in which energy was listed as the main focus area environmentally, in order to create a low-carbon economy.

It is evident from the study that well disclosed items in CSD were not necessarily perceived as so important by the report users. Most of the top disclosed items were at a low rank in terms of the CSDPI, and more importantly-perceived items were ranked at the bottom in terms of the amount of CSD quality. For example, although water was perceived as most important by the users, the amount of CSD quality was only 0.23, ranked 28th out of the total of 47 categories. On the contrary, indirect economic impact was the second-least important item, but it obtained the highest amount of CSD quality. The results from the analysis suggest that there is a potential negative correlation between the users' perceived importance of CSD and the actual quality of CSD. The rationale behind a highly importantly perceived item could possibly be twofold. The report users did not see enough information about a specific area; although the information was disclosed, the extent and the quality of information was not sufficient for evaluation. The second reason could be that the report users did not see information that they perceived to be highly important, and they wish to see more of such information in future. Nonetheless, due to the scope of this study, no further analyses were carried out to specifically investigate the correlation between the users' perceived importance and the quality of CSD. This can be a variable suggestion for future studies.

8.33 The driving forces of the quality of CSD

This study examined the associations between the quality of CSD in the Chinese listed companies in 2013 and the driving forces of CSD using content analysis. Based on the nature of the data, Ordinary Least Square models were employed in the multivariate analysis as the main statistical tools. There were 8 models developed in this study to test each aspect of CSD. The dependent variables were coded by CSDPI and GRI, and each coding method obtained four models to test the associations between the driving forces and the quality of CSD. As company size and leverage were set as control variables, each model was tested twice, with or without the control variable. However, the results did not show significant differences in relation to the inclusion or exclusion of the control variables. In order to ensure the accuracy and validity of the regression models, logistic regression models and stepwise backward regression models were adopted in robustness tests. Results from all three regression models showed similar

findings and statistical significance for the predictor variables. As corporate sustainability incorporates economic, environmental and social aspects, the models in this study examined economic disclosure, environmental disclosure and social disclosure separately. An integrated CSD model that combines all three types of disclosure, representing overall sustainability, was also included. With respect to the significance of the variables, company size as represented by total assets was found to be a significant predictor of variables on the quality of all CSD. Similarly, company location, represented as whether a company was located in a developed economic area, was found significant in economic disclosure, social disclosure and overall sustainability disclosure. Foreign ownership measured by percentage of shared held by foreign companies was found significant in environmental disclosure and overall sustainability disclosure. Other variables, found statistically significant only in environmental disclosure and social disclosure, were company age and industry, and corporate sustainability expenditure. It is interesting that government ownership and leverage were found to have negative signs in common among all CSD models, as tentative existing studies on CSD suggested positive correlations between the variables. Overall, as the results from the regression models showed, common statistically significant variables were found in the models of economic disclosure, social disclosure, corporate sustainability disclosure and, partially, environmental disclosure. This suggests combining all three types of disclosure when analysing CSD as a whole; however, environmental disclosure may be examined separately depending on the purpose of a study, due to its partial consistency with the other types of disclosure. In addition, it is interesting and notable that there is no significant difference between the models coded by GRI and by CSDPI. The possible explanation for this could be the influence on and disturbance from the quality of CSD in the listed firm and the degree of difference between the users' perceived importance and what was intended by GRI. Nevertheless, the models coded from the two indexes were not identical, suggesting that statistically significant differences could still be examined. To conclude this finding, it is evident that a certain degree of difference in the perceived importance of CSD existed between the users and what was intended by GRI, provided that the extent was considerably small in respect to overall corporate sustainability.

Relevant to bivariate analysis, Pearson correlation analyses were adopted to test the correlations of the predictors with each of the CSD models individually. The analysis overall showed similar results as the in multiple regression models. Company location and company size were both found statistically significant at $p < 0.01$ level in all CSD models. Foreign ownership was found strongly significant in environmental disclosure and sustainability disclosure. Interestingly, leverage was found to have strong statistical significance in environmental disclosure, social disclosure and CSD models, and a significance level of 0.1 was obtained in economic disclosure; however, leverage did not show statistical significance at all in the multiple regression models. No signs of significance were shown in the robustness test, where stepwise backward regressions tested the variables by eliminating the least significant ones. Leverage once again did not show statistical significance in this analysis.

The outcomes of the statistical test overall partially supported the hypotheses in accordance with Legitimacy Theory, Stakeholder Theory and Signalling Theory during the year of 2013. Larger firms with foreign ownership, located in a developed economic area, were more likely to produced CSD of higher quality. For environmental disclosure, the quality was more likely to be higher for older, high-profile industrial companies with government ownership or foreign ownership.

8.4 Implications of findings

The findings of this study have many implications for corporate sustainability report preparers, regulators, general report users and researchers in this field. Content analysis used in CSDPI captured the quality of CSD in relation to economic disclosure, environmental disclosure and social disclosure, in which 47 categories were specifically examined in each type of CSD. This study provides a clear insight into companies' internal and external driving forces of CSD from the perspectives of Stakeholder Theory, Legitimacy Theory and Signalling Theory. It was found that not all dimensions of the theories were significant in any one model. With respect to Legitimacy Theory, most of the hypothesised variables were significant in either one of the models, with firm size and location being the most significant over all of the research

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models. This indicates that legitimacy is key in the context of China. With regard to Stakeholder Theory, the dimensions of stakeholder power and ownership diffusion were most considered in this study, from which variables regarding different types of ownership were developed. The results only partially showed that these dimensions of Stakeholder Theory explained the quality of CSD. Signalling Theory was employed for the development of the instrument, as well as for the hypothesis. However, the results from the study showed that the hypotheses developed based on this theory were not able to explain the quality of CSD, and corporate sustainability expenditure was only significant in social disclosure models.

One major implication of the findings from the study is the research instrument developed from the analysis of the Chinese report users' perceptions towards corporate sustainability reporting. The analysis captured the level of importance perceived by the report users, which was compared with the importance intended by GRI. Consequently, this study has implications first for the report preparers, in terms of sustainability information that was of the most interest to the users. It helps CSD preparers to understand the difference in perceptions between report users and governing bodies, thereby increasing the effectiveness of disclosure. The preparers would be also benefit from this study as a guide to making sustainability disclosure and understanding report users' concerns of and interests in CSD at different levels of the reporting process. For regulators, policies can be made, amended or mandated relevant to the results showed in this study, by looking at the areas of sustainability that users are most interested in and concerned with, as well as how this differs from the global standards. This helps regulators in the regulatory process and policy-making decisions, as the study reveals the interests of an important group of stakeholders extensively. It is crucial to the governing bodies in the Chinese market economy, because the report users generally represent the public that eventually obtain evaluation of CSD from financial analysts.

Another implication from the study is from the results of the quality of CSD with the most up-to-date evidence, which helps CSD users in general to understand the sustainability aspects of a company when investing. It provides insight into the quality of CSD in the listed Chinese companies, showing the disclosed information with the level of importance perceived by

financial analysts. The users in general would subsequently benefit from the study as a guide for their decision-making processes. As indicated in the results, the most importantly-perceived information was barely disclosed in the disclosure reports from the listed companies; therefore, this study can also help industries to improve their quality of CSD. In addition, only a slight difference was obtained in the comparison of results between the models of economic, environmental, and social disclosure, and the integrated model of CSD, which suggests that these sustainability disclosures should be considered as a whole when analysing CSD practices, due to their strong relevance to each other. This implies to policy makers that policies for corporate sustainability must include all three perspectives in the development process. Therefore, in the context of China, this study provides an indication of a perception of CSD from the users' perspective, by revealing the users' perceived importance of GRI items. The quality values for CSD indicate that the level of corporate sustainability reporting was generally low, and it suggests to Chinese regulators when preparing reporting standards that they must be mindful of the report users' perceptions of the importance of disclosing items. It is important to use GRI as a guideline, but there are factors that influence users' perceptions, such as political interference, public pressure, media exposure and significant social events, and these issues must be considered in the regulatory and policy-making processes. Furthermore, since economic disclosure was reported with a higher level of quality than the other types of disclosure, the cost of information should also be considered from the regulators' and the users' perspective. The study also showed the disclosing rate of 100 percent in firms' stand-alone sustainability reports. Even though the nature of the stand-alone reports was essentially to disclose sustainability information, it was clear that all companies reported at least something from GRI. This suggests that, overall, the level of CSD in China is improving under the encouragement and monitoring activities from the governing bodies, as well as many other external driving forces, such as business ethics and corporate governance, which could be interesting to investigate in future studies.

8.5 Limitations and suggestions for future research

There are a number of limitations in the current study. First, the study is limited to collecting only stand-alone reports from the listed companies; therefore, it may not be possible to generalise these results for a larger Chinese context, because of other CSD media such as newspapers and stand-alone website disclosure.

Secondly, stand-alone CSD was on a completely voluntary basis, and companies that did not issue such reports could be neglected, because they could disclose corporate sustainability in their annual reports. Nevertheless, in chapter four, it was indicated that many Chinese companies do not disclose sustainability if they have issued a separate stand-alone disclosure report. Therefore, in future research, in order to obtain the most optimal results, all publicly available corporate sustainability report media should be considered.

The business environment in China changes over time due to its complexity in nature and its unique economic background. There could be inherent difficulties and limits to obtaining and capturing corporate sustainability in a single observation of the 2013 period. Therefore, the results of this study do not show the trend of development and influence of corporate sustainability over years. Future studies could apply a longitudinal approach in which they measure how perceptions of CSD change, as well as CSD's influence over a number of years.

The r squared values in the models were relatively low, and the results in variables suggested that the theories could only partially explain the quality of CSD in the Chinese context. This suggests that future studies may find other representative variables in the Chinese context. Nonetheless, the values were statistically significant and acceptable overall in terms of the statistical critical values. In addition, company location and foreign ownership may be considered in future studies, because there was a lack of investigation of influence from a regional level and from a foreign company's perspective. This is important because there are different levels of legitimacy faced by companies due to their location and type of ownership.

In addition, there may be some issues surrounding the validity of the content analysis method, due to the problem of the subjectivity of a single researcher (Krippendorff, 2004). Nevertheless,

the results from content analysis were partially re-examined by another experienced researcher, and no major errors were indicated. Inconsistency in results was discussed and adjusted with accuracy.

With regard to the users' perceptions of CSD in 2013, no explanatory hypotheses were set to explain why the users perceived CSD in the ways indicated in the study. This is due to the fact that the purpose of this analysis was essentially to develop an instrument for this study, and the analysis of the users' perceptions was an exploratory process for creating the instrument. Although indicators of the users' perceived importance of CSD could be examined by visualisation from descriptive statistics, more specific measures and predication can be considered in future research. In addition, this study only considered financial analysts as the sample representing and generalising the report users, but there could be other types of stakeholders who used the report. Therefore, future studies could consider users other than financial analysts. As this study examined only perceptions of CSD in 2013, results may change over time as the policies and setting for corporate sustainability change. China is currently experiencing fast-paced sustainability development, and the perceptions of CSD from companies stakeholders' will also change as time passes. Therefore, researchers in the future need to consider the comprehensiveness of the instrument and coding methods which will be appropriate and suitable in the context of China.

This study has provided evidence of CSD practice in Chinese listed companies in 2013, and important areas were examined based on the report users' perceived importance of CSD. Due to the broad nature of corporate sustainability, this research cannot include many other aspects or methods for testing. Nevertheless, Legitimacy Theory and Stakeholder Theory played critical roles to explain the quality of CSD, and Signalling Theory helped explain the users' perceptions of CSD. This study considered only the quality of CSD and the users' perceived importance of CSD in 2013, and generalisation of the results could be difficult. All in all, the findings of this study should be viewed in light of the limitations, but it provides solid information and a contribution to future research into corporate sustainability reporting.

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Appendix A: Statement of objectives

Ordinal Scale	Description
5	Separate statement in section of corporate sustainability, which must include the following items: mission, goals, and performance targets in specific, concise, understandable, and realistic terminology. All items must have measureable/quantitative dimensions and a given time frame.
4	As per 5, but deficient in one significant item.
3	General and specific, some breadth, and including only some significant measurement.
2	Lacking any significant measurement.
1	Brief; incomplete.
0	Omitted.

Appendix B: Email to participants

Dear Participants，

An invitation to participate in a research project。

My name is Alex Zhang (Junru Zhang), a PhD candidate in the Faculty of Business and Law at Edith Cowan University who is conducting a research on corporate sustainability and sustainability reporting which have now become two of the most serious concerns in the business world in China.

I would like to invite you to participate in this survey that has been designed to explore the perceptions of the sustainability from the report users. The questionnaire should take not more than 20 minutes of your valuable time. This survey is entirely voluntary and there will be no sensitive or confidential information asked and collected. Your responses will be treated anonymously and with the strictest confidence. Your participation will be very important and highly appreciated, and it will help to complete a research project in order to fulfil my doctoral degree requirement.

Should you have any questions or require any further information regarding this research, please contact:

- Alex Zhang (Junru Zhang), PhD Candidate, Email: junruz@our.ecu.edu.au
- Associate Professor Hadrian Djajadikerta, Principal Supervisor, Email: h.djajadikerta@ecu.edu.au
- Associate Professor Zhaoyong Zhang, Co-Supervisor, Email: zhaoyong.zhang@ecu.edu.au

Address: Faculty of Business and Law, Edith Cowan University
             270 Joondalup Drive, Joondalup, WA 6027, Australia

This research project has been approved by ECU Human Research Ethics Committee. If you have any concern or complaint about the study and wish to speak to an independent person, you may contact:

Research Ethics Officer
Edith Cowan University
Phone: +61 8 63042170, Email: research.ethics@ecu.edu.au

If you agree to participate in this survey, please click on the below website address: https://ecuau.qualtrics.com/SE/?SID=SV_cHosL68IcSwlFFr

If you wish to get a copy of the result of this research you can put your email address at the end of the survey. The result will be emailed to you once the research is completed.

Thank you very much for your time and kind participation.

Kind regards,
Alex Zhang (Junru Zhang)

Appendix C: Environmental information (pilot study and full study)

1. Material usage (by weight or volume; percentage of materials used are from recycled materials)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

2. Energy (energy consumption within the organisation; energy consumption outside of the organisation; energy intensity; reduction of energy consumption; reduction in energy requirements of products and services)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

3. Water (total amount of withdrawal by source; water sources significantly affected by withdrawal of water; percentage and total volume of water recycled and reused)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

4. Biodiversity (operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas; description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas; habitats protected or restored; total number of ICUH red list species and national conservation list species with habitats in areas affected by operations, by level of extinction risk)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

5. Emissions (direct greenhouse gas emissions; energy indirect greenhouse gas emissions; other indirect greenhouse gas emissions; greenhouse gas emission intensity; reduction of greenhouse gas emissions; emissions of ozone-depleting substances; NOx, SOx, and other significant air emissions)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

6. Effluents and waste (total water discharge by quality and destination; total weight of waste by type and disposal method; total number and volume of significant spills; weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel convention annexes i, ii, iii, and viii, and percentage of transported waste shipped internationally; identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the organisation's discharges of water and runoff)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

7. Products and services (extent of impact mitigation of environmental impacts of products and services; percentage of products sold and their packaging materials that are reclaimed by category)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

8. Compliance (monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

9. Transportation (significant environmental impacts of transporting products and other goods and materials for the organisation's operations, and transporting members of the workforce)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

10. Overall (total environmental protection expenditures and investments by type)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

11. Supplier Environmental Assessment (percentage of new suppliers that were screened using environmental criteria; significant potential negative environmental impacts in the supply chain and actions taken)

Least important	*Not important*	*Neutral*	*Important*	*Most important*

12. Environmental grievance mechanisms (number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanism)

Least important	Not important	Neutral	Important	Most important

13. Other: please specify here and rate.

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Least important	Not important	Neutral	Important	Most important

Appendix D: Economic information (pilot study and full study)

1. Economic performance (direct economic value generated and distributed; financial implications and other risks and opportunities for the organisation's activities due to climate change; coverage of the organisation's defined benefit plan obligation; financial assistance received from government)

Least important	Not important	Neutral	Important	Most important

2. Market presence (ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation; proportion of senior management hired from the local community at significant locations of operation)

Least important	Not important	Neutral	Important	Most important

3. Indirect economic impacts (development and impact of infrastructure investments and services supported; significant indirect economic impacts, including the extent of impacts)

Least important	Not important	Neutral	Important	Most important

4. Procurement practices (proportion of spending on local suppliers at significant location of operation)

Least important	Not important	Neutral	Important	Most important

5. Other: please specify here and rate.

   ●

Least important	Not important	Neutral	Important	Most important

Appendix E: Social information (pilot study)

1. Labour practise and decent work (employment; labour/management relationship; occupational health and safety; training and education; diversity and equal opportunity; equal remuneration for women and men; supplier assessment for labour practices; labour practices grievance mechanisms)

Least important	Not important	Neutral	Important	Most important

2. Human rights (investment; non-discrimination; freedom of association and collective bargaining; child labour; forced or compulsory labour; security practice; indigenous rights assessment; supplier human rights assessment; human rights grievance mechanisms)

Least important	Not important	Neutral	Important	Most important

3. Society (local community; anti-corruption; public policy; anti-competitive behaviour; compliance; supplier assessment for impacts on society; grievance mechanism for impacts on society)

Least important	Not important	Neutral	Important	Most important

4. Product responsibility (customer health and safety; product and service labelling; marketing communications; customer privacy; compliance)

Least important	Not important	Neutral	Important	Most important

5. Other: please specify here and rate.

   ●

Least important	Not important	Neutral	Important	Most important

Appendix F: Social information (full study)

Labour practices and decent work

1. Employment (total workforce by employment type, employment contract and region, broken down by gender; total number and rate of new employee heirs and employee turnover by age group, gender, and region; benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operations; return to work and retention rates after parental leave by gender)

Least important	Not important	Neutral	Important	Most important

2. Labour/management relations (percentage of employees covered by collective bargaining agreements; minimum notice periods regarding operational changes, including whether it is specified in collective agreements)

Least important	Not important	Neutral	Important	Most important

3. Occupational health and safety (percentage of total workforce represented in formal joint management – worker health and safety committees that help monitor and advise on occupational health and safety programs; rates of injury, occupational diseases, lost days and absenteeism, and total number of work-related fatalities, by region and by gender; education, training, counselling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases; health and safety topics covered in formal agreements with trade unions)

Least important	Not important	Neutral	Important	Most important

4. Training and education (average hours of training per employee by gender, and by employee category; programs for skill management and lifelong learning that support the continued employability of employees and assist them in managing retirement; percentage of employees receiving regular performance and career development reviews, by gender)

Least important	Not important	Neutral	Important	Most important

5. Diversity and equal opportunity (composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity)

Least important	Not important	Neutral	Important	Most important

6. Equal remuneration for women and men (ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation)

Least important	Not important	Neutral	Important	Most important

Human rights

7. Investment and procurement practices (percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening; percentage of significant suppliers, contractors, and other business partners that have undergone human rights screening, and actions taken; total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained)

Least important	Not important	Neutral	Important	Most important

8. Non-discrimination (total number of incidents of discrimination and corrective action taken)

Least important	Not important	Neutral	Important	Most important

9. Freedom of association and collective bargaining (operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and action taken to support these rights)

Least important	Not important	Neutral	Important	Most important

10. Child labour (operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of all forms of forced or compulsory labour)

Least important	Not important	Neutral	Important	Most important

11. Forced and compulsory labour (Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of all forms of forced or compulsory labour)

Least important	Not important	Neutral	Important	Most important

12. Security practices (percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations)

Least important	Not important	Neutral	Important	Most important

13. Indigenous rights (total number of incidents of violations involving rights of indigenous people and actions taken)

Least important	Not important	Neutral	Important	Most important

14. Assessment (number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms)

Least important	Not important	Neutral	Important	Most important

15. Supplier human rights assessment

Least important	Not important	Neutral	Important	Most important

16. Human rights grievance mechanisms

Least important	Not important	Neutral	Important	Most important

Society

17. Local communities (percentage of operations with implemented local community engagement, impact assessments and development programs; operations with significant potential or actual negative impacts on local communities; prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities)

Least important	Not important	Neutral	Important	Most important

18. Corruption (percentage and total number of business units analysed for risks related to corruption; percentage of employees trained in organisation's anti-corruption policies and procedures; action taken in response to incidents of corruption)

Least important	Not important	Neutral	Important	Most important

19. Public policy (public policy positions and participation in public policy development and lobbying; total value of financial and in-kind contributions to political parties, politicians, and related institutions by country)

Least important	Not important	Neutral	Important	Most important

20. Anti-competitive behaviour (total number of legal actions for anti-competitive behaviour, anti-trust and monopoly practices and their outcomes)

Least important	Not important	Neutral	Important	Most important

21. Compliance (monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations)

Least important	Not important	Neutral	Important	Most important

22. Supplier assessment for impact on society

Least important	Not important	Neutral	Important	Most important

23. Grievance mechanism for impact on society

Least important	Not important	Neutral	Important	Most important

Product responsibility

24. Customer health and safety (life cycle stages in which health and safety impacts on products and services are assessed for improvement, and percentage of significant products and

services categories subject to such procedures; total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts on products and services during their life cycle, by type of outcome)

Least important	Not important	Neutral	Important	Most important

25. Product and service labelling (type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements; total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcome; practices related to customer satisfaction, including results of surveys measuring customer satisfaction)

Least important	Not important	Neutral	Important	Most important

26. Marketing communications (programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising promotion and sponsorship; total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship by type of outcomes)

Least important	Not important	Neutral	Important	Most important

27. Customer privacy (total number of substantiated complaints regarding breaches of customer privacy and losses of customer data)

Least important	Not important	Neutral	Important	Most important

28. Compliance (monetary value of significant fines for compliance with laws and regulations concerning the provision and use of products and services)

Least important	Not important	Neutral	Important	Most important

29. Other: please specify here and rate.

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Least important	Not important	Neutral	Important	Most important

Appendix G: Results from Pilot study

Results from descriptive statistics

Frequency of environmental indicators (sample size N = 34)

	Least important	Not important	Neutral	Important	Most important	Mode
Material usage	0	1 (2.9%)	6 (17.6%)	23 (67.6%)	4 (11.8%)	Important
Energy	0	1 (2.9%)	5 (14.7%)	22 (64.7%)	6 (7.6%)	Important
Water	0	1 (2.9%)	2 (5.9%)	14 (41.2%)	17 (50%)	Most Important
Biodiversity	1 (2.9%)	1 (2.9%)	6 (17.6%)	22 (64.7%)	4 (11.8%)	Important
Emissions	0	1 (2.9%)	2 (5.9%)	18 (52.9%)	13 (38.2%)	Important
Effluents and Waste	0	0	5 (14.7%)	14 (41.2%)	15 (44.1%)	Most Important
Products and services	0	0	11 (32.4%)	18 (52.9%)	5 (14.7%)	Important
Compliance	0	0	4 (11.8%)	18 (52.9%)	12 (35.3%)	Important
Transportation	1 (2.9%)	3 (8.8%)	10(29.4%)	18 (52.9%)	2 (5.9%)	Important
Overall environmental sustainability	0	1 (2.9%)	7 (20.6%)	23 (67.6%)	3 (8.8%)	Important
Supplier environmental assessment	0	2 (5.9%)	6 (17.6%)	21 (61.8%)	5 (14.7%)	Important
Environmental grievance	1 (2.9%)	2 (5.9%)	11 (32.4%)	19 (55.9%)	1 (2.9%)	Important
Open-ended question		No response				

Results from descriptive statistics

Frequency of economic indicators (sample size N = 34)

	Least important	Not important	Neutral	Important	Most important	Mode
Economic performance	1 (2.9%)	1 (2.9%)	11 (32.4%)	19 (55.9%)	2 (5.9%)	Important
Market presence	0	2 (5.9%)	10 (29.4%)	20 (58.8%)	2 (5.9%)	Important
Indirect economic impacts	0	4 (11.8%)	13 (38.2%)	17 (50%)	0	Important
Procurement practices	0	6 (17.6%)	14 (41.2%)	14 (41.2%)	0	Important *and* Neutral
Open-ended question	CPI of employees within a company; Accumulated unemployment					

Frequency of levels of importance among social sustainability aspects

	Least important	Not important	Neutral	Important	Most important	Mode
Labour Practice and Decent Work	0	2 (5.9%)	7 (20.6%)	22 (64.7%)	3 (8.8%)	Important
Human Rights	1 (2.9%)	1 (2.9%)	10 (29.4%)	14 (41.2%)	8 (23.5%)	Important
Society	0	3 (8.8%)	9 (26.5%)	20 (58.8%)	2 (5.9%)	Important
Product Responsibility	0	2 (5.9%)	3 (8.8%)	22 (64.7%)	7 (20.6%)	Important
Open-ended question	Sexism					

Results from one sample t-test

T-test for environmental indicators (sample size N = 34)

	Mean	Std. Deviation	T-test 95% Confidence Interval	
			t	Sig. (2-tailed)
Material usage	3.88	0.640	-1.071	0.292
Energy	3.97	0.674	-0.255	0.801
Water	4.38	0.739	3.016	0.005***
Biodiversity	3.79	0.808	-1.485	0.147
Emissions	4.26	0.710	2.175	0.037**
Effluents and Waste	4.29	0.719	2.385	0.023**
Products and services	3.82	0.673	-1.529	0.136
Compliance	4.24	0.654	2.098	0.044**
Transportation	3.50	0.862	-3.384	0.002***
Overall environmental sustainability	3.82	0.626	-1.643	0.110
Supplier environmental assessment	3.85	0.744	-1.153	0.257
Environmental grievance	3.50	0.788	-3.699	0.001***

*Significant at 0.1 level; **Significant at 0.05 level; ***Significant at 0.01 level

Results from one sample t-test

T-test for economic indicators (sample size N = 34)

	Mean	Std. Deviation	T-test 95% Confidence Interval	
			t	Sig. (2-tailed)
Economic performance	3.59	0.783	-3.066	0.004***
Market presence	3.65	0.691	-2.978	0.005***
Indirect economic impacts	3.38	0.697	-5.167	0.000***
Procurement practices	3.24	0.741	-6.018	0.000***

*Significant at 0.1 level; **Significant at 0.05 level; ***Significant at 0.01 level

T-test for social indicators (N = 34)

	Mean	Std. Deviation	T-test 95% Confidence Interval	
			t	Sig. (2-tailed)
Labour Practice and Decent Work	3.76	0.699	-1.963	0.058*
Human Rights	3.79	0.946	-1.268	0.214
Society	3.62	0.739	-3.016	0.005***
Product Responsibility	4	0.739	0.000	1.000

*Significant at 0.1 level; **Significant at 0.05 level; ***Significant at 0.01 level

Appendix H: Research instrument

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
	Economic performance			4	
EC1	Direct economic value generated and distributed	Economic		4	
EC2	Financial implications and other risks and opportunities for the organisation's activities due to climate change	Economic		4	
EC3	Coverage of the organisation's defined benefit plan obligation	Economic		4	
EC4	Financial assistance received from government	Economic		4	
	Market presence			3.87	
EC5	Ratios of standard entry level wage by gender compared to local minimum wage at significant locations of operation	Economic		3.87	
EC6	Policy, practices, and proportion of spending on locally-based suppliers at significant locations of operation	Economic		3.87	
EC7	Proportion of senior management hired from the local community at significant locations of operation	Economic		3.87	
	Indirect economic impacts			3.69	
EC8	Development and impact of infrastructure investments and services supported	Economic		3.69	
EC9	Significant indirect economic impacts, including the extent of impacts	Economic		3.69	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
EC10	Proportion of spending on local suppliers at significant location of operation	Economic		3.64	
	Additional questions		N/P	4	
AQ1	CPI of employees	Economic	N/P	4	
AQ2	Spending regarding unemployed/retired workers	Economic	N/P	4	
	Material usage			4	
EN1	Material used by weight or volume	Environmental		4	
EN2	Percentage of materials used are from recycled materials	Environmental		4	
	Energy			4.2	
EN3	Direct energy consumption by primary energy	Environmental		4.2	
EN4	Indirect energy consumption by primary energy	Environmental		4.2	
EN5	Energy saved due to conservation and efficiency improvements	Environmental		4.2	
EN6	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives	Environmental		4.2	
EN7	Initiatives to reduce indirect energy consumption and reductions achieved	Environmental		4.2	
	Water			4.51	
EN8	Total water withdrawal by source	Environmental		4.51	
EN9	Water sources significantly affected by withdrawal of water	Environmental		4.51	
EN10	Percentage and total volume of water recycled and reused	Environmental		4.51	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Environmental		4	
EN12	Description of significant impacts of activities, products and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas	Environmental		4	
EN13	Habitats protected or restored	Environmental		4	
EN14	Strategies, current actions, and future plans for managing impacts on biodiversity	Environmental		4	
EN15	Number of IUCN red list species and national conservation list specifies with habitats in areas affected by operations, by level of extinction risk	Environmental		4	
	Emissions			4.46	
EN16	Total direct and indirect greenhouse gas emissions by weight	Environmental		4.46	
EN17	Other relevant indirect greenhouse gas emissions by weight	Environmental		4.46	
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved	Environmental		4.46	
EN19	Emissions of ozone-depleting substance by weight	Environmental		4.46	
EN20	NO, SO and other significant air emissions by type and weight	Environmental		4.46	
	Effluents and waste			4.48	
EN21	Total water discharge by quality and destination	Environmental		4.48	
EN22	Total weight of waste by type and disposal method	Environmental		4.48	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
EN23	Total number and volume of significant spills	Environmental		4.48	
EN24	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally	Environmental		4.48	
EN25	Identity, size, protected status and biodiversity value of water bodies and related habitats significantly affected by the reporting organisation's discharges of water and runoff	Environmental		4.48	
	Products and services			4	
EN26	Initiatives to mitigate environmental impacts of products and services and extent of impact mitigation	Environmental		4	
EN27	Percentage of products sold and their packaging materials that are reclaimed by category	Environmental		4	
	Compliance			4.35	
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	Environmental		4.35	
	Transport			4	
EN29	Significant environmental impacts of transporting products and other goods and materials used for the organisation's operations, and transporting members of the workforce	Environmental		4	
	Overall			4	
EN30	Total environmental protection expenditures and investments by type	Environmental		4	
	Supplier Environmental Assessment			4	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
EN31	Percentage of new suppliers that were screened using environmental criteria; significant potential negative environmental impacts in the supply chain and actions taken	Environmental		4	
	Environmental grievance mechanisms			4	
EN32	Number of grievances about environmental impacts filed, addressed, and resolved through formal grievance mechanism	Environmental		4	
	Additional questions		N/P	4	
AQ3	Pollution and waste by technical issues	Environmental	N/P	4	
AQ4	Overall environmental influence	Environmental	N/P	4	
	Labour practice and decent work				
	Employment			3.86	
LA1	Total workforce by employment type, employment contract and region, broken down by gender	Social		3.86	
LA2	Total number and rate of new employee heirs and employee turnover by age group, gender, and region	Social		3.86	
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operations	Social		3.86	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
LA15	Return to work and retention rates after parental leave by gender	Social		3.86	
	Labour/management relations			4	
LA4	Percentage of employees covered by collective bargaining agreements	Social		4	
LA5	Minimum notice periods regarding operational changes, including whether it is specified in collective agreements	Social		4	
	Occupational health and safety			4.22	
LA6	Percentage of total workforce represented in formal joint management – worker health and safety committees that help monitor and advise on occupational health and safety programs	Social		4.22	
LA7	Rates of injury, occupational diseases, lost days and absenteeism, and total number of work-related fatalities, by region and by gender	Social		4.22	
LA8	Education, training, counselling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases	Social		4.22	
LA9	Health and safety topics covered in formal agreements with trade unions	Social		4.22	
	Training and education			4	
LA10	Average hours of training per employee by gender, and by employee category	Social		4	
LA11	Programs for skill management and lifelong learning that support the continued employability of employees and assist them in managing retirement	Social		4	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
LA12	Percentage of employees receiving regular performance and career development reviews, by gender	Social		4	
	Diversity and equal opportunity			3.81	
LA13	Composition of governance bodies and breakdown of employees per employee category according to gender, age group, minority group membership, and other indicators of diversity	Social		3.81	
	Equal remuneration for women and men			4	
LA14	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	Social		4	
	Additional question		N/P	4	
AQ5	Sexism	Social	N/P	4	
	Human rights				
	Investment and procurement practices			3.79	
HR1	Percentage and total number of significant investment agreements and contracts that include clauses incorporating human rights concerns, or that have undergone human rights screening	Social		3.79	
HR2	Percentage of significant suppliers, contractors, and other business partners that have undergone human rights screening, and actions taken	Social		3.79	
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained	Social		3.79	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
	Non-discrimination			3.84	
HR4	Total number of incidents of discrimination and corrective action taken	Social		3.84	
	Freedom of association and collective bargaining			3.81	
HR5	Operations and significant suppliers identified in which the right to exercise freedom of association and collective bargaining may be violated or at significant risk, and actions taken to support these rights	Social		3.81	
	Child labour			4.16	
HR6	Operations and significant suppliers identified as having significant risk for incidents of child labour, and measures to contribute to the elimination of all forms of child labour	Social		4.16	
	Forced and compulsory labour			4	
HR7	Operations and significant suppliers identified as having significant risk for incidents of forced or compulsory labour, and measures to contribute to the elimination of all forms of forced or compulsory labour	Social		4	
	Security practices			4.16	
HR8	Percentage of security personnel trained in the organisation's policies or procedures concerning aspects of human rights that are relevant to operations	Social		4.16	
	Indigenous rights			3.81	
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken	Social		3.81	
	Assessment			3.78	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
HR10	Number of grievances related to human rights filed, addressed and resolved through formal grievance mechanisms	Social		3.78	
	Supplier human rights assessment			3.62	
HR11	Supplier human rights assessment	Social		3.62	
	Human rights grievance mechanisms			3.78	
HR12	Human rights grievance mechanisms	Social		3.78	
	Society				
	Local communities			3.76	
SO1	Percentage of operations with implemented local community engagement, impact assessments and development programs	Social		3.76	
SO9	Operations with significant potential or actual negative impacts on local communities	Social		3.76	
SO10	Prevention and mitigation measures implemented in operations with significant potential or actual negative impacts on local communities	Social		3.76	
	Anti-corruption			4	
SO2	Percentage and total number of business units analysed for risks related to corruption	Social		4	
SO3	Percentage of employees trained in organisation's anti-corruption policies and procedures	Social		4	
SO4	Action taken in response to incidents of corruption	Social		4	
	Public policy			3.81	

Appendix H: Research instrument (Cont'd)

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
SO5	Public policy positions and participation in public policy development and lobbying	Social		3.81	
SO6	Total value of financial and in-kind contributions to political parties, politicians, and related institutions by country	Social		3.81	
	Anti-competitive behaviour			3.88	
SO7	Total number of legal actions for anti-competitive behaviour, anti-trust and monopoly practices and their outcomes	Social		3.88	
	Compliance			4.16	
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	Social		4.16	
SO11	Supplier assessment for impact on society	Social		3.71	
SO12	Grievance mechanism for impact on society	Social		4	
	Product responsibility				
	Customer health and safety			4.36	
PR1	Lifecycle stages in which health and safety impacts on products and services are assessed for improvement, and percentage of significant products and services categories subject to such procedures	Social		4.36	
PR2	Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their lifecycle, by type of outcomes	Social		4.36	
	Product and service labelling			4	

Code	Category/indicator	CSD type	Score of quality by GRI	CSD perceptions index (CSDPI)	Score of quality by CSDPI
PR3	Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements	Social		4	
PR4	Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labelling, by type of outcome	Social		4	
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction	Social		4	
	Marketing communications			3.83	
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising promotion and sponsorship	Social		3.83	
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion and sponsorship by type of outcome	Social		3.83	
	Customer privacy			4.31	
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data	Social		4.31	
	Compliance			4.25	
PR9	Monetary value of significant fines for compliance with laws and regulations concerning the provision and use of products and services	Social		4.25	

Appendix I:

Robustness test results – Binary logistics regressions (N = 238)

Variable	Expected sign	Model 1 (CEco)		Model 2 (CEnv)		Model 3 (CSoc)		Model 4 (CSD)	
		b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	-8.326	0.007***	-0.818	0.176	-0.350	0.548	-0.401	0.496
IND	+	-0.064	0.860	-0.880	0.013**	-0.304	0.374	-0.521	0.131
AREA	+	-1.077	0.000***	-0.236	0.450	-0.538	0.070*	-0.636	0.034**
AGE	+	-0.003	0.905	0.045	0.086*	0.002	0.947	0.035	0.165
GOWN	+	-0.176	0.788	0.310	0.623	0.648	0.282	0.016	0.980
LOWN	+	-0.322	0.332	-0.013	0.969	-0.348	0.292	-0.301	0.365
FOWN	+	0.785	0.498	3.091	0.101	0.133	0.909	1.930	0.092*
PERF	+	0.736	0.733	2.754	0.210	1.220	0.567	0.734	0.733
CSE	+	-0.041	0.596	0.000	0.136	0.000	0.632	0.000	0.728
SIZE	+	0.390	0.025**	0.000	0.025**	0.000	0.087*	0.000	0.079*
LEV	+	-0.449	0.007***	-0.163	0.115	-0.078	0.385	-0.080	0.381

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix I:

Robustness test results –Binary logistics regressions (N = 238) (Cont'd)

Variable	Expected sign	Model 5 (WEco)		Model 6 (WEnv)		Model 7 (WCSoc)		Model 8 (WCSD)	
		b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	0.122	0.838	-0.818	0.176	-0.326	0.577	-0.401	0.496
IND	+	-0.121	0.735	-0.880	0.013**	-0.341	0.319	-0.521	0.131
AREA	+	-1.029	0.001***	-0.236	0.450	-0.574	0.054*	-0.636	0.034**
AGE	+	0.013	0.614	0.045	0.086*	0.006	0.805	0.035	0.165
GOWN	+	0.209	0.739	0.310	0.623	0.516	0.395	0.016	0.980
LOWN	+	-0.448	0.188	-0.013	0.969	-0.394	0.237	-0.301	0.365
FOWN	+	1.002	0.380	3.091	0.101	0.200	0.863	1.930	0.092*
PERF	+	1.286	0.558	2.754	0.210	1.053	0.623	0.734	0.733
CSE	+	0.000	0.697	0.000	0.136	0.000	0.589	0.000	0.728
SIZE	+	0.000	0.019**	0.000	0.025**	0.000	0.089*	0.000	0.079*
LEV	+	-0.293	0.026**	-0.163	0.115	-0.075	0.408	-0.080	0.381

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix J:

Robustness test results – Stepwise backwards regression for CEco (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1		Test model 2		Test model 3		Test model 4	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	-0.573	0.504	-0.578	0.499	-0.637	0.449	-.609	0.467
LN (SIZE)	H9	+	0.110	0.006***	0.106	0.005***	0.109	0.003***	.110	0.003***
AREA	H2	+	0.214	0.026**	0.217	0.022**	0.216	0.022**	.216	0.022**
GOWN	H4	+	-0.278	0.163	-0.268	0.171	-0.278	0.152	-.306	0.098
IND	H1	+	0.161	0.142	0.158	0.148	0.155	0.153	.159	0.141
LN (LEV)	H10	+	-.052	0.357	-0.051	0.363	-0.053	0.349	-.054	0.332
AGE	H3	+	0.005	0.506	0.005	0.501	0.005	0.506	.005	0.485
PERF	H7	+	-0.288	0.663	-0.318	0.625	-0.332	0.609	-.342	0.597
LOWN	H5	+	0.050	0.613	0.050	0.607	0.049	0.617		
FOWN	H6	+	0.132	0.712	0.140	0.694				
LN (CSE)	H8	+	-0.007	0.759						

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix J:

Robustness test results – Stepwise backwards regression for CEco (N = 238) (Cont'd)

Variable	Hypothesis number	Expected sign	Test model 5		Test model 6		Test model 7		Test model 8		Test mod	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-t
Constant	N/A	N/A	-0.586	0.483	-0.465	0.569	-0.057	0.624	0.103	0.868	0.375	0.52
LN (SIZE)	H9	+	0.107	0.003***	0.105	0.004***	0.087	0.028**	0.082	0.003***	0.067	0.01
AREA	H2	+	0.214	0.023**	0.218	0.020**	0.217	0.093*	0.217	0.021**	0.218	0.02
GOWN	H4	+	-0.301	0.103	-0.301	0.103	-0.307	0.183	-0.266	0.146		
IND	H1	+	0.162	0.133	0.164	0.128	0.173	0.106				
LN (LEV)	H10	+	-0.052	0.354	-0.042	0.436						
AGE	H3	+	0.005	0.492								
PERF	H7	+										
LOWN	H5	+										
FOWN	H6	+										
LN (CSE)	H8	+										

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix K:

Robustness test results - Stepwise backwards regression for CEnv (N = 238)

			Test model 1		Test model 2		Test model 3		Test model 4	
Variable	Hypothesis number	Expected sign	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	-1.994	0.248	-1.857	0.155	-2.014	0.108	-1.925	0.121
LN (SIZE)	H9	+	.156	0.051*	0.150	0.018**	0.160	0.007***	.0160	0.007***
IND	H1	+	.573	0.010***	0.576	0.009***	0.578	0.009***	0.587	0.007***
FOWN	H6	+	2.213	0.002***	2.219	0.002***	2.205	0.002***	2.191	0.002***
AGE	H3	+	.020	0.201	0.019	0.196	0.020	0.184	0.020	0.176
LN (CSE)	H8	+	-.047	0.314	-0.046	0.315	-0.049	0.282	-0.050	0.277
PERF	H7	+	1.508	0.256	1.522	0.249	1.559	0.236	1.542	0.240
GOWN	H4	+	.395	0.323	0.395	0.322	0.389	0.328	0.327	0.388
LOWN	H5	+	.101	0.609	0.103	0.602	0.103	0.601		
AREA	H2	+	.084	0.661	0.084	0.661				
LN (LEV)	H10	+	-.014	0.904						

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix K:

Robustness test results - Stepwise backwards regression for CEnv (N = 238) (Cont'd)

			Test model 5		Test model 6		Test model 7		Test model 8	
Variable	Hypothesis number	Expected sign	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	-2.266	0.054*	-2.282	0.053*	-2.493	0.032**	-2.437	0.036**
LN (SIZE)	H9	+	0.182	0.001***	0.186	0.001***	0.167	0.001***	0.177	0.000***
IND	H1	+	0.614	0.005***	0.598	0.006***	0.577	0.007***	0.576	0.008***
FOWN	H6	+	2.109	0.003***	2.082	0.004***	2.119	0.003***	2.076	0.004***
AGE	H3	+	0.020	0.176	0.020	0.174	0.021	0.161		
LN (CSE)	H8	+	-0.056	0.215	-0.048	0.283				
PERF	H7	+	1.493	0.254						
GOWN	H4	+								
LOWN	H5	+								
AREA	H2	+								
LN (LEV)	H10	+								

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix L:

Robustness test results – Stepwise backwards regression for CSoc (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1		Test model 2		Test model 3		Test model 4	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	-.917	0.426	-0.913	0.426	-0.936	0.413	-1.008	0.369
LN (SIZE)	H9	+	0.144	0.008***	0.143	0.007***	0.143	0.007***	0.147	0.005***
AREA	H2	+	0.250	0.052*	0.249	0.051*	0.249	0.051*	0.247	0.052*
GOWN	H4	+	-0.299	0.262	-0.298	0.262	-0.272	0.283	-0.284	0.257
LN (CSE)	H8	+	0.020	0.509	0.020	0.509	0.020	0.502	0.020	0.518
LN (LEV)	H10	+	-0.049	0.522	-0.048	0.523	-0.047	0.535	-0.048	0.519
IND	H1	+	0.080	0.587	0.081	0.583	0.077	0.598	0.074	0.609
AGE	H3	+	0.005	0.614	0.005	0.615	0.005	0.627	0.005	0.632
FOWN	H6	+	0.168	0.727	0.169	0.724	0.176	0.713		
LOWN	H5	+	-0.044	0.739	-0.044	0.739				
PERF	H7	+	-0.049	0.956						

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix L:

Robustness test results – Stepwise backwards regression for CSoc (N = 238) (Cont'd)

Variable	Hypothesis number	Expected sign	Test model 5		Test model 6		Test model 7		Test model 8		Test model 9	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	-0.894	0.414	-0.867	0.427	-0.442	0.595	-0.382	0.644	-0.081	0.919
LN (SIZE)	H9	+	0.145	0.005***	0.143	0.005***	0.124	0.002***	0.135	0.000***	0.119	0.001***
AREA	H2	+	0.251	0.047**	0.252	0.046**	0.251	0.047**	0.239	0.056*	0.241	0.054*
GOWN	H4	+	-0.285	0.255	-0.264	0.285	-0.267	0.280	-0.294	0.228		
LN (CSE)	H8	+	0.019	0.521	0.021	0.481	0.022	0.452				
LN (LEV)	H10	+	-0.039	0.588	-0.043	0.548						
IND	H1	+	0.076	0.599								
AGE	H3	+										
FOWN	H6	+										
LOWN	H5	+										
PERF	H7	+										

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix M:

Robustness test results – Stepwise backwards regression for CSD (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1		Test model 2		Test model 3		Test model 4	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	0.409	0.701	0.404	0.704	0.402	0.704	0.416	0.693
LN (SIZE)	H9	+	0.127	0.011**	0.127	0.010***	0.124	0.007***	0.124	0.007***
AREA	H2	+	0.209	0.079*	0.209	0.077*	0.212	0.071*	0.212	0.070*
FOWN	H6	+	0.819	0.067*	0.817	.067*	0.824	0.063*	0.820	0.064*
IND	H1	+	0.199	0.145	0.198	0.145	0.196	0.147	0.198	0.141
GOWN	H4	+	-0.161	0.515	-0.162	0.511	-0.155	0.523	-0.171	0.458
AGE	H3	+	0.007	0.460	0.007	0.458	0.007	0.455	0.007	0.446
LN (LEV)	H10	+	-0.037	0.602	-0.037	0.594	-0.037	0.600	-0.038	0.589
LOWN	H5	+	0.028	0.820	0.027	0.821	0.028	0.817		
LN (CSE)	H8	+	-0.005	0.853	-0.005	0.861				
PERF	H7	+	0.074	0.928						

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix M:

Robustness test results – Stepwise backwards regression for CSD (N = 238) (Cont'd)

Variable	Hypothesis number	Expected sign	Test model 5 b	Sig. (1-tailed)	Test model 6 b	Sig. (1-tailed)	Test model 7 b	Sig. (1-tailed)	Test model 8 b	Sig. (1-tailed)
Constant	N/A	N/A	0.792	0.318	0.819	0.301	1.019	0.172	1.138	0.126
LN (SIZE)	H9	+	0.109	0.002***	0.111	0.002***	0.101	0.002***	0.097	0.003***
AREA	H2	+	0.211	0.070*	0.217	0.062*	0.218	0.060*	0.218	0.062*
FOWN	H6	+	0.833	0.059*	0.822	0.062*	0.862	0.048**	0.820	0.060*
IND	H1	+	0.206	0.121	0.206	0.122	0.193	0.143		
GOWN	H4	+	-0.175	0.446	-0.175	0.447				
AGE	H3	+	0.006	0.517						
LN (LEV)	H10	+								
LOWN	H5	+								
LN (CSE)	H8	+								
PERF	H7	+								

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix N:

Robustness test results – Stepwise backwards regression for WCEco (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1		Test model 2		Test model 3		Test model 4	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	0.747	0.397	0.744	0.397	0.765	0.383	0.692	0.422
LN (SIZE)	H9	+	0.107	0.009***	0.105	0.007***	0.103	0.007***	0.106	0.004***
AREA	H2	+	0.222	0.024**	0.223	0.022**	0.222	0.022**	0.220	0.023**
IND	H1	+	0.170	0.132	0.168	0.133	0.170	0.127	0.168	0.132
GOWN	H4	+	-0.243	0.234	-0.239	0.236	-0.233	0.245	-0.245	0.217
LOWN	H5	+	0.075	0.455	0.076	0.452	0.077	0.443	0.075	0.453
AGE	H3	+	0.006	0.432	0.006	0.429	0.006	0.434	0.006	0.439
LN (LEV)	H10	+	-0.043	0.456	-0.043	0.459	-0.041	0.480	-0.042	0.461
FOWN	H6	+	0.165	0.655	0.168	0.646	0.176	0.630		
PERF	H7	+	-0.251	0.711	-0.265	0.691				
LN (CSE)	H8	+	-0.003	0.888						

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix N:

Robustness test results – Stepwise backwards regression for WCEco (N = 238) (Cont'd)

Variable	Hypothesis number	Expected sign	Test model 5		Test model 6		Test model 7		Test model 8		Test model 9	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	1.108	0.090	1.129	0.083	1.204	0.062	1.521	0.013	1.630	0.008
LN (SIZE)	H9	+	0.089	0.002***	0.091	0.002***	0.090	0.002***	0.074	0.006***	0.070	0.008***
AREA	H2	+	0.219	0.023**	0.224	0.020**	0.224	0.020**	0.226	0.019**	0.226	0.020**
IND	H1	+	0.177	0.110	0.176	0.110	0.183	0.095	0.160	0.143		
GOWN	H4	+	-0.248	0.211	-0.246	0.215	-0.294	0.121				
LOWN	H5	+	0.080	0.426	0.082	0.410						
AGE	H3	+	0.005	0.545								
LN (LEV)	H10	+										
FOWN	H6	+										
PERF	H7	+										
LN (CSE)	H8	+										

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix O:

Robustness test results – Stepwise backwards regression for WCEnv (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1 b	Test model 1 Sig. (1-tailed)	Test model 2 b	Test model 2 Sig. (1-tailed)	Test model 3 b	Test model 3 Sig. (1-tailed)	Test model 4 b	Test model 4 Sig. (1-tailed)
Constant	N/A	N/A	-1.122	0.613	-1.113	0.615	-0.821	0.621	-0.972	0.542
LN (SIZE)	H9	+	0.158	0.126	0.158	0.124	0.145	0.074*	0.155	0.043**
IND	H1	+	0.638	0.025**	0.640	0.024**	0.646	0.022**	0.648	0.021**
AGE	H3	+	0.036	0.073*	0.036	0.072*	0.035	0.070*	0.035	0.065*
FOWN	H6	+	2.547	0.007***	2.545	0.006***	2.556	0.006***	2.543	0.006***
GOWN	H4	+	0.583	0.257	0.572	0.244	0.570	0.244	0.565	0.248
PERF	H7	+	1.970	0.249	1.967	0.249	1.997	0.239	2.032	0.229
LN (CSE)	H8	+	-0.048	0.419	-0.048	0.417	-0.048	0.421	-0.050	0.391
AREA	H2	+	0.081	0.743	0.081	0.742	0.081	0.742		
LN (LEV)	H10	+	-0.029	0.846	-0.029	0.841				
LOWN	H5	+	0.018	0.943						

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix O:

Robustness test results – Stepwise backwards regression for WCEnv (N = 238) (Cont'd)

Variable	Hypothesis number	Expected sign	Test model 5 b	Sig. (1-tailed)	Test model 6 b	Sig. (1-tailed)	Test model 7 b	Sig. (1-tailed)
Constant	N/A	N/A	-1.117	0.481	-1.133	0.475	-1.804	0.227
LN (SIZE)	H9	+	.131	0.065*	0.142	0.045**	.178	0.006***
IND	H1	+	.618	0.027**	0.607	0.030**	.652	0.019**
AGE	H3	+	.036	0.060*	0.036	0.060**	.036	0.060*
FOWN	H6	+	2.592	0.005***	2.543	0.006***	2.405	0.009***
GOWN	H4	+	.631	0.191	0.595	0.216		
PERF	H7	+	1.817	0.276				
LN (CSE)	H8	+						
AREA	H2	+						
LN (LEV)	H10	+						
LOWN	H5	+						

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix P:

Robustness test results – Stepwise backwards regression for WCSoc (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1		Test model 2		Test model 3		Test model 4	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	B	Sig. (1-tailed)
Constant	N/A	N/A	0.445	0.706	0.449	0.702	0.426	0.716	0.523	0.648
LN (SIZE)	H9	+	0.144	0.009***	0.144	0.009***	0.143	0.009***	0.141	0.009***
AREA	H3	+	0.259	0.050*	0.258	0.049**	0.258	0.048**	0.262	0.045**
GOWN	H4	+	-0.282	0.302	-0.282	0.302	-0.256	0.326	-0.256	0.323
LN (CSE)	H8	+	0.020	0.518	0.020	0.517	0.021	0.510	0.020	0.513
IND	H1	+	0.087	0.566	0.087	0.563	0.083	0.577	0.085	0.569
LN (LEV)	H10	+	-0.047	0.550	-0.046	0.551	-0.045	0.562	-0.037	0.620
FOWN	H6	+	0.191	0.698	0.192	0.696	0.199	0.685	0.194	0.692
AGE	H3	+	0.004	0.675	0.004	0.676	0.004	0.688		
LOWN	H5	+	-0.044	0.746	-0.044	0.747				
PERF	H7	+	-0.044	0.961						

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix P:

Robustness test results – Stepwise backwards regression for WCSoc (N = 238) (Cont'd)

			Test model 5		Test model 6		Test model 7		Test model 8		Test model 9	
Variable	Hypothesis number	Expected sign	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	0.440	0.695	0.816	0.344	0.894	0.294	0.954	0.260	1.238	0.126
LN (SIZE)	H9	+	0.146	0.006***	0.129	0.002***	0.125	0.002***	0.136	0.000***	0.121	0.001***
AREA	H3	+	0.259	0.046**	0.258	0.047**	0.259	0.046**	0.247	0.054*	0.249	0.053*
GOWN	H4	+	-0.270	0.293	-0.274	0.285	-0.250	0.323	-0.277	0.267		
LN (CSE)	H8	+	0.019	0.531	0.020	0.509	0.023	0.460				
IND	H1	+	0.082	0.580	0.090	0.541						
LN (LEV)	H10	+	-0.039	0.600								
FOWN	H6	+										
AGE	H3	+										
LOWN	H5	+										
PERF	H7	+										

Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01

Appendix Q:

Robustness test results – Stepwise backwards regression for WCSD (N = 238)

Variable	Hypothesis number	Expected sign	Test model 1		Test model 2		Test model 3		Test model 4	
			b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)	b	Sig. (1-tailed)
Constant	N/A	N/A	1.786	0.098*	1.778	0.099	1.776	0.098*	1.794	0.094*
AREA	H2	+	0.209	0.082*	0.210	0.079*	0.213	0.073*	0.213	0.072*
FOWN	H6	+	0.848	0.061*	0.845	0.061*	0.852	0.058*	0.847	0.059*
LN (SIZE)	H9	+	0.127	0.012***	0.127	0.011**	0.124	0.008***	0.125	0.008***
IND	H1	+	0.204	0.139	0.203	0.139	0.201	0.141	0.203	0.134
GOWN	H4	+	-0.152	0.544	-0.153	0.539	-0.146	0.552	-0.166	0.478
AGE	H3	+	0.007	0.464	0.007	0.461	0.007	0.458	0.007	0.447
LN (LEV)	H10	+	-0.036	0.618	-0.036	0.607	-0.036	0.614	-0.037	0.601
LOWN	H5	+	0.034	0.783	0.034	0.785	0.034	0.781		
LN (CSE)	H8	+	-0.006	0.846	-0.005	0.858				
PERF	H7	+	0.104	0.900						

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix Q:

Robustness test results – Stepwise backwards regression for WCSD (N = 238) (Cont'd)

Variable	Hypothesis number	Expected sign	Test model 5 b	Test model 5 Sig. (1-tailed)	Test model 6 b	Test model 6 Sig. (1-tailed)	Test model 7 b	Test model 7 Sig. (1-tailed)	Test model 8 b	Test model 8 Sig. (1-tailed)
Constant	N/A	N/A	2.162	0.007***	2.189	0.007***	2.382	0.002***	2.505	0.001***
AREA	H2	+	0.212	0.072*	0.218	0.064*	0.219	0.062*	0.218	0.064*
FOWN	H6	+	0.860	0.054*	0.848	0.057*	0.888	0.044**	0.844	0.056*
LN (SIZE)	H9	+	0.109	0.003***	0.112	0.002***	0.101	0.002***	0.098	0.003***
IND	H1	+	0.212	0.116	0.211	0.116	0.198	0.136		
GOWN	H4	+	-0.170	0.466	-0.169	0.467				
AGE	H3	+	0.006	0.516						
LN (LEV)	H10	+								
LOWN	H5	+								
LN (CSE)	H8	+								
PERF	H7	+								

*Note: Variable significance levels: *p < 0.1, **p < 0.05, ***p < 0.01*

Appendix R:

Registered securities companies in survey

Number	Company Name
1	Ai Jiang Security Co., Ltd
2	An Xing Security Co., Ltd
3	Gao Hua Beijing Security Co., Ltd
4	Bo Hai Security Co., Ltd
5	Caida Security Co., Ltd
6	Cai Fu Security Co., Ltd
7	Cai Tong Security Co., Ltd
8	Chang Cheng Security Co., Ltd
9	Cheng Hao Security Co., Ltd
10	Chang Jiang Security Co., Ltd
11	Chuan Cai Security Co., Ltd
12	Da Tong Security Co., Ltd
13	DT Security Co., Ltd
14	De Bang Security Co., Ltd
15	Di Yi Security Co., Ltd
16	Dongbei Security Co., Ltd
17	Dongfang Security Co., Ltd
18	Dong Hai Security Co., Ltd
19	Dong wu Security Co., Ltd
20	Dong Xing Security Co., Ltd
21	Fang Zheng Security Co., Ltd
22	Dong Wan Security Co., Ltd
23	Guang da Security Co., Ltd
24	Guang FA Security Co., Ltd
25	Guang Zhou Security Co., Ltd
26	Guo Du Security Co., Ltd
27	Guo Hai Security Co., Ltd
28	Guo Jin Security Co., Ltd
29	Guo Kai Security Co., Ltd
30	Guo Lian Security Co., Ltd
31	Guo Sheng Security Co., Ltd
32	Guo Tai Jun An Security Co., Ltd
33	Guo Xin Security Co., Ltd
34	Guo Yuan Security Co., Ltd
35	Hai Yong Security Co., Ltd

APPENDIX R: Registered securities companies in survey (Cont'd)

Number	Company Name
36	Hang tian Security Co., Ltd
37	Heng Tai Security Co., Ltd
38	Hong Ta Security Co., Ltd
39	Hong Xin Security Co., Ltd
40	Hong Yuan Security Co., Ltd
41	Hua An Security Co., Ltd
42	Hua Bao Security Co., Ltd
43	Hua Fu Security Co., Ltd
44	Hua Chuang Security Co., Ltd
45	Hua Lin Security Co., Ltd
46	Hua Long Security Co., Ltd
47	Hua Rong Security Co., Ltd
48	Hua Tai Security Co., Ltd
49	Hua Xi Security Co., Ltd
50	Hua Xin Security Co., Ltd
51	Jiang Hai Security Co., Ltd
52	Jin Yuan Security Co., Ltd
53	Kai Yuan Security Co., Ltd
54	Lian Xun Security Co., Ltd
55	Min Sheng Security Co., Ltd
56	Min Zu Security Co., Ltd
57	Nan Jing Security Co., Ltd
58	Ping an Security Co., Ltd
59	Ji Lu Security Co., Ltd
60	Bai Xin Security Co., Ltd
61	Rui Yin Security Co., Ltd
62	Shan Xi Security Co., Ltd
63	Shang Hai Security Co., Ltd
64	Shen Yin Security Co., Ltd
65	Shi JI Security Co., Ltd
66	Shou Chuang Security Co., Ltd
67	Tai Ping Yang Security Co., Ltd
68	Tian Feng Security Co., Ltd
69	Tian Yuan Security Co., Ltd
70	Wan He Security Co., Ltd
71	Wan Lian Security Co., Ltd
72	Wu Kuang Security Co., Ltd
73	Xi Bu Security Co., Ltd
74	Xi Zang Tong Xin Security Co., Ltd

APPENDIX R: Registered securities companies in survey (Cont'd)

Number	Company Name
75	Xi Nan Security Co., Ltd
76	Xia Men Security Co., Ltd
77	Xiang Cai Security Co., Ltd
78	Xin Shi Dai Security Co., Ltd
79	Xin Da Security Co., Ltd
80	Xing Ye Security Co., Ltd
81	Yin He Security Co., Ltd
82	Yin Tai Security Co., Ltd
83	Ying Da Security Co., Ltd
84	Zhao Shang Security Co., Ltd
85	Zhe Shang Security Co., Ltd
86	Zhong Hang Security Co., Ltd
87	Zhong JIN Security Co., Ltd
88	Zhong Shan Security Co., Ltd
89	Zhong Tian Security Co., Ltd
90	Zhong Tou Security Co., Ltd
91	Zhong Xin Security Co., Ltd
92	Zhong Xin Jian Tou Security Co., Ltd
93	Zhong Yin Guo JI Security Co., Ltd
94	Zhong You Security Co., Ltd
95	Zhong Yuan Security Co., Ltd
96	Zhong Cheng Security Co., Ltd
97	Hua Tai Lian He Security Co., Ltd
98	Heng Tai Security Co., Ltd
99	Gao Sheng Gao Hua Security Co., Ltd
100	Zhang Jiang Bao Jian Security Co., Ltd
101	Cai Fu Li Ang Security Co., Ltd
102	Hai Ji Da He Security Co., Ltd
103	Rui Xin Fang Zheng Security Co., Ltd
104	Zhong De Security Co., Ltd
105	Zhong Xin Wan Tong Security Co., Ltd
106	Hua Ying Security Co., Ltd
107	Mo Gen Da Tong Security Co., Ltd
108	Hua Xin Security Co., Ltd
109	Guo Tai Jun AN (Shanghai) Security Co., Ltd
110	Dong Fang Security Co., Ltd
111	Guang Da Zi Chan Security Co., Ltd
112	Hai Tong Security Co., Ltd
113	Zhong Xin (Zhejiang) Security Co., Ltd
114	Dong Fang Hua Qi Security Co., Ltd

Appendix S:

Listed companies in sample

Number	Stock Code	Company Name	Industry
1	000001	Ping An Bank Co., Ltd	Finance
2	000002	China Vanke Co., Ltd	Real estate
3	000009	China Baoan Group Co., Ltd	Conglomerates
4	000012	CSG Holding Co., Ltd	Manufacturing
5	000021	Shenzhen Kaifa Technology Co., Ltd	Wholesale and retail
6	000024	Zhaoshang Dichan Co., Ltd	Real estate
7	000039	China International Marine Containers (Group) Co., Ltd	Manufacturing
8	000046	Oceanwide Holdings Co., Ltd	Real estate
9	000060	Shenzhen Zhongjin Lingnan Company Ltd	Mining
10	000061	Shenzhen Agricultural Products Co., Ltd	Business support
11	000069	Shenzhen Overseas Chinese Town Co., Ltd	Environmental protection
12	000157	Zoomlion Heavy Industry Science and Technology Co., Ltd	Manufacturing
13	000301	Jiangsu Wujiang china Eastern Silk market Co., Ltd	Utilities
14	000333	Midea Group Co., Ltd	Manufacturing
15	000338	Weichai Power Co., Ltd	Manufacturing
16	000402	Financial Street Holding Co., Ltd	Real estate
17	000498	Shandong Hi-Speed Road and Bridge Co., Ltd	Construction
18	000528	Guangxi Liugong Machinery Co., Ltd	Manufacturing
19	000536	CPT Technology (Gourp) Co., Ltd	Manufacturing
20	000538	Yunnan Baiyao Group Co., Ltd	Manufacturing
21	000550	Jiangling Motors Co., Ltd	Manufacturing
22	000568	Luzhou Laojiao Company Ltd	Manufacturing
23	000581	Weifu High-technology Group Co., Ltd	Manufacturing
24	000651	Gree Electric Appliances, Inc. of Zhuhai	Manufacturing
25	000655	Shandong Jingling Mining Co., Ltd	Mining
26	000671	Sunshine City Group Co., Ltd	Real estate
27	000718	Suning Universal Co., Ltd	Real estate
28	000725	BOE Technology Group Co., Ltd	Manufacturing

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
29	000726	Lu Thai Textile Co., Ltd	Textile
30	000729	Beijing Yanjing Brewery Co., Ltd	Manufacturing
31	000776	GF Securities Co., Ltd	Finance
32	000778	Xinxing Ductile Iron Pipes Co., Ltd	Manufacturing
33	000792	Yanhu Co., Ltd	Manufacturing
34	000797	China Wuyi Co., Ltd	Real estate
35	000819	Yueyang Xingchang Co., Ltd	Mining
36	000861	Haiying Co., Ltd	Business support
37	000869	Yantai Zhangyu Winery Co., Ltd	Manufacturing
38	000876	New Hope Liuhe Co., Ltd	Manufacturing
39	000877	Tianshan Co., Ltd	Manufacturing
40	000895	Shuanghui Fazhan Co., Ltd	Manufacturing
41	000970	Zhongke Sanhuan Co., Ltd	Manufacturing
42	000973	Fosuo Technology Co., Ltd	IT
43	000981	Yinyi Real Estate Co., Ltd	Real estate
44	000983	Shenxi Xishan Coal and Electricity Power Co., Ltd	Mining
45	000993	Fujian Mindong Electric Power Co., Ltd	Utilities
46	002001	Zhejiang NHU Co., Ltd	Manufacturing
47	002008	Han's Laser Technology Industry Group Co., Ltd	Manufacturing
48	002035	Vatti Corporate Limited	Manufacturing
49	002038	Beijing SL Pharmaceutical Co., Ltd	Manufacturing
50	002041	Shandong Denghai Seeds Co., Ltd	Agriculture
51	002042	Huafu Top Dyed Melange Yarn Co., Ltd	Textile
52	002051	China CAMC Engineering Co., Ltd	Construction
53	002056	Hengdian Group DMEGC Magertics Co., Ltd	Manufacturing
54	002063	Ygsoft Inc.	IT
55	002064	Zhejiang Huafeng Spandex Co., Ltd	Manufacturing
56	002070	Zhonghe Co., Ltd	Textile
57	002081	Suzhou Gold Mantis Construction and Decoration Co., Ltd	Construction
58	002092	Wiscom System Co., Ltd	Manufacturing
59	002098	Fujian SBS Zipper Science and Technology Co., Ltd	Manufacturing
60	002102	Fujian Guanfu Modern Household Wares Co., Ltd	Manufacturing

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
61	002121	Shenzhen Clou Electronics Co., Ltd	Manufacturing
62	002128	Huolinhe Opencut Coal Industry Corporation Limited of Inner Mongolia, Co., Ltd	Mining
63	002155	Hunan Gold Corporation Limited	Mining
64	002179	AVIC Jonhon Optronic Technology Co., Ltd	Manufacturing
65	002216	Sanquan Food Co., Ltd	Manufacturing
66	002224	Sanlux Co., Ltd	Manufacturing
67	002233	Guangdong Tapai Group Co., Ltd	Manufacturing
68	002236	Zhejiang Dahua Techonolgy Co., ltd	Manufacturing
69	002241	Goertek Inc.	Manufacturing
70	002244	Hangzhou Binjiang Real Estate Group Co., Ltd	Real estate
71	002249	Zhongshan Broad-ocean Montor Co., Ltd	Manufacturing
72	002250	Lianhe Chemical Technology Co., Ltd	Manufacturing
73	002269	Shanghai Metersbonwe Fashion and Accessories Co., Ltd	Textile
74	002271	Beijing Oriental Yuhong Waterproof Teachnology Co., Ltd	Manufacturing
75	002287	Tibet Cheezheng Tibetan Medicine Co., Ltd	Manufacturing
76	002300	Fujian Nanping Sun Cable Co., Ltd	Manufacturing
77	002304	Jiangsu Yanghe Brewery Join-stock Co., Ltd	Manufacturing
78	002344	Haining China Leather Market Co., Ltd	Business support
79	002367	Canny Elevator Co., Ltd	Manufacturing
80	002372	Zhejiang Weixing New Building materials Co., Ltd	Manufacturing
81	002394	Jiangsu Lianfa Textile Co., Ltd	Textile
82	002419	Rainbow Department Store Co., Ltd	Wholesale and retail
83	002438	Jiangsu Shentong Valva Co., Ltd	Manufacturing
84	002454	Songz Automobile Aire Conditioning Co., Ltd	Manufacturing
85	002470	Kingenta Ecological Engineering Group Co., Ltd	Manufacturing
86	002498	Qingdao Hanhe Cable Co., Ltd	Manufacturing
87	002500	Shanxi Securities Company Lited	Business support

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
88	002509	Tianguang Fire-fighting Co., Ltd	Manufacturing
89	002527	Shanghai Setp Electric Corporation	Manufacturing
90	002543	Guangdong Vanward New Electric Co., Ltd	Manufacturing
91	002545	Qingdao East Steel Tower Stock Co., Ltd	Manufacturing
92	002546	Nanjing Xinlian Electronics Co., Ltd	Manufacturing
93	002570	Beingmate Baby and Child Food Co., Ltd	Manufacturing
94	002578	Fujian Minfa Aluminium Co., Ltd	Mining
95	002584	Xilong Scientific Co., Ltd	Manufacturing
96	002595	Shandong Himile Mechanical Science and Technology Co., Ltd	Manufacturing
97	002635	Suzhou anjie Technology Co., Ltd	Manufacturing
98	002641	Yonggao Co., Ltd	Manufacturing
99	002656	Modern Avenue Group Co. Ltd	Textile
100	002673	Western Securities Co., Ltd	Business support
101	002674	Xingye Leather Technology Co., Ltd	Manufacturing
102	002716	Chenzhou City Jingui Silber Industry Co., Ltd	Mining
103	300003	Lepu Medical technology Co., Ltd	Manufacturing
104	300015	Aier Eye Hospital Group Co., Ltd	Public Health
105	300019	Chengdu Guibao Science and Technology Co., Ltd	Manufacturing
106	300067	Shanghai Anoky Group Co., Ltd	Manufacturing
107	300132	Fujian Green Pine Co., Ltd	Manufacturing
108	300179	SF Diamond Co., Ltd	Manufacturing
109	300181	Zhejiang Jolly Pharmaceutical Co., Ltd	Manufacturing
110	300197	Shenzhen Techand Ecology and Environmental Co., Ltd	Construction
111	300198	Fujiang Newchoice Pipe Technology Co., Ltd	Manufacturing
112	600021	Shanghai Electric Power Co., Ltd	Utilities
113	600027	Huadian Power International Corporation Limited	Utilities
114	600029	China Southern Airlines Co., Ltd	Transportation
115	600030	CITIC Securities Company Limited	Business support
116	600031	Sany Heavy Industry Co., Ltd	Manufacturing

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
117	600036	China Merchants Bank Co., Ltd	Finance
118	600048	Poly Real Estate Group Co., Ltd	Real estate
119	600050	China United Network Communications Limited	IT
120	600051	Ningbo United Group Co., Ltd	Wholesale and retail
121	600052	Zhejiang Guangsha Co., Ltd	Real estate
122	600056	China Meheco Co., Ltd	Manufacturing
123	600058	Minmetals Development Co., Ltd	Wholesale and retail
124	600059	Zhejiang Guyuelongshan Shaoxing Wine Co., Ltd	Manufacturing
125	600062	China Resources Double-crance Pharmaceutical Co., Ltd	Manufacturing
126	600064	Nanjing Gaoke Company Limited	Real estate
127	600067	Citychamp Dartong Co., Ltd	Real estate
128	600085	Beijing Tong Ren Tang Co., Ltd	Manufacturing
129	600089	Tebian Electric Apparatus Stock Co., Ltd	Manufacturing
130	600100	Tsinghua Tongfang Co., Ltd	Manufacturing
131	600109	Sinolink Securities Co., Ltd	Business support
132	600111	China Northern Rare Earth (Group) High-Tech Co., Ltd	Manufacturing
133	600123	Shanxi Lanhua Sci-tech Venture Co., Ltd	Mining
134	600138	China CYTS Tours Holding Co., Ltd	Business support
135	600153	Xiamen CD Inc.	Wholesale and retail
136	600170	Shanghai Construction Group Co., Ltd	Construction
137	600177	Youngor Group Co., Ltd	Real estate
138	600190	Jinzhou Port Co., Ltd	Transportation
139	600195	China Animal Husbandry Industry Co., Ltd	Manufacturing
140	600196	Shanghai Fosun Pharmaceutical (Group) Co., Ltd	Manufacturing
141	600197	Xinjiang Yilite Industry Co., Ltd	Manufacturing
142	600203	Fujian Furi Electronics Co., Ltd	Wholesale and retail
143	600208	Xinhu Zhongbao Co., Ltd	Real estate
144	600223	Lushang Property Co., Ltd	Real estate
145	600246	Beijing Vantone Real Estate Co., Ltd	Real estate
146	600252	Guangxi Wuzhou Zhongheng Group Co., Ltd	Manufacturing

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
147	600261	Zhejiang Yankon Group Co., Ltd	Manufacturing
148	600262	Inner Mongolia North Hauler Joint Stock Co., Ltd	Manufacturing
149	600266	Beijing Urban Construction Investment and Development Co., Ltd	Real estate
150	600267	Zhejiang Hisun Pharmaceutical Co., Ltd	Manufacturing
151	600298	Angel Yeast Co., Ltd	Manufacturing
152	600309	Wanhua Chemical Group Co., Ltd	Manufacturing
153	600322	Tianjin Reality Development (Group) Co., Ltd	Real estate
154	600329	Tianjin Zhongxin Pharmaceutical Group Corporation Limited	Manufacturing
155	600337	Markor International Home Furnishings Co., Ltd	Wholesale and retail
156	600352	Zhejiang Longsheng Group Co., Ltd	Manufacturing
157	600356	Mudanjiang Hengfeng Paper Co., Ltd	Manufacturing
158	600372	China Avionics Systems Co., Ltd	Manufacturing
159	600376	Beijing Capital Development Co., Ltd	Real estate
160	600377	Markor International Home Furnishings Co., Ltd	Wholesale and retail
161	600383	Gemdale Corporation	Real estate
162	600388	Fujian Longking Co., Ltd	Manufacturing
163	600389	Nantong Jiangshan Agrochemical and Chemicals Limited Liability Co.	Manufacturing
164	600422	KPC Pharmaceuticals, Inc.	Manufacturing
165	600436	Zhangzhou Pientzehuang Pharmaceutical Co., Ltd	Manufacturing
166	600483	Fujian Funeng Co., Ltd	Utilities
167	600486	Jiangsu Yangnong Chemical Co., Ltd	Manufacturing
168	600505	Sichuan Xichang Electric Power Co., Ltd	Utilities
169	600510	Black Peony (Group) Co., Ltd	Real estate
170	600511	China National Medicines Corporation Ltd	Wholesale and retail
171	600518	Kangmei Pharmaceutical Co., Ltd	Manufacturing
172	600525	Changyuan Group Ltd	IT
173	600535	Tasly Pharmaceutical Group Co., Ltd	Manufacturing

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
174	600549	Xiamen Tungsten Co., Ltd	Mining
175	600582	Tian Di Science and Technology Co., Ltd	Manufacturing
176	600583	Offshore Oil Engineering Co., Ltd	Mining
177	600597	Bright Dairy and Food Co., Ltd	Manufacturing
178	600611	Dazhong Transportion (Group) Co., Ltd	Transportation
179	600619	Shanghai Highly (Group) Co., Ltd	Manufacturing
180	600628	Shanghai New World Corporation Ltd	Wholesale and retail
181	600660	Fuyao Glass Industry Group Co., Ltd	Manufacturing
182	600704	Materials Industry Zhongda Group Co., Ltd	Wholesale and retail
183	600705	AVIC Capital Co., Ltd	Finance
184	600741	Huayu Automotive Systems Company Limited	Manufacturing
185	600743	Hua Yuan Property Co., Ltd	Real estate
186	600750	Jiangzhong Pharmaceutical Co., Ltd	Manufacturing
187	600761	Anhui Heli Co., Ltd	Manufacturing
188	600787	CMST Development Co., Ltd	Transportation
189	600802	Fujian Cement Inc.	Manufacturing
190	600816	Anxin Trust Co., Ltd	Finance
191	600824	Shanghai Yimin Commerce Group Co., Ltd	Wholesale and retail
192	600829	HPGC Renmintongtai Pharmaceutical Corporation	Wholesale and retail
193	600835	Shanghai Mechanical and Electrical Industry Co., Ltd	Manufacturing
194	600836	Shanghai Jielong Industry Group Corporation Limited	Media
195	600837	Haitong Securities Company Ltd	Business support
196	600839	Sichuan Changhong Electric Co., Ltd	Manufacturing
197	600858	Silver Plaza Group Co., Ltd	Wholesale and retail
198	600867	Tonghua Dongbao Pharmaceutical Co., Ltd	Manufacturing
199	600872	Jonjee Hi-tech Industrial and Commercial Holding Co., Ltd	Manufacturing
200	600875	Dongfang Electric Corporation Limited	Manufacturing
201	600900	China Yangtze Power Co., Ltd	Utilities

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
202	600970	Sinoma International Engineering Co., Ltd	Manufacturing
203	600979	Sichuan Guangan AAA Public Co., Ltd	Utilities
204	600987	Zhejiang Hangmin Co., Ltd	Textile
205	601000	Tangshan Port Group Co., Ltd	Transportation
206	601098	China South Publishing and Media Group Co., Ltd	Media
207	601099	The Pacific Securities Co., Ltd	Business support
208	601107	Sichuan Expressway Company Limited	Transportation
209	601139	Shenzhen Gas Corporation Ltd	Utilities
210	601168	Western Mining Co., Ltd	Mining
211	601169	Bank of Beijing Co., Ltd	Finance
212	601186	China Railway Construction Corporation Limited	Construction
213	601238	Guangzhou Automobile Group Co., Ltd	Manufacturing
214	601288	Agricultural Bank of China Limited	Finance
215	601299	China Beiche Co., Ltd	Manufacturing
216	601328	Bank of Communications Co., Ltd	Finance
217	601339	Bros Eastern Co., Ltd	Textile
218	601377	Industrial Securities Co., Ltd	Business support
219	601515	Shantou Dongfeng Printing Co., Ltd	Media
220	601555	Soochow Securities Co., Ltd	Business support
221	601588	Beijing North Star Company Limited	Real estate
222	601633	Great Wall Motor Company Limited	Manufacturing
223	601688	Huatai Securities Co., Ltd	Business support
224	601699	Shanxi Lu'an Environmental Energy Development Co., Ltd	Mining
225	601717	Zhengzhou Coal Mining Machinery Group Co., Ltd	Manufacturing
226	601727	Shanghai Electric Group Company Limited	Manufacturing
227	601788	Everbright Securities Company Limited	Finance
228	601800	China Communications Construction Company Limited	Construction
229	601808	China Oilfield Services Limited	Mining
230	601818	China Everbright Bank Company Limited	Finance

APPENDIX S: Listed companies in sample (Cont'd)

Number	Stock Code	Company Name	Industry
231	601899	Zijin Mining Group Co., Ltd	Mining
232	601901	Founder Securities Co., Ltd	Finance
233	601988	Bank of China Limited	Finance
234	601991	Datang International Power Generation Co., Ltd	Utilities
235	601992	BBMG Corporation	Manufacturing
236	601998	China CITIC Bank Corporation Limited	Finance
237	603123	Beijing Cuiwei Tower Co., Ltd	Wholesale and retail
238	603993	China Molybdenum Co., Ltd	Mining

Appendix T:

Industry classifications by the Chinese security commission

Sector name	Sub-sector name	No. of companies
Agriculture	Agriculture	5
	Forestry	4
	Animal husbandry	10
	Fishery	7
	Agriculture services	1
Total		**27**
Mining	Coal mining and dressing	7
	Petroleum and natural gas extraction	1
	Ferrous metals mining and dressing	4
	Nonferrous metals mining and dressing	7
	Mining support activities	7
Total		**26**
Manufacturing	Agricultural and sideline products processing	30
	Food manufacturing	14
	Wine, beverage and refined tea manufacturing	16
	Textiles	26
	Textile garments and clothing	20
	Leather, fur, down and related products, and shoes	3
	Timber processing, bamboo, cane, palm fibre, and straw products	6
	Furniture manufacturing	3

Sector name	Sub-sector name	No. of companies
	Papermaking and paper products	15
	Printing and record medium preproduction	5
	Cultural, educational and sports article manufacturing	10
	Petroleum processing, coking and nuclear fuel processing	8
	Raw chemical materials and chemical product manufacturing	119
	Pharmaceutical manufacturing	89
	Chemical fibre manufacturing	17
	Rubber and plastic products	40
	Nonmetal mineral products	44
	Smelting and pressing of ferrous metals	10
	Smelting and pressing of nonferrous metals	32
	Metal products	35
	General-purpose machinery manufacturing	81
	Special-purpose machinery manufacturing	98
	Automobile manufacturing	49
	Railway, shipping, aerospace and other transport equipment manufacturing	14

Sector name	Sub-sector name	No. of companies
	Electrical machinery and equipment manufacturing	119
	Computers, communication equipment, and other electronic equipment manufacturing	166
	Instrument and apparatus manufacturing	23
	Other manufacturing	14
	Comprehensive utilisation of waste	1
Total		**1107**
Construction	Housing industry	1
	Civil engineering construction	22
	Building installation	1
	Building fitting and decoration and other construction	10
Total		**34**
Wholesale and retail	Wholesale	28
	Retail	34
Total		**62**
Transportation	Highway transportation	9
	Water transportation	7
	Air transportation	3
	Load and unload, and transportation agency	1
	Storage	6
Total		**26**
Hotels and catering	Lodging	6
	Catering services	4
Total		**10**

Sector name	Sub-sector name	No. of companies
IT	Telecommunications, radio and television and satellite transmission service	6
	Internet and other related services	11
	Software and information technology services	90
Total		**107**
Finance	Monetary and financial services	2
	Capital market services	8
	Other financial services	1
Total		**11**
Real estate	Real estate	68
Total		**68**
Business support	Lease	1
	Business services	14
Total		**15**
Research and development	Research and experimental development	1
	Professional technical services	10
Total		**11**
Environmental protection	Ecological protection and environmental governance	8
	Public facilities management	12
Total		**20**
Public health	Health	2
Total		**2**

Sector name	Sub-sector name	No. of companies
Media	News and publishing	4
	Production of radio, television, film, audio and video	7
	Culture and art	2
<u>Total</u>		**<u>13</u>**
Conglomerates	Conglomerates	7
<u>Total</u>		**<u>7</u>**
Utilities	Electric power, steam and hot water production and supply	62
	Gas production and supply	10
	Tap water production and supply	14
<u>Total</u>		**<u>86</u>**