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CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE, ASSURANCE AND FINANCIAL PERFORMANCE: A CROSS-COUNTRY STUDY

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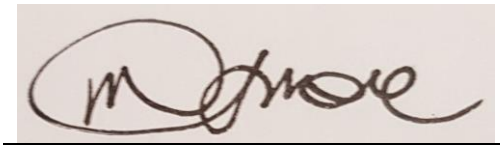

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ABSTRACT

CORPORATE SOCIAL RESPONSIBILITY DISCLOSURE, ASSURANCE AND FINANCIAL PERFORMANCE: A CROSS-COUNTRY STUDY

Candidate: Martha Catharina de Klerk (student number 29226130)
Supervisor: Prof. Charl de Villiers
Department: Department of Accounting
Degree: PhD Accounting Sciences

The study evaluates in a cross-country setting whether corporate social responsibility (CSR) assurance represents a signal of the quality of CSR disclosure to investors. As part of this objective, the study also evaluates whether the associations of CSR disclosure and CSR assurance with subsequent financial performance are in the same or in opposite directions. Agency Theory and information asymmetry considerations are used as basis to develop testable hypotheses. The first step is to test the association between CSR disclosure and subsequent financial performance. Next, the association between third-party assurance provided on CSR disclosure and subsequent financial performance is evaluated. The two market-based measures of financial performance chosen are share price and market-to-book ratio. The two accounting-based measures of financial performance used are actual future cash flows and actual future profitability.

The study examines a sample based on the 100 largest firms from different countries included in KPMG's 2008, 2011 and 2013 international surveys of CSR reporting practices. The measures of CSR disclosure and CSR assurance used are based on data collected by KPMG, as an independent and credible source.

The overall findings show that CSR assurance does not represent a signal of the quality of CSR disclosure to investors and that the associations of CSR disclosure and CSR assurance

with market-based measures of financial performance are in opposite directions. CSR disclosure included in a firm's annual report at a level higher than the sample mean has a positive association with market-based measures of financial performance. These results are driven by firms in environmentally non-sensitive industries.[1] CSR assurance has a negative association with market-based measures of financial performance. Additional tests suggest that this negative association is driven by firms in non-sensitive industries from countries where some form of CSR disclosure is required, or is in the process of being mandated. The results are robust to various additional tests. Associations of CSR disclosure and CSR assurance with accounting-based measures of financial performance are mostly not significant for the one- to three-year-ahead periods.

Prior studies on the association between CSR disclosure and market-based measures of financial performance have provided inconsistent results. In respect of CSR assurance, limited prior archival studies have been conducted on the association between CSR assurance and market-based measures of financial performance. Prior research on CSR assurance did not evaluate whether associations could be different for firms in environmentally sensitive industries compared to firms in environmentally non-sensitive industries. Prior research also did not control for country-level institutional strength and country-specific characteristics. Analysing CSR disclosure together with CSR assurance in a study using the same underlying financial data made it possible to evaluate whether associations of CSR disclosure and CSR assurance with financial performance are in the same or in opposite directions.

Key words: CSR assurance; CSR disclosure; financial performance; market-to-book ratio; share price.

[1] For the purposes of this study, environmentally sensitive industries are defined as industries whose operations potentially have an environmental impact (for example, chemical and pharmaceutical industries, plastics manufacturing, electricity and gas, iron and steel manufacturing, mining, oil exploration, paper and pulp mills). Environmentally non-sensitive industries refer to all other industries.

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CHAPTER 1:
INTRODUCTION

1.1 BACKGROUND

Corporate social responsibility (CSR) is a collective term for environmental, social and ethical activities. Some firms refer to "corporate social responsibility" reporting, while others prefer the terms "sustainability" or "corporate responsibility" reporting (Cohen & Simnett 2015; KPMG 2013a). CSR assurance refers to third-party (external) assurance statements on the CSR information provided by a firm. CSR reporting in the context of this study refers to both CSR disclosure and the disclosure of CSR assurance statements.

Some form of CSR disclosure is now required in many countries, for example, in South Africa (IoDSA 2009), for EU-domiciled firms from 2018 onwards (European Commission 2014), as well as in Denmark, France, India, Indonesia, Japan, Malaysia, Nigeria, Norway, Singapore, the UK and the US (KPMG 2013a:25). Even though CSR disclosure has become a common business practice (KPMG 2011), *what* and *how much* is to be disclosed is still largely discretionary – not only for CSR disclosure in general, but also for Integrated Reports (Cahan, De Villiers, Jeter, Naiker & Van Staden 2016; Deloitte & Touche 2011; IIRC & IFRS Foundation 2013; IIRC & SASB 2013; KPMG 2013a; Kumarasinghe, Will & Hoshino 2018; PWC 2013; Verbeeten, Gamerschlag & Möller 2017).

Given the discretion that firms have regarding CSR disclosure, there are some concerns regarding the completeness and credibility of the information provided (Ackers 2015; Birkey, Michelon, Patten & Sankara 2016; Bouten, Everaert, Van Liedekerke, De Moor & Christiaens 2011; Cho, Michelon, Patten & Roberts 2015; Kolk & Perego 2010; Merkl-Davies & Brennan 2007; Park & Brorson 2005). CSR assurance has the potential to enhance the credibility of

CSR disclosure (Casey & Grenier 2015; Cohen & Simnett 2015; Hodge, Subramaniam & Stewart 2009; Holder-Webb, Cohen, Narth & Wood 2009; KPMG 2013a; Michelon, Patten & Romi 2018; Simnett, Vanstraelen & Chua 2009).

However, CSR assurance practices have also been criticised in the literature. Such assurance is not always an independent process, conducted without restrictions by management (O'Dwyer & Owen 2005; Pinsker & Wheeler 2009). Moreover, there is not yet a generally accepted standard for CSR assurance, although several assurance standards are used (Hodge *et al.* 2009; Salman 2016:21). Another factor which has elicited criticism and makes comparison between firms difficult is the large amount of variability in terms of the format of assurance statements and the scope of assurance engagements (Hodge *et al*. 2009), as well as the variability in assurance providers. Providers range from large audit firms to other specialists (Ackers & Eccles 2015; Brown-Liburd & Zamora 2015; Casey & Grenier 2015; Cheng, Green & Ko 2015; O'Dwyer & Owen 2005; Peters & Romi 2015; Pflugrath, Roebuck & Simnett 2011). In addition, firms that have pre-existing CSR credibility issues (Simnett *et al*. 2009) have added incentives to provide CSR assurance voluntarily to improve the credibility of their CSR disclosures (Brown-Liburd & Zamora 2015; Cheng *et al*. 2015; Hodge *et al*. 2009; Pflugrath *et al*. 2011; Reimsbach, Hahn & Gürtürk 2018).

CSR disclosure has become part of many large firms' CSR reporting practices, as KPMG's (2008, 2011, 2013, 2015) surveys show. During the earlier years investigated by KPMG, CSR disclosure mostly took the form of stand-alone CSR reports, but the last few surveys by KPMG reveal a move to include CSR information in the annual report. KPMG (2015) reports that only 9% of its N100 sample firms (the N100 firms represent the 100 largest firms in each of the different countries included in the KPMG survey, based on revenue) included CSR information in their 2008 annual reports. The percentage grew to 20% in 2011, to 51% in 2013 and to 56% in 2015. In respect of CSR assurance, KPMG reports that 42% of the N100

firms provided assurance in 2015 (KMPG 2015), compared to 39% in 2008, 38% in 2011, and 38% in 2013 (KPMG 2013a).

KPMG attributes the increasing trend for firms to include CSR information in their annual reports to initiatives such as the Integrated Reporting framework developed by the International Integrated Reporting Council (IIRC), which promotes the disclosure of CSR information together with financial information (KPMG 2013a). In addition, KPMG ascribes the increasing trend for firms to include CSR information in their annual reports to the fact that stock exchanges and governments increasingly require CSR information to be included in the annual report (KPMG 2015). In respect of CSR assurance, KPMG (2013a) suggests that the slow uptake is due to the fact that CSR assurance is not mandatory, as only France and South Africa have started pioneering a recommended (on a comply or explain basis) and/or mandatory approach towards CSR assurance (KPMG 2013a).

CSR disclosure and CSR assurance form part of a firm's CSR reporting practices. However, prior research on reporting practices has focused either on CSR disclosure (for example, Cahan *et al*. 2016; De Klerk, De Villiers & Van Staden 2015; Dhaliwal, Li, Tsang & Yang 2011, 2014), *or* on CSR assurance (for example, Casey & Grenier 2015; Cho, Michelon, Patten & Roberts 2014; Peters & Romi 2015; Simnett *et al.* 2009). The argument has been made in the literature that CSR assurance can enhance the credibility of CSR disclosure (Cohen & Simnett 2015; Huang & Watson 2015; Moroney, Windsor & Aw 2012). Whether CSR assurance does enhance the credibility of CSR disclosure is the motivating question for this study.

1.2 FOCUS OF THE STUDY

This section focuses on associations between CSR reporting (disclosure as well as assurance) and market-based measures of financial performance. The prior literature specifically relevant

to this study is discussed in Section 1.2.1. The research objectives, together with a short discussion on the direction of possible associations in respect of the main objective, are presented in Section 1.2.2. Although the study also evaluates associations between the variables of interest and accounting-based measures of financial performance, these are not seen as the main motivation for the study as presented in this chapter.

1.2.1 Prior literature

Prior archival research on the association between a firm's CSR disclosure and market-based measures of financial performance, such as share price and firm value, mostly drew on data prior to 2010 and has reported mixed results. The findings of studies in a single country setting range from a negative association (Hassel, Nilsson & Nyquist 2005), to no significant association (Horn, De Klerk & De Villiers 2018), or a positive association (De Klerk & De Villiers 2012; De Klerk *et al*. 2015). De Villiers and Marques (2016) conducted a study on European firms using data from 2007 to 2010, and found a positive association between CSR disclosure and share price. Cahan *et al*. (2016) did a cross-country study using 2008 data in their main analysis, and also note a positive association between unexpected CSR disclosure and firm value. However, Cho *et al*. (2015) report that CSR disclosure was not valued positively by investors in a study comparing Fortune 500 data for 1977 and 2010.

The results of these prior studies are not all comparable, because they used a range of different measures of CSR disclosure. These measures include self-constructed measures employing content analysis (Cho *et al*. 2015) and ones based on compliance with the GRI guidelines (De Klerk & De Villiers 2012; De Klerk *et al*. 2015; De Villiers & Marques 2016). Another is a composite measure of CSR reporting based on 87 data points for each observation collected by KPMG during its 2008 survey of CSR reporting practices (De Klerk *et al*. 2015). An improved measure was also developed by Cahan *et al*. (2016), who predicted

and regressed expected disclosures on the actual CSR disclosure of a firm, based on the 87 data points, to obtain a measure of a firm's unexpected CSR disclosure.

In summary, some of the prior literature does provide evidence of a positive association between CSR disclosure and market-based measures of financial performance, but the results seem to depend on how CSR disclosure is measured, as well as other research design choices, such as the control variables used. Given the mixed results discussed above, and the increasing tendency by firms to include CSR information in their annual reports, this study is interested in whether there is a positive association between firms' inclusion of higher levels of CSR information in their annual reports and these firms' financial performance. Since stand-alone CSR reports and the publication of CSR information on a firm's website are popular disclosure practices (KPMG 2013a, 2015), I am also interested in the association between these disclosures and market-based measures of financial performance.

In respect of CSR assurance, interviews were conducted with representatives of UK firms regarding their perceptions of the need for and benefits of assurance by Edgley, Jones and Solomon (2010) and Jones and Solomon (2010). The interviews suggested that managers of UK firms were reluctant to support third-party assurance of CSR information, because of the cost of providing assurance, the complex nature of CSR disclosure and concerns regarding the independence of assurance providers. Nevertheless, experimental studies have provided evidence that CSR assurance enhances the credibility of CSR information for investors, and that CSR assurance may be relevant to them (Brown-Liburd & Zamora 2015; Cheng *et al*. 2015; Hodge *et al*. 2009; Pflugrath *et al*. 2011; Reimsbach *et al*. 2018).

Fuhrmann, Ott, Looks and Guenther (2017) provide evidence that CSR assurance reduces information asymmetry between managers and shareholders under certain conditions. Although a reduction in information asymmetry does not necessarily result in an increase in

share price, Fuhrmann *et al*. (2017) show that CSR assurance provides information that is incorporated by investors when making investment decisions. The association between CSR assurance and share price depends not only on whether CSR has information content, as Fuhrmann *et al*. (2017) indicate, but also on how that information is assessed by the market. The fundamental research objective of the current study is therefore to evaluate whether CSR assurance represents a signal of the quality of CSR disclosure that reduces information asymmetry and results in an increase in market-based measures of financial performance (share price and market-to-book ratio).

To date, archival studies on the financial consequences of CSR assurance in Australia, New Zealand and the US, and on EU-domiciled firms, have provided mixed results (Casey & Grenier 2015; Cho *et al*. 2014; Peters & Romi 2015; Salman 2016). Cho *et al*. (2014) report no significant association with share price, using a US sample of 2010 Fortune 500 firms. By contrast, Casey and Grenier (2015) show that first-time adoption of assurance is associated with lower cost of capital and lower analyst forecast error, again using a US sample. In an unpublished thesis, Benschop (2017) reports a positive association between providing assurance (compared to not providing assurance) and share price for 525 EU-domiciled firms during 2016, but also contrastingly a negative association between the scope of the assurance statement and share price. In another thesis, Salman (2016) demonstrates that providing assurance had a significant association with market capitalisation, but that the quality of the assurance process did not have an association with market capitalisation for a sample of 50 New Zealand and 100 Australian firms.

Prior research conducted earlier in the US may not be relevant to more recent periods or to other countries, because these studies covered sample periods not later than 2010 (Casey & Grenier 2015; Cho *et al.* 2014; Peters & Romi 2015), and because the uptake on CSR assurance was slow in the US, compared to that by firms in other countries (Cohen & Simnett

2015). Prior studies may have been conducted in jurisdictions where financial consequences are less likely to occur. There are also some concerns regarding the research design followed in the two recent cross-country studies by Benschop (2017) and Salman (2016). Both studies used small samples and a limited sample period. In addition, neither of these two studies addresses the possibility that associations of share price or market capitalisation with CSR assurance could be different for firms in environmentally sensitive industries,[2] than for firms in environmentally non-sensitive industries. These studies also do not consider the possibility that associations with share price and market capitalisation could be affected by country-level institutional strength, or that associations could be affected by country-specific effects. The studies suffer from omitted variable problems, where the omitted variables may be responsible for the associations reported.

The role of CSR assurance in enhancing CSR disclosure can arguably be seen as positive, which should therefore lead to positive financial consequences, but there are arguments both for and against this position. Third-party assurance implies that the assurers are independent. However, in practice, assurance is not always seen as a completely independent process, because it is normally conducted under restrictions in terms of the scope of the assurance contracted between the firm's management and the assurance provider (O'Dwyer & Owen 2005; Pinsker & Wheeler 2009). There is also some variability in the format and scope of the assurance statement (Hodge *et al*. 2009). Notwithstanding, some firms may feel the need to enhance the credibility of their disclosure through assurance. Decisions regarding whether CSR assurance is provided or not, as well as the scope of the assurance statement, are still largely discretionary (Ackers 2017; Cohen & Simnett 2015; Huang & Watson 2015; KPMG 2013a, 2015).

[2] In line with Cahan *et al*. (2016), for the purposes of the current study, environmentally sensitive industries are defined as industries whose operations potentially have an environmental impact (for example, chemical and pharmaceutical industries, plastics manufacturing, electricity and gas, iron and steel manufacturing, mining, oil exploration, paper and pulp mills). Environmentally non-sensitive industries refer to all other industries.

If investors believe that CSR assurance is not the result of an independent process, they are likely to suspect a firm's management of providing assurance to mask pre-existing CSR issues, which could lead to a negative market reaction (Cohen & Simnett 2015; Huang & Watson 2015; Simnett *et al*. 2009). Moreover, the market may perceive CSR assurance as a form of impression management, as has been suggested in the interview studies by Edgley *et al*. (2010) and Jones and Solomon (2010). The market could also regard the cost of CSR assurance as exceeding its benefits, especially if investors deem the CSR reporting requirements sufficient and/or if they deem firm-level governance sufficient to ensure good quality disclosure (Brown-Liburd & Zamora 2015; Cheng *et al*. 2015; Hodge *et al.* 2009; Pflugrath *et al.* 2011). Investors may question the value of CSR assurance if they do not believe CSR assurance to be an accurate signal of the quality of CSR disclosure.

Signalling the credibility of disclosures by means of assurance to investors, potential investors, as well as employees and other stakeholders of the firm, could mitigate concerns that the firm is engaged in impression management (Birkey *et al.* 2016; Michelon, Pilonati & Ricceri 2015). CSR assurance can reduce the information asymmetry between managers and shareholders of a firm and may be relevant to investors when they make investment decisions (Brown-Liburd & Zamora 2015; Cheng *et al.* 2015; Hodge *et al.* 2009; Pflugrath *et al*. 2011; Reimsbach *et al*. 2018).

Decisions regarding a firm's CSR reporting include decisions regarding CSR disclosure and CSR assurance. Shareholders and other capital market participants are able to formulate an opinion about a firm's CSR practices and estimate future risks and cash flows based on the CSR information provided in firms' annual reports, in stand-alone CSR reports and/or on firms' websites (Cahan *et al*. 2016; De Klerk & De Villiers 2012; De Klerk *et al*. 2015; De Villiers & Marques 2016; Dhaliwal *et al*. 2011, 2014; Dhaliwal, Radhakrishnan, Tsang & Yang 2012; Ioannou & Serafeim 2017). Assurance statements could improve the relevance

and reliability of disclosed CSR information (Cohen & Simnett 2015; KPMG 2013a). Assurance statements can also enhance and signal the credibility of such information to shareholders and potential investors (Fuhrmann *et al*. 2017; Ioannou & Serafeim 2017).

1.2.2 Research objectives

The main objective in this study is to evaluate in a cross-country setting whether CSR assurance represents a signal of the quality of CSR disclosure to investors. As part of this objective, I also evaluate whether the associations of CSR disclosure and CSR assurance with market-based measures of financial performance are in the same or in opposite directions. To achieve the research objectives, I start by answering two related questions using the same underlying data. The first question is whether there is an association between firms' CSR disclosure and firms' subsequent market-based financial performance. The second question is whether there is an association between firms' CSR assurance and firms' subsequent market-based financial performance.

A positive association between CSR assurance and market-based measures of financial performance will indicate whether CSR assurance is a signal of the quality of CSR disclosure to investors. A negative association will show that CSR assurance has information content, as Fuhrmann *et al*. (2017) indicate, but that shareholders and potential investors are of the opinion that CSR assurance is used as a tool either to enhance the CSR image of a firm (Birkey *et al*. 2016; Michelon *et al*. 2015), or to "manage" pre-existing credibility issues, as Simnett *et al*. (2009) suggest. A negative association or no association between CSR assurance and financial performance may also be indicative of shareholders' and potential investors' concern about the quality of the assurance process.

Based on the arguments in Cahan *et al*. (2016), as well as the arguments and findings of Simnett *et al*. (2009), it may be possible to argue that providing CSR assurance has become

expected from firms in environmentally sensitive industries. Building on this argument, it is also possible that CSR assurance provided by firms in industries where it is less expected (environmentally non-sensitive industries) is provided to counteract negative market perceptions caused by pre-existing CSR credibility issues that the market is already aware of. Following the logic of this argument, the negative financial consequences for such firms may be bigger if CSR assurance is not provided. Along the same lines, one could argue that there could be negative financial consequences for firms in environmentally sensitive industries if they do not provide the expected assurance.

If the association between CSR disclosure and market-based measures of financial performance, and that between CSR assurance and market-based measures of financial performance are in opposite directions (positive for CSR disclosure and negative for CSR assurance), this may suggest that shareholders and potential investors deem CSR disclosure requirements to be replacing the need for assurance (Casey & Grenier 2015; Cho *et al*. 2014; Benschop 2017; La Porta, Lopez-de-Silanes & Shleifer 2006). In this case, assurance is seen as a cost, resulting in no financial benefits.

1.3 THEORETICAL FRAMEWORK

CSR reporting can change how businesses are run, and may therefore have an impact on the way capital markets allocate financial resources (Radley Yeldar & World Business Council for Sustainable Development 2015). This study is therefore interested in whether CSR reporting (disclosure and assurance) is associated with two capital market indicators, namely share price and market-to-book ratio. Share price reflects both the market's assessment of risks and expected financial performance (De Klerk & De Villiers 2012; De Klerk *et al.* 2015; De Villiers & Marques 2016). Market-to-book ratio represents a long-term measure of shareholders' assessment of a firm's future cash flows and risks (Daske, Hall, Leuz & Verdi

2008; Jiao 2011) and is thus suitable to use as a market-based measure of financial performance. Evidence of a significant association (irrespective of whether that association is positive or negative) would suggest that shareholders and investors take the information available from firms' CSR reporting (disclosure and assurance) into account when making investment decisions.

This study is embedded in a positivist research paradigm, because the purpose is to understand and explain what happens in practice (Deegan 2009; De Villiers & Hsiao 2017; Maroun 2018; Scott 2010; Watts & Zimmerman 1978, 1986), and not what ought to happen.[3] This study is not about understanding social actors' views, as in an interpretivist paradigm, but about the outcomes of their decisions. This study develops testable hypotheses regarding the association of CSR disclosure and CSR assurance with financial performance, based on Agency Theory and information asymmetry considerations.

Information asymmetry exists where there is a separation of duties between principals (owners or shareholders) and agents (managers) (Deegan 2009; Jensen & Meckling 1976). Shareholders, prospective investors and capital providers require information regarding the environmental risks involved in a firm's operations (Al-Tuwaijri, Christensen & Hughes 2004; Cheng, Ioannou & Serafeim 2014). They also need to know how management responds to and addresses these risks (Clarkson, Li, Richardson & Vasvari 2008), to reassure them of the firm's profitability and to allow them to assess future risks and cash flows. An adverse selection effect arises where shareholders and potential investors do not have access to relevant information: there is evidence that shareholders and potential investors lower the price they are prepared to pay for shares in a firm, or require a higher rate of return on their investment (De Klerk *et al*. 2015; De Villiers & Marques 2016; Dhaliwal *et al*. 2011, 2014).

[3] By contrast, normative theory prescribes what *ought* to happen (Deegan 2009; De Villiers & Hsiao 2017; Maroun & Atkins 2018; Scott 2010).

Managers consider the costs versus the benefits of reporting particular information when they make discretionary reporting decisions (Deegan 2009; Fama & Jensen 1983; Healy & Palepu 2001; Scott 2010).

Agency Theory posits that managers are self-interested. This implies that they will not engage in CSR disclosure practices (such as higher levels of CSR disclosure included in the annual report) and CSR assurance unless they believe they will benefit from it (Deegan 2009; Fama & Jensen 1983; Healy & Palepu 2001; Scott 2010). Career concerns and bonuses linked to share price are examples of incentives that may motivate managers (Deegan 2009; Graham, Harvey & Puri 2013; Scott 2010; Song & Thakor 2006) to provide more extensive CSR disclosure and to obtain assurance on disclosure. Managers have an incentive to disclose information in a manner preferred by shareholders and potential investors (De Villiers & Van Staden 2011a, 2011b), to ensure that investors have all the information they need to evaluate a firm's risks and returns.

Users of CSR disclosure are aware that managers have discretion about *what*, *how much* and *where* to provide CSR disclosure. Users also know that managers can emphasize positive aspects concerning their CSR in disclosure. Thus, the possibility exists that users have some concerns about the credibility of CSR disclosures. Based on Agency Theory, managers may have an incentive to enhance the credibility of their CSR disclosure. One mechanism to do so is to provide assurance on CSR information. Providing assurance is a discretionary reporting decision for firms (managers) (Huang & Watson 2015; Kolk & Perego 2010). I use Agency Theory, because it focuses on managers' motivations, and posits that discretionary disclosure and assurance are mechanisms that can reduce the information asymmetry between managers and shareholders.

1.4 SAMPLE AND RESEARCH DESIGN

1.4.1 Sample

The sample of 2 615 firms (see Section 3.2) in total is drawn from the 100 largest firms per country, based on revenue, in three international KPMG surveys. In its three reports, KPMG refers to these firms as the N100 firms. The first set of N100 firms was identified in the 22 countries included in KPMG's 2008 global survey of CSR reporting practices (KPMG 2008). The next set of N100 firms was identified in the 34 countries included in a similar survey done in 2011 (KPMG 2011). The final N100 firms are located in the 41 countries included in the 2013 survey (KPMG 2013a). The surveys included publically owned/listed firms (entities whose shares trade on a stock exchange) and non-listed firms. The 2013 KPMG survey on CSR reporting practices was the eighth survey conducted by KPMG since 1993. It provides a credible source of CSR reporting data on a cross-country sample.

My sample excludes government-owned and other non-listed firms, because the required share price information is not available for these firms. This study also eliminates banks and financial firms, as these firms have financial ratio characteristics that differ from those of other firms. In addition, this study eliminates observations with missing financial or share price data on Datastream, Thomson Reuters.

1.4.2 Research design

I use both market-based and accounting-based measures of financial performance, as recommended by Lu and Taylor (2015). The market-based measures of financial performance that I chose are share price and market-to-book ratio. My accounting-based measures of financial performance are actual future cash flows and actual future profitability (measured as return on assets).

Four measures of CSR disclosure are used in this study. Three of these relate to the inclusion of CSR information in the annual report of a firm, and one relates to whether CSR information is published in a stand-alone CSR report and/or is available on the firm's website. Three measures of CSR assurance are used. One of these indicates whether assurance is provided or not, and two relate to the scope of the assurance statement. I perform the Heckman procedure to evaluate whether self-selection is a concern in respect of the different measures of CSR disclosure and CSR assurance, as described in Appendix D. The Lambda of the Inverse Mills ratio is not significant for any of the measures; thus, self-selection is not a concern that needs to be addressed in the research design.

In the first stage of the study, I regress CSR disclosure along with control variables derived from the literature on the measures of financial performance. Next, I regress CSR assurance along with control variables on the measures of financial performance. I also include both CSR disclosure and CSR assurance, along with other control variables, and regress them on the measures of financial performance.

Ordinary least square regressions are estimated using models based on the literature. The regression models with share price as the dependent variable are based on the Ohlson (1995) model, and the models with market-to-book ratio as the dependent variable are based on the model used by Cahan *et al*. (2016). The regression models with actual future cash flows and actual future profitability as the dependent variables are based on the models used by Clarkson, Fang, Li and Richardson (2013). These models have been used in the prior literature as discussed in Chapter 3. I control for fixed-year and fixed-industry effects in the regression models. Standard errors are clustered per country and industry. All observations are winsorized at a 1% and 99% level.

Additional tests are performed to evaluate the robustness of my results. I do the following in the additional tests: estimate change specifications; control for year interaction effects with CSR disclosure and CSR assurance; control for country-level institutional strength; evaluate whether the results hold for both environmentally sensitive and non-sensitive industries; control for CSR performance and corporate governance; control for the accounting quality of a firm; and test the results for country-specific sensitivity (including whether some form of CSR disclosure is required or in the process of being mandated). The research design is discussed in detail in Chapter 3.

1.5 DELIMITATIONS

The study has a number of delimitations. Firstly, prior research has offered evidence that CSR reporting is more prevalent in larger firms than in smaller firms (Clarkson *et al*. 2008; De Villiers & Van Staden 2011b). Because I limit my sample to N100 firms (as identified in the 2008, 2011 and 2013 KPMG surveys), my chosen sample enables me to draw inferences only on associations relating to larger listed firms.

Secondly, the possible interaction between country-level institutional strength and CSR reporting (CSR disclosure and CSR assurance) is not evaluated in this study. I do however control for country-level institutional strength by including it as an additional control variable in the regressions.

Thirdly, I do not make any inferences regarding the quality of disclosure, as called for by Abernathy, Stefaniak, Wilkins and Olson (2017) and by Dong, Fu, Gao and Ni (2016). Nor do I investigate the quality of the assurance process, as Huggins, Green and Simnett (2011) have done. Reported associations can also be influenced by *who* the assurance provider is or the *level* of the assurance statement, neither of which is evaluated in this study.

Fourthly, my chosen research approach uses Agency Theory and information asymmetry considerations to develop testable hypotheses regarding the associations between CSR reporting (disclosure and assurance) and market-based measures of financial performance. This approach and the fact that I am using archival data do not allow me to evaluate the extent to which CSR reporting initiatives are valued by non-shareholder constituents (Moser & Martin 2012). Alternative theoretical persepectives which may also explain associations between CSR reporting and market-based measures of financial performance are not considered.

Finally, it is not the objective of the study to make inferences regarding the preferred medium of communication to investors. The measure of CSR disclosure that I use which is an indicator of whether information is published as a stand-alone CSR report, and/or whether CSR information is available on the firm's website does not enable me to make inferences regarding the difference between a stand-alone report and other CSR information, such as photos or videos available on a firm's website (Chong, Ali & Lodhia 2016; Lodhia 2018).

1.6 RESULTS

The interpretation and possible explanations of the findings, as well as the contribution of the study, are discussed in the final chapter of the thesis. A brief summary of the results is presented below.

The overall results provide evidence that CSR assurance is not a signal of the quality of CSR disclosure to investors resulting in higher share prices and market-to-book ratios. The overall results also show that the associations of CSR disclosure and CSR assurance with market-based measures of financial performance are in opposite directions.

The results of the study indicate a positive and significant association at a 10% level between higher levels of CSR included in the annual report (using a measure that shows whether the

level of inclusion of CSR information in the annual report is higher than the sample mean) and the share price of firms. I also found a positive and significant association at a 10% level between higher levels of CSR information included in the annual report and market-to-book ratio. The positive association is driven by firms in environmentally non-sensitive industries. The results show very little association with the two accounting-based measures of financial performance, namely actual future cash flows and actual future profitability. Overall, the results are not sensitive to year interaction effects and other additional tests.

The results of the study indicate a negative and significant association between market-based measures of financial performance and CSR assurance. These results are sensitive to industry effects. Overall, CSR assurance provided by firms in environmentally sensitive industries display no significant association with market-based measures of financial performance. The negative association is driven by firms in environmentally non-sensitive industries. Furthermore, the results of the additional tests suggest that the negative association for firms in non-sensitive industries are driven by firms from countries where CSR disclosure is required or in the process of being mandated. The results are robust to various additional tests. The results show no association with the two accounting-based measures of financial performance, namely actual future cash flows and actual future profitability.

1.7 ORGANISATION OF THE THESIS

The prior literature focused either on CSR disclosure or on CSR assurance. I explore both aspects, but, in line with the prior literature, I separate the analyses when I present the results. To enable easier referencing, I also differentiate between CSR disclosure and CSR assurance when I discuss the research design.

The study is set out in six chapters. Following on from this introductory chapter, Chapter 2 presents the literature review and states the hypotheses. Chapter 3 describes the sample

selection process and the research design of the study in detail. Chapter 4 presents the results of the association between firms' CSR disclosure and their financial performance, while Chapter 5 presents the results of the association between firms' CSR assurance and their financial performance. Chapter 5 also includes a section on the results when CSR disclosure is included in the regression models together with CSR assurance. Chapter 6 concludes the study with a discussion of the main findings and an interpretation of the results. Chapter 6 also reflects on the contribution of the study, points out its limitations and suggests areas for future research, and presents the concluding remarks.

CHAPTER 2:
LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 INTRODUCTION

CSR reporting practices in the context of this study consist of two components: CSR disclosure and CSR assurance. This chapter reviews current knowledge about CSR disclosure and CSR assurance practices. The literature about CSR disclosure and CSR assurance practices forms the basis for the identification of the investigations to be performed and the hypotheses formulated for this study.

The CSR reporting literature focuses either on CSR disclosure *or* on CSR assurance, but not both in the same study. I explore both aspects, but, in line with the prior literature, I separate the discussion and the development of the hypotheses for the two components. Section 2.2 presents the background to the study and includes a discussion of current CSR disclosure and CSR assurance trends and practices. Section 2.3 reviews the literature on the association between CSR disclosure and financial performance and formulates the hypotheses. Section 2.4 discusses the literature on the association between CSR assurance and financial performance and presents the hypotheses. Section 2.5 concludes the chapter.

2.2 BACKGROUND TO THE STUDY

CSR assurance is sometimes provided on disclosed CSR information. I discuss the background to the study of each of these two components of CSR reporting below.

2.2.1 CSR disclosure

CSR disclosure, which originally focused primarily on environmental disclosure, was initially included in annual reports (Deegan 2009). Later, there was a tendency to publish separate

stand-alone CSR reports, followed by the use of other media, such as websites, to cover environmental and social information (Cho, Phillips, Hageman & Patten 2009). In the last decade, there has increasingly been a call by regulators, standard-setters and major accounting firms for firms to include CSR information in their annual reports. More recently, there has also been a call for an integrated *separate* concise report that includes financial, social, environmental and governance information – this is referred to as an Integrated Report (Burke & Clarke 2016; Deloitte & Touche 2011; IIRC 2011; IIRC & IFRS Foundation 2013; IIRC & SASB 2013; IoDSA 2009; KPMG 2013b; PWC 2013).

The uptake on providing Integrated Reports is still slow – only 10% of the N100 firms in different countries surveyed by KPMG issued a self-declared Integrated Report during 2013, and only 11% did so in 2015 (KPMG 2013a:28, 2015:38). However, there has been a steady increase in the percentage of firms including CSR information in their annual reports during the KPMG surveys' sample periods 2008, 2011 and 2013. KMPG (2015) reports that only 9% of its N100 sample firms included CSR information in their annual reports during 2008, but 20% did so during 2011, 51% did so during 2013, and 56% did so during 2015. The increase from 2008 to 2013 is substantial, but the increase from 2013 to 2015 from 50% to 56% of N100 firms including CSR information in their annual report suggests that CSR disclosure practices in this respect have not changed considerably between 2013 and 2015, compared to 2008, 2011 and 2013.

KPMG (2013a) attributes the global trend of increasingly incorporating CSR information in the annual report (comparing 2011 to 2013) to initiatives such as the adoption of the Integrated Reporting framework, which was developed by the IIRC and was approved in 2013. Increased regulatory pressure from governments and stock exchanges is one of the contributing factors for increased CSR disclosure in both developed economies (KPMG 2015) and emerging economies (KPMG 2015; Zaini, Samkin, Sharma & Davey 2018). According to

KPMG (2015:36), firms include CSR information in their annual reports because it is relevant to investors, enabling them to understand a firm's risks and opportunities, and because stock exchanges and governments increasingly require CSR information to be included in annual reports.

During my sample period, there was little or no guidance to firms on *what* and *how much* to disclose, because there was no single generally accepted framework or set of disclosure requirements. The Global Reporting Initiative (GRI) guidelines are now the most widely used framework for CSR disclosure. There has been a steady increase: 78% of the N100 firms referred to the GRI in their CSR disclosure in 2011, compared to 82% in 2013 (KPMG 2013a). The GRI is already widely accepted, but the guidelines are still undergoing development. The G2 and G3 guidelines were relevant during the sample period used in this study. This was followed by the G4 guidelines, which became effective from 31 December 2015. The G4 guidelines have in turn been replaced by the GRI Standards, which are required for all reports or other CSR materials published on or after 1 July 2018 (GRI 2016).

Firms also continued to publish CSR information in stand-alone reports and/or the firm's website during my sample period. KPMG (2011:22) states that the number of firms that rely solely on stand-alone reports, web-enabled interaction or the inclusion of CSR issues in their annual reports is rapidly decreasing. This claim is borne out in the sample period covered in this study: the majority of the sample firms include CSR information in their annual reports, but also issue a stand-alone CSR report and/or publish CSR information on the firms' websites (KMPG 2013a).

I am interested in two aspects of CSR reporting, namely the CSR information included in the annual reports of firms and CSR information published in a stand-alone report and/or

available on the website of the firm, and its association with the firms' financial performance. Including CSR information in the annual report may potentially evolve into Integrated Reporting, as suggested by Adams and Simnett (2011), KPMG (2013a, 2015) and Eccles, Krzus and Ribot (2015). Using the level of inclusion in the annual report as a measure of CSR disclosure is relevant, since many firms are following this disclosure practice.

Prior research has provided evidence that large firms are more likely to provide CSR disclosure than smaller firms (Clarkson *et al*. 2008; Clarkson *et al*. 2013). Moreover, the literature shows that firms in environmentally sensitive industries are more likely to provide higher levels of CSR disclosure (Clarkson, Overell & Chapple 2011; De Villiers, Naiker & Van Staden 2011). CSR disclosure may be a function of a firm's general accounting quality (Kim, Park & Wier 2012, also see Dhaliwal *et al*. 2012). It can also be a function of a firm's CSR performance (Clarkson *et al*. 2008; Clarkson *et al*. 2011), firm-level corporate governance (Bear, Rahman & Post 2010; Hoang, Abreysekera & Ma 2016; Katmon, Mohammad, Norwani & Farooque 2017; Ntim & Soobaroyen 2013), as well as country-level institutional strength (Cahan *et al*. 2016; De Villiers & Marques 2016; Ioannou & Serafeim 2012). I control for these variables in the main analyses or additional tests in order to evaluate whether my results hold, or whether they are sensitive to the inclusion of these variables.

2.2.2 CSR assurance

CSR disclosure is subject to concerns regarding the completeness and credibility of the information that is provided (Ackers 2015; Birkey *et al*. 2016; Bouten *et al*. 2011; Cho *et al*. 2015; Kolk & Perego 2010; Merkl-Davies & Brennan 2007; Park & Brorson 2005). Third party assurance has the potential to enhance the credibility of CSR disclosure (Casey & Grenier 2015; Cohen & Simnett 2015; Hodge *et al.* 2009; Holder-Webb *et al*. 2009; KPMG 2013a; Michelon *et al*. 2018; Simnett *et al.* 2009). Increased credibility of CSR disclosure

should reduce the information asymmetry between agents (managers) and principals (owners or shareholders). In addition, CSR assurance may enhance the CSR image of firms (Birkey *et al*. 2016; Michelon *et al*. 2015). A better CSR image with external stakeholders to whom CSR is important (such as investors and customers) may lead to higher profits and firm value.

Inconsistency in assurance practices is problematic, not only for South African firms (Ackers & Eccles 2015), but also for firms in other countries (Farooq & De Villiers 2017a). It undermines the intention of Integrated Reports, and is also an issue in other forms of CSR disclosure, such as CSR included in the annual report as part of the directors' report, a separate section of the annual report, or CSR information published as a stand-alone CSR report (Ackers & Eccles 2015; Benschop 2017; Brown-Liburd & Zamora 2015; Casey & Grenier 2015; Cheng *et al.* 2015; Farooq & De Villiers 2017b; Gürtürk & Hahn 2016; Hodge *et al*. 2009; Maroun 2017b, 2018; Mock, Strohm & Swartz 2007; O'Dwyer & Owen 2005; Perego & Kolk 2012; Peters & Romi 2015; Pflugrath *et al*. 2011; Sethi, Martell & Demir 2017).

Salman (2016) categorises the reasons for the inconsistency of assurance practices into three broad categories. The first concern is that there is no generally accepted framework for CSR reporting (see Section 2.2.1). Hence, CSR assurance statements may vary in content and structure (Hodge *et al*. 2009; Mock *et al*. 2007; O'Dwyer & Owen 2005; Salman 2016:21). The second concern is the lack of a generally accepted standard for CSR assurance (Hodge *et al*. 2009; Salman 2016:21), which leads to variability and ambiguity in assurance statements (Hodge *et al*. 2009; Perego & Kolk 2012). Two CSR assurance standards are currently available, namely the Accountability Assurance Standard (AA1000 AS), which is normally used in conjunction with the Accountability Principals Standard (AA1000 APS) (AccountAbility 2008a, 2008b), and the International Standards on Assurance Engagements (ISAE3000) issued by the International Auditing and Assurance Standards Board (IAASB

2013; see also Salman 2016:14). Given the limited guidance available on CSR disclosure and CSR assurance, normative researchers have proposed alternative approaches towards assurance. This includes interpretive qualitative assurance, which may be relevant to Integrated Reports prepared according to the IIRC's framework for integrated reporting (Maroun 2017a, 2018), as well as other types of CSR reporting, such as stand-alone reports or CSR information included in the annual report as a separate section (Sethi *et al.* 2017). The third concern is the fact that assurance providers can range from professional accountants to environmental or other specialists (Ackers & Eccles 2015; Brown-Liburd & Zamora 2015; Casey & Grenier 2015; Cheng *et al.* 2015; O'Dwyer & Owen 2005; Peters & Romi 2015; Pflugrath *et al*. 2011). This can result in inconsistencies which affect users' confidence in CSR disclosures (Hodge *et al*. 2009), and consequently also in assurance statements (Benschop 2017; Gürtürk & Hahn 2016; Salman 2016).

Given the uncertainties discussed above, I am interested in whether providing CSR assurance and the scope of the assurance statement is associated with financial performance. I evaluate whether CSR assurance is a signal of more credible CSR disclosure to investors. In addition, since CSR assurance is provided on disclosed CSR information, I am interested in whether associations between CSR assurance and financial performance, as well as CSR disclosure and financial performance, are affected if both variables are included in the same regression model.

Some prior research has focused on what predisposes firms from different countries to provide CSR assurance (Herda, Taylor & Winterbotham 2014; Simnett *et al*. 2009), as well as on which industries are more likely to provide assurance (Mock *et al.* 2007; Mock, Rao & Srivastava 2013; Simnett *et al*. 2009). These prior studies suggest that the decision to provide assurance may be influenced by country-specific characteristics (Herda *et al.* 2014; Simnett *et al*. 2009), the industry in which a firm operates (Mock *et al*. 2007; Mock *et al*. 2013; Simnett

et al. 2009) and a firm's CSR performance (Simnett *et al*. 2009). I control for these variables in the main analyses or in the additional tests.

Prior research that focuses on the financial consequences of providing CSR disclosure and CSR assurance are discussed in Sections 2.3.1 and 2.4.1. Testable hypotheses are developed in Sections 2.3.2 and 2.4.2.

2.3 CSR DISCLOSURE AND FINANCIAL PERFORMANCE

2.3.1 Literature review on CSR disclosure and financial performance

Extensive prior research has been conducted on the association between a firm's CSR disclosure and market-based measures of financial performance, such as share price (for example, studies by De Klerk & De Villiers 2012; De Klerk *et al.* 2015; De Villiers & Marques 2016; Hassel *et al*. 2005), and Tobin's Q (see Cahan *et al*. 2016; Ioannou & Serafeim 2017). Hence, in this section, I do not refer to the research findings of interview and experimental studies.

In respect of the association with share price, Hassel *et al.* (2005) examined disclosed environmental performance information in the UK and found a negative association with share price. Schadéwitz and Niskala (2010) found a positive association between CSR disclosure and share price in Finland. De Klerk and De Villiers (2012) report a positive association between CSR disclosure and share price in South Africa for 2008. However, a subsequent study found no significant association with firm value (using Tobin's Q as measure) during 2011 and 2013 (Horn *et al*. 2018). De Klerk *et al.* (2015) report a positive association for large UK firms for 2008; similarly, De Villiers and Marques (2016) noted a positive association between CSR disclosure and share price for European firms from 2007 to 2010. Cahan *et al*. (2016) report a positive association between CSR disclosure and firm value

in a cross-country setting for 2008, but only for unexpected levels of CSR disclosure. The findings of Cho *et al*. (2015) contradict this evidence in a comparison study, using Fortune 500 data for 1977 (205 firms) and 2010 (213 firms), suggesting that CSR disclosure is not valued positively by investors.

Most of the above studies used data prior to 2010 and report either a positive association or no association. Horn *et al*.'s (2018) study is the only one that used data for a more recent period, and they report no significant association between CSR disclosure and Tobin's Q in the South African context.

The measures of CSR disclosure used in the prior studies include an indicator of compliance with the GRI guidelines (De Klerk & De Villiers 2012; De Klerk *et al*. 2015; Schadéwitz & Niskala 2010), and a measure of the level of compliance with the GRI G3 guidelines (De Villiers & Marques 2016). Another measure is a composite measure of CSR reporting that includes compliance with the GRI guidelines, as well as other elements of disclosure captured by KPMG during its 2008 global survey of CSR reporting practices, based on all CSR disclosures available in the public domain (Cahan *et al*. 2016; De Klerk & De Villiers 2012; De Klerk *et al*. 2015). A measure based on the GRI G3 guidelines, where CSR assurance is incorporated into the score (see De Klerk & De Villiers 2012) may not be meaningful, because the economic consequences of CSR disclosure and CSR assurance may be in opposite directions (De Villiers & Marques 2016:170). In summary, prior research used a variety of measures of CSR disclosure, of which none focused exclusively on the level (amount) of inclusion of CSR information (*how much*) in the annual report.

Cross-country studies such as mine can provide insight into associations on a global level. A study that is relevant to my research is a cross-country study by Cahan *et al*. (2016), who used 2008 data in their main analysis. Cahan *et al*. (2016) used an advanced measure of CSR

disclosure which took 87 data points into account, based on CSR disclosure data available in the public domain and collected by KPMG during its 2008 survey of CSR reporting practices. Their study provides evidence of an association between CSR disclosure and Tobin's Q (a measure of firm value), but only in respect of unexpected disclosure. Cahan *et al.* (2016) argue that different levels of CSR disclosure are now expected in different countries and industries, and that investors only value disclosure provided at a level different from what is expected. A cross-country study was also conducted by De Villiers and Marques (2016), who focused on European firms. They report a positive association between higher levels of CSR disclosure, based on the level of compliance with the GRI G3 guidelines, and share price from 2007 to 2010. The main difference between these two studies and my study is the measures used. Also, instead of testing associations using a single market-based measure of financial performance, I use two measures, namely share price and market-to-book ratio (a measure of firm value similar to Tobin's Q).

Associations between CSR disclosure and accounting-based measures of financial performance such as actual future cash flows and actual future profitability are rarely examined in the literature, as has already been pointed out by Cahan *et al*. (2016) and Plumlee, Brown, Hayes and Marshall (2015). Where they are included, it is done as part of the additional analyses of a study. Following the argument in Clarkson *et al.* (2013) that in the long run CSR initiatives may result in financial benefits to a firm, such as increased profits and increased cash flow, I am interested in whether there is an association between CSR disclosure and accounting-based measures of financial performance. Analysing the association between CSR disclosure and accounting-based measures of financial performance may provide insight into some of the drivers of share price or firm value.[4]

[4] Another driver of share price is cost of capital, which represents an estimation of the risks associated with acquiring shares in a firm.The association between CSR disclosure and cost of capital is not evaluated in this

2.3.2 Theory and hypothesis development

I develop testable hypotheses regarding the association between CSR disclosure and market-based measures of financial performance, based on Agency Theory and information asymmetry considerations.

Agents (managers) weigh the costs against the benefits when they make voluntary reporting decisions (Healy & Palepu 2001). Such decisions include the extent of CSR disclosure to be made and where to make these disclosures (as discussed in Section 1.3). In turn, shareholders and prospective investors want to know what environmental risks a firm faces (Al-Tuwaijri *et al*. 2004) and how the firm is responding to these risks (Clarkson *et al*. 2008), because they need to be reassured as to the firm's profitability, future risks and cash flow prospects. If shareholders and potential investors lack relevant information, they are reluctant to pay higher prices for shares in a firm, or require a higher rate of return on investment (Dhaliwal *et al.* 2011, 2014). Managers who hope to gain a bonus based on share price or other financial performance indicators therefore have an incentive to voluntarily provide the (higher) levels of CSR disclosure that shareholders and potential investors want, in the ways preferred by shareholders and potential investors. For example, they might provide the information in the annual report and/or in a stand-alone CSR report and on the firm's website (De Villiers & Van Staden 2011b; Kamala, Wingard & Cronjé 2016).

CSR disclosure could affect analysts' and investors' behaviour by attracting analyst following and institutional investors, reducing analyst forecast estimation error, and stimulating a reduction in the cost of capital (Dhaliwal *et al.* 2011; Dhaliwal *et al.* 2012). CSR disclosure can also improve the overall information environment of a firm by providing additional information relevant to financial and investment decision-making (Cahan *et al*. 2016; De

study. A large percentage of the firms included in my final sample are not covered on I/B/E/S, Thomson Reuters, which shows earnings data and analyst forecast information, which are necessary to calculate cost of capital.

Villiers & Marques 2016; Dhaliwal *et al*. 2014; Ioannou & Serafeim 2017). The benefits of disclosing CSR information may include higher share prices due to investors' improved ability to assess a firm's financial prospects (Clarkson *et al*. 2013; De Klerk *et al*. 2015; De Villiers & Marques 2016; Horn *et al*. 2018). Thus, following Agency Theory and the literature, the first hypothesis is stated as follows:

H_1: *There is a positive association between CSR disclosure and market-based measures of financial performance (share price and market-to-book ratio in the context of this study).*

Clarkson *et al.* (2013) suggest that increases in firm value may be attributable to increases in the future competitive advantages of firms that result from the firms' current environmental strategies and the disclosure thereof (environmental strategies form part of CSR strategies). The counterargument is that increased CSR disclosure may result in additional expenses and related cash outflows for firms. Prior research also indicates that investors use estimations of future cash flows and future risks to estimate the price they are prepared to pay for shares in a firm (where the risk is lower, investors generally require a lower cost of capital or rate of return) (Dhaliwal *et al.* 2011; Dhaliwal *et al.* 2012). The associations between future profitability, future cash flows and CSR disclosure are rarely examined in the literature (see Cahan *et al*. 2016; Plumlee *et al*. 2015). Hence, I do not make predictions regarding possible associations between CSR disclosure and the different accounting-based measures of financial performance. The second hypothesis is stated in the null form:

H_2: *There is no association between CSR disclosure and accounting-based measures of financial performance (actual future cash flows and actual future profitability in the context of this study).*

2.4 CSR ASSURANCE AND FINANCIAL PERFORMANCE

2.4.1 Literature review on CSR assurance and financial performance

Edgley *et al*. (2010) and Jones and Solomon (2010) conducted a series of interviews with representatives of UK firms regarding their perceptions of the need for and benefits of assurance. Most of their interviewees were reluctant to support third-party assurance of CSR information, because of the cost of providing assurance, the complex nature of CSR reporting, and concerns regarding the independence of assurance providers. Interviewees were of the opinion that managers can use assurance to manage a firm's reputational risk and give a favourable impression of a firm to external stakeholders.

Five experimental studies with participants from the UK, the US and Australia suggest that CSR assurance enhances the credibility of CSR information for investors, and that CSR assurance may be relevant to investors under certain conditions (Brown-Liburd & Zamora 2015; Cheng *et al*. 2015; Hodge *et al*. 2009; Pflugrath *et al*. 2011; Reimsbach *et al*. 2018). Hodge *et al.* (2009) conducted an experimental survey using MBA students from Australian universities as participants to gain some understanding of their perceptions regarding the credibility of CSR reports and assurance. The students perceived CSR disclosure on which assurance is provided as more credible than other disclosures. Pflugrath *et al.* (2011) used financial analysts (who may be deemed more financially sophisticated) in the US, the UK and Australia in an experiment with a similar objective as that of Hodge *et al.* (2009). Pflugrath *et al.*'s (2011) findings support Hodge *et al*.'s (2009) results, and highlight the sensitivity of the findings for firms in the mining industry, similar to findings reported by Simnett *et al*. (2009).

The experimental studies by Hodge *et al.* (2009) and Pflugrath *et al*. (2011) focused on participants' perceptions of the credibility of CSR assurance, while Brown-Liburd and Zamora (2015), Cheng *et al.* (2015) and Reimsbach *et al*. (2018) focused on the direct

relationship between CSR assurance and investment decisions. Brown-Liburd and Zamora (2015) and Cheng *et al*. (2015) found that US participants were more willing to invest in a firm when the CSR performance indicators were assured. Reimsbach *et al*. (2018) used institutional investors from Germany as participants for their experiment. They found that CSR assurance is likely to have a positive effect on investors' evaluation of a firm's CSR performance, which may in turn have a positive effect on investment decisions (Reimsbach *et al*. 2018). In addition, their findings suggest the possibility that CSR assurance provided on stand-alone CSR reports is assessed differently (has a more positive effect on investors' perceptions) than CSR assurance provided on Integrated Reports (Reimsbach *et al*. 2018).

In summary, the results of the experimental studies suggest that professional and non-professional investors and financial analysts believe that CSR assurance enhances the credibility of CSR information (Brown-Liburd & Zamora 2015; Cheng *et al.* 2015; Hodge *et al.* 2009; Pflugrath *et al.* 2011; Reimsbach *et al.* 2018). The experiments also suggest that investors and analysts are likely to take assurance into account when they make investment decisions (Brown-Liburd & Zamora 2015; Cheng *et al*. 2015; Reimsbach *et al*. 2018).

Although such experimental studies suggest that investors deem assurance an indicator of credibility that has a positive effect on investment decisions, the results of archival studies on the financial consequences of CSR assurance are inconsistent. Cho *et al*. (2014) used a US sample drawn from the 2010 Fortune 500 firms and an Ohlson-based (1995) model to test the association between the presence of CSR assurance provided on CSR information included in a stand-alone CSR report and share price. Cho *et al*. (2014) included a measure of CSR disclosure as a control variable in their regression analyses representing the level of disclosure in stand-alone reports. They also controlled for CSR performance in their regression analyses. Cho *et al*. (2014) report a negative and significant association between CSR disclosure and share price, and no significant association for CSR assurance. Another study using archival

data and a US sample from 1993 to 2010 by Casey and Grenier (2015) focused on stand-alone CSR reports and the issuance of an assurance statement. They found that first-time adoption of assurance is associated with lower cost of capital and analyst forecast error. Casey and Grenier (2015) controlled for CSR performance and fixed-industry effects. In the same year, Peters and Romi (2015) conducted a similar study, also using a US sample and two sample periods, from 2002 to 2007 and from 2008 to 2010. They used an Ohlson-based (1995) model and regressed a vector of variables representing CSR assurance and firm-level governance, along with other firm-level control variables, as well as industry- and year-indicator variables, on share price (Peters & Romi 2015). They did not control for CSR performance. They concluded that good governance may act as a substitute for CSR assurance (Peters & Romi 2015). US firms' uptake of CSR assurance practices has been relatively slow, compared to that by firms in other countries (Cohen & Simnett 2015) – this implies that the findings of Casey and Grenier (2015), Cho *et al.* (2014) and Peters and Romi (2015) may not be generalizable to other countries.

More recently, in an unpublished thesis, Salman (2016) used 22 New Zealand and 88 Australian firms in 2014 to evaluate whether providing CSR assurance and the quality of the assurance provided (using content analysis to score the quality of the assurance provided) are associated with market capitalisation. Salman (2016) used firms that included CSR disclosure in their annual reports and/or published CSR information in stand-alone CSR reports and/or on the firms' websites as the basis for the sample selection. Salman (2016) reports that CSR assurance is positively associated with market capitalisation, but that the quality of assurance displays no significant association with market capitalisation.

Another thesis by Benschop (2017) demonstrates a positive association between providing assurance (compared to not providing assurance) and share price using an Ohlson-based (1995) model for 525 EU-domiciled firms during 2016 that published stand-alone CSR

reports based on the GRI guidelines or Integrated Reports. Benschop (2017) controlled for fixed-industry effects, but not for CSR performance. Benschop (2017) concluded that there is a positive and significant association between providing CSR assurance and share price (but only when CSR disclosure is provided voluntarily), and a negative association between the scope of the assurance statement and share price. Benschop (2017) reports no significant association between the level of CSR assurance provided, who the assurance provider is, and share price.

In summary, the prior research has used a range of measures of CSR disclosure, was conducted in different settings, and provides some inconsistent results regarding the association between CSR assurance and market-based measures of financial performance.

There are a number of improvements in my study compared to prior studies. In terms of the research design of the study, I use a cross-country sample covering 39 countries and three sample years. I control for the possibility that CSR assurance is a function of CSR performance, firm-level governance and firm-level accounting quality. In addition, I control for country-level institutional strength and evaluate whether the results are robust for firms in environmentally sensitive industries compared to those in non-sensitive industries. I also evaluate whether my results are sensitive to country-specific effects. More specifically, I evaluate whether the results are sensitive to firms in countries with large representation in my sample – in this I follow the approach used by Cahan *et al*. (2016) – and in countries where CSR disclosure is required, or in the process of being mandated, based on the above-mentioned findings of Benschop (2017; also see Fuhrmann *et al*. (2017), as discussed in more detail later in Section 2.4.2). Also, instead of testing associations using a single market-based measure of financial performance, I use two measures, namely share price and market-to-book ratio (a measure of firm value). The measures of CSR assurance that I use are similar but not identical to two of the measures used by Benschop (2017). I use an indicator variable

of whether CSR assurance is provided or not, and a measure of the scope of the assurance statement which can range between 0 and 3, compared to the indicator variable used by Benschop (2017), where a score of 1 represented assurance provided on the entire report. Finally, since CSR assurance is provided on CSR disclosure, I include CSR disclosure as a control variable in the regression models. I am interested in whether associations between CSR assurance and financial performance as well as CSR disclosure and financial performance are affected if both variables are included in the same regression model.

Following the argument in Moroney *et al*. (2012), going through the process of providing third-party CSR assurance on CSR information allows managers of firms to identify and address potential CSR risks on timely basis. Similar to CSR disclosure, in the long run, providing CSR assurance may result in financial benefits to the firm such as increased profits and cash flows. However, providing CSR assurance may also result in additional expenses, due to the direct costs of providing assurance. Similar to the argument in Section 2.3.1, analysing the association between CSR assurance and accounting-based measures of financial performance (actual future cash flows and actual future profitability) may provide insight into some of the drivers of share price.

2.4.2 Theory and hypothesis development

Agency Theory posits that agents (managers) are self-interested and will not engage in CSR disclosure and CSR assurance unless they benefit from it (Deegan 2009). In most countries, providing assurance is still largely voluntary for firms (managers) (Farooq & De Villiers 2017b; Huang & Watson 2015). CSR assurance should arguably enhance the credibility of CSR disclosure, because the CSR information should be of a sufficient standard to allow the assurance provider to express an opinion (Cohen & Simnett 2015; GRI 2013). The reporting of CSR information (for example, environmental information) sends signals about a firm's

CSR reputation to investors and other stakeholders. Assurance is a signal of higher quality CSR disclosure which would otherwise remain unobservable (Cheng *et al*. 2015; Cohen & Simnett 2015; Connelly, Certo, Ireland & Reutzel 2011; Huang & Watson 2015; Spence 1973). Since assurance is a provided by a third party, the signal cannot be mimicked by firms that perform less well, because information about the firm's CSR performance is known, or will eventually become known to the market (Connelly *et al*. 2011). The signal provided by assurance about the quality of CSR disclosure aims to reduce the information asymmetry between principals (owners or shareholders) and agents (managers). In theory, assurance can mitigate concerns that the firm is engaged in impression management (Birkey et al. 2016; Michelon *et al*. 2015).

Agents (managers) may signal information about the quality of CSR disclosure to principals (owners or shareholders) by providing assurance on it (Connelly *et al*. 2011). Principals (owners or shareholders) provide feedback by showing increased investment confidence, resulting in a positive and significant association with market-based measures of financial performance (Merkl-Davies & Brennan 2007). Firms (managers) may provide assurance to distinguish themselves from lesser performers.

However, CSR assurance is likely to fail as a signal of the quality of CSR disclosure if principals have doubts regarding the credibility and completeness of the audit process (Connelly *et al*. 2011). Shareholders and potential investors tend to lower the price they are prepared to pay for shares in a firm, or require a higher rate of return, if it becomes known or is suspected that a firm is using impression management to create a positive CSR reputation. This would happen if investors have the perception (or are aware of the fact) that firms that provide CSR assurance do so because they have pre-existing CSR credibility issues (Simnett *et al*. 2009). Following this line of reasoning, dubious CSR assurance will fail to reduce

information asymmetry between shareholders and managers, ultimately resulting in a reduction of the price investors are prepared to pay for shares in a firm.

A study by Fuhrmann *et al*. (2017) is also relevant to my study. They investigated whether assurance results in a lower bid-ask-spread and zero trading days. A reduction in the bid-ask-spread (or alternatively, in zero trading days or share price volatility) would provide evidence that CSR assurance reduces the information asymmetry between agents (managers) and principals (owners or shareholders). Fuhrmann *et al.* (2017) used a matched European-based sample of 442 firms that published a GRI-based stand-alone report during 2008 or 2009. Their study focused specifically on the content of the assurance statement, but they also measured whether providing assurance and the level of the assurance statement is associated with a lower bid-ask-spread. They included CSR disclosure as a control variable in their regression model using an indicator variable representing whether a stand-alone CSR report was issued and whether the stand-alone report was prepared according to the GRI guidelines. They also controlled for CSR performance using a variable that indicates whether a firm is listed on a sustainability index and controlled for CSR news that may have been published in respect of a firm. Fuhrmann *et al.* (2017) conclude that high quality in the assurance process (measured as a description of the audit process followed in the assurance statement) reduces information asymmetry, but only if the quality of the assurance process is higher than a moderate level. Furthermore, they conclude that more detail regarding the assurance process is required to result in a reduction of information asymmetry in countries where CSR reporting is *not* required.

Thus, given the uncertainty in respect of current assurance practices and the inconsistency of the results in prior studies, my third hypothesis is stated in the null form:

H_3: *There is no association between CSR assurance provided and market-based measures of financial performance (share price and market-to-book ratio in the context of this study).*

Providing CSR assurance (also referred to as obtaining third-party assurance) allows managers of firms to identify and address potential CSR risks on a timely basis and could have a positive influence on the overall quality and informativeness of disclosures (Moroney *et al*. 2012). Similar to providing CSR disclosure, providing CSR assurance may result in additional expenses and related cash-outflows for firms, due to investments in reporting systems and the direct costs related to obtaining third-party assurance. Given the uncertainty in respect of current assurance practices as discussed earlier, and the lack of prior research on the association between CSR assurance and accounting-based measures of financial performance, the fourth hypothesis is also stated in the null form:

H_4: *There is no association between CSR disclosure and accounting-based measures of financial performance (actual future cash flows and actual future profitability in the context of this study).*

2.5 CONCLUSION

This chapter presents an overview of the literature relevant to the potential financial consequences of providing CSR disclosure and CSR assurance and states the hypotheses for this study.

Prior research has produced mixed results on the association between CSR disclosure and market-based measures of financial performance. More recent literature offers evidence of a positive association between CSR disclosure and market-based measures of financial performance. Given the trend by firms to include CSR information in their annual reports and the increasing support provided by regulators for such disclosure, it is of interest whether

higher levels of CSR information included in the annual report has a positive association with market-based measures of financial performance. In my study, no predictions are made in terms of the association between CSR disclosure and accounting-based measures of financial performance.

Experimental studies suggest that CSR assurance should enhance the credibility of disclosed information. However, only a limited number of archival studies have been published on the association between CSR assurance and market-based measures of financial performance. The few that have been done produced mixed results. Most of the prior research on the association between CSR assurance and market-based measures of financial performance has been conducted in a US setting. Two prior cross-country studies using a single sample year was performed. The prior research that evaluated the association between CSR assurance and market-based measures of financial performance did not control sufficiently for CSR performance, accounting quality, environmentally sensitive industries versus non-sensitive industries and country sensitivity. In my study, no predictions are formulated in terms of the association between CSR assurance and accounting-based measures of financial performance.

The remainder of the thesis is structured as follows: Chapter 3 discusses the sample and research design in detail; Chapter 4 presents the descriptive statistics and regression results in respect of the association between CSR disclosure and financial performance; Chapter 5 presents the descriptive statistics, as well as the regression results, in respect of the association between CSR assurance and financial performance, and Chapter 6 concludes the study.

CHAPTER 3:
SAMPLE AND RESEARCH DESIGN

3.1 INTRODUCTION

This chapter deals with the sample and research design applied in this study. The general approach to testing the hypotheses in Chapter 2 is to evaluate whether or not CSR disclosure and CSR assurance have (predicted) associations with specific measures of financial performance. The approach to test the stated hypotheses is similar but not identical. I use share price and the market-to-book ratio as market-based measures of financial performance (measures of firm value). Actual future cash flows and actual future profitability are employed as accounting-based measures of financial performance.

Section 3.2 discusses the sample selection for this study. Section 3.3 sets out the research design used to test the association between CSR disclosure and financial performance. Section 3.4 sets out the research design adopted to test the association between CSR assurance and financial performance. Section 3.4 also includes a description of the research design to examine what happens when CSR disclosure is included as an additional control variable in the regression models. Section 3.5 concludes the chapter.

3.2 SAMPLE

I use KPMG's 2008, 2011 and 2013 global survey data on CSR reporting practices as the basis for my sample. KPMG's 2013 survey data are the eighth set produced. KPMG uses local staff from the countries included in the survey to overcome challenges arising from language differences. I use survey data from KPMG for three years in my sample, compared to prior

studies that included only one year's or two years' data (Cahan *et al*. 2016; De Klerk & De Villiers 2012).

As I mentioned in Section 1.4.1, KPMG's sample included the 100 largest firms, based on revenue, in 22 countries during 2008 (KPMG 2008), referred to as the N100 firms. In 2011, the N100 firms from 34 countries were included (KPMG 2011), and in 2013, the N100 firms from 41 countries were included (KPMG 2013a).

KPMG's samples included publically owned/listed firms (firms whose shares traded on a stock exchange), as well as non-listed firms. I eliminate non-listed firms from the sample, because share price data are not available for these firms. In addition, I eliminate financial firms due to their unique financial characteristics, and exclude observations with missing financial or share price data on Datastream, Thomson Reuters.

KPMG used data available in the public domain during mid-2007 and mid-2008 to compile its 2008 CSR report. It used mid-2010 to mid-2011 data to compile the 2011 CSR report, and mid-2012 to mid-2013 data to compile the 2013 CSR report. I align the financial and share price information that I use with the periods covered by KPMG's surveys.

My final sample consists of 2 615 observations from 39 countries. These are used throughout the study, except where indicated otherwise in some of the additional tests. The sample composition is presented in Table 3.1 (overleaf). More information regarding the sample composition per year, country and industry is presented in Appendix A.

Table 3.1: Sample composition

Sample	2008	2011	2013	Total
Firms included in the KPMG survey	2 170	3 400	4 100	9 670
Eliminated:				
Firms not listed on a stock exchange	(598)	(980)	(1600)	(3178)
Financial firms, firms not covered on Thomson Reuters, and firms with missing data	(1 024)	(1 479)	(1 374)	(3 877)
Final sample	**548**	**941**	**1 126**	**2 615**

Notes:

The 2008 data file received from KPMG consisted of 2 170 observations and not 2 200. I eliminate financial firms, firms not covered on the Thomson Reuters database, or firms with insufficient data on Thomson Reuters (such as privately owned firms, government-owned firms, etc.). The sample size is comparable to another cross-country study that used KPMG 2008 data as a basis for their analysis: Cahan *et al*. (2016) had a final sample of 555 firms to test the association between CSR disclosure and firm value.

3.3 RESEARCH DESIGN – CSR DISCLOSURE

The main models are specified in Equations 1a, 2a, 3a and 4a below. Equations 1a and 2a are estimated to test the hypothesis related to market-based measures of financial performance (H_1). Hypothesis H_1 predicts a positive association between CSR disclosure and market-based measures of financial performance. Hypothesis H_2 is stated in the null form and predicts no association between CSR disclosure and accounting-based measures of financial performance. Equations 3a and 4a are estimated to test H_2. (Please note that the equations are numbered 1a, 2a, etc. to facilitate easier cross-referencing where adjusted versions of the original equations are specified in Section 3.4.)

The four measures of *CSRdiscl* (of which three relate to the inclusion of CSR information in the annual report and one to CSR information published in a stand-alone CSR report and/or available on the firm's website) are discussed in Section 3.3.1. Next, Section 3.3.2 sets out the research design to test the association between CSR disclosure and market-based measures of financial performance. Section 3.3.3 sets out the research design to test the association between CSR disclosure and accounting-based measures of financial performance. The additional tests that I perform are discussed in Section 3.3.4.

3.3.1 Measures of CSR disclosure

As indicated in Section 1.4.1, I use data collected by KPMG during its 2008, 2011 and 2013 surveys of CSR reporting practices to measure specific aspects of CSR disclosure and CSR assurance. The results for the questionnaires for each of the years are used, and similar questions are mapped to enable me to calculate measures that can be used across the sample period.[5] The mapping of the relevant questions included for the coding of KPMG's data (coding Yes or No answers as 1 or 0), as well as the accuracy of the coding, has been verified by two independent researchers. Details regarding the mapping of the questionnaires and how I calculate the measures used in this study are set out in Appendix B.[6]

Eleven CSR-related items appeared in all three KPMG surveys. Five of the 11 items are related to CSR disclosure matters (three are related to the inclusion of CSR information in the annual report, one is related to whether CSR information is disclosed in a stand-alone CSR report and/or on the firm's website, and one is related to whether the GRI guidelines are adopted by a firm). Five are related to CSR assurance (three relate to whether assurance is provided and the scope of the assurance statement, and two relate to the level of assurance provided[7]). The remaining item is related to the question of whether supply chain issues are addressed in a firm's CSR reporting.

[5] Cahan *et al*. (2016) used a measure of abnormal (or unexpected) disclosure. They used a composite disclosure score between 0 and 87 to measure abnormal disclosure, and used data from 2008. The composite disclosure score took into account disclosures regarding stakeholder engagement, corporate management systems, the GRI guidelines, responsible investment, suppliers, and assurance. The range between 0 and 87 allowed for more data to be included in the score. I do not follow a similar approach. Only 16 data points were covered in KPMG's 2011 survey, and only 14 were covered in the 2013 survey. Most of the questions included in these two surveys focused on the measures of CSR disclosure that I am using in this study and CSR assurance. I avoided a composite measure of CSR disclosure which includes assurance to prevent endogeneity issues.

[6] CSR disclosure and CSR assurance measures calculated based on the KPMG data for the purposes of this study have been used in two prior papers by Horn *et al*. (2018) and Jordaan, De Klerk and De Villiers (2018) focusing on CSR in the South African context.

[7] This measure could not be used, due to a warning by SAS that the validity of a model fit using this measure is questionable. Neither the prediction model to evaluate whether self-selection is an issue, nor the models specified to test the association with financial performance could be reliably estimated. Of the total sample of 2 615 observations, 2 433 scored a 0 (no assurance, or level of assurance not available).

I do not use a composite measure of CSR reporting taking the 11 data items into account, because such a measure would essentially represent two different aspects of CSR reporting: CSR disclosure and CSR assurance. Following the argument by De Villiers and Marques (2016) that associations between CSR disclosure and CSR assurance with financial performance could be in opposite directions, it does not make sense to combine the scores into a single measure. The data do, however, enable me to evaluate the association between CSR disclosure included in the annual report with financial performance, which has not been tested in such a direct way in earlier studies. The data also enable me to evaluate the association between CSR assurance and financial performance. In addition, using the KPMG data as the basis for the calculation of the CSR disclosure and CSR assurance measures allows me to include these two aspects of CSR reporting in a single regression model. The measures of CSR assurance are discussed in Section 3.4.1.

The four measures of CSR disclosure that I use are the following:

- The inclusion in the annual report indicator (*IncARDum*) shows whether or not CSR-related disclosure is included in the annual report. Inclusion of CSR-related disclosure in the annual report of a sample firm is coded 1, non-inclusion is coded 0.
- The inclusion level (*IncARLev*) measures the extent of inclusion of CSR disclosure in a firm's annual report. Comprehensive inclusion of CSR information is coded 3, a CSR report issued as a separate section or chapters on CSR issues and performance is coded 2, CSR issues referred to in the annual report are coded 1, and a 0 is allocated if there is no reference to CSR issues in the annual report.
- An inclusion level higher than sample mean (*IncARLevDum*) indicates whether the level of inclusion of CSR disclosure in the annual report of a firm (*IncARLev*) is higher than that of the sample mean or not (yes=1, no=0).

- A stand-alone/web-indicator (*StdaloneWebDum*) shows whether a firm discloses CSR information in a full stand-alone report and/or on the firm's website (coded 1), or not (coded 0).

I evaluate whether self-selection is a concern for the measures of CSR disclosure by following the Heckman procedure, as recommended by Angrist and Pischke (2010) and Guo and Fraser (2009), and by estimating prediction models for CSR disclosure. Reasons for testing for self-selection bias and an explanation of the prediction models are given in Appendix D. The p-values of the Lambda of the Inverse Mills are 0.462 for *IncARDum*, 0.468 for *IncARLevDum* and 0.274 for *StdaloneWebDum*. This indicates that self-selection is not an issue that needs to be addressed in the research design. *IncARLevDum* represents the measure *IncARLev*, which is converted into an indicator variable where 1 represents a score higher than that of the sample mean.

3.3.2 Association with market-based measures of financial performance

Equations 1a and 2a are estimated to test H_1, which predicts a positive association between CSR disclosure and market-based measures of financial performance (share price in Equation 1a, and market-to-book ratio in Equation 2a). A level specification using share price and the market-to-book ratio as measures of financial performance allows me to test the association between CSR disclosure and financial performance. A level specification allows me to make inferences regarding whether a variable of interest (CSR disclosure, in this context) has a predicted association with equity market values (Barth, Beaver & Landsman 2001:79) at a specific point in time, and thus whether this information is utilised by investors in estimating the price they are prepared to pay for shares in a firm. The share price and market value are a given in a level specification because the objective is not "to estimate firm value" (Barth *et al*. 2001:90).

The relevant equations are set out below. Each of the measures of CSR disclosure (*IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*) is included separately in each of the regression models. Standard errors are clustered per industry and per country, and variables are winsorized at a 1% and 99% level.

3.3.2.1 Share price

I use a modified Ohlson (1995) model in Equation 1a to evaluate the association between CSR disclosure and share price. The Ohlson (1995) model has been used extensively in prior research to test the association between CSR disclosure and share price (for example, by De Klerk & De Villiers 2012; De Klerk *et al.* 2015; De Villiers & Marques 2016; Hassel *et al.* 2005; Schadéwitz & Niskala 2010). The underlying premise of the Ohlson (1995) model is that share price is a function of accounting information (the book value of equity (*BV*) and earnings (*E*), since earnings are indicative of future dividends), and other value relevant information, such as CSR disclosure. Size is included as an additional control variable, because larger firms may potentially have higher CSR disclosure and higher share prices because of their increased visibility (De Villiers & Marques 2016; Massa, Farneti & Scappini 2015). The model is stated as follows:

Share price:	
$P_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(1a)

where

- *P* is the share price of a firm, measured for each observation on the last day of the month, three months after the financial year-end (a three-month lag is used to allow time for the publication and analysis of the financial statements of a firm);

- *BV* is the book value of equity per share of a firm, measured as the difference between total assets and total liabilities at year-end and deflated by the number of shares in issue on the last day of the month, three months after the financial year-end;
- *E* is the earnings per share, measured as net income after interest and tax for the financial year, scaled by the number of shares in issue three months after the end of the financial year;
- *Size* is measured as the natural log of market value of equity;
- *CSRdiscl* is represented by the measures *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (see Section 3.3.1);
- *YR* is an indicator variable to control for fixed-year effects;
- *IND* is an indicator variable to control for fixed-industry effects.

Multi-collinearity is not a concern, since the VIF scores for the different model specifications range between 1.062 and 3.758.

3.3.2.2 Market-to-book ratio

I use market-to-book ratio in Equation 2a as a market-based measure of financial performance. I use the model specified by Cahan *et al*. (2016) with Tobin's Q and replace Q as the dependent variable in the model with the market-to-book ratio. Market-to-book ratio and Tobin's Q are both measures of firm value. Tobin's Q is calculated as the market value of equity scaled by the replacement value of assets while market-to-book ratio is calculated as the market value of equity scaled by the book value of assets. I use the market-to-book ratio because the data to calculate the measure are available on Datastream, Thomson Reuters.

Market-to-book ratio:	
$MtB_{i,t} = \beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + \beta_{10} CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(2a)

where

- *MtB* is the market-to-book ratio, calculated as the market value of equity scaled by total assets at the financial year-end;
- *Size* is measured as the natural log of the market value of equity at the financial year-end;
- *StockTurn* is the trading volume of stock (also referred to as shares) for the year;
- *ROA* refers to return on assets, calculated as the net income after interest and tax for the year, scaled by total assets at the end of the financial year;
- *Capex* is the capital expenditure as a percentage of sales;
- *Lev* is the total debt scaled by the total assets at the end of the financial year;
- *Dividend* is an indicator variable that shows whether dividends were declared by the firm during the financial year or not;
- *Intang* is intangible assets, calculated as 1 minus net property plant and equipment scaled by total assets at the end of the financial year;
- *R&D* is a measure of research and development intensity (a score of 1 is awarded if the R&D-to-sales ratio is in the top quantile of the sample, otherwise 0);
- *StdDevSP* is share price volatility, calculated as the standard deviation of daily stock (or share) return;
- *CSRdiscl* is represented by the measures *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (see Section 3.3.1); and
- *YR* and *IND* are indicator variables to control for fixed-year and fixed-industry effects.

Multi-collinearity is not a concern for any of the model specifications, because the VIF scores range between 1.002 and 3.857.

3.3.3 Association with accounting-based measures of financial performance

The accounting-based measures used are future cash flows and future profitability.

CSR disclosure can have an impact on firm value by enabling better prediction of future cash flow, or by reducing cost of capital (Clarkson *et al*. 2013). Equations 3a and 4a regress CSR disclosure on the actual future cash flow and profitability. The objective is to evaluate whether future cash flow and future profitability reflect the consequences of current CSR initiatives (Clarkson *et al*. 2013), and are useful for gaining insight into what drives share price (Clarkson *et al*. 2013; Plumlee *et al*. 2015). Equations 3a and 4a are similar to the models specified by Clarkson *et al*. (2013). The models are the following:

Cash flows from operations:	
$AVECFO_{i,t+1,2,3} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(3a)
Profitability:	
$AVEROA_{i,t+1,2,3} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(4a)

where

- *AVECFO* in Equation 3a is measured as the average one- to three-year-ahead cash flow from operations for the years 2008, 2011 and 2013;
- *AVEROA* in Equation 4a is measured as the average one- to three-year-ahead return on assets for the years 2008, 2011 and 2013;
- *Size* in both equations is measured as the natural log of the market value of equity;
- *CSRdiscl* is represented by the measures *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (see Section 3.3.1); and
- *YR* and *IND* are indicator variables to control for fixed-year and industry effects.

Again, multi-collinearity is not a concern, because the VIF scores for the different model specifications range between 1.059 and 2.067.

3.3.4 Additional tests

I perform additional tests to evaluate the robustness of the results for both market-based and accounting-based measures of financial performance. Level specifications are followed in all the additional tests, except for the change analysis in Section 3.3.4.1. The dependent variable in a level specification represents a measure at a certain point in time, whereas the dependent variable in a change specification represents change during a specific period. The VIF scores for the different model specifications range between 1.014 and 4.310, which is well below the accepted norm of 10, thus multi-collinearity is not a concern.

3.3.4.1 Change analysis

A level specification is concerned about whether or not information is incorporated into the valuation process itself (Barth *et al*. 2001), whereas a change specification relates to the information processing that takes place during the valuation process (Barth *et al*. 2001). Although the objectives are different in a way, a change analysis enables stronger inferences regarding causality (Cahan *et al*. 2016; De Villiers & Marques 2016) than a level specification.

The number of observations for the change analysis is 2 021, of which 421 have data for two years (either 2008 and 2011, or 2011 and 2013), and 393 firms have data for all three sample years. More information regarding the sample is available in Appendix A.3. The conceptual model evaluates whether a change in share return, or a change in the market-to-book ratio, is attributable to a change in CSR disclosure. Equations 1a, 2a, 3a and 4a are re-specified as indicated below to represent changes during the sample period.

Market-based measures of financial performance:	
$MR_{i,t} = \beta_0 + \beta_1 E_{i,t} + \beta_2 \Delta E_{i,t} + \beta_3 \Delta Size_{i,t} + \beta_4 \Delta CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(5a)
$\Delta MtB_{i,t} = \beta_0 + \beta_1 \Delta Size_{i,t} + \beta_2 \Delta StockTurn_{i,t} + \beta_3 \Delta ROA_{i,t} + \beta_4 \Delta Capex_{i,t} + \beta_5 \Delta Lev_{i,t} + \beta_6 \Delta Dividend_{i,t} + \beta_7 \Delta Intang_{i,t} + \beta_8 \Delta R\&D_{i,t} + \beta_9 \Delta StdDevSP_{i,t} + \beta_{10} \Delta CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(6a)
Accounting-based measures of financial performance:	
$\Delta AVECFO_{i,t+1,2,3} = \beta_0 + \beta_1 \Delta CFO_{i,t} + \beta_2 \Delta Size_{i,t} + \beta_3 \Delta CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(7a)
$\Delta AVEROA_{i,t+1,2,3} = \beta_0 + \beta_1 \Delta ROA_{i,t} + \beta_2 \Delta Size_{i,t} + \beta_3 \Delta CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(8a)

where

- *MR* in Equation 5a is the share return for the period, calculated as the difference between the share price[8] for the sample year minus the share price for the previous sample year, scaled by the share price for the previous sample year;
- Δ*Size* is the natural log of the change in the market value of equity;
- *E* is earnings for the year,
- Δ*E* represents the change in earnings from one period to the next (i.e. 2008 to 2011, and 2011 to 2013).

The share return model as specified in Equation 5a is based on the work of Easton (1999), who argues that Ohlson's (1995) model can be expressed as a return specification. Equation 6a is based on Equation 2a, Equation 7a is based on Equation 3a, and Equation 8a is based on Equation 4a. The only difference is that all the variables are expressed as a change from one period to the next. The measures of change in CSR disclosure (Δ*CSRdiscl*) are Change in *IncARDum* (Δ*IncARDum*), Change in level of inclusion in the annual report (Δ*IncARLev*), Change in whether the level of inclusion in the annual report is higher than that of the sample mean or not (Δ*IncARLevDum*), and a Change in whether CSR disclosure is published in a

[8] Adjusted for corporate actions such as cash dividends, share consolidations, rights offers, etc., as obtained from Datastream, Thomson Reuters.

stand-alone report, and/or whether CSR information is published on the firm's website (Δ*StdaloneWebDum*).

3.3.4.2 Year interaction effects

The research design controls for fixed-year effects. Given that the sample period is not continuous, the question remains whether there is not still a possibility that the main effect could depend on the interaction between CSR disclosure provided during a specific year. I therefore adjust the main models to include interaction variables to analyse whether CSR disclosure provided during 2008 and 2013 is assessed differently from the overall sample. The models are the following:

Market-based measures of financial performance:	
Share price	
$P_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + \beta_{5\&6} CSRdiscl*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(9a)
Market-to-book ratio	
$MtB_{i,t} = \beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + \beta_{10} CSRdiscl_{i,t} + \beta_{11\&12} CSRdiscl*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(10a)
Accounting-based measures of financial performance:	
Cash flows from operations	
$AVECFO_{i,t+1,2,3} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + \beta_{4\&5} CSRdiscl*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(11a)
Profitability	
$AVEROA_{i,t+1,2,3} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + \beta_{4\&5} CSRdiscl*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(12a)

All the variables are as discussed earlier, except for the interaction variable between *CSRdiscl* and *YR* (*CSRdiscl*YR*). The four measures of *CSRdiscl* (*IncARDum*, *IncARLev*,

IncARLevDum and *StdaloneWebDum*) are multiplied by the 2008 and 2013 *YR* indicators (0 or 1) included in the regression models. Because 2011 is in the middle of the sample period, it was chosen as the base year. The interaction variable *CSRdiscl*YR* represents *CSRdiscl* provided during a specific year and enables me to evaluate whether *CSRdiscl* provided during that specific year is assessed differently than in the other years.

3.3.4.3 Country-level institutional strength

A prior study provides evidence that firm-level CSR is a function of country-level institutional strength (Ioannou & Serafeim 2012). Country-level institutional strength has been reported to have a positive effect on the level of CSR disclosure provided by firms (Cahan *et al*. 2016), as well as the level of compliance with the GRI guidelines,[9] the most widely used framework for CSR disclosure (De Villiers & Marques 2016). The literature suggests a positive association between individual country-level characteristics of institutional strength (for example, government effectiveness, regulatory quality, societal concern about environmental performance), as well as a constructed composite measure of institutional strength and CSR (Cahan *et al*. 2016; De Villiers & Marques 2016; Dhaliwal *et al*. 2012). In line with the results reported by De Villiers and Marques (2016), it is possible to argue that if country-level institutional strength has an effect on the extent of CSR disclosure provided by firms, it may also have an effect on the association between CSR disclosure and market-based measures of financial performance.

Based on the above argument and evidence provided by Cahan *et al*. (2016), De Villiers and Marques (2016) and Dhaliwal *et al*. (2012) that individual country-level characteristics of institutional strength are highly correlated, I use a composite measure of country-level institutional strength and include it as an additional control variable in my analyses. The

[9] The GRI is the most widely used framework for CSR disclosure and is particularly popular in Europe (KPMG 2015, 2013a). De Villiers and Marques's (2016) sample is based on European firms and they use compliance with the GRI G3 guidelines as a measure of CSR disclosure.

individual country-level characteristics included in the calculation of the composite measure are identical to those included by Cahan *et al*. (2016) in their robustness test.

In Appendix C.2, I discuss the calculation of the composite measure of institutional strength (*InstStrength*). I also provide a description of the individual measures included in the composite measure. In addition, I include tables presenting the correlations between the composite measure of institutional strength (*InstStrength*) and the individual country-level measures on which this measure is based, as well as the correlations between *InstStrength* and the different measures of CSR disclosure and CSR assurance.

3.3.4.4 Environmentally sensitive industries

The level of CSR disclosure provided by firms could be different for firms operating in environmentally sensitive industries (Alzari, De Villiers & Van Staden 2015, 2016; Cho & Patten 2007; Clarkson *et al.* 2011). Firms in such industries have a more visible CSR impact and may thus experience greater pressure to provide CSR information (Cahan *et al*. 2016). It is possible that the association between CSR disclosure and market-based measures of financial performance such as share price and market-to-book ratio may also be different for firms in these industries (Cahan *et al.* 2016; De Villiers & Marques 2016). In line with Cahan *et al.* (2016), I therefore split the sample based on industry classification to group firms in environmentally sensitive industries (with SIC codes 800-899, 1000-1099, 1200-1399, 2600-2699, 2800-3099, 3300-3399, and 4900-4999) into one sample, and the remainder of the firms into a different sample. I evaluate whether the results hold for both samples.

3.3.4.5 CSR performance and corporate governance

The literature on the association between environmental disclosure (which is part of CSR disclosure) and environmental performance provides some evidence of a positive association between them (Clarkson *et al*. 2008; Clarkson *et al*. 2011). Prior research also suggests that

firm-level corporate governance characteristics can be associated with CSR in developing countries such as Malaysia (Katmon *et al.* 2017), Vietnam (Hoang *et al.* 2016), and South Africa (Ntim & Soobaroyen 2013), as well as developed countries such as the US and Canada (Bear *et al.* 2010; Ben-Amar, Chang & McIlkenny 2015; Harjato, Laksmana & Lee 2015).

Thus, it is possible that any association between CSR disclosure and the market-based measures of financial performance in Equations 1a and 2a (the share price and market-to-book ratio) may be a result of the CSR performance of a firm or the corporate governance of a firm, rather than of CSR disclosure (also see Malik 2015).

To test this, I use scores obtained from the Thomson Reuters Environmental, Social and Governance (ESG) database (formerly known as Asset 4) to construct a control variable for CSR performance, and firm-level governance. The ESG database uses publically available data to compute scores. The database rates and compares firms against approximately 700 individual data points. Data are aggregated into four pillars, namely Economic Performance, Environmental Performance, Social Performance and Corporate Governance Performance. I combine the aggregated scores for Environmental Performance and Social Performance into a single score to represent CSR performance and include it, together with the Corporate Governance Performance score, as additional control variables in the regression models. It is possible that a negative CSR issue relates to specific data points, with the result that such a CSR issue does not have a major impact on the overall ESG scores. The only way to control for existing CSR issues (news) is to hand-collect news on each observation included in the sample. This is not practical in a sample of 2 615 observations.

3.3.4.6 Accounting quality

The CSR performance of a firm (Kim *et al.* 2012) and its CSR reporting practices (Jordaan *et al*. 2018; Suteja, Gunardi & Mirawati 2016; Yip, Van Staden & Cahan 2011) could be

affected by the firm's accounting quality. Prior research testing the association between CSR disclosure and financial performance controlled for firm-level accounting quality, either in the main analysis or in the sensitivity tests of these studies (see Cahan *et al*. 2016; De Villiers & Marques 2016; Dhaliwal *et al*. 2012).

If only CSR disclosure is included in Equations 1a and 2a (but not accounting quality), it is possible that any association between the measures of CSR disclosure and market-based measures of financial performance may be attributable to the overall level of a firm's accounting quality (similar to the argument for controlling for CSR performance and corporate governance). In line with Dhaliwal *et al.* (2012), I calculate the absolute value of scaled accruals to use as a basis for the measures of accounting quality. Scaled accruals are a country-, industry- and year-adjusted measure of accounting quality and are based on a model developed by Bhattacharya, Daouk and Welker (2003). Like Bhattacharya *et al*. (2003), I calculate scaled accruals for each observation as the change in the total current assets for a specific year, minus the change in the total current liabilities, minus the change in cash and cash equivalents, plus the change in the current portion of long-term debt included in the total current liabilities, minus the depreciation for the year, plus the change in income taxes payable, scaled by the lagged total assets at the end of the previous financial year.

I use an indicator variable where the accounting quality variable is coded 1 if the absolute value of the scaled accruals of a firm is lower than the respective country-industry-year-adjusted mean (an absolute value for scaled accruals lower than the mean of the respective country-industry-year-adjusted total scaled accruals represents better firm-level accounting quality). The variable is coded 0 for each observation if the absolute value is higher than the respective mean. In an additional test, I include the inverse of the absolute value of scaled

accruals for each observation instead of the indicator variable described above as a measure of accounting quality.

3.3.4.7 Country sensitivity

To test for country sensitivity, the main analysis is repeated after excluding certain groups of countries one at a time to evaluate whether the results hold. Firstly, Japan is excluded, since it is the country with the highest representation in the sample. Secondly, the US is excluded, as the country with the second highest representation, and lastly, I exclude South Africa. Next, countries where some form of CSR disclosure was required by 2013 are excluded one at a time. These countries are Denmark, France, India, Indonesia, Malaysia, Nigeria, Norway, Singapore and the UK. Finally, countries with fewer than 20 observations are excluded one at a time.

3.4 RESEARCH DESIGN – CSR ASSURANCE

One of the objectives in this study is to evaluate the association between the CSR assurance provided and disclosed by firms and their subsequent financial performance. Three measures of *CSRass* are used in the study and are included separately in each of the regression models. The measures focus on whether assurance is provided or not, and the scope of the assurance statement. The measures of CSR assurance are discussed in Section 3.4.1. Then, Section 3.4.2 sets out the research design to test the association of CSR assurance with market-based measures as well as with accounting-based measures of financial performance, and Section 3.4.3 discusses the additional tests. Section 3.4.4 sets out the research design when both CSR disclosure and CSR assurance are included as control variables in regression models to test the association with financial performance.

3.4.1 Measures of CSR assurance

The process followed to measure CSR assurance, based on the KPMG survey data, is the same as the process followed to measure CSR disclosure.

Three measures of CSR assurance are used in this study:

- An assurance indicator (*AssDum*) shows whether a formal assurance statement has been provided by a third party (for example, a technical experts firm, certification bodies, a specialist assurance provider or a major accountancy firm). If third-party assurance has been provided, this is coded as 1, whereas 0 indicates that third-party assurance has not been provided.
- Assurance scope (*AssScope*) measures the scope of the assurance statement provided by the assurance provider. Assurance on the overall report is scored as 3, assurance on individual chapters and/or a combination of chapters and performance indicators is scored as 2, assurance on CSR performance indicators only is scored as 1; otherwise a 0 is allocated.
- The assurance scope dummy (*AssScopeDum*) is based on *AssScope.* It measures whether the scope of the assurance statement provided by the assurance provider (*AssScope*) is higher than that of the sample mean or not (yes=1, no=0).

To evaluate whether self-selection is a concern, I use the Heckman procedure and estimate prediction models for CSR assurance. The p-values of the Lambda of the Inverse Mills are 0.918 for *AssDum* and 0.875 for *AssScopeDum*. This indicates that self-selection is not an issue that needs to be addressed in the research design. *AssScopeDum* represents the measure *AssScope* that is converted into an indicator variable, where 1 represents a score higher than that of the sample mean. The prediction models are described in Appendix D.

3.4.2 Association with financial performance

I estimate Equations 1b and 2b to test the hypothesis relevant to the market-based measures of financial performance (see H_3), and Equations 3b and 4b to gain an understanding of whether CSR assurance is associated with accounting-based measures of financial performance (see H_4). I am interested in the association between *CSRass* and the measures of financial performance. Note that these models are the same as Equations 1a to 4a, except that *CSRdiscl* is now replaced with *CSRass*. All other variables are as discussed earlier. The reasoning behind the models is discussed in Sections 3.3.2 and 3.3.3.

Market-based measures of financial performance:	
Share price	
$P_{i,t}=\beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(1b)
Market-to-book ratio	
$MtB_{i,t}=\beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + \beta_{10} CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(2b)
Accounting-based measures of financial performance:	
Cash flows from operations	
$AVECFO_{i,t+1,2,3}=\beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(3b)
Profitability	
$AVEROA_{i,t+1,2,3}=\beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(4b)

The measures of *CSRass* are discussed in Section 3.4.1. The three measures of CSR assurance (*AssDum*, *AssScope* and *AssScopeDum*) are included separately in Equations 1b, 2b, 3b and 4b. Variables are winsorized at a 1% and 99% level. I cluster standard errors by country and

industry, and include indicator variables to control for fixed-industry (*IND*) and fixed-year (*YR*) effects in line with Cahan *et al*. (2016), Clarkson *et al*. (2013), and De Villiers and Marques (2016). Multi-collinearity is not a concern, because the VIF scores for the different model specifications range between 1.095 and 4.295.

3.4.3 Additional tests

The additional tests are similar to those described in Section 3.3.4. The VIF scores for the different model specifications range between 1.146 and 4.368, which is well below the accepted norm of 10. Multi-collinearity is thus not a concern.

3.4.3.1 Change analysis

Equations 5a, 6a, 7a and 8a in Section 3.3.4.1 are re-specified to include CSR assurance (*CSRass*) instead of CSR disclosure (*CSRdiscl*). The models are the following:

Market-based measures of financial performance:	
$MR_{i,t}=\beta_0 + \beta_1 E_{i,t} + \beta_2 \Delta E_{i,t} + \beta_3 \Delta Size_{i,t} + \beta_4 \Delta CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(5b)
$\Delta MtB_{i,t}=\beta_0 + \beta_1 \Delta Size_{i,t} + \beta_2 \Delta StockTurn_{i,t} + \beta_3 \Delta ROA_{i,t} + \beta_4 \Delta Capex_{i,t} + \beta_5 \Delta Lev_{i,t} + \beta_6 \Delta Dividend_{i,t} + \beta_7 \Delta Intang_{i,t} + \beta_8 \Delta R\&D_{i,t} + \beta_9 \Delta StdDevSP_{i,t} + \beta_{10} \Delta CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(6b)
Accounting-based measures of financial performance:	
$\Delta AVECFO_{i,t+1,2,3}=\beta_0 + \beta_1 \Delta CFO_{i,t} + \beta_2 \Delta Size_{i,t} + \beta_3 \Delta CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(7b)
$\Delta AVEROA_{i,t+1,2,3}=\beta_0 + \beta_1 \Delta ROA_{i,t} + \beta_2 \Delta Size_{i,t} + \beta_3 \Delta CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(8b)

All the variables except CSR assurance (*CSRass*) are the same as those discussed in Section 3.3.4.1. The measures of *CSRass* are discussed in Section 3.4.1. Equation 5b to 8b are similar to Equations 5a to 8a in Section 3.3.4.1, except that the change in CSR disclosure ($\Delta CSRdiscl$) is replaced by the change in CSR assurance ($\Delta CSRass$). The measures of change

in CSR assurance (Δ*CSRass*) are Change in whether assurance is provided or not (Δ*AssDum*), Change in the scope of the assurance statement provided (Δ*AssScope*), and Change in whether the level of scope of the assurance statement provided is higher than that of the sample mean or not (Δ*AssScopeDum*).

3.4.3.2 Year interaction effects

The models below are based on Equations 9a to 12a (see Section 3.3.4.2), except that *CSRdiscl* is replaced by *CSRass*. The interaction variable *CSRass*YR* represents the *CSRass* provided during a specific year. This variable enables me to evaluate whether the *CSRass* provided during that specific year has a different association with the dependent variable than in other years. The models are the following:

Market-based measures of financial performance:	
Share price	
$P_{i,t}=\beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRass_{i,t} + \beta_{5\&6} CSRass*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(9b)
Market-to-book ratio	
$MtB_{i,t}=\beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + \beta_{10} CSRass_{i,t} + \beta_{11\&12} CSRass*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(10b)
Accounting-based measures of financial performance:	
Cash flows from operations	
$AVECFO_{i,t+1,2,3}=\beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRass_{i,t} + \beta_{4\&5} CSRass*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(11b)
Profitability	
$AVEROA_{i,t+1,2,3}=\beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRass_{i,t} + \beta_{4\&5} CSRass*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(12b)

All the variables are as discussed earlier, except the interaction between *CSRass* and *YR* (*CSRass*YR*). The three measures of *CSRass* (*AssDum*, *AssScope* and *AssScopeDum*) are multiplied by the 2008 and 2013 *YR* indicators to represent interaction variables. These interaction variables are included in the regression models to evaluate year-specific interaction effects.

3.4.3.3 Country-level institutional strength

Only a limited number of cross-country studies have thus far been conducted on what predisposes firms to provide assurance (Cohen & Simnett 2015; Huang & Watson 2015). The two most eminent papers using cross-country samples are those by Herda *et al.* (2014) and Simnett *et al.* (2009). Herda *et al.* (2014) report that there is an association between the CSR assurance provided by firms and the level of investor protection in a country. Simnett *et al.* (2009) provide cross-country evidence that firms in civil law countries (which may be described as stakeholder-oriented countries) are more likely to provide assurance on their CSR than other firms. However, KPMG's (2013a) survey provides evidence that India, the UK and Australia (which are common law countries) are globally among the countries where the highest percentage of assurance is provided. This raises questions about the appropriateness of using a single measure of institutional strength to represent overall country-level institutional strength. In their additional analyses, Cahan *et al.* (2016) and De Villiers and Marques (2016) adopted a composite measure of country-level institutional strength that takes a number of individual measures of institutional strength into account (see Section 3.3.4.3 and Appendix C.2), to evaluate whether associations of CSR disclosure with share price (De Villiers & Marques 2016) and with Tobin's Q as a measure of firm value (Cahan *et al.* 2016) are affected by country-level institutional strength. In my study, I use a composite measure based on the measures included by Cahan *et al.* (2016) to evaluate

whether associations between CSR assurance and financial performance are affected by country-level institutional strength.

3.4.3.4 Environmentally sensitive industries

Prior research on CSR assurance has suggested that firms in environmentally sensitive industries may be more likely to provide CSR assurance (Ackers 2017; Casey & Grenier 2015; Mock *et al.* 2007; Mock *et al*. 2013; Simnett *et al.* 2009). I therefore evaluate whether associations between CSR assurance and financial performance are sensitive to industry classification and follow the same approach as that described in Section 3.3.4.4. I split the sample so that firms in environmentally sensitive industries form one group and firms in non-sensitive industries form the other group. I evaluate whether the results hold for both sample groups.

3.4.3.5 CSR performance and corporate governance

Simnett *et al*. (2009) suggest that the decision to provide CSR assurance is influenced by the level of a firm's CSR performance. The decision to provide assurance may also be affected by the level of a firm's corporate governance (Peters & Romi 2015). For example, firm-level corporate governance has an effect on the decision to provide assurance on Greenhouse Gas emission information (Zhou, Simnett & Green 2016), and may also have an effect on whether assurance is provided on other CSR information.

I therefore include a measure of environmental and social performance, as well as a measure of governance as control variables in the regression models and report the results. Both variables are obtained from the Thomson Reuters Environmental, Social and Governance (ESG) database. The measures are described in more detail in Section 3.3.4.5.

3.4.3.6 Accounting quality

Similar to the argument in Section 3.3.4.6 in respect of CSR disclosure, a firm's CSR assurance practices could be a function of the firm's level of accounting quality. Hence, accounting quality is included as an additional control variable in the regression models. I use industry-, country- and year-adjusted scaled accruals as the basis for the measures of accounting quality. Two measures of accounting quality are used in the analyses. These measures are described in Section 3.3.4.6.

3.4.3.7 Country sensitivity

As discussed in Section 3.3.4.7, I exclude Japanese firms, followed by US firms, then South African firms, and countries with fewer than 20 observations one at a time. In addition, I exclude firms from France, since steps were being taken during the sample period to mandate CSR assurance. I also exclude other countries where some form of CSR was required or in the process of being mandated by 2013 one at a time. These countries are Denmark, India, Indonesia, Malaysia, Nigeria, Norway, Singapore and the UK.

3.4.4 CSR disclosure and CSR assurance

CSR assurance is provided on CSR disclosure. Thus, the objective in this section is to evaluate whether the association between CSR assurance and financial performance is affected if CSR disclosure, together with an interaction variable between CSR disclosure and CSR assurance, are included as control variables in the regression models.

3.4.4.1 Association with financial performance

The models are similar to Equations 1a to 4a, as well as Equations 1b to 4b. The only difference is that both *CSRdiscl* and *CSRass* are included in the regression models, together with an interaction variable between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*).

Market-based measures of financial performance:	
Share price	
$P_{i,t}=\beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + \beta_5 CSRass_{i,t} + \beta_6 CSRass*CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(1c)
Market-to-book ratio	
$MtB_{i,t}=\beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + \beta_{10} CSRdiscl_{i,t} + \beta_{11} CSRass_{i,t} + \beta_{12} CSRass*CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(2c)
Accounting-based measures of financial performance:	
Cash flows from operations	
$AVECFO_{i,t+1,2,3}=\beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + \beta_4 CSRass_{i,t} + \beta_5 CSRass*CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(3c)
Profitability	
$AVEROA_{i,t+1,2,3}=\beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + \beta_4 CSRass_{i,t} + \beta_5 CSRass*CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(4c)

All the variables except the interaction between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*) are as discussed earlier. Variables are winsorized at a 1% and 99% level. Standard errors are clustered by country and industry. The VIF scores for the regressions range between 1.153 and 7.976. Since the VIF scores are below 10, multi-collinearity is not a concern.

Interaction variables are calculated as the function between a measure of CSR disclosure and a measure of CSR assurance (*CSRdiscl*CSRass*). An interaction variable cannot be a function of two measures where both are coded as 1 or 0. The categories of the interaction variables (*CSRdiscl*CSRass*) that are included in the analyses are listed below. The interaction measures between CSR disclosure and CSR assurance are the following:

- *IncARDum*AssScope*, which is the interaction between whether or not CSR information is included in the annual report (*IncARDum*, 0 or 1) and the scope of the assurance statement (*AssScope*, ranging between 0 and 3).
- *IncARLev*AssDum*, which is the interaction between the level of inclusion of CSR in the annual report (*IncARLev*, ranging between 0 and 3), and whether or not third party assurance is obtained on a firm's CSR information (*AssDum*, 0 or 1).
- *IncARLev*AssScope*, which is the level of inclusion in the annual report (*IncARLev*, ranging between 0 and 3) and the scope of the assurance statement (*AssScope*, ranging between 0 and 3).
- *IncARLev*AssScopeDum*, which is the level of inclusion in the annual report (*IncARLev*, ranging between 0 and 3) and an indicator of whether the scope of the assurance statement is higher than the sample mean (*AssScopeDum*, 0 or 1).
- *IncARLevDum*AssScope*, which is the indicator of whether the level of inclusion in the annual report is higher than the sample mean (*IncARLevDum*, 0 or 1) and the scope of the assurance statement (*AssScope*, ranging between 0 and 3).
- *StdaloneWebDum*AssScope*, which shows whether a stand-alone CSR report was published and/or whether CSR information is available on the firm's website (*StdaloneWebDum*, 0 or 1), and the scope of the assurance statement (*AssScope*, ranging between 0 and 3).

The interaction variables described above are a function between an indicator variable (1 or 0) and a second variable that can range between 0 and 3. Since CSR assurance is provided on CSR disclosure, the interaction variable effectively captures an interaction effect if a firm discloses CSR information and provides assurance.

3.4.4.2 Additional tests

The additional tests, and the motivations to perform them, are similar to those described in Sections 3.3.4 and 3.4.3, except that the change specification is not estimated. The VIF scores for the different model specifications range between 1.146 and 7.310, thus multi-collinearity is not a concern. In summary, I do the following:

- test for year interaction effects to evaluate whether associations are different for a specific year, but only for the interaction between *IncARLev*AssScope* (since neither of the two variables is an indicator variable);
- control for country-level institutional strength;
- evaluate whether the results are robust for firms in environmentally sensitive industries, as well as firms in non-sensitive industries;
- control for CSR performance and corporate governance;
- control for firm-level accounting quality; and
- evaluate whether the results are sensitive to country-specific effects by excluding identified countries one at a time from the sample.

3.5 CONCLUSION

This chapter describes the sample selection process. Both the measures of CSR disclosure and CSR assurance are discussed, and the measures of financial performance are defined. The research design to test the association between CSR disclosure and the financial performance of firms along with the additional tests to evaluate the robustness of results is discussed. The research design to test the association between CSR assurance and the financial performance of firms is also described, as well as the additional tests to evaluate the robustness of the results. Included in this discussion is a section dealing with CSR disclosure as an additional control variable when testing associations with financial performance.

The remainder of the thesis is structured as follows: Chapter 4 presents the descriptive statistics and the regression results for the association between CSR disclosure and financial performance; Chapter 5 presents the descriptive statistics and the regression results for the association between CSR assurance and the financial performance of firms; and Chapter 6 concludes the study.

CHAPTER 4:
RESULTS – ASSOCIATION BETWEEN CSR DISCLOSURE AND FINANCIAL PERFORMANCE

4.1 INTRODUCTION

The first hypothesis of this study (H_1), predicts a positive association between CSR disclosure and market-based measures of financial performance such as share price and market-to-book ratio. The second hypothesis (H_2) is stated in the null form and predicts no association between CSR disclosure and accounting-based measures of financial performance such as actual future cash flows and actual future profitability. Given the measures of CSR disclosure described in Section 3.3.1, I am interested in associations where the measure of CSR disclosure captures whether CSR information is included in the annual report or not, the level of inclusion in the annual report, focusing on how much information is included and whether a stand-alone CSR report is published and/or CSR information is available on a firm's website.

In the discussions that follow, the detailed results of the main tests as well as the additional tests investigating the hypotheses are presented. Section 4.2 presents the main effects in respect of the two market-based measures of financial performance (share price and market-to-book ratio), and Section 4.3 sets out the main effects in respect of the two accounting-based measures of financial performance (actual future cash flows and actual future profitability). Section 4.4 presents the results of the additional tests. Section 4.5 summarises the findings and Section 4.6 concludes the chapter.

4.2 MARKET-BASED MEASURES – MAIN EFFECTS

The first hypothesis, H_1 (see Section 2.3.2), predicts a positive and significant association between CSR disclosure and market-based measures of financial performance. The market-based measures of financial performance used in the study are share price and the market-to-book ratio. Four measures of CSR disclosure are used. The first measure is an indicator variable showing whether CSR information is included in the annual report or not (*IncARDum*). The next two measures, *IncARLev* and *IncARLevDum*, relate to the level of CSR information included in the annual report (how much information is included). The fourth measure is an indicator of whether a stand-alone CSR report is published and/or whether CSR information is published on a firm's website (*StdaloneWebDum*). The measures of CSR disclosure are discussed in detail in Section 3.3.1. Information regarding the calculation of the measures of CSR disclosure is also available in Appendix B.

4.2.1 Share price

4.2.1.1 Descriptive statistics and correlation coefficients

Table 4.1 (overleaf) presents the descriptive statistics for the measures of CSR disclosure (*CSRdiscl*), namely *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. The mean of *IncARDum* is 0.560, indicating that 56% of the sample firms included CSR information in their annual reports in the years under review. The mean for *IncARLev* is 1.040, with a median of 1, compared to a minimum of 0 and a maximum of 3, suggesting that the majority of the sample firms are including CSR information in the annual report, but that the extent of disclosure is limited. The mean for *IncARLevDum* is 0.370, indicating that 37% of the sample firms have an *IncARLev* score higher than that of the sample mean. The final measure is

StdaloneWebDum.[10] The mean for this score is 0.620, showing that 62% of the sample firms publish a stand-alone CSR report and/or CSR information on the firm's website.

Table 4.1: Descriptive statistics: Measures of CSR disclosure

	Minimum	Maximum	Standard deviation	Mean	Median
Number of observations (*N*)	2 615	2 615	2 615	2 615	2 615
Measures of CSR disclosure:					
IncARDum	0	1	0.497	0.560	1
IncARLev	0	3	1.067	1.040	1
IncARLevDum	0	1	0.483	0.370	0
StdaloneWebDum	0	1	0.485	0.620	1

Notes:
The indicator for inclusion of CSR information in the annual report is *IncARDum*: 1=CSR information is included in a firm's annual report; 0=it is not included. The level of inclusion (*IncARLev*) indicates the extent of inclusion in the annual report of firms: the score can range from 0 (no inclusion) to 3 (fully included/integrated). *StdaloneWebDum* indicates whether CSR information is published as a stand-alone CSR report and/or whether CSR information is published on the firm's website: 1=published, 0=not published. The source for these measures is KPMG's 2008, 2011 and 2013 survey data. *IncARLevDum* is calculated based on the measure *IncARLev*: 1=higher than the sample mean, 0=not higher than the sample mean.

The descriptive statistics of the other variables included in the share price model (Equation 1a) are presented in Table 4.2 (overleaf). The mean share price (*P*) is 46.824US$ compared to a median of 14.233US$ (the minimum share price is 0.080US$ and the maximum is 1002.512US$). The mean for the book value per share (*BV*) is 23.145US$, with a median of 7.246US$ (the minimum is 0.022US$, and the maximum is 369.716US$). The mean for net income per share (*E*) is 2.819US$, with a median of 0.756US$ (the minimum is -6.087US$, and the maximum is 52.770US$). *Size* is measured as the natural log of market value of equity. The mean for this variable is 15.244 compared to a median of 15.324, a minimum of 10.468 and a maximum of 19.028.

[10]Combining the measures relevant to the level of inclusion of CSR information in the annual report with *StdaloneWebDum* does not provide a meaningful measure, because *StdaloneWebDum* does not indicate the extent of full disclosure. It is not possible to tell from this measure whether or not a stand-alone CSR report was published or the extent to which the firm's website is used to communicate CSR information. *IncRepLev* indicates the extent of disclosure included in the annual report. Combining *StdaloneWebDum* with *IncARLev* or *IncARLevDum* is also not meaningful, because both *IncARDum* and *IncARLevDum* deal with only one medium of disclosure each, while *StdaloneWebDum* potentially incorporates more than one medium.

Table 4.2: Descriptive statistics: Share price as measure of financial performance

	$P_{i,t}$ (US$)	$BV_{i,t}$ (US$)	$E_{i,t}$ (US$)	$Size_{i,t}$
Mean	46.824	23.145	2.819	15.244
Median	14.233	7.246	0.756	15.324
Standard deviation	123.358	52.020	7.335	1.759
Minimum	0.080	0.022	-6.087	10.468
Maximum	1002.512	369.716	52.770	19.028
N	2 615	2 615	2 615	2 615

Notes:
Equation 1a: $P_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables below.
P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. There are four measures of *CSRdiscl*, namely *IncARDum*, *IncARLev*, *IncARLevDum*, and *Stdalone WebDum*. *YR* is an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects.

Table 4.3 (overleaf) presents the correlation coefficients between the variables included in Equation 1a and three of the measures of CSR disclosure (*CSRdiscl*), namely *IncARDum*, *IncARLev* and *StdaloneWebDum*. The coefficients between the variables on which the Ohlson (1995) model is based, namely share price, book value per share and earnings per share, are positive and significant, as expected. The correlation coefficients between the measures of CSR disclosure and other variables range between negative but not significant, to positive and significant.

Table 4.3: Correlation coefficients: Share price and CSR disclosure

	$P_{i,t}$	$BV_{i,t}$	$E_{i,t}$	$\beta_4 Size_{i,t}$	*IncARDum*	*IncARLev*	*StdaloneWebDum*
$P_{i,t}$	1	0.865***	0.896***	0.186***	-0.019	-0.036	0.084***
$BV_{i,t}$	0.887***	1	0.871***	0.158***	-0.023	-0.048	0.083***
$E_{i,t}$	0.839***	0.751***	1	0.217***	-0.024	0.029	0.097***
$Size_{i,t}$	0.542***	0.416***	0.500***	1	0.120***	0.092***	0.437***
IncARDum	0.039**	0.014	0.028	0.108***	1	0.867***	0.112***
IncARLev	-0.003	-0.024	-0.017	0.084***	0.913***	1	0.034
StdaloneWebDum	0.276***	0.262***	0.238***	0.451***	0.112***	0.049**	1

Notes:

Spearman (Pearson) correlation coefficients are presented below (above) the diagonal.

*** Correlation is significant at a 1% level (2-tailed); ** Correlation is significant at a 5% level (2-tailed).

Equation 1a: $P_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i,t*), are suppressed in the description of the variables below. *P* is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The three measures of *CSRdiscl* that are obtained directly from the KPMG data, namely *IncARDum*, *IncARLev* and *StdaloneWebDum*, are included in the correlation table. *YR is* an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects. The number of observations (*N*) is 2 615.

4.2.1.2 Regression results – main effects

The variable of interest in Equation 1a is *CSRdiscl*. Regression results for the main effects are presented in Table 4.4. Equation 1a is estimated separately for each CSR disclosure measure (*IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*). The associations of book value per share, earnings per share and size (measured as the natural log of the market value of equity) with share price are positive and significant. None of the CSR disclosure measures is significantly associated with share price, except *IncARLevDum*. The coefficient of *IncARLevDum* is 3.145; the p-value is 0.094. The positive and significant association of *IncARLevDum* with share price suggests that including CSR information in annual reports at a level higher than that of the sample mean is relevant to investors in estimating share price. Based on the results, H_1 is supported, but only if the level of inclusion of CSR information is higher than that of the sample mean. The results are robust if loss firms are eliminated from the sample.

Table 4.4: Regression results: Share price and CSR disclosure, main effects

	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1BV_{i,t}$	0.881 (<0.001)	0.881 (<0.001)	0.881 (<0.001)	0.881 (<0.001)
$\beta_2E_{i,t}$	9.338 (<0.001)	9.338 (<0.001)	9.336 (<0.001)	9.336 (<0.001)
$\beta_3Size_{i,t}$	1.778 (0.021)	1.752 (0.023)	1.721 (0.025)	1.673 (0.035)
$B_4CSRdiscl_{i,t}$	1.324 (0.285)	0.827 (0.223)	3.145 (0.094)	1.646 (0.242)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.845	0.845	0.845	0.845
F-statistic	280.457 (<0.001)	280.490 (<0.001)	280.638 (<0.001)	280.478 (<0.001)
N	2 615	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 indicate significance at a 1%, 5% and 10% level respectively. The p-value of the variable of interest, *CSRdiscl*, is presented one-tailed.
Equation 1a: $P_{i,t} = \beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables below.
P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of market value of equity. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (as discussed in Section 3.3.1). Equation 1a is estimated separately for each measure of *CSRdiscl. YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

4.2.2 Market-to-book ratio

4.2.2.1 Descriptive statistics

The descriptive statistics are presented in Table 4.5 (overleaf). The results for the mean and the median of the various control variables in Equation 2a are the following: *Size* – a mean of 15.244 with a median of 15.324; *Stock turnover* – a mean of 1.020 and a median of 0.736; *ROA* – a mean of 0.059 and a median of 0.049; *Capex* – a mean of 0.078 and a median of 0.045; *Lev* – a mean of 0.257 and a median of 0.244; *Dividend* – an indicator variable with a mean of 0.089 and a median of 1; *Intang* with a mean of 0.668 and a median of 0.698; *R&D* – an indicator variable with a mean of 0.013 and a median of 0; and *StdDevSP* – a mean of 2.604 and a median of 2.310.

Table 4.5: Descriptive statistics: Market-to-book ratio

	$Size_{i,t}$	$StockTurn_{i,t}$	$ROA_{i,t}$	$Capex_{i,t}$	$Lev_{i,t}$	$Dividend_{i,t}$	$Intang_{i,t}$	$R\&D_{i,t}$	$StdDevSP_{i,t}$
Mean	15.244	1.020	0.059	0.078	0.257	0.89	0.668	0.013	2.604
Median	15.324	0.736	0.049	0.045	0.244	1	0.698	0	2.310
Standard deviation	1.759	1.064	0.065	0.095	0.156	0.315	0.210	0.339	1.205
Minimum	10.468	0.001	-0.121	0.002	0.001	0	0.129	0	0.964
Maximum	19.028	5.810	0.296	0.573	0.675		0.984	1	7.001

Notes:

Equation 2a: $MtB_{i,t} = \beta_0 + + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + \beta_{10} CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i,t*), are suppressed in the description of the variables included in the equation.

Market-to-book ratio (*MtB*) is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* is the trading volume of stock (also referred to as shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is the capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether dividends were declared by the firm during the financial year. *Intang* represents intangible assets and is calculated as 1 minus net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quantile of the sample. *StdDevSP* represents share price volatility and is calculated as the standard deviation of daily stock (or share) return. *CSRdiscl* is represented by the measures *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (see Section 3.3.1). *YR is* an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects.

4.2.2.2 Regression results – main effects

The results of the main effects for Equation 2a, in which CSR disclosure (*CSRdiscl*, the variable of interest) and firm-level control variables are regressed on the market-to-book ratio, are presented in Table 4.6 (overleaf). The model is estimated separately for each of the four measures of CSR disclosure. The association between the control variables and the market-to-book ratio is in line with findings reported in the literature. The coefficients of two of the measures of *CSRdiscl*, namely *IncARDum* and *StdaloneWebDum*, are not significant. The coefficients of *IncARLev* and *IncARLevDum* are significant at a 10% level and a 5% level respectively (the coefficients are 0.017 and 0.059; the p-values are 0.066 and 0.015).

The results support H_1, which predicts a positive and significant association between CSR disclosure and the market-to-book ratio when higher levels of CSR information are included in the annual report of a firm (using the measure *IncARLev*) and also when the level of inclusion in the annual report is higher than that of the sample mean (using the measure *IncARLevDum*). The results do not support H_1 when *IncARDum* (which indicates whether or not CSR information is included in the annual report), and *StdaloneWebDum* (which indicates whether the CSR information is published in a stand-alone report and/or on the firm's website) are used as measures of CSR disclosure. The results are similar to the results reported in Section 4.2.1.2 for Equation 1a with share price as the dependent variable.

Table 4.6: Regression results: Market-to-book ratio and CSR disclosure, main effects

	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1Size_{i,t}$	0.110 (<0.001)	0.109 (<0.001)	0.109 (<0.001)	0.112 (<0.001)
$B_2StockTurn_{i,t}$	-0.026 (0.049)	-0.025 (0.050)	-0.025 (0.054)	-0.025 (0.054)
$B_3ROA_{i,t}$	8.563 (<0.001)	8.566 (<0.001)	8.566 (<0.001)	8.556 (<0.001)
$B_4Capex_{i,t}$	-0.029 (0.857)	-0.027 (0.866)	-0.030 (0.852)	-0.035 (0.828)
$B_5Lev_{i,t}$	-0.588 (<0.001)	-0.585 (<0.001)	-0.582 (<0.001)	-0.588 (0.001)
$B_6Dividend_{i,t}$	-0.205 (<0.001)	-0.205 (<0.001)	-0.204 (<0.001)	-0.203 (<0.001)
$B_7Intang_{i,t}$	0.046 (0.536)	0.049 (0.511)	0.047 (0.528)	0.041 (0.577)
$B_8R\&D_{i,t}$	0.097 (0.010)	0.098 (0.009)	0.099 (0.008)	0.096 (0.010)
$B_9StdDevSP_{i,t}$	0.030 (0.022)	0.030 (0.024)	0.029 (0.025)	0.030 (0.021)
$\beta_{10}CSRdiscl_{i,t}$	0.020 (0.221)	0.017 (0.066)	0.059 (0.015)	-0.011 (0.346)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.627	0.627	0.627	0.627
F-statistic	78.005 (<0.001)	78.066 (<0.001)	78.202 (<0.001)	77.984 (<0.001)
N	2 615	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level. The p-value of the variable of interest, *CSRdiscl*, is presented one-tailed.
Equation 2a: $MtB_{i,t} = \beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.
Market-to-book ratio (*MtB*) is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (also referred to as shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is the capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether dividends were declared by the firm during the financial year. *Intang* represents intangible assets and is calculated as 1 minus net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quintile of the sample. *StdDevSP* represents share price volatility and is calculated as the standard deviation of daily stock (or share) return. *CSRdiscl* is represented by the measures *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (see Section 3.3.1). *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

4.3 ACCOUNTING-BASED MEASURES – MAIN EFFECTS

I test for an association between CSR disclosure and two accounting-based measures of financial performance, namely actual future cash flows (Equation 3a) and actual future profitability (Equation 4a). The relevant hypothesis (H_2) is stated in the null form.

4.3.1 Future cash flows

4.3.1.1 Descriptive statistics

The descriptive statistics are presented in Table 4.7. The mean for the *CFO* for period *t* is 0.090, versus a median of 0.083. The means for *AVECFO* for the average one-, two- and three-year-ahead periods are 0.085, 0.084, and 0.086 respectively, compared to the respective medians of 0.078, 0.078 and 0.082. The minimum and maximum values do not fluctuate much (the lowest minimum value is -0.099; the highest maximum value is 0.336). The descriptive statistics for the measures of CSR disclosure are as discussed in Section 4.2.1.1 and presented in Table 4.2. Size is discussed in Section 4.2.1.1.

Table 4.7: Descriptive statistics: Future cash flows

	$CFO_{i,t}$	$AVECFO_{i,t+1,}$	$AVECFO_{i,t+,2}$	$AVECFO_{i,t+,3}$	$Size_{i,t}$
Mean	0.090	0.085	0.084	0.086	15.244
Median	0.083	0.078	0.078	0.082	15.324
Standard deviation	0.072	0.070	0.068	0.067	1.759
Minimum	-0.099	-0.096	-0.095	-0.095	10.468
Maximum	0.336	0.321	0.314	0.318	19.028
N	2 615	2 609	2 584	2 310	2 615

Notes:
Equation 3a: $AVECFO_{i,t+1,2,3} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables.
CFO is the cash flow from operations for period *t*. $AVECFO_{i,t+1,2,3}$ is measured as the average one- to three-year-ahead cash flow from operations for each observation. Size is measured as the natural log of the market value of equity for each observation. The measures of *CSRdiscl*, namely *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*, are as described in Section 3.3.1. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects.

4.3.1.2 Regression results – main effects

The regression results are presented in Table 4.8 (page after next). Panel A presents the results for average one-year-ahead cash flow from operations ($AVECFO_{i.t+1}$), with 2 609 observations,[11] Panel B presents the average two-year-ahead results, with 2 584 observations, and Panel C the average three-year-ahead results, with 2 310 observations. The variable of

[11] The number of observations fluctuates because *AVECFO* needs to be calculated and data are not available for some of the firm years.

interest is CSR disclosure (*CSRdiscl*). The four measures of CSR disclosure are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*.

Panel A provides evidence that the association of *CSRdiscl*, measured as *IncARDum*, *IncARLev* or *StdaloneWebDum* with one-year-ahead *AVECFO,* is not significant. The association for *IncARLevDum* (coefficient 0.002, p-value 0.089) is positive and significant at a 10% level. The association between the measures of CSR disclosure and *AVECFO* is not significant with the one- to two-year-ahead, and the one- to three-year-ahead *AVECFO*.

Table 4.8: Regression results: Future cash flows and CSR disclosure, main effects

PANEL A – Dependent variable: $AVECFO_{i,,t+1}$				
	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1CFO_{i,t}$	0.566 (<0.001)	0.566 (<0.001)	0.566 (<0.001)	0.566 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRdiscl_{i,t}$	0.002 (0.279)	0.002 (0.194)	0.002 (0.089)	-0.002 (0.239)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.475	0.475	0.475	0.475
F-statistic	48.214 (<0.001)	48.209 (<0.001)	48.206 (<0.001)	48.236 (<0.001)
N	2 609	2 609	2 609	2 609
PANEL B – Dependent variable: $AVECFO_{i,,t+2}$				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1CFO_{i,t}$	0.482 (<0.001)	0.482 (<0.001)	0.481 (<0.001)	0.482 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRdiscl_{i,t}$	0.002 (0.543)	0.001 (0.576)	0.002 (0.551)	0.003 (0.273)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.379	0.379	0.379	0.379
F-statistic	32.543 (<0.001)	32.541 (<0.001)	32.543 (<0.001)	32.571 (<0.001)
N	2 584	2 584	2 584	2 584
PANEL C – Dependent variable: $AVECFO_{i,,t+3}$				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1CFO_{i,t}$	0.453 (<0.001)	0.452 (<0.001)	0.452 (<0.001)	0.452 (<0.001)
$B_2Size_{i,t}$	0.003 (0.001)	0.003 (0.001)	0.003 (0.001)	0.003 (0.002)
$B_3CSRdiscl_{i,t}$	0.005 (0.800)	0.001 (0.402)	<0.001 (0.966)	0.003 (0.247)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.352	0.352	0.351	0.352
F-statistic	26.121 (<0.001)	26.047 (<0.001)	26.025 (<0.001)	26.067 (<0.001)
N	2 310	2 310	2 310	2 310

Notes:

The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 indicates significance at a 5% level, and p<0.10 significance at a 10% level.

Equation 3a: $AVECFO_{i,,t+1,2,3} = \beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables.

CFO is the cash flow from operations for period *t*. *AVECFO* is measured as the average one- to three-year-ahead cash flow from operations for each observation. *Size* is measured as the natural log of the market value of equity for each observation. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* (see Section 3.3.1). *YR* is an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The number of observations varies from year to year, depending on the availability of relevant financial data.

4.3.2 Future profitability

4.3.2.1 Descriptive statistics

The descriptive statistics for future probability are presented in Table 4.9. The mean for *ROA* for period *t* is 0.059 compared to a median of 0.049. The means for the one- to three-year-ahead, one- to two-year-ahead and one-year-ahead *AVECFO* are 0.048, 0.041, and 0.043 respectively, compared to medians of 0.044, 0.036 and 0.039 respectively. Similar to the results of Equation 3a, there is also little fluctuation between the minimum and maximum values, with a lowest minimum value of -0.167 and a highest maximum value of 0.296. The descriptive statistics relevant to *Size* and CSR disclosure are as discussed in Section 4.2.1.1.

Table 4.9: Descriptive statistics – Future profitability

	$ROA_{i,t}$	$AVEROA_{i,t+1}$	$AVEROA_{i,t+2}$	$AVEROA_{i,t+3}$	$Size_{i,t}$
Mean	0.059	0.048	0.041	0.043	15.244
Median	0.049	0.044	0.036	0.039	15.324
Standard deviation	0.065	0.066	0.062	0.064	1.759
Minimum	-0.121	-0.151	-0.167	-0.167	10.468
Maximum	0.296	0.291	0.258	0.269	19.028
N	2 615	2 615	2 612	2 337	2 615

Notes:
Equation 4a: $AVEROA_{i,,t+1,2,3} = \beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables.
ROA is the return on assets for period *t*. $AVEROA_{i,t+1,2,3}$ is measured as the average the one- to three-year-ahead return on assets for each observation. *Size* is measured as the natural log of the market value of equity for each observation. The measures of *CSRdiscl* (*IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*) are as described in Section 3.3.1. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects.

4.3.2.2 Regression results – main effects

The regression results of the main effects are presented in Table 4.10 (overleaf). Panel A shows the one-year-ahead *AVEROA* results, with 2 615 observations. Panel B presents the average two-year-ahead results, with 2 612 observations, and Panel C the average three-year-ahead results with 2 337 observations. Panels A, B and C provide evidence that the association between *CSRdiscl*, measured as *IncARDum*, *IncARLev*, *IncARLevDum*,

StdaloneWebDum and the one-year-ahead *AVEROA*, the one- to two-year-ahead *AVEROA*, as well as the one- to three-year-ahead *AVEROA*, is not significant. The results are robust when return on equity (*ROE*) is used as measure of future profitability instead of *ROA*.

Table 4.10: Regression results: Future profitability and CSR disclosure, main effects

PANEL A – Dependent variable: $AVEROA_{i,,t+1}$				
	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1ROA_{i,t}$	0.711 (<0.001)	0.711 (<0.001)	0.711 (<0.001)	0.711 (<0.0001)
$B_2Size_{i,t}$	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)
$B_3CSRdiscl_{i,t}$	-0.002 (0.384)	<0.001 (0.724)	<0.001 (0.953)	0.001 (0.806)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.556	0.556	0.556	0.556
F-statistic	66.567 (<0.001)	66.538 (<0.001)	66.532 (<0.001)	66.535 (<0.001)
N	2 615	2 615	2 615	2 615
PANEL B – Dependent variable: $AVEROA_{i,,t+2}$				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1ROA_{i,t}$	0.578 (<0.001)	0.578 (<0.001)	0.578 (<0.001)	0.580 (<0.001)
$B_2Size_{i,t}$	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)	0.003 (<0.001)
$B_3CSRdiscl_{i,t}$	0.001 (0.734)	<0.001 (0.878)	0.001 (0.664)	0.003 (0.264)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.428	0.428	0.428	0.428
F-statistic	40.002 (<0.001)	39.999 (<0.001)	40.005 (<0.001)	40.067 (<0.001)
N	2 612	2 612	2 612	2 612
PANEL C – Dependent variable: $AVEROA_{i,,t+3}$				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1ROA_{i,t}$	0.516 (<0.001)	0.516 (<0.001)	0.516 (<0.001)	0.518 (<0.001)
$B_2Size_{i,t}$	0.003 (0.001)	0.003 (0.001)	0.003 (0.001)	0.003 (0.002)
$B_3CSRdiscl_{i,t}$	-0.001 (0.479)	-0.001 (0.347)	-0.002 (0.473)	0.003 (0.302)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.357	0.357	0.357	0.357
F-statistic	26.968 (<0.001)	26.986 (<0.001)	26.975 (<0.001)	26.992 (<0.001)
N	2 337	2 337	2 337	2 337

Notes:
The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 significance at a 5% level, and p<0.10 significance at a 10% level.
Equation 4a: $AVEROA_{i,,t+1,2,3} = \beta_0 + \beta_1ROA_{i,t} + \beta_2Size_{i,t} + \beta_3CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables. *ROA* is the return on assets for period *t*.
AVEROA is measured as the average one- to three-year-ahead return on assets for each observation. *Size* is measured as the natural log of market value of equity for each observation. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. *YR* is an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The number of observations varies from year to year, depending on the availability of relevant financial data.

4.4 RESULTS OF ADDITIONAL TESTS

I perform additional tests to evaluate the robustness of the main effects reported for the market-based and accounting-based measures of financial performance. The first hypothesis predicts a positive association between CSR disclosure and market-based measures of financial performance (share price and the market-to-book ratio). The second hypothesis in respect of the association of CSR disclosure with future cash flows and with future profitability as accounting-based measures of financial performance is stated in the null form. Multi-collinearity is not a concern in the additional tests, because the VIF scores range from 1.014 to 4.310 for the different model specifications.

4.4.1 Change analysis

4.4.1.1 Market-based measures of financial performance

The untabulated results of the change specifications in respect of share returns and changes in market-to-book ratio as specified in Equations 5a and 6a indicate no significant association between a change in whether or not CSR information is included in the annual report (Δ*IncARDum*) and share return or a change in the market-to-book ratio. There is also no significant association between the extent to which CSR information is included in the annual report (Δ*IncARLev*), or a change in whether or not CSR information is published in a stand-alone report and/or on the firm's website (Δ*StdaloneWebDum*) and share return or a change in the market-to-book ratio.

The results indicate that a change in whether or not the extent of inclusion in the annual report is higher than that of the sample mean (Δ*IncARLevDum*) is not associated with share return (*MR*) in Equation 5a. However, it does have a positive and significant association at a 10% level with changes in the market-to-book ratio (Δ*MtB*) in Equation 6a. The results of the change specification confirm that inferences are limited to associations, as stated in H_1.

4.4.1.2 Accounting-based measures of financial performance

In respect of the two accounting-based measures of financial performance, namely actual future cash flows and actual future profitability, none of the measures of change in CSR disclosure (Δ*IncARDum*, Δ*IncARLev*, Δ*IncARLevDum* and Δ*StdaloneWebDum*) are associated with a change in average future cash flows (Δ*AVECFO* in Equation 7a) or a change in average future profitability (Δ*AVEROA* in Equation 8a).

4.4.2 Year interaction effects

4.4.2.1 Market-based measures of financial performance

The results for the share price model (Equation 9a) are presented in Table 4.11 (overleaf) and the results for the market-to-book ratio model (Equation 10a) are shown in Table 4.12 (page after next). Tables 4.11 and 4.12 indicate that the overall association is not significant for *IncARDum*, *IncARLev* and *StdaloneWebDum* after controlling for interaction between CSR disclosure provided during 2008 and 2013. Similar to the main effects of both the share price model (Equation 1a) and the market-to-book ratio model (Equation 2a), the results for the model with *IncARLevDum* as a measure of *CSRdiscl* show a positive and significant association with share price at a 10% level (coefficient 3.823, p value 0.096). They also show a positive and significant association at a 10% level (coefficient 0.081, p-value 0.054) with the market-to-book ratio.

The interaction between *CSRdiscl* and the indicator for 2008 ($ß_5$*CSRdiscl*YR08* in Table 4.11 and $ß_{11}$*CSRdiscl*YR08* in Table 4.12), and the interaction between *CSRdiscl* and the indicator for 2013 ($ß_6$*CSRdiscl*YR13* in Table 4.11 and $ß_{12}$*CSRdiscl*YR08* in Table 4.12) is not significant for *IncARDum*, *IncARLev* and *IncARLevDum*. This suggests that CSR disclosure provided during these years is not assessed significantly differently than that in other years.

The results show that, for both the share price model (Equation 9a) and the market-to-book ratio model (Equation 10a), CSR disclosure published in a stand-alone report and/or on a firm's website has a significantly different association with the dependent variables (share price and market-to-book ratio respectively) during 2008. This interaction variable has a positive and significant association at a 10% level with share price (p-value 0.067) and also with the market-to-book ratio (p-value 0.072).

Table 4.11: Regression results: Share price and CSR disclosure, year interaction

	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1BV_{i,t}$	0.881 (<0.001)	0.881 (<0.001)	0.880 (<0.001)	0.883 (<0.001)
$B_2E_{i,t}$	9.333 (<0.001)	9.333 (<0.001)	9.342 (<0.001)	9.324 (<0.001)
$B_3Size_{i,t}$	1.777 (0.021)	1.748 (0.025)	1.702 (0.027)	1.667 (0.027)
$B_4CSRdiscl_{i,t}$	-0.095 (0.489)	0.488 (0.286)	3.823 (0.096)	0.451 (0.252)
$B_5CSRdiscl*YR08_{i,t}$	1.878 (0.742)	0.075 (0.982)	-5.312 (0.430)	11.839 (0.067)
$B_6CSRdiscl*YR13_{i,t}$	2.398 (0.608)	0.613 (0.775)	0.409 (0.993)	-1.347 (0.767)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.845	0.845	0.845	0.845
F-statistic	269.698 (<0.001)	269.707 (<0.001)	269.941 (<0.001)	270.261 (<0.001)
N	2 615	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level. The p-value of *CSRdiscl* is presented one-tailed.
Equation 9a: $P_{i,t} = \beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + \beta_{5\&6} CSRdiscl*YR + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t.}$ The year and firm subscripts (*i,t*), are suppressed in the description of the variables included in the equation.
P is the share price three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. *CSRdiscl*YR08* and *CSRdiscl*YR13* represent disclosure provided during those specific years. *YR* is an indicator variable to control for fixed-year effects (2008 and 2013, since 2011 is the base year in the middle of the sample period), and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

Table 4.12: Regression results: Market-to-book ratio and CSR disclosure, year interaction

	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1Size_{i,t}$	0.109 (<0.001)	0.110 (<0.001)	0.110 (<0.001)	0.112 (<0.001)
$B_2StockTurn_{i,t}$	-0.025 (0.060)	-0.025 (0.050)	-0.026 (0.054)	-0.025 (0.054)
$B_3ROA_{i,t}$	8.573 (<0.001)	8.576 (<0.001)	8.566 (<0.001)	8.549 (<0.001)
$B_4Capex_{i,t}$	-0.025 (0.879)	-0.027 (0.857)	-0.030 (0.852)	-0.032 (0.828)
$B_5Lev_{i,t}$	-0.589 (<0.001)	-0.589 (<0.001)	-0.587 (<0.001)	-0.588 (0.001)
$B_6Dividend_{i,t}$	-0.204 (<0.001)	-0.205 (<0.001)	-0.204 (<0.001)	-0.203 (<0.001)
$B_7Intang_{i,t}$	0.047 (0.536)	0.048 (0.521)	0.047 (0.529)	0.046 (0.537)
$B_8R\&D_{i,t}$	0.099 (0.008)	0.098 (0.009)	0.099 (0.008)	0.097 (0.010)
$B_9StdDevSP_{i,t}$	0.030 (0.022)	0.030 (0.024)	0.029 (0.025)	0.030 (0.021)
$B_{10}CSRdiscl_{i,t}$	0.041 (0.165)	0.125 (0.106)	0.081 (0.054)	-0.010 (0.407)
$B_{11}CSRdiscl*YR08_{i,t}$	-0.061 (0.350)	-0.031 (0.405)	-0.095 (0.219)	0.109 (0.072)
$B_{12}CSRdiscl*YR13_{i,t}$	-0.014 (0.792)	-0.009 (0.736)	-0.013 (0.819)	-0.035 (0.497)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.627	0.627	0.627	0.627
F-statistic	75.343 (<0.001)	75.067 (<0.001)	75.302 (<0.001)	75.619 (<0.001)
N	2 615	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level. The p-value of *CSRdiscl* is presented one-tailed.
Equation 10a: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRdiscl_{i,t} + B_{11\&12}CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i,t*), are suppressed in the description of the variables included in the equation.
Market-to-book ratio (*MtB*) is calculated as the market value of equity scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (also referred to as shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is capital expenditure as a percentage of sales. *Lev* is total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether dividends were declared by the firm during the financial year. *Intang* represents intangible assets and is calculated as 1 minus net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quantile of the sample. *StdDevSP* represents share price volatility and is calculated as the standard deviation of daily stock (or share) return. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. *CSRdiscl*YR08* and *CSRdiscl*YR13* represent disclosure provided during those specific years. *YR* is an indicator variable to control for fixed-year effects (2008 and 2013, since 2011 is in the middle of the sample period and the base year), and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

In summary, the original findings based on the main effects (see Tables 4.4 and 4.6, and discussed in Sections 4.2.1.2 and 4.2.2.2) are robust for H_1. The first hypothesis is supported, but only when the level of inclusion of CSR disclosure in the annual report is higher than that of the sample mean (CSR disclosure measure *IncARLevDum*). The results are robust over the sample period. The interaction between the measure *StdaloneWebDum* and the indicator for

2008 suggests that, although CSR disclosure by way of publishing a stand-alone CSR report and/or publishing CSR information on the website of the firm is not significant in the main effects as reported in Tables 4.4 and 4.6 and discussed in Sections 4.2.1.2 and 4.2.2.2, information published in this manner during 2008 had a different association with share price and market-to-book ratio than in other years under review (positive and significant at a 10% level). Further tests are performed to evaluate the robustness of these results.

4.4.2.2 Accounting-based measures of financial performance

The untabulated results provide evidence that the association of CSR disclosure (focusing on each measure of disclosure separately) with the average one- to three-year-ahead cash flows from operations ($AVECFO_{i.t+1,2,3}$), and with the average one- to three-year-ahead future profits ($AVEROA_{i.t+1,2,3}$) are not affected by the interaction between the CSR disclosure provided during a specific year. The overall conclusion is that the results of the main effects reported in Sections 4.3.1.2 and 4.3.2.2 and presented in Tables 4.8 and 4.10 are robust.

4.4.3 Country-level institutional strength

4.4.3.1 Market-based measures of financial performance

The results are presented here, but not tabulated. Neither the results for the share price models (Equations 1a and 9a) nor the results for the market-to-book ratio models (Equations 2a and 10a) are affected when country-level institutional strength is controlled for using the composite measure of institutional strength.[12]

For all four measures of CSR disclosure (*IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*), the main effects reported in Section 4.2.1.2 and Table 4.4 for the share price model, and in Section 4.2.2.2 and Table 4.6 for the market-to-book ratio model, as well as the results when controlling for year effects (see Section 4.4.2.1 and Tables 4.11 and 4.12)

[12] This composite measure is explained in Appendix C.

remain qualitatively similar. In summary, country-level institutional strength does not have a significant influence on the association of CSR disclosure with share price, or with the market-to-book ratio. Similar to the main results, neither *IncARDum* nor *StdaloneWebDum* has a significant association with either share price or the market-to-book ratio. However, the *StdaloneWebDum* provided during 2008 does have a significantly different association with both share price and the market-to-book ratio, compared to other years with a positive and significant association at a 10% level. Similar to the results reported earlier, the association of *IncARLevDum* with share price as well as with the market-to-book ratio is positive and significant at a 10% level throughout the sample period.

4.4.3.2 Accounting-based measures of financial performance

I also control for country-level institutional strength in the actual future cash flows and actual future profitability specifications. Similar to the results reported earlier, the untabulated results show that country-level institutional strength does not affect the association of the different measures of CSR disclosure with future cash flows or with future profitability. The results when controlling for country-level institutional strength and year interactions are similar to the main effects reported in Sections 4.3.1.2 and 4.3.2.2.

4.4.4 Environmentally sensitive industries

4.4.4.1 Market-based measures of financial performance

The results for the share price model are presented in Tables 4.13 and 4.14. First, in Table 4.13 (page after next), I set out the results for the main effects estimated for two samples: environmentally sensitive and non-sensitive industries. Then, Table 4.14 (on page 91) contains the results for the same test, but also controlling for interaction effects of CSR disclosure provided during 2008 and 2013. The sample period is 2008, 2011 and 2013 (2011 represents the base year, as it is in the middle of the sample period). Table 4.15 presents the

results on the main effects of the market-to-book ratio model. Table 4.16 shows the effects taking into account the interactions of the CSR disclosure provided during 2008 and 2013. The coefficients of the control variables are included in the tables, but are not discussed.

The regression results of the main effects for environmentally sensitive industries presented in Table 4.13 Panel A (overleaf) show that the association of CSR disclosure for the four measures (*IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*) with share price is not significant (p-values range between 0.397 and 0.472). The regression results for the main effects for environmentally non-sensitive industries in Table 4.13 Panel B show that the association of CSR disclosure for *IncARDum*, *IncARLev* and *StdaloneWebDum* with share price is not significant (p-values range between 0.163 and 0.363). However, the association of CSR information included in the annual report at a level higher than the sample mean (*IncARLevDum*) with share price is positive and significant at a 10% level (p-value 0.052). The results for environmentally non-sensitive industries are in line with the reported main effects.

Table 4.13: Regression results: Share price and CSR disclosure, main effects for environmentally sensitive and non-sensitive industries

Measures of CSR disclosure				
PANEL A – Environmentally sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1BV_{i,t}$	0.858 (<0.001)	0.858 (<0.001)	0.858 (<0.001)	0.858 (<0.001)
$B_2E_{i,t}$	7.860 (<0.001)	7.857 (<0.001)	7.867 (<0.001)	7.847 (<0.001)
$\beta_3Size_{i,t}$	1.759 (0.054)	1.796 (0.047)	1.716 (0.067)	1.726 (0.067)
$B_4CSRdiscl_{i,t}$	-0.324 (0.472)	-0.411 (0.421)	0.682 (0.427)	1.329 (0.397)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.798	0.798	0.798	0.798
F-statistic	66.927 (<0.001)	66.931 (<0.001)	66.929 (<0.001)	66.934 (<0.001)
N	771	771	771	771
PANEL B – Environmentally non-sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1BV_{i,t}$	0.822 (<0.001)	0.823 (<0.001)	0.824 (<0.001)	0.821 (<0.001)
$B_2E_{i,t}$	10.129 (<0.001)	10.123 (<0.001)	10.119 (<0.001)	10.136 (<0.001)
$\beta_3Size_{i,t}$	1.449 (0.013)	1.395 (0.017)	1.383 (0.019)	1.349 (0.014)
$B_4CSRdiscl_{i,t}$	0.931 (0.363)	1.152 (0.163)	3.311 (0.052)	1.482 (0.284)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.869	0.869	0.869	0.869
F-statistic	245.898 (<0.001)	246.009 (<0.001)	246.108 (<0.001)	245.929 (<0.001)
N	1 844	1 844	1 844	1 844
Total N	2 615	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level. The p-value of *CSRdiscl* is presented one-tailed.
Equation 1a: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables below.
P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. *YR* is an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The sample is split into environmentally sensitive industries, with 771 observations, and environmentally non-sensitive industries, with 1844 observations. Equation 1a is estimated for each of the two groups.

The results in Table 4.14 Panel A (overleaf) are robust in respect of year interaction effects, as *CSRdiscl*YR08* and *CSRdiscl*YR13* are not significant. These results confirm that the association between CSR disclosure and share price for environmentally sensitive industries is not significant throughout the sample period. The results in Table 4.14 Panel B are robust in respect of year interaction effects for *IncARDum*, *IncARLev* and *IncARLevDum*, because

*CSRdiscl*YR08* and *CSRdiscl*YR13* are not significant, but *StdaloneWebDum* provided during 2008 is positive and significant (p-value 0.084).

Table 4.14: Regression results – Share price and CSR disclosure, year interaction for environmentally sensitive and non-sensitive industries

Measures of CSR disclosure				
PANEL A – Environmentally sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1BV_{i,t}$	0.862 (<0.001)	0.862 (<0.001)	0.860 (<0.001)	0.858 (<0.001)
$B_2E_{i,t}$	7.822 (<0.001)	7.825 (<0.001)	7.853 (<0.001)	7.898 (<0.001)
$\beta_3Size_{i,t}$	1.692 (0.059)	1.801 (0.047)	1.677 (0.059)	1.616 (0.060)
$B_4CSRdiscl_{i,t}$	-6.745 (0.179)	-4.036 (0.119)	-5.731 (0.234)	-2.197 (0.389)
$B_5CSRdiscl*YR08_{i,t}$	6.155 (0.585)	3.841 (0.539)	2.739 (0.840)	15.939 (0.302)
$B_6CSRdiscl*YR13_{i,t}$	12.245 (0.194)	5.738 (0.170)	11.892 (0.231)	2.486 (0.797)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.797	0.797	0.797	0.797
F-statistic	64.146 (<0.001)	64.171 (<0.001)	64.135 (<0.001)	64.087 (<0.001)
N	771	771	771	771
PANEL B – Environmentally non-sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1BV_{i,t}$	0.822 (<0.001)	0.821 (<0.001)	0.821 (<0.001)	0.824 (<0.001)
$B_2E_{i,t}$	10.130 (<0.001)	10.133 (<0.001)	10.134 (<0.001)	10.112 (<0.001)
$\beta_3Size_{i,t}$	1.445 (0.010)	1.382 (0.012)	1.365 (0.012)	1.355 (0.013)
$B_4CSRdiscl_{i,t}$	1.062 (0.397)	2.167 (0.139)	7.061 (0.055)	1.031 (0.399)
$B_5CSRdiscl*YR08_{i,t}$	-0.504 (0.938)	-2.739 (0.463)	-6.208 (0.278)	6.596 (0.084)
$B_6CSRdiscl*YR13_{i,t}$	-0.037 (0.994)	-1.261 (0.606)	-4.119 (0.449)	-2.342 (0.641)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.869	0.869	0.869	0.869
F-statistic	236.177 (<0.001)	236.373 (<0.001)	236.659 (<0.001)	236.687 (<0.001)
N	1 844	1 844	1 844	1 844
Total N	2 615	2 615	2 615	2 615

Notes:
The p-values are shown in parentheses: p<0.01 shows significance at a 1% level, p<0.05 and p<0.10 show significance at a 5% level and a 10% level respectively. The p-value of *CSRdiscl* is presented one-tailed.
Equation 9a: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRdiscl_{i,t} + \beta_{5\&6}CSRdiscl*YR + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.
P is the share price three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. *CSRdiscl*YR08* and *CSRdiscl*YR13* represent disclosure provided during those specific years. *YR* is an indicator variable to control for fixed-year effects (2008 and 2013). *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The sample is split into two groups: environmentally sensitive industries, with 771 observations, and environmentally non-sensitive industries, with 1844 observations.

Regression results for the main effects for environmentally sensitive industries in Table 4.15 Panel A (overleaf) show that associations between *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* and the market-to-book ratio are not significant (the p-values range from 0.262 to 0.436). The results for the main effects for non-sensitive industries (see Panel B) show that associations between *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum* and the market-to-book ratio are positive and significant for *IncARDum*, *IncARLev* and *IncARLevDum*, but not for *StdaloneWebDum* (the p-values are 0.083, 0.035, 0.008 and 0.316 respectively).

Table 4.15: Regression results: Market-to-book ratio and CSR disclosure, main effects for environmentally sensitive and non-sensitive industries

Measures of CSR disclosure				
PANEL A – Environmentally sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1Size_{i,t}$	0.082 (<0.001)	0.081 (<0.001)	0.080 (<0.001)	0.084 (<0.001)
$B_2StockTurn_{i,t}$	-0.057 (0.060)	-0.057 (0.060)	-0.057 (0.027)	-0.056 (0.060)
$B_3ROA_{i,t}$	8.041 (<0.001)	8.045 (<0.001)	8.056 (<0.001)	8.039 (<0.001)
$B_4Capex_{i,t}$	0.752 (0.004))	0.753 (0.004))	0.757 (0.004))	0.754 (0.004))
$B_5Lev_{i,t}$	-0.773 (<0.001)	-0.776 (<0.001)	-0.774 (<0.001)	-0.774 (<0.001)
$B_6Dividend_{i,t}$	-0.129 (0.120)	-0.130 (0.121)	-0.130 (0.116)	-0.127 (0.120)
$B_7Intang_{i,t}$	0.334 (0.041)	0.333 (0.040)	0.340 (0.037)	0.336 (0.039)
$B_8R\&D_{i,t}$	0.148 (0.053)	0.147 (0.053)	0.152 (0.047)	0.149 (0.054)
$B_9StdDevSP_{i,t}$	0.073 (0.004)	0.072 (0.006)	0.073 (0.005))	0.074 (0.004))
$B_{10}CSRdiscl_{i,t}$	-0.033 (0.259)	-0.008 (0.358)	0.008 (0.436)	-0.036 (0.262)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.612	0.612	0.612	0.612
F-statistic	24.349 (<0.001)	24.334 (<0.001)	24.328 (<0.001)	24.349 (<0.001)
N	771	771	771	771
PANEL B – Environmentally non-sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1Size_{i,t}$	0.125 (<0.001)	0.125 (<0.001)	0.123 (<0.001)	0.128 (<0.001)
$B_2StockTurn_{i,t}$	-0.013 (0.413)	-0.012 (0.439)	-0.011 (0.475)	-0.012 (0.452)
$B_3ROA_{i,t}$	8.749 (<0.001)	8.748 (<0.001)	8.744 (<0.001)	8.741 (<0.001)
$B_4Capex_{i,t}$	-0.615 (0.005))	-0.615 (0.005))	-0.619 (0.004)	-0.630 (0.004))
$B_5Lev_{i,t}$	-0.587 (<0.001)	-0.582 (<0.001)	-0.578 (<0.001)	-0.586 (<0.001)
$B_6Dividend_{i,t}$	-0.231 (<0.001)	-0.230 (<0.001)	-0.228 (<0.001))	-0.228 (<0.001)
$B_7Intang_{i,t}$	-0.122 (0.164)	-0.119 (0.174)	-0.124 (0.164)	-0.131 (0.137)
$B_8R\&D_{i,t}$	0.082 (0.060)	0.083 (0.056)	0.086 (0.060)	0.081 (0.065)
$B_9StdDevSP_{i,t}$	0.016 (0.325)	0.015 (0.348)	0.015 (0.344)	0.016 (0.306)
$B_{10}CSRdiscl_{i,t}$	0.043 (0.083)	0.031 (0.035)	0.086 (0.008)	-0.015 (0.316)
YR indicator	Included	Included	Included	Included
IND indicator	Included	Included	Included	Included
Adjusted R^2	0.643	0.644	0.644	0.643
F-statistic	60.308 (<0.001)	60.439 (<0.001)	60.572 (<0.001)	60.221 (<0.001)
N	1 844	1 844	1 844	1 844
Total N	2 615	2 615	2 615	2 615

Notes:

The p-values are shown in parentheses. p<0.01, p<0.05 and p<0.10 indicate significance at a 1% level, 5% level and 10% level respectively. The p-value of *CSRdiscl* is presented one-tailed.

Equation 2a: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

Market-to-book ratio (*MtB*) is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year, *Capex* is the capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is a variable indicating whether the firm declared dividends during the financial year. *Intang* is intangible assets, calculated as 1 minus net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quintile of the sample. *StdDevSP* shows share price volatility, calculated as the standard deviation of daily stock (share) return. The measures of CSR disclosure (*CSRdiscl*) are *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The sample is divided into environmentally sensitive industries, with 771 observations, and environmentally non-sensitive industries, with 1844 observations. Equation 2a is estimated separately for each sample.

The results presented in Table 4.16 Panel A (overleaf) for environmentally sensitive industries are robust in respect of year interaction effects for *IncARDum*, *IncARLev* and *IncARLevDum*, because *CSRdiscl*YR08* and *CSRdiscl*YR13* are not significant. These results confirm that the association between CSR disclosure for these specific measures and the market-to-book ratio is not significantly different for the various years included in the sample period. However, the interaction between *StdaloneWebDum* and 2008 in Table 4.16 Panel A is positive and significant for firms in these industries (the p-value is 0.011). This implies that the overall association between *StdaloneWebDum* and the market-to-book ratio for the sample period is not significant, but that a stand-alone CSR report and/or CSR information published during 2008 has a different association with the market-to-book ratio than in other periods (a positive and significant association at a 5% level with the market-to-book ratio).

The results presented in Table 4.16 Panel B (overleaf) for environmentally non-sensitive industries are robust for year interaction effects for *IncARDum*, *IncARLev* and *IncARLevDum*. However, the interaction between *StdaloneWebDum* and 2008 in Table 4.16 Panel B is positive and significant (p-value 0.073). The results provide evidence of a positive and significant association between higher levels of CSR included in the annual report of a firm and market-based measures of financial performance for firms in environmentally non-sensitive industries. The results are not sensitive to interaction effects between CSR disclosure provided during a specific year. The results also support earlier findings that *StdaloneWebDum* provided during 2008 by firms in environmentally non-sensitive industries (similar to environmentally sensitive industries – as presented in Panel A) has a different association with market-based measures of financial performance than in other years – the association is positive and significant at a 10% level. Further tests are performed to evaluate the sensitivity of the results.

Table 4.16: Regression results: Market-to-book ratio and CSR disclosure, year interaction for environmentally sensitive and non-sensitive industries

Measures of CSR disclosure				
PANEL A – Environmentally sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1Size_{i,t}$	0.080 (<0.001)	0.081 (<0.001)	0.079 (<0.001)	0.083 (<0.001)
$B_2StockTurn_{i,t}$	-0.055 (0.032)	-0.057 (0.028)	-0.054 (0.035)	-0.058 (0.023)
$B_3ROA_{i,t}$	8.045 (<0.001)	8.036 (<0.001)	8.083 (<0.001)	8.049 (<0.001)
$B_4Capex_{i,t}$	0.748 (0.004)	0.743 (0.005)	0.751 (0.004)	0.783 (0.003)
$B_5Lev_{i,t}$	-0.770 (<0.001)	-0.772 (<0.001)	-0.776 (<0.001)	-0.783 (<0.001)
$B_6Dividend_{i,t}$	-0.130 (0.118)	-0.131 (0.115)	-0.134 (0.107)	-0.121 (0.143)
$B_7Intang_{i,t}$	0.335 (0.040)	0.336 (0.040)	0.345 (0.035)	0.383 (0.019)
$B_8R\&D_{i,t}$	0.151 (0.048)	0.152 (0.047)	0.158 (0.039)	0.134 (0.078)
$B_9StdDevSP_{i,t}$	0.073 (0.004)	0.073 (0.004)	0.073 (0.004)	0.068 (0.008)
$B_{10}CSRdiscl_{i,t}$	-0.048 (0.278)	-0.025 (0.259)	-0.017 (0.421)	-0.101 (0.131)
$B_{11}CSRdiscl*YR08_{i,t}$	-0.024 (0.846)	0.010 (0.885)	-0.072 (0.633)	0.432 (0.011)
$B_{12}CSRdiscl*YR13_{i,t}$	0.055 (0.596)	0.028 (0.547)	0.077 (0.485)	0.014 (0.899)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.611	0.611	0.611	0.612
F-statistic	23.408 (<0.001)	23.387 (<0.001)	23.426 (<0.001)	23.756 (<0.001)
N	771	771	771	771
PANEL B – Environmentally non-sensitive industries				
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
$B_1Size_{i,t}$	0.124 (<0.001)	0.123 (<0.001)	0.123 (<0.001)	0.128 (<0.001)
$B_2StockTurn_{i,t}$	-0.011 (0.470)	-0.010 (0.520)	-0.010 (0.536)	-0.012 (0.436)
$B_3ROA_{i,t}$	8.758 (<0.001)	8.757 (<0.001)	8.744 (<0.001)	8.743 (<0.001)
$B_4Capex_{i,t}$	-0.610 (0.005)	-0.616 (0.005)	-0.624 (0.004)	-0.626 (0.004)
$B_5Lev_{i,t}$	-0.589 (<0.001)	-0.587 (<0.001)	-0.585 (<0.001)	-0.586 (<0.001)
$B_6Dividend_{i,t}$	-0.230 (<0.001)	-0.229 (<0.001)	-0.228 (<0.001)	-0.229 (<0.001)
$B_7Intang_{i,t}$	-0.121 (0.168)	-0.121 (0.168)	-0.126 (0.151)	-0.127 (0.149)
$B_8R\&D_{i,t}$	0.085 (0.052)	0.085 (0.052)	0.085 (0.051)	0.080 (0.065)
$B_9StdDevSP_{i,t}$	0.016 (0.122)	0.016 (0.126)	0.016 (0.120)	0.016 (0.104)
$B_{10}CSRdiscl_{i,t}$	0.072 (0.067)	0.051 (0.029)	0.137 (0.008)	-0.013 (0.395)
$B_{11}CSRdiscl*YR08_{i,t}$	-0.083 (0.280)	-0.068 (0.125)	-0.150 (0.192)	0.230 (0.073)
$B_{12}CSRdiscl*YR13_{i,t}$	-0.024 (0.703)	-0.022 (0.453)	-0.053 (0.410)	-0.055 (0.350)
YR indicators	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included
Adjusted R^2	0.643	0.644	0.644	0.643
F-statistic	58.222 (<0.001)	58.408 (<0.001)	58.561 (<0.001)	58.130 (<0.001)
N	1 844	1 844	1 844	1 844
Total N	2 615	2 615	2 615	2 615

Notes:
The p-values are shown in parentheses: p<0.01, p<0.05 and p<0.10 indicate significance at a 1% level, 5% level and 10% level respectively. The p-value of *CSRdiscl* is presented one-tailed.
Equation 10a: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRdiscl_{i,t} + B_{11\&12}CSRdiscl*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$.
The variables included in the regression model are as described in the notes to Table 4.15. The sample is divided into environmentally sensitive industries, with 771 observations, and environmentally non-sensitive industries, with 1844 observations.

4.4.4.2 Accounting-based measures of financial performance

I evaluate whether associations between the four measures of CSR disclosure and future cash flows and future profitability remain consistent with the main results reported in Sections

4.3.1.2 and 4.3.2.2 if the sample is divided into firms in environmentally sensitive and non-sensitive industries. The results are presented here, but are not tabulated. The results show that being a firm in an environmentally sensitive industry does not have a significant association with the average one-year-ahead *CFO*. However, the association for firms in environmentally non-sensitive industries is positive and significant at a 5% level for *IncARLevDum*. No significant associations are evident for the average two- to three-year-ahead *CFO* for any of the measures. The results reported earlier remain robust for the average one- to three-year-ahead *ROA* and CSR disclosure – I found no significant associations for firms in either environmentally sensitive or non-sensitive industries. These results are not sensitive to year effects or country-level institutional strength.

4.4.5 CSR performance and corporate governance

Controlling for CSR performance and corporate governance resulted in a reduced sample size of 1 772 observations, compared to 2 615 used in the main analyses.

4.4.5.1 Market-based measures of financial performance

The untabulated results provide support for H_1, but only when the level of inclusion of CSR in the annual report is higher than that of the sample mean (CSR disclosure measure: *IncARLevDum*). These results are similar to those reported earlier. In the regression model where *IncARLevDum* is the measure of CSR disclosure, CSR performance has a negative and significant association with share price and market-to-book ratio at a 10% level (the p-values are 0.067 and 0.058) and corporate governance has a positive and significant association at a 5% level (the p-values are 0.035 and 0.041). The coefficient of *IncARLevDum* is 6.341, with a p-value of 0.054 in the share price model. *IncARLevDum* remains positive and significant at a 10% level when I control for CSR performance and corporate governance.

In the regression models where *IncARDum, IncARLev* are used as measures of CSR disclosure, CSR performance displays a negative and significant association with share price at a 10% level (the p-values are 0.079 and 0.074) and not a significant association when *StdaloneWebDum* is used as measure of CSR disclosure (the p-value is 0.108). Corporate governance displays a positive and significant association at a 5% level (the p-values are 0.033, 0.034 and 0.027) with share price when *IncARDum*, *IncARLev* and *StdaloneWebDum* are used as measures of CSR disclosure. The results are qualitatively similar when the market-to-book ratio is used as the dependent variable in the regression model instead of share price.

In summary, the results are robust when I control for CSR performance and corporate governance in the share price model and in the market-to-book ratio model. The results show that the association between CSR disclosure and share price is not significant for firms in environmentally sensitive industries and it is significant at a 10% level for firms in non-sensitive industries. The results are not sensitive to year interaction effects, or to country-level institutional strength. The previously reported result that CSR disclosure in a stand-alone CSR report and/or available on a firm's website (*StdaloneWebDum*) provided during 2008 has a positive and significant association with market-based measures of financial performance, is not supported when I control for CSR performance and corporate governance.

4.4.5.2 Accounting-based measures of financial performance

The untabulated results are robust for Equations 3a and 4a when I control for CSR performance and corporate governance in the additional tests. CSR disclosure, measured as *IncARLevDum*, has a positive and significant association with average one-year-ahead cash flow from operations. This association is not significant for firms in environmentally sensitive industries, but is positive and significant for firms in non-sensitive industries for the average one-year-ahead *CFO*. None of the other measures of CSR disclosure has a significant

association with average one-year-ahead, two-year-ahead or three-year-ahead cash flow ($AVECFO_{t+1,2,3}$) in Equation 3a. These results are robust when I test for year-specific effects, control for firms in environmentally sensitive industries versus non-sensitive industries, test for the effect of country-level institutional strength, and control for CSR performance and corporate governance. Results are robust for all the CSR disclosure measures and average one-year-ahead, two-year-ahead and three-year-ahead return on assets ($AVEROA_{t+2,3}$) for the original Equation 4a, as well as the specifications used in the additional/robustness tests.

4.4.6 Accounting quality

Market-based measures as well as accounting-based measures of financial performance are discussed in this section.

The results for the share price model indicate that, similar to the main effects, *IncARLevDum* is the only measure of CSR disclosure that displays a positive and significant association with share price (significant at a 10% level, p-value 0.089). The results for the market-to-book ratio model indicate a positive and significant association for CSR information included in the annual report at a level higher than the sample mean (*IncARLevDum*) at a 10% level (compared to 5% in the main results). Overall, *IncARLevDum* is positive and significant, is not sensitive to year or country-level institutional strength, but it is sensitive to industry classification. The association of *IncARLevDum* with share price as well as with the market-to-book ratio is not significant for firms in environmentally sensitive industries, but is positive and significant at a 10% level for firms in non-sensitive industries.

The previously reported results in respect of future cash flows and future profitability are robust when accounting quality is controlled for. The association between *IncARLevDum* as a measure of CSR disclosure and the average one-year-ahead *CFO* is not significant for firms in environmentally sensitive industries, but it is positive and significant at a 10% level (p-value

0.081) for firms in sensitive industries. The results are not sensitive to year, country-level institutional strength, or CSR performance and corporate governance. CSR disclosure does not have a significant association with *AVECFO* for any of the other periods. None of the measures of CSR disclosure have a significant association with average one- to three-year-ahead *ROA* when accounting quality is controlled for. The results are robust in respect of all the additional tests.

The coefficient of accounting quality (using the two measures of accounting quality as discussed in Section 3.3.4.6) is not significant in any of the tests. In conclusion, none of the results reported earlier are affected when accounting quality is controlled for.

4.4.7 Country sensitivity

4.4.7.1 Market-based measures of financial performance

Overall, the results are robust when I exclude Japan, Denmark, France, India, Indonesia, Malaysia, Nigeria, Norway, Singapore, the UK and other countries with fewer than 20 observations one at a time from my sample. The results are also robust when I exclude the US and South Africa one at a time from the sample – the only difference is that the interaction between CSR disclosure, using the measure *StdaloneWebDum* and using 2008, is significant at a 5% level compared to a 10% level when I test for year interaction effects (as reported in Table 4.11). However, the country-effects mentioned above disappear when I control for CSR performance and corporate governance. Overall, the results remain robust. The results reported earlier for firms in environmentally sensitive and non-sensitive industries are supported.

4.4.7.2 Accounting-based measures of financial performance

The results are robust when the identified countries are eliminated one at a time for the models testing the association of CSR disclosure with actual future cash flows, as well as with

actual future profitability. The results are also robust for the interaction between *CSRdiscl* and year (CSR disclosure provided during a specific year). The results I reported earlier in respect of firms in environmentally sensitive and non-sensitive industries are supported.

4.5 SUMMARY OF FINDINGS

4.5.1 Market-based measures of financial performance

A summary of the main effects as well as the results of the additional tests is presented in Table 4.17 (on page 104).

The overall results of my study indicate a positive and significant association at a 10% level between higher levels of CSR included in the annual report (using a measure that indicates whether or not the level of inclusion of CSR information in the annual report is higher than that of the sample mean) and the share price of firms. It also shows a positive and significant association at a 10% level with the market-to-book ratio for this measure. The results are sensitive when the sample is divided into two groups representing firms in environmentally sensitive and non-sensitive industries. The evidence suggests that the positive and significant associations are driven by firms in environmentally non-sensitive industries. The association between CSR disclosure (using the four measures *IncARDum*, *IncARLev*, *IncARLevDum* and *StdaloneWebDum*) and the two market-based measures of financial performance (share price and the market-to-book ratio) is not significant for firms in environmentally sensitive industries. Overall, the results are not sensitive to year interaction effects. The results are robust to various additional tests.

The interpretation of the findings and the limitations of the study are discussed in Chapter 6.

The remainder of the discussion summarises the findings of the different tests performed:

- The main effects with share price as the dependent variable in the regression model indicate no significance for *IncARDum*, *IncARLev* and *StdaloneWebDum*. However, they

indicate a positive and significant association at a 10% level for *IncARLevDum*, which is an indicator variable that shows whether or not the *IncARLev* for a firm is higher than that of the sample mean. The mean of *IncARLevDum* is 0.370, indicating that 37% of the sample firms provide disclosure higher than that of the sample mean. The main effects with the market-to-book ratio as the dependent variable in the regression model indicate no significance for *IncARDum* and *StdaloneWebDum*, but show significance (a positive association) at a 10% level for *IncARLev* and at a 5% level for *IncARLevDum*.

- The results of the change analysis with share returns as the dependent variable is not significant for any of the measures of CSR disclosure. The results of the change specification for the market-to-book ratio are positive and significant at a 10% level, between change in *IncARLevDum* and change in the market-to-book ratio. Overall, the results of the change specification suggests that a change in the level of inclusion of CSR issues in the annual report may be associated with a change in the market-based measures of financial performance if the level of inclusion is higher than that of the sample mean.
- The results when I interact CSR disclosure with a specific year in the share price model support the main effects for *IncARDum, IncARLev*, and *IncARLevDum* (CSR disclosure provided during 2008 and 2013 does not have a significantly different association with share price). However, the *StdaloneWebDum* provided by firms during 2008 has a different association with share price than for other years. More specifically, the coefficient of the interaction variable between *StdaloneWebDum* and the 2008 indicator has a positive and significant association with share price. Regarding the market-to-book ratio model, the interaction between the 2008 indicator and the CSR disclosure measure, *StdaloneWebDum,* provides similar evidence.
- The main effects and year interaction effects reported above are not affected when I control for country-level institutional strength in the share price or the market-to-book ratio models.

- The results reported above are sensitive when I divide the sample into firms in environmentally sensitive and non-sensitive industries. CSR disclosure provided by firms in environmentally sensitive industries does not have a significant association with share price or with the market-to-book ratio. CSR disclosure provided by firms in environmentally non-sensitive industries does have a positive and significant association at a 10% level for the measure *IncARLevDum* (CSR included in the annual report at a level higher than the sample mean) and share price, as well as for the measures *IncARDum*, *IncARLev* and *IncARLevDum* in the market-to-book ratio model. The results for *IncARDum*, *IncARLev* and *IncARLevDum* are not sensitive to year effects in the market-to-book ratio model. *StdaloneWebDum* provided during 2008 has a significantly different association for non-sensitive industries in the share price model (positive and significant at a 10% level) and for firms in both environmentally sensitive and non-sensitive industries in the market-to-book ratio model (positive and significant at a 5% level and a 10% level).
- The results discussed above are robust when I control for CSR performance and corporate governance in the share price model, as well as in the market-to-book ratio model. CSR disclosure has a positive and significant association with market-based measures of financial performance if the level of inclusion of CSR information in the annual report is higher than that of the sample mean. These results are driven by firms in non-sensitive industries. The results reported earlier of a positive and significant association between CSR disclosure provided in a stand-alone CSR report and/or available on the firm's website (*StdaloneWebDum*) during 2008 is not supported when I control for CSR performance and corporate governance.
- The above results are also robust when I control for firm-level accounting quality.

- Preliminary differences are reported when the US and South Africa are eliminated from the sample for the share price model and the market-to-book ratio model, where the interaction between *StdaloneWebDum* and during 2008 is significant at a 5% level, compared to a 10% level as reported for the total sample. However, when all the additional tests are performed, the overall results remain robust, with no country-specific sensitivity.

Table 4.17: Summary of findings: CSR disclosure and market-based measures of financial performance, H_1

PANEL A – Association between CSR disclosure (*CSRdiscl*) and share price (*P*)				
	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
Main effects (see Table 4.4)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* positive and significant at a 10% level.	*CSRdiscl* not significant.
Additional tests:				
Change analysis (Untabulated)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.
Year interaction effects (see Table 4.11)	*CSRdiscl* not significant or sensitive to year interaction effects.	*CSRdiscl* not significant or sensitive to year interaction effects.	*CSRdiscl* positive and significant at a 10% level and not sensitive to year interaction effects.	*CSRdiscl* not significant but sensitive to interaction during 2008 (i.e. stand-alone CSR reports and/or CSR information published on a firm's website during 2008), with a positive and significant association with share price at a 10% level.
Country-level institutional strength (untabulated)	*CSRdiscl* remains not significant and is not sensitive to year interaction effects.	*CSRdiscl* remains not significant and is not sensitive to year interaction effects.	*CSRdiscl* remains positive and significant, and is not sensitive to year interaction effects.	*CSRdiscl* not significant but sensitive to interaction during 2008 (i.e. stand-alone CSR reports and/or CSR information published on a firm's website during 2008), with a positive and significant association with share price at a 10% level.
Environmentally sensitive industries (see Tables 4.13 & 4.14)	*CSRdiscl* not significant for firms in sensitive industries, results not sensitive to year interaction effects. *CSRdiscl* not significant for firms in non-sensitive industries, results not sensitive to year interaction effects.	*CSRdiscl* not significant for firms in sensitive industries, results not sensitive to year interaction effects. *CSRdiscl* not significant for firms in environmentally non-sensitive industries, results not sensitive to year interaction effects.	*CSRdiscl* not significant for firms in sensitive industries, results not sensitive to year interaction effects. *CSRdiscl* positive and significant at a 10% level for firms in non-sensitive industries, results not sensitive to year interaction effects.	*CSRdiscl* not significant for firms in sensitive industries, results not sensitive to year interaction effects. *CSRdiscl* not significant for firms in non-sensitive industries, interaction between *StdaloneWebDum* and 2008 is positive and significant at a 10% level.
CSR performance and corporate governance (untabulated)	*CSRdiscl* is not significant and is not sensitive to year, sensitive industries or country-level institutional strength effects.	*CSRdiscl* is not significant and is not sensitive to year, sensitive industries or country-level institutional strength effects.	*CSRdiscl* is positive and significant at a 10% level, is not sensitive to year or country-level institutional strength effects. Association between CSR and	*CSRdiscl* is not significant and is not sensitive to year, sensitive industries or country-level institutional strength effects.

			share price is not significant for sensitive industries and significant at a 10% level for non-sensitive industries.	
Accounting quality (untabulated)	*CSRdiscl* remains not significant and is not sensitive to year, sensitive industry or country-level institutional effects.	*CSRdiscl* remains not significant and is not sensitive to year, sensitive industry or country-level institutional effects.	*CSRdiscl* is positive and significant, is not sensitive to year or country-level institutional effects, but is sensitive to industry classification (the association between CSR and share price is not significant for sensitive industries, but is significant at a 10% level for non-sensitive industries).	*CSRdiscl* remains not significant and is not sensitive to year, sensitive industry or country-level institutional effects.
Country sensitivity (untabulated)	The results reported earlier are robust when different countries are eliminated one at a time from the sample.	The results reported earlier are robust when different countries are eliminated one at a time from the sample.	The results reported earlier are robust when different countries are eliminated one at a time from the sample.	Overall, the results reported earlier are robust when different countries are eliminated one at a time from the sample.
PANEL B – Association between CSR disclosure (*CSRdiscl*) and market-to-book ratio (*MtB*)				
	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
Main effects (see Table 4.6)	*CSRdiscl* not significant.	*CSRdiscl* positive and significant at a 10% level.	*CSRdiscl* positive and significant at a 5% level.	*CSRdiscl* not significant.
Additional tests:				
Change analysis (untabulated)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* positive and significant at a 10% level.	*CSRdiscl* not significant.
Year interaction effects (see Table 4.12)	*CSRdiscl* is not significant or sensitive to year interaction effects.	*CSRdiscl* is not significant or sensitive to year interaction effects.	*CSRdiscl* is significant at a 10% level and not sensitive to year interaction effects.	*CSRdiscl* is not significant or sensitive to 2013 year interaction effects, but the *StdaloneWebDum* and 2008 association is positive and significant at a 10% level.
Country-level institutional strength (untabulated)	*CSRdiscl* remains not significant and is not sensitive to year interaction effects.	*CSRdiscl* remains not significant and is not sensitive to year interaction effects.	*CSRdiscl* is significant at a 10% level and is not sensitive to year interaction effects.	*CSRdiscl* remains not significant and is not sensitive to 2013 year interaction effects. The *StdaloneWebDum* and 2008 association is positive and significant at a 10% level.
Environmentally sensitive industries (see Tables 4.15 & 4.16)	*CSRdiscl* is not significant for firms in sensitive industries, the results are not sensitive to	*CSRdiscl* is not significant for firms in sensitive industries, the results are not sensitive to	*CSRdiscl* is not significant for firms in sensitive industries, the results are not sensitive to	*CSRdiscl* is not significant for firms in sensitive industries, the results are sensitive to interaction

	interaction effects between *CSRdiscl* provided during 2008 or 2013. *CSRdiscl* is positive and significant at a 10% level for firms in non-sensitive industries and not sensitive to year interaction effects.	interaction effects between *CSRdiscl* provided during 2008 or 2013. *CSRdiscl* is positive and significant at a 5% level for firms in non-sensitive industries and not sensitive to year interaction effects.	interaction effects between *CSRdiscl* provided during 2008 or 2013. *CSRdiscl* is positive and significant at a 1% level for firms in non-sensitive industries and not sensitive to year interaction effects.	between *CSRdiscl* provided during 2008, with a positive and significant association at a 5% level. *CSRdiscl* is not significant for firms in non-sensitive industries, but is sensitive to year interaction effects between *CSRdiscl* provided during 2008, with a positive and significant association at a 10% level.
CSR performance and corporate governance (untabulated)	*CSRdiscl* is not significant and is not sensitive to year, sensitive industries or country-level institutional strength effects.	*CSRdiscl* remains positive and significant and is not sensitive to year or country-level institutional strength effects. *CSRdiscl* is not significant for sensitive industries, but it is positive and significant for firms in non-sensitive industries.	*CSRdiscl* remains positive and significant and is not sensitive to year or country-level institutional strength effects. *CSRdiscl* is not significant for sensitive industries, but it is positive and significant for firms in non-sensitive industries.	*CSRdiscl* is not significant and is not sensitive to year, sensitive industries or country-level institutional strength effects.
Accounting quality (untabulated)	*CSRdiscl* remains not significant and is not sensitive to year, sensitive industry or country-level institutional effects.	*CSRdiscl* is positive and significant, is not sensitive to year or country-level institutional effects, but is sensitive to industry classification (the association between CSR and market-to-book ratio is not significant for sensitive industries, but is significant for non-sensitive industries).	*CSRdiscl* is positive and significant, is not sensitive to year or country-level institutional effects, but is sensitive to industry classification (the association between CSR and market-to-book ratio is not significant for sensitive industries, but is significant at a 10% level for non-sensitive industries).	*CSRdiscl* remains not significant and is not sensitive to year, sensitive industry or country-level institutional effects.
Country sensitivity (untabulated)	The results reported earlier are robust when different countries are eliminated one at a time from the sample.	The results reported earlier are robust when different countries are eliminated one at a time from the sample.	The results reported earlier are robust when different countries are eliminated one at a time from the sample.	The results reported earlier are robust when different countries are eliminated one at a time from the sample.
Notes: The relevant tables are indicated in brackets next to the description of the tests. The measures of CSR disclosure (*CSRdiscl*) are described in Section 3.3.1, with the method followed to test the main effects in Section 3.3.2. The additional tests are described in Section 3.3.4.				

4.5.2 Accounting-based measures of financial performance

The detailed findings are summarised in Table 4.18 (overleaf). The results show very little association between CSR disclosure and the two accounting-based measures of financial performance, namely actual future cash flows and actual future profitability.

The only significant association is that between the inclusion of CSR disclosure in the annual report at a level higher than that of the sample mean (*IncARLevDum*), and average one-year-ahead future cash flows. Similar to the results for the market-based measures of financial performance discussed in Section 4.5.1, this result is driven by firms in environmentally non-sensitive industries. No significant associations are reported for future profitability. Various additional tests are performed to ensure robustness of results.

The interpretation of the findings, as well as the limitations of the study are discussed in Chapter 6.

Table 4.18: Summary of findings: CSR disclosure and accounting-based measures of financial performance, H_2

PANEL A – Association between CSR disclosure (*CSRdiscl*) and future cash flows ($AVECFO_{t+1,2,3}$).				
	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
Main effects (see Table 4.8)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* positive and significant at a 10% level for average one-year-ahead *CFO* but not for any of the other periods.	*CSRdiscl* not significant.
Additional tests:				
Change analysis (untabulated)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.
Year interaction effects (untabulated) (*CSRdiscl***YR*)	*CSRdiscl* not significant or sensitive to year interaction effects.	*CSRdiscl* not significant or sensitive to year interaction effects.	*CSRdiscl* positive and significant at a 10% level for average one-year-ahead *CFO*, but not sensitive to year interaction effects. *CSRdiscl* not significant for any of the other periods.	*CSRdiscl* not significant and also not sensitive to year interaction effects.
Country-level institutional strength (untabulated)	*CSRdiscl* remains not significant or sensitive to year interaction effects.	*CSRdiscl* remains not significant or sensitive to year interaction effects.	*CSRdiscl* remains significant at a 10% level and is not sensitive to year interaction effects for one-year-ahead *CFO*.	*CSRdiscl* remains not significant or sensitive to year interaction effects.
Environmentally sensitive industries (untabulated)	*CSRdiscl* remains not significant or sensitive to year and country-level institutional strength effects.	*CSRdiscl* remains not significant or sensitive to year and country-level institutional strength effects.	*CSRdiscl* is not significant for firms in sensitive industries but is positive and significant for firms in non-sensitive industries for average one-year-ahead *CFO*. Results are not sensitive to year and country-level institutional strength effects.	*CSRdiscl* remains not significant or sensitive to year and country-level institutional strength effects.
CSR performance and corporate governance (untabulated)	*CSRdiscl* remains not significant or sensitive to year, sensitive industries and country-level institutional strength effects.	*CSRdiscl* remains not significant or sensitive to year, sensitive industries and country-level institutional strength effects	*CSRdiscl* is not significant for firms in sensitive industries, but is positive and significant for firms in non-sensitive industries for average one-year-ahead *CFO*. Results are also not sensitive to year and country-	*CSRdiscl* remains not significant or sensitive to year, sensitive industry and country-level institutional strength effects.

			level institutional strength effects.	
Accounting quality (untabulated)	*CSRdiscl* remains not significant or sensitive to year, sensitive industries, country-level institutional strength or CSR performance or corporate governance effects.	*CSRdiscl* remains not significant or sensitive to year, sensitive industries, country-level institutional strength or CSR performance or corporate governance effects.	*CSRdiscl* is not significant for firms in sensitive industries, but is positive and significant for firms in non-sensitive industries for average one-year-ahead *CFO*. Results are also not sensitive to year, country-level institutional strength, or CSR performance and corporate governance effects.	*CSRdiscl* remains not significant or sensitive to year, sensitive industries, country-level institutional strength or CSR performance or corporate governance effects.
Country sensitivity (untabulated)	Results reported earlier are robust when different countries are eliminated one at a time from the sample.	Results reported earlier are robust when different countries are eliminated one at a time from the sample.	Results reported earlier are robust when different countries are eliminated one at a time from the sample.	Results reported earlier are robust when different countries are eliminated one at a time from the sample.
PANEL B – Association between CSR disclosure (*CSRdiscl*) and future profitability ($AVEROA_{t+1,2,3}$)				
	Measures of CSR disclosure			
	IncARDum	***IncARLev***	***IncARLevDum***	***StdaloneWebDum***
Main effects (see Table 4.10)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.
Additional tests:				
Change analysis (untabulated)	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.	*CSRdiscl* not significant.
Year interaction effects (untabulated)	*CSRdiscl* not significant for any of the periods and not sensitive to year interaction effects.	*CSRdiscl* not significant for any of the periods and not sensitive to year interaction effects.	*CSRdiscl* not significant for any of the periods and not sensitive to year interaction effects.	*CSRdiscl* not significant for any of the periods and not sensitive to year interaction effects.
Country-level institutional strength (untabulated)	*CSRdiscl* not significant for any of the periods, also not sensitive to year interaction effects.	*CSRdiscl* not significant for any of the periods, also not sensitive to year interaction effects.	*CSRdiscl* not significant for any of the periods, also not sensitive to year interaction effects.	*CSRdiscl* not significant for any of the periods, also not sensitive to year interaction effects.
Environmentally sensitive industries (untabulated)	*CSRdiscl* not significant for any of the periods, also not sensitive to year and country-level institutional strength effects.	*CSRdiscl* not significant for any of the periods, also not sensitive to year and country-level institutional strength effects.	*CSRdiscl* not significant for any of the periods, also not sensitive to year and country-level institutional strength effects.	*CSRdiscl* not significant for any of the periods, also not sensitive to year and country-level institutional strength effects.
CSR performance and corporate governance (untabulated)	*CSRdiscl* remains not significant. Results are not sensitive to year, country-level institutional strength or sensitive industries.	*CSRdiscl* remains not significant. Results are not sensitive to year, country-level institutional strength or sensitive industries.	*CSRdiscl* remains not significant. Results are not sensitive to year, country-level institutional strength or sensitive industries.	*CSRdiscl* remains not significant. Results are not sensitive to year, country-level institutional strength or sensitive industries.
Accounting quality	*CSRdiscl* not significant for any	*CSRdiscl* not significant for any	*CSRdiscl* not significant for any	*CSRdiscl* not significant for any

(untabulated)	of the periods. Results not sensitive to year, country-level institutional strength, sensitive industries or CSR performance and corporate governance.	of the periods. Results not sensitive to year, country-level institutional strength, sensitive industries or CSR performance and corporate governance.	of the periods. Results not sensitive to year, country-level institutional strength, sensitive industries or CSR performance and corporate governance.	of the periods. Results not sensitive to year, country-level institutional strength, sensitive industries or CSR performance and corporate governance.
Country sensitivity (untabulated)	Results reported earlier are robust when different countries are eliminated one at a time from the sample.	Results reported earlier are robust when different countries are eliminated one at a time from the sample.	Results reported earlier are robust when different countries are eliminated one at a time from the sample.	Results reported earlier are robust when different countries are eliminated one at a time from the sample.
Notes: The relevant tables are indicated in brackets next to the description of the tests. The measures of CSR disclosure (*CSRdiscl*) are described in Section 3.3.1, with the method followed to test the main effects in Section 3.3.3. The additional tests are described in Section 3.3.4.				

4.6 CONCLUSION

This chapter provides the descriptive statistics for the four measures of CSR disclosure. It documents the regression results for the first hypothesis of the study (H_1), namely that there is a positive association between CSR disclosure and market-based measures of financial performance (share price and market-to-book ratio). The chapter provides evidence in support of H_1 for the measure of CSR disclosure representing the inclusion of CSR information in the annual report at a level higher than that of the sample mean. The results of the additional tests suggest that the association is driven by firms in environmentally non-sensitive industries.

This chapter also details the regression results for the second hypothesis (H_2), which predicts no association between CSR disclosure and accounting-based measures of financial performance (actual future cash flows and actual future profitability). The overall results provide evidence that support H_2. No significant associations are reported, except a positive and significant association of CSR included in the annual report of a firm at a level higher than that of the sample mean with average one-year-ahead cash flow from operations. This result is driven by firms in environmentally non-sensitive industries.

The remainder of the thesis is structured as follows: Chapter 5 presents the descriptive statistics as well as the regression results for the association of CSR assurance with market-based and with accounting-based measures of financial performance, and Chapter 6 concludes the thesis.

CHAPTER 5:
RESULTS – ASSOCIATION BETWEEN CSR ASSURANCE AND FINANCIAL PERFORMANCE

5.1 INTRODUCTION

This chapter contains the results for the third and fourth hypotheses of this study, relating to CSR assurance. The third hypothesis (H_3) is stated in the null form; it predicts no association between CSR assurance and market-based measures of financial performance. The fourth hypothesis (H_4) is also stated in the null form and predicts no association between CSR assurance and accounting-based measures of financial performance.

In the discussions that follow, the detailed results of the main tests as well as the additional tests investigating the hypotheses are presented. Section 5.2 presents the main effects for the two market-based measures of financial performance. Section 5.3 discusses the main effects for the two accounting-based measures of financial performance. Section 5.4 sets out the results of the additional tests and Section 5.5 summarises the results. Section 5.6 indicates what happens when CSR disclosure is controlled for and Section 5.7 concludes the chapter.

5.2 MARKET-BASED MEASURES – MAIN EFFECTS

The third hypothesis, H_3 (set out in Section 2.4.2), regarding the association between CSR assurance and market-based measures of financial performance is stated in the null form. The market-based measures of financial performance used are again share price and market-to-book ratio. Three measures of CSR assurance are used. The first measure is an indicator variable showing whether CSR assurance is provided or not (*AssDum*) The next measure, *AssScope*, is a measure of the scope of the assurance statement, which can range from 0 to 3 (no assurance=0, CSR indictors only=1, CSR chapters=2, the whole report=3). The final

measure, *AssScopeDum*, is an indicator of whether the *AssScope* score of an observation is higher than the sample mean (for a full discussion of the measures of CSR assurance, see Section 3.4.1).

5.2.1 Share price

5.2.1.1 Descriptive statistics

Table 5.1 displays the descriptive statistics for the measures of CSR assurance (*CSRass*). *AssDum* has a mean of 0.299, indicating that 30% of the sample provides assurance. *AssScope* has a minimum value of 0 and a maximum of 3. The mean for *AssScope* is 0.623, with a median of 0. This suggests that the scope for the assurance statement is relatively low for those firms that do provide assurance. The descriptive statistics for *AssScopeDum* show a mean of 0.310 and a median of 0. This is similar to the descriptive statistics for *AssDum*. The descriptive statistics for the other variables included in the share price model, as presented in Table 4.2 and discussed in Section 4.2.1.1, are relevant to this chapter too and are thus not repeated.

Table 5.1: Descriptive statistics: Measures of CSR assurance

	Minimum	**Maximum**	**Standard deviation**	**Mean**	**Median**
Number of observations (*N*)	2 615	2 615	2 615	2 615	2 615
Measures of CSR assurance:					
AssDum	0	1	0.458	0.299	0.000
AssScope	0	3	1.091	0.623	0.000
AssScopeDum	0	1	0.455	0.310	0.000

Notes:
AssDum shows whether a formal assurance statement has been provided by a third party (e.g. a technical experts firm, certification bodies, specialist assurance provider or major accountancy firm). A score of 1 indicates that third party assurance has been provided and a 0 that third-party assurance has not been provided. *AssScope* measures the scope of the assurance statement provided by the assurance provider. Assurance on the overall report is scored as 3, assurance on chapters and/or a combination of chapters and performance indicators is scored as 2, assurance on CSR performance indicators only is scored as 1, and otherwise the score is 0. *AssScopeDum* is based on *AssScope*, and shows whether the scope of the assurance statement provided by the assurance provider is higher than that of the sample mean.

Table 5.2 sets out the correlation coefficients between the variables included in the share price model (see Equation 1b in Section 3.4.2) and the measures of CSR assurance (*CSRass*) obtained from the KPMG data (*AssDum* and *AssScope*). The correlation coefficients between share price, book value per share and earnings per share are positive and significant at a 1% level. The correlation coefficients between the measures of CSR assurance, share price (*P*), book-value per share (*BV*) and earnings per share range from significant at a 1% level to significant at a 10% level. The associations are tested statistically by means of regression analyses and the results are discussed in the next section.

Table 5.2: Correlation coefficients: Share price and CSR assurance

	$P_{i,t}$	$BV_{i,t}$	$E_{i,t}$	$Size_{i,t}$	$AssDum_{i,t}$	$AssScope_{i,t}$
$P_{i,t}$	1	0.865***	0.896***	0.186***	0.034*	0.034*
$BV_{i,t}$	0.887***	1	0.871***	0.158***	0.089***	0.085***
$E_{i,t}$	0.839***	0.751***	1	0.217***	0.061***	0.061***
$Size_{i,t}$	0.542***	0.416***	0.500***	1	0.344***	0.284***
$AssDum_{i,t}$	0.198***	0.227***	0.159***	0.356***	1	0.870***
$AssScope_{i,t}$	0.182***	0.214***	0.151***	0.336***	0.963***	1

Notes:
Spearman (Pearson) correlation coefficients are presented below (above) the diagonal.
*** Correlation is significant at a 1% level (2-tailed); ** Correlation is significant at a 5% level; * Correlation is significant at a 10% level.
Equation 1b: $P_{i,t}=\beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables below.
P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of market value of equity. The two measures of *CSRass* that are obtained from the KPMG data, *AssDum* and *AssScope*, are included in the correlation table. *YR* is an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects. The number of observations (*N*) is 2 615.

5.2.1.2 Regression results – main effects

Table 5.3 (overleaf) presents the regression results for the main effects of the share price model in Equation 1b. The variable of interest is CSR assurance (*CSRass*). Using a similar approach as in Chapter 4, Equation 1b is estimated separately for each measure of CSR assurance (*AssDum*, *AssScope* and *AssScopeDum*). As expected, based on the premise of the Ohlson (1995) model, the association with share price (*P*), the book value of equity (*BV*), and

earnings (*E*) is positive and significant at a 1% level. The association between share price (*P*) and *Size* is also positive and significant at a 1% level in the separate regressions. *AssDum*, *AssScope* and *AssScopeDum* have a negative and significant association with share price (*P*) – the coefficients are -3.309 for *AssDum*, -2.311 for *AssScope*, and -3.584 for *AssScopeDum*, with p-values of 0.009, 0.021 and 0.006 respectively. The negative and significant association between the three measures of CSR assurance and share price (*P*), a market-based measure of financial performance, suggests that shareholders see assurance as an additional cost, or may believe that CSR assurance is provided by firms with negative CSR issues, as Simnett *et al.* (2009) suggest. H_3 predicts no association between CSR assurance and share price, but the results for the main effects indicate a negative and significant association between CSR assurance (for all three measures) and share price. Thus, H_3 is rejected. Since the association is significant, the results suggest that CSR assurance is relevant to investors when making investment decisions.

Table 5.3: Regression results: Share price and CSR assurance, main effects

	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
$B_1BV_{i,t}$	0.887 (<0.001)	0.886 (<0.001)	0.888 (<0.001)
$B_2E_{i,t}$	9.293 (<0.001)	9.303 (<0.001)	9.286 (<0.001)
$\beta_3Size_{i,t}$	2.372 (0.003)	2.290 (0.004)	2.389 (0.003)
$B_4CSRass_{i,t}$	-3.309 (0.009)	-2.311 (0.021)	-3.584 (0.006)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.845	0.845	0.845
F statistic	281.300 (<0.001)	281.105 (<0.001)	281.375 (<0.001)
N	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 show significance at a 1%, 5% and 10% level respectively.
Equation 1b: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables below.
P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The measures of CSR assurance (*CSRass*) are *AssDum*, *AssScope*, and *AssScopeDum*, measured as discussed in Section 3.4.1. Equation 1b is estimated separately for each of the measures of *CSRass. YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

5.2.2 Market-to-book ratio

5.2.2.1 Descriptive statistics

The descriptive statistics for all the variables included in Equation 2b (other than the measures of *CSRass*) have already been presented in Table 4.5 and discussed in Section 4.2.2.1. The descriptive statistics of the measures of CSR assurance have been presented in Table 5.1. The discussion here focuses on the results of the regression analyses.

5.2.2.2 Regression results – main effects

The results for Equation 2b, estimated separately for each of the measures of *CSRass*, are presented in Table 5.4 (overleaf). As with the share price model, the three measures of CSR assurance, *AssDum*, *AssScope* and *AssScopeDum*, have a negative and significant association (p-values <0.05) with the market-to-book ratio. The coefficient of *AssDum* is -0.048, that of *AssScope* is -0.023, and that of *AssScopeDum* is -0.048. The coefficients and p-values of other control variables are similar to those presented in Chapter 4, and are in line with those reported in prior research (Cahan *et al*. 2016) on which Equation 2b is based.

The results for Equation 2b with the market-to-book ratio (*MtB*) as the dependent variable support the earlier findings reported in Section 5.2.1.2 of a negative and significant association between *CSRass* and share price. The results for Equation 2b with the market-to-book ratio (*MtB*) as the dependent variable indicate a negative and significant association with the three measures of *CSRass* at a 5% level.

Table 5.4: Regression results: Market-to-book ratio and CSR assurance, main effects

	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
$B_1Size_{i,t}$	0.115 (<0.001)	0.116 (<0.001)	0.115 (<0.001)
$B_2StockTurn_{i,t}$	-0.025 (0.054)	-0.025 (0.056)	-0.025 (0.054)
$B_3ROA_{i,t}$	8.525 (<0.001)	8.528 (<0.001)	8.525 (<0.001)
$B_4Capex_{i,t}$	-0.024 (0.442)	-0.025 (0.438)	-0.024 (0.441)
$B_5Lev_{i,t}$	-0.592 (<0.001)	-0.593 (<0.001)	-0.592 (<0.001)
$B_6Dividend_{i,t}$	-0.203 (<0.001)	-0.203 (<0.001)	-0.203 (<0.001)
$B_7Intang_{i,t}$	0.035 (0.320)	0.033 (0.326)	0.035 (0.320)
$B_8R\&D_{i,t}$	0.099 (0.008)	0.099 (0.008)	0.098 (0.009)
$B_9StdDevSP_{i,t}$	0.030 (0.021)	0.030 (0.023)	0.030 (0.021)
$B_{10}CSRass_{i,t}$	-0.048 (0.042)	-0.023 (0.023)	-0.048 (0.041)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.627	0.627	0.627
F-statistic	78.121 (<0.001)	78.167 (<0.001)	78.122 (<0.001)
N	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 show significance at a 1%, 5% and 10% level respectively.
Equation 2b: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (i,t), are suppressed in the description of the variables included in the equation.
Market-to-book ratio (*MtB*) is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether the firm declared dividends during the financial year. *Intang* represents intangible assets and is calculated as 1 minus the net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quintile of the sample. *StdDevSP* represents share price volatility, calculated as the standard deviation of daily stock (share) return. *CSRass* is represented by the measures *AssDum*, *AssScope* and *AssScopeDum* (see Section 3.4.1). *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

5.3 ACCOUNTING-BASED MEASURES – MAIN EFFECTS

No predictions are made in respect of the two accounting-based measures of financial performance, namely future cash flows and future profitability – the hypothesis (H_4) is stated in the null form.

5.3.1 Future cash flows

5.3.1.1 Descriptive statistics

The descriptive statistics in respect of the variable *CFO* are presented in Table 4.7 and discussed in Section 4.3.1.1. The objective is to test statistically whether there are associations using regression analysis. Hence, the correlation coefficients related to Equation 3b are not presented nor discussed.

5.3.1.2 Regression results – main effects

The regression results for the main effects are set out in Table 5.5 (overleaf). Panel A shows the results for the *AVECFO* one-year-ahead results, Panel B presents the *AVECFO* two-year-ahead results, and Panel C displays the *AVECFO* three-year-ahead results. The variable of interest is CSR assurance (*CSRass*). The three measures of CSR assurance are *AssDum*, *AssScope* and *AssScopeDum*. Panels A, B and C provide evidence that the association between *CSRass* and actual future cash flows from operations is not significant for any of the measures of *CSRass* or for any of the periods. The results suggest that CSR assurance does not have an effect on firms' future cash flows.

Table 5.5: Regression results: Future cash flows and CSR assurance, main effects

PANEL A – Dependent variable: $AVECFO_{i,,t+1}$			
	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
$B_1CFO_{i,t}$	0.567 (<0.001)	0.567 (<0.001)	0.567 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRass_{i,t}$	0.002 (0.487)	0.001 (0.302)	0.002 (0.474)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.475	0.475	0.475
F-statistic	48.219 (<0.001)	48.241 (<0.001)	48.219 (<0.001)
N	2 609	2 609	2 609
PANEL B – Dependent variable: $AVECFO_{i,,t+2}$			
	AssDum	***AssScope***	***AssScopeDum***
$B_1CFO_{i,t}$	0.482 (<0.001)	0.482 (<0.001)	0.482 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRass_{i,t}$	0.001 (0.829)	0.001 (0.576)	<0.001 (0.890)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.379	0.379	0.379
F-statistic	32.533 (<0.001)	32.541 (<0.001)	32.532 (<0.001)
N	2 584	2 584	2 584
PANEL C – Dependent variable: $AVECFO_{i,,t+3}$			
	AssDum	***AssScope***	***AssScopeDum***
$B_1CFO_{i,t}$	0.453 (<0.001)	0.453 (<0.001)	0.453 (<0.001)
$B_2Size_{i,t}$	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)
$B_3CSRass_{i,t}$	0.002 (0.412)	0.001 (0.390)	0.002 (0.414)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.352	0.352	0.352
F-statistic	26.046 (<0.001)	26.048 (<0.001)	26.046 (<0.001)
N	2 310	2 310	2 310

Notes:

The *p*-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.

Equation 3b: $AVECFO_{i,,t+1,2,3=}\beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t.}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables.

CFO is the cash flow from operations for period *t*. *AVECFO* is measured as the average one- to three-year-ahead cash flow from operations for each observation. *Size* is measured as the natural log of the market value of equity for each observation. The measures of CSR assurance (*CSRass*) are *AssDum*, *AssScope* and *AssScopeDum*. *YR* is an indicator variable to control for fixed-year effects and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The number of observations varies from year to year, depending on the availability of the relevant financial data.

5.3.2 Future profitability

5.3.2.1 Descriptive statistics

The descriptive statistics and correlation coefficients for Equation 4b are not presented or discussed in this chapter – see Table 4.9 and Section 4.3.2.1 for the descriptive statistics.

5.3.2.2 Regression results – main effects

The regression results are presented in Table 5.6 (overleaf). Panel A presents the results for the one-year-ahead *AVEROA*, Panel B shows the *AVEROA* two-year-ahead results, and Panel C sets out the *AVEROA* three-year-ahead results. The association between the average one-year-ahead *ROA* ($AVEROA_{i,t+1}$, as presented in Panel A) and *CSRass* is negative and significant for *AssScope* and *AssScopeDum*, but not significant for *AssDum*. The coefficient of *AssScope* is -0.002, with a p-value of 0.083. The coefficient of *AssScopeDum* is -0.005, with a p-value of 0.036. The coefficient of *AssDum* is -0.003, with a p-value of 0.149.

The associations between the measures of CSR assurance and future profitability are not significant with the two-year-ahead *AVEROA* as the dependent variable, or with the three-year-ahead *AVEROA* as the dependent variable (see Panels B and C). The results are robust when return on equity (*ROE*) is used as the measure of profitability.

Table 5.6: Regression results: Future profitability and CSR assurance, main effects

PANEL A – Dependent variable: $AVEROA_{i,,t+1}$			
	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
$B_1ROA_{i,t}$	0.709 (<0.001)	0.709 (<0.001)	0.708 (<0.001)
$B_2Size_{i,t}$	0.004 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRass_{i,t}$	-0.003 (0.149)	-0.002 (0.083)	-0.005 (0.036)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.557	0.557	0.557
F-statistic	66.628 (<0.001)	66.670 (<0.001)	66.628 (<0.001)
N	2 615	2 615	2 615
PANEL B – Dependent variable: $AVEROA_{i,,t+2}$			
	AssDum	***AssScope***	***AssScopeDum***
$B_1ROA_{i,t}$	0.578 (<0.001)	0.578 (<0.001)	0.577 (<0.001)
$B_2Size_{i,t}$	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)
$B_3CSRass_{i,t}$	0.001 (0.703)	0.001 (0.741)	0.001 (0.573)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.428	0.428	0.428
F-statistic	39.999 (<0.001)	39.998 (<0.001)	40.009 (<0.001)
N	2 612	2 612	2 612
PANEL C – Dependent variable: $AVEROA_{i,,t+3}$			
	AssDum	***AssScope***	***AssScopeDum***
$B_1ROA_{i,t}$	0.519 (<0.001)	0.519 (<0.001)	0.519 (<0.001)
$B_2Size_{i,t}$	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)
$B_3CSRass_{i,t}$	0.003 (0.322)	0.002 (0.322)	0.003 (0.321)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.357	0.358	0.357
F-statistic	26.990 (<0.001)	27.023 (<0.001)	26.990 (<0.001)
N	2 337	2 337	2 337

Notes:
The *p*-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level and p<0.10 shows significance at a 10% level.
Equation 4b: $AVEROA_{i,,t+1,2,3=}\beta_0 + \beta_1ROA_{i,t} + \beta_2Size_{i,t} + \beta_3CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables.
ROA is the return on assets for period *t*. *AVEROA* is measured as the average one- to three-year-ahead return on assets for each observation. *Size* is measured as the natural log of the market value of equity for each observation. The measures of CSR assurance (*CSRass*) are *AssDum*, *AssScope* and *AssScopeDum*. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The number of observations varies from year to year, depending on the availability of the relevant financial data.

5.4 RESULTS OF ADDITIONAL TESTS

Various additional tests, as discussed in Section 3.4.3, are performed to evaluate the sensitivity of the results of the association between CSR assurance and the two market-based

measures of financial performance (share price and market-to-book ratio). Additional tests are also performed on the association between CSR assurance and accounting-based measures of financial performance (future cash flows and future profitability).

5.4.1 Change analysis

5.4.1.1 Market-based measures of financial performance

The untabulated results of the change specifications in respect of share returns (*MR* in Equation 5b) indicate that a change in whether or not CSR assurance is obtained (Δ*AssDum*), and a change in the scope of the assurance statement (Δ*AssScope*) is not associated with share returns. However, a change in whether the scope of the CSR assurance statement is higher than that of the sample mean (Δ*AssScopeDum*) is marginally significantly associated with share returns (negative at a 10% level). None of the measures of change in CSR assurance (Δ*AssDum*, Δ*AssScope*, Δ*AssScopeDum*) is associated with a change in the market-to-book ratio (Δ*MtB*).

5.4.1.2 Accounting-based measures of financial performance

In respect of the two accounting-based measures of financial performance, namely future cash flows and future profitability, none of the measures of change in CSR assurance (Δ*AssDum*, Δ*AssScope*, Δ*AssScopeDum*) is associated with a change in average future cash flows (Δ*AVECFO* in Equation 7b) or a change in average future profitability (Δ*AVEROA* in Equation 8b).

5.4.2 Year interaction effects

5.4.2.1 Market-based measures of financial performance

The results for the share price model (Equation 9b) are presented in Table 5.7 (overleaf) and the results of the market-to-book ratio model (Equation 10b) are set out in Table 5.8 (on

p. 125). Table 5.7 indicates that the overall effect is still negative and significant after controlling for interaction between the CSR assurance provided during 2008 and CSR assurance provided during 2013. The coefficient of $ß_4CSRass$ for all three measures (*AssDum*, *AssScope* and *AssScopeDum*) is negative and significant at a 1% and a 5% level for the share price model (the p-values are 0.002, 0.016 and 0.012 respectively). For each of the three measures, the year interaction for CSR assurance provided during 2008 does not have an association with share price. The interaction between *AssScopeDum* provided during 2013 has a positive and significant association with share price, suggesting that where the scope of the assurance statement is higher than that of the sample mean during 2013, this association is significantly different compared to other years. The association between *AssScopeDum* provided during 2013 ($ß_6CSRass*YR13$) has a coefficient of 3.255 with a p-value of 0.086.

Table 5.7: Regression results: Share price and CSR assurance, year interaction

	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
$B_1BV_{i,t}$	0.888 (<0.001)	0.886 (<0.001)	0.888 (<0.001)
$B_2E_{i,t}$	9.288 (<0.001)	9.303 (<0.001)	9.281 (<0.001)
$B_3Size_{i,t}$	2.433 (0.002)	2.332 (0.003)	2.452 (0.002)
$B_4CSRass_{i,t}$	-3.794 (0.002)	-4.064 (0.016)	-4.124 (0.012)
$B_5CSRass*YR08_{i,t}$	3.944 (0.130)	1.875 (0.466)	2.354 (0.163)
$B_6CSRass*YR13_{i,t}$	2.886 (0.119)	2.883 (0.148)	3.255 (0.086)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.845	0.845	0.846
F-statistic	270.905 (<0.001)	270.549 (<0.001)	270.974 (<0.001)
N	2 615	2 615	2 615

Notes:
The *p*-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.
Equation 9b: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRass_{i,t} + \beta_{5\&6}CSRass*YR + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.
P is the share price three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The three measures of CSR assurance (*CSRass*) are *AssDum*, *AssScope* and *AssScopeDum*. *CSRass*YR08* and *CSRass*YR13* represent assurance provided during that specific year. *YR* is an indicator variable to control for fixed-year effects (2008 and 2013, since 2011 is the middle year in the sample period), and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

Table 5.8 (overleaf) indicates that the overall association between CSR assurance and the market-to-book ratio is still negative and significant after controlling for the interaction between CSR assurance provided during 2008 and 2013. The coefficient of $ß_{10}$*CSRass* for *AssDum*, *AssScope* and *AssScopeDum* is negative and significant at a 1% level and a 5% level (the p-values are 0.006, 0.011 and 0.041 respectively). The interactions between CSR assurance and 2008 ($ß_{11}$*CSRass*YR08*), and 2013 ($ß_{12}$*CSRass*YR13*) are not significant for any of the measures of CSR assurance – thus these findings do not support the results of the share price model in respect of a positive and significant association at a 10% level for $ß_6$*CSRass*YR13* for the measure *AssScopeDum* as set out in Table 5.7.

The overall results suggest that the association between market-based measures of financial performance (share price and market-to-book ratio) and CSR assurance is negative and significant, and that year-specific effects make no significant difference. Thus, the original findings on the main effects as presented in Tables 5.3 and 5.4 (as discussed in Sections 5.2.1.2 and 5.2.2.2) are robust. Hence, H_3 is rejected – the associations between market-based measures of financial performance and *CSRass* are negative and significant.

Table 5.8: Regression results: Market-to-book ratio and CSR assurance, year interaction

	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
$B_1Size_{i,t}$	0.116 (<0.001)	0.116 (<0.001)	0.115 (<0.001)
$B_2StockTurn_{i,t}$	-0.026 (0.046)	-0.026 (0.048)	-0.025 (0.054)
$B_3ROA_{i,t}$	8.512 z(<0.001)	8.515 (<0.001)	8.525 (<0.001)
$B_4Capex_{i,t}$	-0.029 (0.857)	-0.030 (0.854)	-0.024 (0.882)
$B_5Lev_{i,t}$	-0.593 (<0.001)	-0.592 (<0.001)	-0.592 (<0.001)
$B_6Dividend_{i,t}$	-0.202 (<0.001)	-0.202 (<0.001)	-0.203 (<0.001)
$B_7Intang_{i,t}$	0.033 (0.659)	0.033 (0.660)	0.035 (0.641)
$B_8R\&D_{i,t}$	0.100 (0.008)	0.099 (0.008)	0.098 (0.009)
$B_9StdDevSP_{i,t}$	0.030 (0.023)	0.030 (0.022)	0.030 (0.021)
$B_{10}CSRass_{i,t}$	-0.110 (0.006)	-0.100 (0.011)	-0.048 (0.041)
$B_{11}CSRass*YR08_{i,t}$	0.129 (0.157)	0.100 (0.145)	3.447 (0.639)
$B_{12}CSRass*YR13_{i,t}$	0.075 (0.168)	0.067 (0.226)	1.414 (0.803)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.627	0.627	0.627
F-statistic	75.598(<0.001)	75.532 (<0.001)	78.122 (<0.001)
N	2 615	2 615	2 615

Notes:
The *p*-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.
Equation 10b: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRass_{i,t} + B_{11\&12}CSRass*YR_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.
MtB is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether the firm declared dividends during the financial year. *Intang* represents intangible assets, calculated as 1 minus the net property plant and equipment scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quantile of the sample. *StdDevSP* represents share price volatility, calculated as the standard deviation of daily stock (or share) return. The three measures of CSR assurance (*CSRass*) are *AssDum*, *AssScope* and *AssScopeDum*. *CSRass*YR08* and *CSRass*YR13* represent assurance provided during a specific year. *YR* is an indicator variable to control for fixed-year effects (2008 and 2013, since 2011 is the middle year in the sample period), and *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

5.4.2.2 Accounting-based measures of financial performance

The results (untabulated) indicate that the association of CSR assurance (focusing on each measure of assurance separately) with the average one- to three-year-ahead cash flows ($AVECFO_{i.t+1,2,3}$) is not affected by year-specific interaction effects (i.e. CSR assurance provided during a specific year). Similarly, the overall results for the association of CSR

assurance (focusing on each measure of assurance separately) with the average one- to three-year ahead future profitability ($AVEROA_{i,t+1,2,3}$) are also not affected by the interaction between CSR assurance provided during a specific year. The results of the main effects reported in Section 5.3.2.2 and presented in Table 5.6 are robust and are not sensitive to year interaction effects.

5.4.3 Country-level institutional strength

5.4.3.1 Market-based measures of financial performance

The results are not tabulated. Neither the results for the share price models (Equations 1b and 9b), nor those for the market-to-book ratio models (Equations 2b and 10b) are affected when country-level institutional strength is controlled for.[13] The originally reported main effects (see Section 5.2.1.2 and Table 5.3, and Section 5.2.2.2 and Table 5.4) and the results when controlling for year effects (see Section 5.4.2.1, Tables 5.7 and 5.8) remain qualitatively similar for all three measures of CSR assurance (*AssDum*, *AssScope* and *AssScopeDum*). In summary, country-level institutional strength does not influence the association of CSR assurance with share price, or market-to-book ratio. The three measures of CSR assurance have negative and significant associations with both share price and the market-to-book ratio. The results are also not sensitive for *CSRass* provided in a specific year.

5.4.3.2 Accounting-based measures of financial performance

I also control for country-level institutional strength in the actual future cash flows and actual future profitability models. Similar to the results reported above, the results (untabulated) show that country-level institutional strength is not associated with future cash flows or future profitability. The results when controlling for *CSRass* and year interactions are similar to the results reported in Sections 5.3.1.2 and 5.3.2.2.

[13] The composite measure is explained in Appendix C.

5.4.4 Environmentally sensitive industries

5.4.4.1 Market-based measures of financial performance

The results for the share price model are presented in Tables 5.9 (overleaf) and Table 5.10 (page after next). Table 5.9 presents the results for the main effects estimated for the two samples: firms in environmentally sensitive industries and in non-sensitive industries. Table 5.10 presents the results for the same test, but also controlling for interaction effects between CSR assurance provided during 2008 and 2013. The sample period is 2008, 2011 and 2013, with 2011 representing the base year. The coefficients of the control variables are included in the tables but are not discussed.

The regression results for environmentally sensitive industries, as presented in Table 5.9 Panel A show that the association of CSR assurance (for the three measures *AssDum*, *AssScope* and *AssScopeDum*) with share price is not significant (p-values range from 0.260 to 0.298). The results for non-sensitive industries show that the association of CSR assurance (*AssDum*, *AssScope* and *AssScopeDum*) with share price is negative and significant at a 5% level (p-values range between 0.022 and 0.043).

Table 5.9: Regression results: Share price and CSR assurance, main effects for environmentally sensitive and non-sensitive industries

Measures of CSR assurance			
PANEL A – Environmentally sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1BV_{i,t}$	0.860 (<0.001)	0.860 (<0.001)	0.860 (<0.001)
$B_2E_{i,t}$	7.850 (<0.001)	7.853 (<0.001)	7.850 (<0.001)
$\beta_3Size_{i,t}$	2.040 (0.206)	2.013 (0.212)	2.073 (0.199)
$B_4CSRass_{i,t}$	-2.687 (0.282)	-1.008 (0.298)	-2.992 (0.260)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.798	0.798	0.798
F-statistic	66.964 (<0.001)	66.958 (<0.001)	66.973 (<0.001)
N	771	771	771
PANEL B – Environmentally non-sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1BV_{i,t}$	0.829 (<0.001)	0.828 (<0.001)	0.831 (<0.001)
$B_2E_{i,t}$	10.083 (<0.001)	10.093 (<0.001)	10.071 (<0.001)
$\beta_3Size_{i,t}$	1.959 (0.031)	1.893 (0.037)	1.957 (0.031)
$B_4CSRass_{i,t}$	-3.349 (0.023)	-2.363 (0.043)	-3.444 (0.022)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.870	0.869	0.870
F-statistic	246.688 (<0.001)	246.520 (<0.001)	246.708 (<0.001)
N	1 844	1 844	1 844
Total N	2 615	2 615	2 615

Notes:
The *p*-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 significance show significance at a 1%, 5% and 10% level respectively.
Equation 1b: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables below.
P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The measures of CSR assurance (*CSR ass*) are *AssDum*, *AssScope*, and *AssScopeDum*, measured as discussed in Section 3.4.1. Equation 1b is estimated separately for each of the measures of *CSRass. YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The sample is divided into environmentally sensitive industries (771 observations) and non-sensitive industries (1844 observations). Equation 1b is estimated for each of the two groups.

The regression results after controlling for year and CSR assurance interaction effects, as presented in Table 5.10 (page after next), show that CSR assurance provided during 2013 has a different association with share price than for other sample years. The interaction variable between *CSRass* and 2013 ($ß_6CSRass*YR13_{i,t}$) is positive and significant at a 10% level for all three measures of *CSRass* for firms in environmentally sensitive industries (p-values

0.057, 0.091 and 0.054). Table 5.10 (overleaf) also provides evidence that CSR assurance provided by firms in environmentally non-sensitive industries have a negative and significant association with share price and that this association is not affected by year interaction effects, since the coefficients of the interaction variables, $ß_5 CSRass*YR08_{i,t}$ and $ß_6 CSRass*YR13_{i,t}$ are not significant. The regression results with market-to-book ratio as the dependent variable, as presented in Tables 5.11 (on page 131) and 5.12 (on page 132), are qualitatively similar to the results reported above, with share price as the dependent variable.

Thus far, the results suggest that *CSRass* provided by firms in environmentally sensitive industries do not have a significant association with market-based measures of financial performance, except maybe when provided during 2013 when the association is positive and significant at a 10% level. The association between *CSRass* provided by firms in non-sensitive industries and market-based measures of financial performance is negative and significant throughout the sample period. Further robustness tests as discussed in the sections below are performed.

Table 5.10: Regression results: Share price and CSR assurance, year interaction for environmentally sensitive and non-sensitive industries

Measures of CSR assurance			
PANEL A – Environmentally sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1BV_{i,t}$	0.865 (<0.001)	0.861 (<0.001)	0.866 (<0.001)
$B_2E_{i,t}$	7.837 (<0.001)	7.872 (<0.001)	7.836 (<0.001)
$\beta_3Size_{i,t}$	2.099 (0.193)	1.995 (0.216)	2.105 (0.199)
$B_4CSRass_{i,t}$	-3.761 (0.255)	-2.627 (0.212)	-2.074 (0.249)
$B_5CSRass*YR08_{i,t}$	3.230 (0.129)	2.187 (0.368)	2.827 (0.143)
$B_6CSRass*YR13_{i,t}$	2.774 (0.057)	2.189 (0.091)	3.328 (0.054)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.798	0.798	0.798
F-statistic	64.455 (<0.001)	64.309 (<0.001)	64.462 (<0.001)
N	771	771	771
PANEL B – Environmentally non-sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1BV_{i,t}$	0.828 (<0.001)	0.828 (<0.001)	0.830 (<0.001)
$B_2E_{i,t}$	10.089 (<0.001)	10.095 (<0.001)	10.075 (<0.001)
$\beta_3Size_{i,t}$	1.974 (0.030)	1.898 (0.037)	1.977 (0.030)
$B_4CSRass_{i,t}$	-4.500 (0.028)	-2.575 (0.035)	-4.785 (0.034)
$B_5CSRass*YR08_{i,t}$	3.728 (0.606)	0.444 (0.886)	3.447 (0.639)
$B_6CSRass*YR13_{i,t}$	0.900 (0.873)	0.261 (0.912)	1.414 (0.803)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.869	0.869	0.869
F-statistic	236.976 (<0.001)	236.777 (<0.001)	236.988 (<0.001)
N	1 844	1 844	1 844
Total N	2 615	2 615	2 615

Notes:

The *p*-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 show significance at a 1%, 5%and 10% level respectively.

Equation 9b: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRass_{i,t} + \beta_{5\&6}CSRass*YR + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

P is the share price three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. The three measures of CSR assurance (*CSRass*) are *AssDum*, *AssScope* and *AssScopeDum*. *CSRass*YR08* and *CSRass*YR13* represent assurance provided during that specific year. *YR* is an indicator variable to control for fixed-year effects (2008 and 2013, since the 2011 is the middle year in the sample period). *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The sample is divided into environmentally sensitive industries (771 observations), and non-sensitive industries (1844 observations).

Table 5.11: Regression results: Market-to-book ratio and CSR assurance, main effects for environmentally sensitive and non-sensitive industries

Measures of CSR assurance			
PANEL A – Environmentally sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1Size_{i,t}$	0.085 (<0.001)	0.087 (<0.001)	0.085 (<0.001)
$B_2StockTurn_{i,t}$	-0.057 (0.027)	-0.056 (0.028)	-0.057 (0.027)
$B_3ROA_{i,t}$	8.017 (<0.001)	8.019 (<0.001)	8.022 (<0.001)
$B_4Capex_{i,t}$	0.764 (0.003)	0.759 (0.004)	0.763 (0.003)
$B_5Lev_{i,t}$	-0.773 (<0.001)	-0.775 (<0.001)	-0.773 (<0.001)
$B_6Dividend_{i,t}$	-0.129 (0.120)	-0.130 (0.108)	-0.129 (0.119)
$B_7Intang_{i,t}$	0.324 (0.048)	0.317 (0.053)	0.324 (0.048)
$B_8R\&D_{i,t}$	0.154 (0.044)	0.154 (0.043)	0.153 (0.045)
$B_9StdDevSP_{i,t}$	0.073 (0.004)	0.073 (0.004)	0.073 (0.004)
$B_{10}CSRass_{i,t}$	-0.043 (0.206)	-0.023 (0.143)	-0.041 (0.216)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.612	0.612	0.612
F-statistic	24.363 <0.001)	24.338 <0.001)	24.360 <0.001)
N	771	771	771
PANEL B – Environmentally non-sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1Size_{i,t}$	0.130 (<0.001)	0.130 (<0.001)	0.130 (<0.001)
$B_2StockTurn_{i,t}$	-0.011 (0.154)	-0.011 (0.161)	-0.011 (0.154)
$B_3ROA_{i,t}$	8.719 (<0.001)	8.725 (<0.001)	8.719 (<0.001)
$B_4Capex_{i,t}$	0.131 (0.344)	0.130 (0.345)	0.129 (0.339)
$B_5Lev_{i,t}$	-0.590 (<0.001)	-0.591 (<0.001)	-0.591 (<0.001)
$B_6Dividend_{i,t}$	-0.228 (0.001)	-0.228 (0.001)	-0.228 (0.001)
$B_7Intang_{i,t}$	-0.133 (0.130)	-0.133 (0.131)	-0.133 (0.130)
$B_8R\&D_{i,t}$	0.083 (0.056)	0.083 (0.056)	0.083 (0.057)
$B_9StdDevSP_{i,t}$	0.016 (0.130)	0.016 (0.132)	0.016 (0.033)
$B_{10}CSRass_{i,t}$	-0.044 (0.046)	-0.018 (0.051)	-0.043 (0.047)
YR indicator	Included	Included	Included
IND indicator	Included	Included	Included
Adjusted R^2	0.643	0.643	0.643
F-statistic	60.301 <0.001)	60.293 <0.001)	60.296 <0.001)
N	1 844	1 844	1 844
Total N	2 615	2 615	2 615

Notes:

The *p*-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 show significance at a 1%, 5% and 10% level respectively.

Equation 2b: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

MtB is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* is the trading volume of stock (shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether the firm declared dividends during the financial year. *Intang* is intangible assets, calculated as 1 minus the net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quintile of the sample. *StdDevSP* is share price volatility, a calculated as the standard deviation of daily stock (share) return. *CSRass* is represented by the measures *AssDum*, *AssScope* and *AssScopeDum* (see Section 3.4.1). *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country. The sample is divided into environmentally sensitive industries (771 observations) and non-sensitive industries (1 844 observations).

Table 5.12: Regression results: Market-to-book ratio and CSR assurance, year interaction for environmentally sensitive and non-sensitive industries

Measures of CSR assurance			
PANEL A – Environmentally sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1Size_{i,t}$	0.086 (<0.001)	0.086 (<0.001)	0.086 (<0.001)
$B_2StockTurn_{i,t}$	-0.059 (0.021)	-0.058 (0.020)	-0.058 (0.023)
$B_3ROA_{i,t}$	7.985 (<0.001)	7.982 (<0.001)	7.988 (<0.001)
$B_4Capex_{i,t}$	0.746 (0.004)	0.746 (0.004)	0.739 (0.005)
$B_5Lev_{i,t}$	-0.778 (<0.001)	-0.779 (<0.001)	-0.782 (<0.001)
$B_6Dividend_{i,t}$	-0.127 (0.063)	-0.127 (0.062)	-0.126 (0.064)
$B_7Intang_{i,t}$	0.313 (0.056)	0.311 (0.054)	0.314 (0.056)
$B_8R\&D_{i,t}$	0.151 (0.047)	0.152 (0.047)	0.151 (0.048)
$B_9StdDevSP_{i,t}$	0.071 (0.006)	0.071 (0.005)	0.070 (0.006)
$B_{10}CSRass_{i,t}$	-0.269 (0.134)	-0.260 (0.132)	-0.253 (0.155)
$B_{11}CSRass*YR08_{i,t}$	0.275 (0.120)	0.266 (0.100)	0.243 (0.142)
$B_{12}CSRass*YR13_{i,t}$	0.142 (0.076)	0.054 (0.091)	0.128 (0.094)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.614	0.613	0.613
F-statistic	23.685(<0.001)	23.543(<0.001)	23.614(<0.001)
N	771	771	771
PANEL B – Environmentally non-sensitive industries			
	AssDum	***AssScope***	***AssScopeDum***
$B_1Size_{i,t}$	0.130 (<0.001)	0.130 (<0.001)	0.130 (<0.001)
$B_2StockTurn_{i,t}$	-0.011 (0.231)	-0.011 (0.231)	-0.012 (0.230)
$B_3ROA_{i,t}$	8.720 (<0.001)	8.720 (<0.001)	8.722 (<0.001)
$B_4Capex_{i,t}$	0.120 (0.340)	0.121 (0.341)	0.120 (0.344)
$B_5Lev_{i,t}$	-0.590 (<0.001)	-0.590 (<0.001)	-0.590 (<0.001)
$B_6Dividend_{i,t}$	-0.228 (0.001)	-0.228 (0.001)	-0.227 (0.001)
$B_7Intang_{i,t}$	-0.133 (0.130)	-0.133 (0.130)	-0.133 (0.131)
$B_8R\&D_{i,t}$	0.083 (0.056)	0.083 (0.056)	0.084 (0.056)
$B_9StdDevSP_{i,t}$	0.016 (0.157)	0.016 (0.157)	0.016 (0.156)
$B_{10}CSRass_{i,t}$	-0.045 (0.058)	-0.012 (0.038)	-0.037 (0.046)
$B_{11}CSRass*YR08_{i,t}$	-0.013 (0.882)	-0.020 (0.576)	-0.032 (0.714)
$B_{12}CSRass*YR13_{i,t}$	0.007 (0.919)	-0.003 (0.907)	0.007 (0.996)
YR indicators	Included	Included	Included
IND indicators	Included	Included	Included
Adjusted R^2	0.643	0.643	0.643
F-statistic	58.159 (<0.001)	58.166 (<0.001)	58.160 (<0.001)
N	1 844	1 844	1 844
Total N	2 615	2 615	2 615

Notes:

The *p*-values are indicated in parentheses: p<0.01, p<0.05 and p<0.10 show significance at a 1%, 5% and 10% level respectively.

Equation 10b: $MtB_{i,t}=\beta_0 + \beta_1Size_{i,t} + \beta_2StockTurn_{i,t} + \beta_3ROA_{i,t} + \beta_4Capex_{i,t} + \beta_5Lev_{i,t} + \beta_6Dividend_{i,t} + \beta_7Intang_{i,t} + \beta_8R\&D_{i,t} + \beta_9StdDevSP_{i,t} + B_{10}CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$ Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

The variables included in the regression model are as described in Table 5.11. The sample is divided into environmentally sensitive industries (771 observations), and non-sensitive industries (1844 observations).

5.4.4.2 Accounting-based measures of financial performance

I evaluate whether associations between the three measures of CSR assurance and future cash flows and future profitability are consistent with the main results reported in Sections 5.3.1.2 and 5.3.2.2 if the sample is split into firms in environmentally sensitive and non-sensitive industries. The results are presented but not tabulated. The results are robust for both groups for average one- to three-year-ahead *CFO* and the average two- to three-year-ahead *ROA*. No significant association is evident between the accounting-based measures of financial performance and CSR assurance using the three measures *AssDum*, *AssScope* and *AssScopeDum* in separate regressions. The results in respect of the average one-year-ahead *ROA* show that firms in environmentally sensitive industries do not display a significant association with the one-year-ahead average *ROA* for any of the three measures of CSR assurance, whereas firms in non-sensitive industries have a negative and significant association with the one-year-ahead average *ROA* at a 5% level for the measures *AssScope* and *AssScopeDum*. The results thus far suggest that the main effect (as presented in Table 5.6 and discussed in Section 5.3.2.2) are driven by firms in environmentally non-sensitive industries. These results are not sensitive to year effects or country-level institutional strength.

5.4.5 CSR performance and corporate governance

Controlling for CSR performance and corporate governance resulted in a reduced sample size of 1 772 observations, compared to 2 615 observations as used in the main analyses.

5.4.5.1 Market-based measures of financial performance

The results are robust when I control for CSR performance and corporate governance in the share price model, as well as in the market-to-book ratio model. The association between CSR performance and market-based measures of financial performance is not significant. The

association between corporate governance and market-based measures of financial performance is positive and significant at a 5% level.

The coefficients of the three measures of CSR assurance (*AssDum*, *AssScope* and *AssScopeDum*) have a negative and significant association at a 5% level with share price when CSR performance and corporate governance are controlled for. CSR performance does not display a significant association with share price in the regression models using *AssDum*, *AssScope* and *AssScopeDum* as measures of CSR assurance. However, corporate governance has a positive and significant association with share price at a 5% level for all three the models (with p-values of 0.024, 0.028 and 0.027). The results for the regression models with the market-to-book value as the dependent variable are similar to the results reported above. *AssDum*, *AssScope* and *AssScopeDum* display a negative and significant association at a 10% level, similar to the results of the main effects reported in Table 5.4.

The results are not sensitive to year interaction effects, or to country-level institutional strength. The previously reported results that CSR assurance provided by firms in environmentally sensitive industries during 2013 have a positive and significant association with market-based measures of financial performance are not supported when I control for CSR performance and corporate governance.

5.4.5.2 Accounting-based measures of financial performance

The results are robust for Equation 3b when I control for CSR performance and corporate governance in the additional tests. In summary, CSR assurance does not have a significant association with the average one-year-ahead, two-year-ahead or three-year-ahead cash flows ($AVECFO_{t+1,2,3}$). There is also no significant association when I test for year-specific effects, control for firms in environmentally sensitive industries versus non-sensitive industries and test for the effect of country-level institutional strength. The results of this study already

reported regarding a negative and significant association of average one-year-ahead ROA (see Equation 4b) with *AssScope* and with *AssScopeDum* as measures of *CSRass* are not supported when I control for CSR performance and corporate governance. The association of *CSRass* (using the three measures *AssDum*, *AssScope* and *AssScopeDum*) with the average two- to three-year-ahead ROA is not significant. There is also no significant association when I test for year-specific effects, control for firms in environmentally sensitive industries versus non-sensitive industries and the effect of country-level institutional strength.

5.4.6 Accounting quality

Market-based measures as well as accounting-based measures of financial performance are discussed in this section.

The main results reported in Section 5.2.1.2 for share price, and in Section 5.2.2.2 for the market-to-book ratio are supported when I include firm-level accounting quality as an additional control variable in Equations 1b and 2b. The results are also robust for the year sensitivity tests, tests in respect of firms in environmentally sensitive industries, country-level institutional strength and CSR performance and corporate governance.

The results reported in Section 5.3.1.2 for actual future cash flows (see Equation 3b) are also supported. The results for the association of CSR assurance, using the three measures of *CSRass*, with the average one- to-three-year ahead *ROA* (see Equation 4b) are similar to the results reported when CSR performance and corporate governance are controlled for – no significant associations between the variables of interest are evident. These results are robust for the sensitivity tests.

5.4.7 Country sensitivity

5.4.7.1 Market-based measures of financial performance

The results for firms in environmentally sensitive industries remain similar to the results reported earlier (including the results of the additional tests) when I exclude South Africa, Denmark, France, India, Indonesia, Malaysia, Nigeria, Norway, Singapore, the UK and countries with fewer than 20 observations one at a time from my sample. Some differences in respect of CSR assurance provided during 2013 are evident when Japan and the US are excluded one at a time. These results are in line with those when CSR performance, corporate governance and accounting quality are controlled for, where the level of significance changes from 10% to being not significant. Small differences are also noticeable (for example, the level of significance of certain measures of CSR assurance changes from 1% to 5%), but this does not affect the overall interpretation of the results. The overall results, taking the additional tests into account, indicate that the association of CSR assurance with market-based measures of financial performance is not significant during the sample period.

The results are robust for non-sensitive industries in respect of all prior analyses when I exclude Denmark, Indonesia, Malaysia, Nigeria, Norway, the UK and countries with fewer than 20 observations one at a time from my sample. However, when Japan, the US, France, India, South Africa and Singapore are excluded one at a time from my sample, the results as reported in earlier sections for firms in non-sensitive industries having a negative and significant association with market-based measures of financial performance, is not supported. The associations of the measures of *CSRass* with share price and market-to-book ratio decreases – when some countries are excluded from the sample, the level of significance decreases from a 5% to 10% level and for others from a 5% level to being not statistically significant. It is important to note that some form of CSR disclosure is required in the

countries identified to be excluded.[14] The countries that affect the results are countries with a large representation in my sample (see Appendix A). It is thus possible that other countries could also have affected the results for firms in non-sensitive industries if their representation in my sample had been larger. The overall results suggest that the negative and significant association reported in the main results are driven by firms in environmentally non-sensitive industries from countries where CSR disclosure is required or is in the process of being mandated.

5.4.7.2 Accounting-based measures of financial performance

The results I reported earlier for the association of the measures of CSR assurance with the average one- to three-year-ahead *CFO*, as well as with the average one- to three-year-ahead *ROA* remain robust after the identified countries (see Section 3.4.3.7) are excluded from my sample, and the additional tests discussed earlier are performed. In summary, neither the association of CSR assurance (using the three measures of *CSRass*) with actual future cash flows, nor that of CSR assurance with actual future profitably is significant after performing the additional tests described in Section 3.4.3.

5.5 SUMMARY OF FINDINGS

5.5.1 Market-based measures of financial performance

A summary of the main effects, as well as the results of the additional tests, is presented in Table 5.13 (on page 142).

The third hypothesis is stated in the null form and predicts no association between whether CSR assurance is provided or not and market-based measures of financial performance (share price and market-to-book ratio). Thus, H_3 is rejected because the associations between CSR

[14] See Section 3.4.3.7, as well as KPMG (2013a:25-26).

assurance (using three measures – *AssDum*, *AssScope* and *AssScopeDum*) and market-based measures of assurance are negative and significant. Additional analyses show that these results are sensitive to industry classification. The association between CSR assurance and market-based measures of financial performance is not significant for firms in environmentally sensitive industries. The association between CSR assurance and market-based measures of financial performance is negative and significant for firms in non-sensitive industries. Additional tests suggest that the negative and significant association is driven by firms in non-sensitive industries in countries where some form of CSR disclosure is required or is in the process of being mandated. These results are not affected by country-level institutional strength. Overall, the results are robust when I control for CSR performance, corporate governance and accounting quality.

The interpretation of the findings and the limitations of the study are discussed in Chapter 6.

The remainder of the discussion summarises the findings of the different tests performed:

- The main effects with share prices as the dependent variable in the regression model indicates significance at a 1% level for *AssDum*, a 5% level for *AssScope*, and a 1% level for *AssScopeDum*, which is an indicator variable that shows whether *AssScope* for a firm is higher than that of the sample mean or not. The mean of *AssScopeDum* is slightly higher than that of *AssDum* (0.310 compared to 0.299), indicating that most of the sample firms that provide assurance in fact provide assurance of a limited scope (such as assurance on CSR indicators only, compared to CSR chapters, or a full CSR report or Integrated Report). The main effects with market-to-book ratio as the dependent variable in the regression model indicate significance at a 5% level for all three measures of CSR assurance.
- A change analysis would enable me to make stronger inferences regarding causality. The results of the change analysis with share returns as the dependent variable are only

significant for *AssScopeDum* (when the scope of the assurance statement is higher than that of the sample mean), and only at a 10% level. The change specification of the market-to-book ratio shows no significant association between CSR assurance and changes in the market-to-book ratio.

- The results when I interact CSR assurance with a specific year in the share price model support the main results for *AssDum* and *AssScope* throughout the sample period (CSR assurance provided during 2008 and 2013 does not have a significantly different association with share price). However, the findings suggest that *AssScopeDum* provided by firms during 2013 has a different association with share price than in other years. More specifically, the coefficient of the interaction variable between *AssScopeDum* and the 2013 indicator has a positive and significant association with share price. In respect of the market-to-book ratio model, the interaction with CSR assurance provided during a specific year shows no significant associations for any of the years. Although the results for the share price model suggest that *AssScopeDum* during 2013 has a positive and significant association (at a 10% level) with share price, these results are not supported by the results for the market-to-book ratio model.
- Neither the main effects, nor the year interaction effects reported above are affected when I control for country-level institutional strength in either the share price model or the market-to-book ratio model. Thus, overall, country-level institutional strength does not have an effect on the association between CSR assurance and share price or the market-to-book ratio, or CSR assurance provided during a specific year and share price or the market-to-book ratio.
- The results reported above are sensitive when I divide the sample into firms in environmentally sensitive versus non-sensitive industries. CSR assurance provided by firms in environmentally sensitive industries does not have a significant association with

firms' share prices, except for 2013, where the interaction variable between CSR assurance and the year is positive and significant. Similarly, CSR assurance provided by firms in environmentally sensitive industries does not have a significant association with the market-to-book ratio, except for 2013, where the interaction variable between CSR assurance and the year is positive and significant. CSR assurance provided by firms in environmentally non-sensitive industries has a negative and significant association at a 5% level and a 10% level for the share price model, as well as the market-to-book ratio model, and this association is not sensitive to year-specific effects. The results are robust for all three measures of CSR assurance. In summary, the results suggest that CSR assurance provided by environmentally sensitive industries does not have a significant association with either share price or the market-to-book ratio, except maybe when provided during 2013, when the association is positive and significant at a 10% level. Furthermore, the results suggest that the negative associations reported in the main effects and additional tests reported earlier are driven by CSR assurance provided by firms in other (environmentally non-sensitive) industries.

- The results discussed above are robust when I control for CSR performance and corporate governance in both the share price model and the market-to-book ratio model except that the positive and significant association with CSR assurance provided during 2013 is no longer significant (compared to significance at a 10% level as reported in the above paragraph).
- The results reported above are also robust when I control for firm-level accounting quality in both models. Country-sensitivity is addressed in the first paragraph of this section.

5.5.2 Accounting-based measures of financial performance

The detailed findings are summarised in Table 5.14 (overleaf). H_4 relates to the association between CSR assurance and accounting-based measures of financial performance (actual future cash flows and actual future profitability) and is stated in the null form.

In summary, there is no significant association between average one- to three-year-ahead cash flows from operations and future profitability and any of the measures of CSR assurance. The original results indicate a negative association between the scope of the assurance statement (*AssScope*) and future profitability, driven by firms in non-sensitive industries. This association is not supported when I control for CSR performance, corporate governance and accounting quality. The overall findings are not sensitive to country-effects.

The interpretation of the findings as well as the limitations of the study are discussed in Chapter 6.

Table 5.13: Summary of findings: CSR assurance and market-based measures of financial performance, H_3

PANEL A – Association between CSR assurance (*CSRass*) and share price (*P*)			
	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
Main effects (Table 5.3)	*CSRass* negative and significant, at a 1% level.	*CSRass* negative and significant, at a 5% level.	*CSRass* negative and significant, at a 1% level.
Additional tests:			
Change analysis (untabulated)	*CSRass* not significant.	*CSRass* not significant.	*CSRass* negative and significant, at a 10% level.
Year interaction effects (see Table 5.7) (*CSRass**YR)	*CSRass* negative and significant, not sensitive to year interaction effects.	*CSRass* negative and significant, not sensitive to year interaction effects.	*CSRass* negative and significant, and sensitive to year interaction effects for 2013. The interaction variable between *CSRass* and 2013 is positive and significant at a 10% level.
Country-level institutional strength (untabulated)	*CSRass* remains negative and significant at a 1% level. It is not sensitive to interaction effects.	*CSRass* remains negative and significant at a 5% level. It is not sensitive to interaction effects.	*CSRass* remain negative and significant at a 1% level, and is sensitive to year interaction effects for 2013. The interaction variable between *CSRass* and 2013 is positive and significant at a 10% level.
Environmentally sensitive industries (see Tables 5.9 & 5.10)	*CSRass* not significant for firms in environmentally sensitive industries, results not sensitive to interaction effects between *CSRass* provided during 2008, but sensitive to interaction effects during 2013 (positive and significant at a 10% level). *CSRass* negative and significant at a 5% level for firms in non-sensitive industries, results not sensitive to year interaction effects.	*CSRass* not significant for firms in environmentally sensitive industries, results not sensitive to interaction effects between *CSRass* provided during 2008, but sensitive to interaction effects during 2013 (positive and significant at a 10% level). *CSRass* negative and significant at a 5% level for firms in non-sensitive industries, results not sensitive to year interaction effects.	*CSRass* not significant for firms in environmentally sensitive industries, results not sensitive to interaction effects between *CSRass* provided during 2008, but sensitive to interaction effects during 2013 (positive and significant at a 10% level). *CSRass* negative and significant at a 5% level for firms in non-sensitive industries, results not sensitive to year interaction effects.
CSR performance and corporate governance (untabulated)	*CSRass* is negative and significant at a 5% level, and is not sensitive to year or country-level institutional strength effects. *CSRass* is not significant for environmentally sensitive industries, but it is negative and significant for non-sensitive industries.	*CSRass* negative and significant, at a 5% level, and is not sensitive to year or country-level institutional effects. *CSRass* is not significant for environmentally sensitive industries, but it is negative and significant for non-sensitive industries.	*CSRass* negative and significant, at a 5% level, and is not sensitive to year or country-level institutional effects. *CSRass* is not significant for environmentally sensitive industries, but it is negative and significant for non-sensitive industries.

Accounting quality (untabulated)	*CSRass* remains negative and significant at a 1% level and is not sensitive to year or country-level institutional effects. *CSRass* is not significant for environmentally sensitive industries, but it is negative and significant for non-sensitive industries.	*CSRass* remains negative and significant at a 5% level. Results are not sensitive to year or country-level institutional effects. *CSRass* is not significant for environmentally sensitive industries, but are negative and significant for non-sensitive industries.	*CSRass* remains negative and significant at a 1% level. Results are not sensitive to year or country-level institutional effects. *CSRass* is not significant for environmentally sensitive industries, but are negative and significant for non-sensitive industries.
Country sensitivity (untabulated)	The results (after performing all the additional tests) show that the association between CSR assurance and share price is not significant for environmentally sensitive industries. The results suggest that the reported overall negative association between *CSRass* and share price is driven by firms in non-sensitive industries from countries where CSR disclosure is required or is in the process of being mandated.	The results (after performing all the additional tests) show that the association between CSR assurance and share price is not significant for environmentally sensitive industries. The results suggest that the reported overall negative association between *CSRass* and share price is driven by firms in non-sensitive industries from countries where CSR disclosure is required or is in the process of being mandated.	The results (after performing all the additional tests) show that the association between CSR assurance and share price is not significant for environmentally sensitive industries. The results suggest that the reported overall negative association between *CSRass* and share price is driven by firms in non-sensitive industries from countries where CSR disclosure is required or is in the process of being mandated.
PANEL B – Association between CSR assurance (*CSRass*) and market-to-book ratio (*MtB*)			
	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
Main effects (see Table 5.4)	*CSRass* negative and significant at a 5% level.	*CSRass* negative and significant at a 5% level.	*CSRass* negative and significant at a 5% level.
Additional tests:			
Change analysis (untabulated)	*CSRass* not significant.	*CSRass* not significant.	*CSRass* not significant.
Year interaction effects (see Table 5.8) (*CSRass**YR)	*CSRass* is negative and significant, and is not sensitive to year interaction effects.	*CSRass* is negative and significant, and is not sensitive to year interaction effects.	*CSRass* is negative and significant, and is not sensitive to year interaction effects.
Country-level institutional strength (untabulated)	*CSRass* remains negative and significant at a 5% level and is not sensitive to interaction effects.	*CSRass* remains negative and significant at a 5% level and is not sensitive to interaction effects.	*CSRass* remains negative and significant at a 5% level and is not sensitive to interaction effects.
Environmentally sensitive industries (see Tables 5.11 & 5.12)	*CSRass* is not significant for firms in environmentally sensitive industries; results are not sensitive to interaction effects between *CSRass* provided during 2008, but are sensitive to interaction effects during 2013 (positive and significant at a 10% level). *CSRass* is negative and significant at a	*CSRass* is not significant for firms in environmentally sensitive industries; results are not sensitive to interaction effects between *CSRass* provided during 2008, but are sensitive to interaction effects during 2013 (positive and significant at a 10% level). *CSRass* is negative and significant at a	*CSRass* is not significant for firms in environmentally sensitive industries; results are not sensitive to interaction effects between *CSRass* provided during 2008, but are sensitive to interaction effects during 2013 (positive and significant at a 10% level). *CSRass* is negative and significant at a

	5% level for firms in environmentally non-sensitive industries; results are not sensitive to year-interaction effects.	10% level for firms in environmentally non-sensitive industries; results are not sensitive to year-interaction effects.	5% level for firms in environmentally non-sensitive industries; results are not sensitive to year-interaction effects.
CSR performance and corporate governance (untabulated)	*CSRass* is negative and significant at a 10% level and is not sensitive to year or country-level institutional strength effects. *CSRass* is not significant for environmentally sensitive industries but it is negative and significant for non-sensitive industries.	*CSRass* is negative and significant at a 10% level and is not sensitive to year or country-level institutional strength effects. *CSRass* is not significant for environmentally sensitive industries but it is negative and significant for non-sensitive industries.	*CSRass* is negative and significant at a 10% level and is not sensitive to year or country-level institutional strength effects. *CSRass* is not significant for environmentally sensitive industries but it is negative and significant for non-sensitive industries.
Accounting quality (untabulated)	*CSRass* remains negative and significant at a 5% level and is not sensitive to year or country-level institutional strength effects. *CSRass* is not significant for environmentally sensitive industries but it is negative and significant for non-sensitive industries.	*CSRass* remains negative and significant at a 5% level and is not sensitive to year or country-level institutional strength effects. *CSRass* is not significant for environmentally sensitive industries but it is negative and significant for non-sensitive industries.	*CSRass* remains negative and significant at a 5% level and is not sensitive to year or country-level institutional strength. *CSRass* is not significant for environmentally sensitive industries but it is negative and significant for non-sensitive industries.
Country sensitivity (untabulated)	The results (after performing all the additional tests) show that the association between CSR assurance and market-to-book ratio is not significant for environmentally sensitive industries. Similar to the share price model, the results suggest that the reported overall negative association between *CSRass* and market-to-book ratio is driven by firms in non-sensitive industries from countries where CSR disclosure is required or in the process of being mandated.	The results (after performing all the additional tests) show that the association between CSR assurance and market-to-book ratio is not significant for environmentally sensitive industries. Similar to the share price model, the results suggest that the reported overall negative association between *CSRass* and market-to-book ratio is driven by firms in non-sensitive industries from countries where CSR disclosure is required or in the process of being mandated.	The results (after performing all the additional tests) show that the association between CSR assurance and market-to-book ratio is not significant for environmentally sensitive industries. Similar to the share price model, the results suggest that the reported overall negative association between *CSRass* and market-to-book ratio is driven by firms in non-sensitive industries from countries where CSR disclosure is required or in the process of being mandated.
Notes: Relevant tables are indicated in brackets next to the description of the tests. The measures of CSR assurance (*CSRass*) are described in Section 3.4.1, and the method used to test the main effects in Section 3.4.2. Additional tests are described in Section 3.4.3.			

Table 5.14: Summary of findings: CSR assurance and accounting-based measures of financial performance, H_4

PANEL A – Association between CSR assurance (*CSRass*) and future cash flows ($AVECFO_{t+1,2,3}$).			
	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
Main effects (see Table 5.5)	*CSRass* is not significant.	*CSRass* is not significant.	*CSRass* is not significant.
Additional tests:			
Change analysis (untabulated)	*CSRass* is not significant.	*CSRass* is not significant.	*CSRass* is not significant.
Year interaction effects (untabulated) (*CSRass**YR)	*CSRass* is not significant and also not sensitive to year interaction effects.	*CSRass* is not significant and also not sensitive to year interaction effects.	*CSRass* is not significant and also not sensitive to year interaction effects.
Country-level institutional strength (untabulated)	*CSRass* remains not significant and is not sensitive to year effects.	*CSRass* remains not significant and is not sensitive to year effects.	*CSRass* remains not significant and is not sensitive to year effects.
Environmentally sensitive industries (untabulated)	*CSRass* remains not significant and is not sensitive to year and country-level institutional strength effects.	*CSRass* remains not significant and is not sensitive to year and country-level institutional strength effects.	*CSRass* remains not significant and is not sensitive to year and country-level institutional strength effects.
CSR performance and corporate governance (untabulated)	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or environmentally sensitive industries.	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or environmentally sensitive industries.	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or environmentally sensitive industries.
Accounting quality (untabulated)	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or environmentally sensitive industries.	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or environmentally sensitive industries.	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or environmentally sensitive industries.
Country sensitivity (untabulated)	*CSRass* is not significant. As with results reported earlier, it is not sensitive to year, country-level institutional strength, firms in environmentally sensitive industries and other tests.	*CSRass* is not significant. As with results reported earlier, it is not sensitive to year, country-level institutional strength, firms in environmentally sensitive industries and other tests.	*CSRass* is not significant. As with results reported earlier, it is not sensitive to year, country-level institutional strength, firms in environmentally sensitive industries and other tests.
PANEL B – Association between CSR assurance (*CSRass*) and future profitability ($AVEROA_{t+1,2,3}$)			
	Measures of CSR assurance		
	AssDum	***AssScope***	***AssScopeDum***
Main effects (see Table 5.6)	*CSRass* is not significant.	*CSRass* is negative and significant, at a 10% level, for the average one-year-ahead return on assets. *CSRass* is not significant for any of the other periods.	*CSRass* is negative and significant, at a 5% level, for the average one-year-ahead return on assets. *CSRass* is not significant for any of the other periods.
Additional tests:			

Change analysis (untabulated)	*CSRass* is not significant.	*CSRass* is not significant.	*CSRass* is not significant.
Year interaction effects (untabulated) (*CSRass**YR)	*CSRass* is not significant for any of the periods and is not sensitive to year interaction effects.	*CSRass* is negative and significant at a 10% level for the average one-year-ahead return on assets, is not significant for any of the other periods or sensitive to year interaction effects.	*CSRass* is negative and significant at a 10% level for the average one-year-ahead return on assets, is not significant for any of the other periods. Not sensitive to year interaction effects.
Country-level institutional strength (untabulated)	*CSRass* is not significant for any of the periods, and it is also not sensitive to interaction effects.	*CSRass* is negative and significant at a 10% level for the average one-year-ahead *ROA*, it is not significant for any other periods, or sensitive to interaction effects.	*CSRass* is negative and significant at a 10% level for the average one-year-ahead *ROA*, it is not significant for any other periods, or sensitive to interaction effects.
Environmentally sensitive industries (Untabulated)	*CSRass* is not significant for any of the periods, it is also not sensitive to year and country-level institutional strength effects.	*CSRass* is not significant for firms in environmentally sensitive industries but it is negative and significant at a 5% level for firms in non-sensitive industries for the average one-year-ahead return on assets. Results are not sensitive to year and country-level institutional strength effects.	*CSRass* is not significant for firms in environmentally sensitive industries but it is negative and significant at a 5% level for firm in non-sensitive industries for the average one-year-ahead return on assets. Results are not sensitive to year and country-level institutional strength effects.
CSR performance and corporate governance (untabulated)	*CSRass* remains not significant. Results are not sensitive to year, country-level institutional strength or firms in environmentally sensitive industries.	*CSRass* is not significant. Results are not sensitive to year, country-level institutional strength or firms in environmentally sensitive industries.	*CSRass* is not significant. Results are not sensitive to year, country-level institutional strength or firms in environmentally sensitive industries.
Accounting quality (untabulated)	*CSRass* is not significant. Results are not sensitive to year, country-level institutional strength, firms in environmentally sensitive industries or CSR performance and corporate governance.	*CSRass* is not significant. Results are not sensitive to year, country-level institutional strength, firms in environmentally sensitive industries or CSR performance and corporate governance.	*CSRass* is not significant. Results are not sensitive to year, country-level institutional strength, firms in environmentally sensitive industries or CSR performance and corporate governance.
Country sensitivity (untabulated)	The results (after performing all the additional tests) show that the association between CSR assurance and future profitability is not significant and not sensitive to the influence of certain countries excluded one at a time from the sample.	The results (after performing all the additional tests) show that the association between CSR assurance and future profitability is not significant and not sensitive to the influence of certain countries excluded one at a time from the sample.	The results (after performing all the additional tests) show that the association between CSR assurance and future profitability is not significant and not sensitive to the influence of certain countries excluded one at a time from the sample.
Notes: The relevant tables are indicated in brackets next to the description of the tests. The measures of CSR assurance (*CSRass*) are described in Section 3.4.1, and the method used to test the main effects in Section 3.4.2. Additional tests are described in Section 3.4.3.			

5.6 CSR DISCLOSURE AND CSR ASSURANCE

In this section, both CSR disclosure and CSR assurance are regressed, along with other control variables, on market-based and accounting-based measures of financial performance. An interaction variable between CSR disclosure and CSR assurance is also included in the regression models. No descriptive statistics or correlation tables are presented or discussed, since the regression models are adjusted versions of the models used in earlier sections of the thesis.

5.6.1 Market-based measures of financial performance

5.6.1.1 Share price – regression results, main effects

The results for share price model are presented in Table 5.15 (overleaf). Equation 1c is estimated separately for each of the six interaction variables described in Section 3.4.4.1.

CSRdiscl is not significant in any of the model specifications, except for the model estimated with *IncARLevDum*AssScope* as the interaction variable between CSR disclosure (*CSRdiscl*) and CSR assurance (*CSRass*). *IncARLevDum* is positive and significant with a coefficient of 2.619 and a p-value of 0.084. *CSRass* is negative and significant for all model specifications, except for *StdaloneWebDum*AssScope*, where it is not significant. The coefficient of the interaction variable (β_6*CSRdiscl*CSRass*) is not significant for any of the models estimated. In summary, the results provide support for earlier findings of a positive and significant association between share price and CSR information included in the annual report at a level higher than the sample mean (see the summary of findings in Section 4.5.1). In addition, the results support earlier findings in this chapter of a negative association between CSR assurance and share price.

Table 5.15: Regression results: Share price, CSR disclosure and CSR assurance, main effects

Interaction variables between CSR disclosure and CSR assurance						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1BV_{i,t}$	0.886 (<0.001)	0.887 (<0.001)	0.886 (<0.001)	0.888 (<0.001)	0.886 (<0.001)	0.887 (<0.001)
$\beta_2E_{i,t}$	9.311 (<0.001)	9.294 (<0.001)	9.306 (<0.001)	9.288 (<0.001)	9.307 (<0.001)	9.319 (<0.001)
$\beta_3Size_{i,t}$	2.276 (0.004)	2.337 (0.003)	2.246 (0.005)	2.355 (0.003)	2.220 (0.005)	1.977 (0.015)
$B_4CSRdiscl_{i,t}$	0.769 (0.384)	0.437 (0.367)	0.576 (0.282)	0.435 (0.268)	2.619 (0.084)	5.197 (0.0.159)
$B_5CSRass_{i,t}$	-3.465 (0.024)	-5.692 (0.010)	-3.175 (0.023)	-5.996 (0.008)	-2.908 (0.022)	-2.072 (0.147)
$B_6CSRdiscl*CSRass_{i,t}$	1.737 (0.349)	1.831 (0.357)	0.655 (0.425)	1.856 (0.352)	1.195 (0.511)	1.569 (0.238)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.845	0.845	0.845	0.845	0.845	0.846
F-statistic	270.473 (<0.001)	270.702 (<0.001)	270.484 (<0.001)	270.776 (<0.001)	270.604(<0.001)	271.043 (<0.001)
N	2 615	2 615	2 615	2 615	2 615	2615

Notes:

The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.

Equation 1c: $P_{i,t}=\beta_0 + \beta_1BV_{i,t} + \beta_2E_{i,t} + \beta_3Size_{i,t} + \beta_4CSRdiscl_{i,t} + \beta_5CSRass_{i,t} + \beta_6CSRdiscl*CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and industry subscripts are suppressed in the description of the variables below.

P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. Six interaction variables between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*) are used in the analyses. *CSRdiscl*CSRass* is represented by *IncARDum*AssScope*, *IncARLev*AssDum*, *IncARLev*AssScope*, *IncARLev*AssScopeDum*, *IncARLev*Dum**AssScope* and *StdaloneWebDum*AssScope*, as discussed in Section 3.4.4.1. Equation 1c is estimated separately for each of the interaction measures, using the same regression, with the individual measures of *CSRdiscl* and *CSRass*, of which the interaction measure (*CSRdiscl*CSRass*) is a function. If, for example, *CSRdiscl*CSRass* is represented by the measure *IncARDum*AssScope* in a regression, then *CSRdiscl* will be represented by *IncARDum*, and *CSRass* by *AssScope*. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

5.6.1.2 Market-to-book ratio – regression results, main effects

The results for the market-to-book ratio model are presented in Table 5.16 (overleaf). Equation 2c is estimated. *CSRdiscl* is not significant in any of the model specifications, except the model estimated with *IncARLevDum*AssScope* as the interaction variable between *CSRdiscl* and *CSRass*. *IncARLevDum* (a *CSRdiscl* measure) is positive and significant, with a coefficient of 0.048 and a p-value of 0.062. *CSRass* is negative and significant for all model specifications, except for *StdaloneWebDum*AssScope*, where it is not significant. The coefficient of the interaction variable (β_{12}*CSRdiscl*CSRass*) is not significant for any interaction variables. As with the share price model, the results support the earlier findings of a positive, significant association between share price and CSR information included in the annual report at a level higher than that of the sample mean (*IncARLevDum*). The results also support earlier findings of a negative association between CSR assurance and share price. Additional tests are performed to evaluate the sensitivity of the results.

5.6.2 Accounting-based measures of financial performance

5.6.2.1 Future cash flows – regression results, main effects

The regression results for Equation 3c are presented in Table 5.17 (page after next). Panel A shows the *AVECFO* one-year-ahead results, Panel B sets out the two-year-ahead results, and Panel C displays the three-year-ahead results. As with results reported in Chapter 4, focusing on CSR disclosure, *CSRdiscl* is not significant in any model specifications, except that estimated using *IncARLevDum*AssScope* as the interaction variable. *IncARLevDum* (a *CSRdiscl* measure) is positive and significant with a p-value of 0.087 for the average one-year-ahead cash flows (*AVECFO*). *IncARLevDum* is not significant for the two- or three-year-ahead *AVECFO*. Also similar to the results reported in Section 5.3.1.2, none of the *CSRass* measures has a significant association with actual future cash flow. The coefficient of the interaction variable (β_5*CSRdiscl*CSRass*) is not significant for any interaction variables.

Table 5.16: Regression results: Market-to-book ratio, CSR disclosure and CSR assurance, main effects

Interaction variables between CSR disclosure and CSR assurance						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1 Size_{i,t}$	0.114 (<0.001)	0.114 (<0.001)	0.115 (<0.001)	0.114 (<0.001)	0.115 (<0.001)	0.115 (<0.001)
$B_2 StockTurn_{i,t}$	-0.024 (0.061)	-0.025 (0.053)	-0.025 (0.057)	-0.025 (0.053)	-0.025 (0.056)	-0.025 (0.051)
$B_3 ROA_{i,t}$	8.532 (<0.001)	8.529 (<0.001)	8.534 (<0.001)	8.530 (<0.001)	8.529 (<0.001)	8.540 (<0.001)
$B_4 Capex_{i,t}$	-0.024 (0.880)	-0.017 (0.916)	-0.020 (0.904)	-0.017 (0.915)	-0.019 (0.904)	-0.015 (0.928)
$B_5 Lev_{i,t}$	-0.587 (<0.001)	-0.589 (<0.001)	-0.589 (<0.001)	-0.589 (<0.001)	-0.587 (<0.001)	-0.592 (<0.001)
$B_6 Dividend_{i,t}$	-0.203 (<0.001)	-0.204 (<0.001)	-0.204 (<0.001)	-0.204 (<0.001)	-0.202 (<0.001)	-0.204 (<0.001)
$B_7 Intang_{i,t}$	0.036 (0.630)	0.039 (0.596)	0.038 (0.605)	0.039 (0.595)	0.038 (0.605)	0.040 (0.586)
$B_8 R\&D_{i,t}$	0.103 (0.006)	0.100 (0.007)	0.101 (0.007)	0.101 (0.006)	0.102 (0.005)	0.097 (0.010)
$B_9 StdDevSP_{i,t}$	0.029 (0.027)	0.030 (0.024)	0.029 (0.026)	0.030 (0.024)	0.029 (0.025)	0.030 (0.024)
$B_{10} CSRdiscl_{i,t}$	0.016 (0.292)	0.017 (0.127)	0.012 (0.201)	0.017 (0.127)	0.048 (0.062)	0.018 (0.551)
$B_{11} CSRass_{i,t}$	-0.033 (0.058)	-0.059 (0.066)	-0.036 (0.012)	-0.058 (0.067)	-0.033 (0.011)	0.013 (0.655)
$B_{12} CSRdiscl*CSRass_{i,t}$	0.015 (0.479)	0.006 (0.798)	0.010 (0.293)	0.006 (0.804)	0.020 (0.337)	-0.042 (0.368)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.627	0.627	0.627	0.627	0.628	0.627
F-statistic	75.524 (<0.001)	75.523 (<0.001)	75.621 (<0.001)	75.523 (<0.001)	75.4761 (<0.001)	75.547 (<0.001)
N	2 615	2 615	2 615	2 615	2 615	2 615

Notes:

The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.

Equation 2c: $MtB_{i,t}=\beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + B_{10} CSRdiscl_{i,t} + B_{11} CSRass_{i,t} + B_{12} CSRdiscl*CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$ .Year and firm subscripts (*i,t*), are suppressed in the description of the variables included in the equation.

MtB is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is the capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether the firm declared dividends in the financial year. *Intang* represents intangible assets, calculated as 1 minus net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quintile of the sample. *StdDevSP* represents share price volatility, calculated as the standard deviation of daily stock (or share) return. *CSRdiscl*CSRass* is represented by *IncARDum*AssScope*, *IncARLev*AssDum*, *IncARLev*AssScope*, *IncARLev*AssScopeDum*, *IncARLevDum*AssScope* and *StdaloneWebDum*AssScope*, as discussed in Section 3.4.4.1. Equation 2c is estimated separately for each of the interaction measures, using the same regression, with the individual measures of *CSRdiscl* and *CSRass*, of which the interaction measure (*CSRdiscl*CSRass*) is a function. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

Table 5.17: Regression results: Future cash flows, CSR disclosure and CSR assurance, main effects

Interaction variables between CSR disclosure and CSR assurance						
PANEL A – Dependent variable: *$AVECFO_{i,,t+1}$*						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum* AssScope***
$B_1CFO_{i,t}$	0.567 (<0.001)	0.567 (<0.001)	0.567 (<0.001)	0.567 (<0.001)	0.567 (<0.001)	0.567 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRdiscl_{i,t}$	0.001 (0.398)	<0.001 (0.597)	<0.001 (0587)	<0.001 (0.258)	<0.001 (087)	-0.004 (0.262)
$B_4CSRass_{i,t}$	0.001 (0.449)	-0.001 (0.883)	0.001 (0.655)	0.001 (0.754)	0.001 (0.705)	-<0.001 (0.984)
$B_5CSRdiscl*CSRass_{i,t}$	<0.001 (0.880)	0.002 (0.377)	<0.001 (0.701)	<0.001 (0.557)	<0.001 (0.559)	0.002 (0.536)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.475	0.475	0.475	0.475	0.475	0.475
F-statistic	46.360 (<0.001)	46.364 (<0.001)	46.361 (<0.001)	46.063 (<0.001)	46.321 (<0.001)	46.423 (<0.001)
N	2 609	2 609	2 609	2 609	2 609	2 609
PANEL B – Dependent variable: *$AVECFO_{i,,t+2}$*						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum* AssScope***
$B_1CFO_{i,t}$	0.482 (<0.001)	0.482 (<0.001)	0.482 (<0.001)	0.482 (<0.001)	0.482 (<0.001)	0.482 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)
$B_3CSRdiscl_{i,t}$	0.002 (0.444)	0.001 (0.635)	0.001 (0.665)	0.001 (0.605)	0.001 (0.624)	0.003 (0.375)
$B_4CSRass_{i,t}$	0.001 (0.431)	0.001 (0.885)	0.001 (0.726)	0.001 (0.826)	0.001 (0.816)	0.001 (0.431)
$B_5CSRdiscl*CSRass_{i,t}$	-0.001 (0.546)	-<0.001 (0.973)	<0.001 (0.980)	<0.001 (0.975)	<0.001 (0.976)	<0.001 (0.925)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.379	0.379	0.379	0.379	0.379	0.379
F-statistic	31.286 (<0.001)	31.266 (<0.001)	31.273 (<0.001)	31.203 (<0.001)	31.253 (<0.001)	31.296 (<0.001)
N	2 584	2 584	2 584	2 584	2 584	2 584
PANEL C – Dependent variable: *$AVECFO_{i,,t+3}$*						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum* AssScope***
$B_1CFO_{i,t}$	0.453 (<0.001)	0.453 (<0.001)	0.453 (<0.001)	0.453 (<0.001)	0.453 (<0.001)	0.452 (<0.001)
$B_2Size_{i,t}$	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.004)
$B_3CSRdiscl_{i,t}$	0.006 (0.502)	0.001 (0.468)	0.002 (0.283)	0.002 (0.303)	0.002 (0.281)	0.002 (0.459)
$B_4CSRass_{i,t}$	0.002 (0.230)	0.003 (0.510)	0.002 (0.254)	0.002 (0.354)	0.002 (0.245)	-0.001 (0.837)
$B_5CSRdiscl*CSRass_{i,t}$	-0.002 (0.321)	<0.001 (0.871)	-0.001 (0.405)	-0.001 (0.554)	-0.001 (0.415)	0.002 (0.630)

YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.352	0.351	0.351	0.351	0.351	0.351
F-statistic	25.139 (<0.001)	25.040 (<0.001)	25.062 (<0.001)	25.062 (<0.001)	25.062 (<0.001)	25.060 (<0.001)
N	2 310	2 310	2 310	2 310	2 310	2 310

Notes:

The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.

Equation 3c: $AVECFO_{i,t+1,2,3,}=\beta_0 + \beta_1 CFO_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + \beta_4 CSRass_{i,t} + \beta_5 CSRass*CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$ Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

CFO is the cash flow from operations for period *t*. AVECFO is measured as the average one-to-three year-ahead cash flow from operations for each observation. Size is measured as the natural log of the market value of equity for each observation. *CSRdiscl*CSRass* is represented by *IncARDum*AssScope*, *IncARLev*AssDum*, *IncARLev*AssScope*, *IncARLev*AssScopeDum*, *IncARLevDum*AssScope* and *StdaloneWebDum*AssScope*. These interaction measures are discussed in Section 3.4.4.1. Equation 3c is estimated separately for each of the interaction measures, using the individual measures of *CSRdiscl* and *CSRass*, of which the interaction measure (*CSRdiscl*CSRass*) is a function, as measures of *CSRdiscl* and *CSRass*. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

Table 5.18: Regression results: Future profitability, CSR disclosure and CSR assurance, main effects

Interaction variables between CSR disclosure and CSR assurance						
PANEL A – Dependent variable: *AVEROA$_{i,,t+1}$*						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1ROA_{i,t}$	0.709 (<0.001)	0.709 (<0.001)	0.709 (<0.001)	0.710 (<0.001)	0.709 (<0.001)	0.709 (<0.001)
$B_2Size_{i,t}$	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.005 (<0.001)	0.004 (<0.001)
$B_3CSRdiscl_{i,t}$	-0.002 (0.389)	-0.001 (0.362)	-0.001 (0.226)	-0.001 (0.316)	-0.001 (0.226)	<0.000 (0.836)
$B_4CSRass_{i,t}$	-0.002 (0.142)	-0.006 (0.052)	-0.003 (0.007)	-0.004 (0.051)	-0.003 (0.037)	-0.004 (0.060)
$B_5CSRdiscl*CSRass_{i,t}$	0.001 (0.617)	0.002 (0.183)	0.002 (0.134)	0.002 (0.154)	0.002 (0.143)	0.003 (0.221)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.557	0.557	0.557	0.557	0.557	0.557
F-statistic	64.090 (<0.001)	64.096 (<0.001)	64.257 (<0.001)	64.205 (<0.001)	64.229 (<0.001)	64.144(<0.001)
N	2 615	2 615	2 615	2 615	2 615	2 615
PANEL B – Dependent variable: *AVEROA$_{i,,t+2}$*						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1ROA_{i,t}$	0.578 (<0.001)	0.578 (<0.001)	0.578 (<0.001)	0.578 (<0.001)	0.578 (<0.001)	0.578 (<0.001)
$B_2Size_{i,t}$	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)	0.004 (<0.001)
$B_3CSRdiscl_{i,t}$	0.001 (0.839)	<0.001 (0.893)	0.001 (0.857)	0.001 (0.861)	0.001 (0.857)	0.002 (0.525)
$B_4CSRass_{i,t}$	<0.001 (0.797)	-0.001 (0.652)	<0.001 (0.995)	<0.001 (0.895)	<0.001 (0.960)	<0.001 (0.811)
$B_5CSRdiscl*CSRass_{i,t}$	<0.001 (0.802)	0.001 (0.612)	<0.001 (0.935)	<0.001 (0.701)	<0.001 (0.905)	-0.001 (0.603)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.427	0.427	0.427	0.427	0.427	0.427
F-statistic	38.436 (<0.001)	38.440 (<0.001)	38.431 (<0.001)	38.032(<0.001)	38.435 (<0.001)	38.446 (<0.001)
N	2 612	2 612	2 612	2 612	2 612	2 612
PANEL C – Dependent variable: *AVEROA$_{i,,t+3}$*						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1ROA_{i,t}$	0.519 (0<0.001)	0.518 (0<0.001)	0.519 (0<0.001)	0.519 (0<0.001)	0.519 (0<0.001)	0.519 (0<0.001)
$B_2Size_{i,t}$	0.003 (0.003)	0.003 (0.002)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.006)
$B_3CSRdiscl_{i,t}$	-0.001 (0.690)	-0.002 (0.277)	-0.001 (0.434)	-0.001 (0.404)	-0.001 (0.403)	0.001 (0.653)
$B_4CSRass_{i,t}$	0.002 (0.710)	0.002 (0.601)	0.002 (0.618)	0.002 (0.611)	0.002 (0.699)	<0.001 (0.961)
$B_5CSRdiscl*CSRass_{i,t}$	-0.001 (0.618)	0.001 (0.682)	<0.001 (0.762)	<0.001 (0.735)	<0.001 (0.787)	-0.002 (0.557)

YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.357	0.357	0.358	0.358	0.358	0.357
F-statistic	25.983 (<0.001)	25.967 (<0.001)	26.111 (<0.001)	26.732 (<0.001)	25.982 (<0.001)	25.987 (<0.001)
N	2 337	2 337	2 337	2 337	2 337	2 337

Notes:

The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level.

Equation 4c: $AVEROA_{i,t+1,2,3,}=\beta_0 + \beta_1 ROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 CSRdiscl_{i,t} + \beta_4 CSRass_{i,t} + \beta_5 CSRass*CSRdiscl_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

ROA is the return on assets for period *t*. *AVEROA* is measured as the average one- to three-year-ahead return on assets for each observation. *Size* is measured as the natural log of the market value of equity for each observation. Four interaction variables between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*) are used in the analyses. *CSRdiscl*CSRass* is represented by *IncARDum*AssScope*, *IncARLev*AssDum*, *IncARLev*AssScope*, *IncARLev*AssScopeDum*, *IncARLevDum*AssScope* and *StdaloneWebDum*AssScope*. These interaction measures are discussed in Section 3.4.4.1. Equation 4c is estimated separately for each of the interaction measures, using the individual measures of *CSRdiscl* and *CSRass*, of which the interaction measure (*CSRdiscl*CSRass*) is a function, as measures of *CSRdiscl* and *CSRass*. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

5.6.2.2 Future profitability – regression results, main effects

The regression results for Equation 4c are presented in Table 5.18 (above, on page 153). Panel A presents the *AVEROA* one-year-ahead results, Panel B sets out the two-year-ahead results, and Panel C shows the three-year-ahead results. Similar to the results reported in Chapter 4 where the focus is on CSR disclosure, *CSRdiscl* is not significant in any of the model specifications. Again, similar to the results reported in Section 5.3.2.2, some of the measures of CSR assurance display a negative and significant association with average one-year-ahead return on assets (*AVEROA*). The results indicate no significant association between any of the *CSRdiscl*CSRass* interaction variables (*β5CSRdiscl*CSRass*) and future cash flows for any of the periods.

5.6.3 Results of additional tests

I perform additional tests similar to the tests performed in Sections 4.4 and 5.4 to evaluate the sensitivity of the results.

5.6.3.1 Year interaction effects

Equations 1c to 4c are adjusted to include both *CSRdiscl* and *CSRass* and the interaction variable *CSRdiscl*CSRass*. In order to test year interaction effects, I include interaction variables between *CSRdiscl*CSRass* and a 2008 *YR* indicator, as well as a 2013 *YR* indicator in the model. Year interaction effects are evaluated for the interaction between *IncARLev* and *AssScope*. This is the only interaction variable for which year interaction effects could be evaluated, because both *IncARLev* and *AssScope* can range between 0 and 3, with the year interaction (*YR*) as the only indicator variable.

The untabulated results for Equation 1c using share price (*P*) as the dependent variable are the following: *IncARLev* is not significant (coefficient 1.361, p-value 0.254); *AssScope* has a negative and significant association with share price (coefficient -3.217, p- value 0.077), and

the interaction variable (*CSRdiscl*CSRass*, represented by *IncARLev*AssScope*) has a negative but not significant association with share price (coefficient -0.673, p-value 0.640). The interaction variable between *IncARLev* and *AssScope* provided during 2008 is significant, suggesting that the combined effect between *IncARLev* and *AssScope* provided during 2008, may have a different association with share price than in other years. The interaction variable *IncARLev*AssScope*2008YRDum* has a positive and significant association with share price with a coefficient of 6.002 and a p-value 0.044), while *IncARLev*AssScope*2013YRDum* is not significant.

However, the above results for the share price model are not robust when the sample is divided into firms in environmentally sensitive versus non-sensitive industries, where the interaction variable between *CSRdiscl*CSRass* provided during 2008 and 2013 displays results that are not significantly different from those of the overall sample. For both firms in environmentally sensitive industries and those in non-sensitive industries, the interaction between *CSRdiscl* and *CSRass* (*CSRdiscl*CSRass*) is not significant, with a coefficient of 1.106 and p-value of 0.672 for firms in environmentally sensitive industries, and a coefficient of 0.834 and a p-value of 0.639 for those in non-sensitive industries. CSR disclosure using the measure *IncARLev*, which represents the level of inclusion in the annual report (without indicating whether the level of disclosure is higher than that of the sample mean or not), does not have a significant association with share price. *AssScope* has a negative and significant association with share price.

The untabulated results for the adjusted Equation 2c with market-to-book ratio as the dependent variable indicate that the association with *IncARLev* is not significant (coefficient 0.018, p-value 0.177) and that *AssScope* has a negative and significant association with share price (coefficient 0.058, p-value 0.012). The interaction variable *CSRdiscl*CSRass* has a positive but not significant association with market-to-book ratio (coefficient 0.018, p-value

0.255). The interaction between *IncARLev* and *AssScope* provided during 2008 has a different association with market-to-book ratio, compared to the overall sample (positive and significant with a coefficient of 6.002 and a p-value of 0.07). The coefficient for the 2013 interaction between CSR disclosure and CSR assurance has a coefficient of 0.811 and a p-value of 0.660, and the association is thus not significant. Similar to the results for the share price model, the significant interaction variable for 2008 disappears when the sample is divided into firms in environmentally sensitive versus non-sensitive industries – *CSRdiscl*CSRass* is not significant for either of the two groups or sensitive to year interaction effects.

The main results reported for future cash flows and future profitably are robust. There is no significant association of the interaction between *CSRdiscl* and *CSRass* with actual future cash flows or with actual future profitability. Associations of *CSRdiscl* and *CSRass* with accounting-based measures of financial performance are in line with the main effects reported in Sections 5.6.2.1 and 5.6.2.2.

5.6.3.2 Country-level institutional strength

None of the main effects are affected when country-level institutional strength is controlled for using the calculated composite measure of institutional strength (see Appendix C.2). This holds for the results reported in Table 5.15 (with share price as the dependent variable), Table 5.16 (with the market-to-book ratio as the dependent variable), Table 5.17 (with future cash flows as the dependent variable) and Table 5.18 (with future profitability as the dependent variable).

5.6.3.3 Environmentally sensitive industries

This section discusses the results of the tests where the sample is divided into two groups, with the first group representing firms in environmentally sensitive industries and the second

group firms in environmentally non-sensitive industries. The industry classification is discussed in Section 3.3.4.4. Equations 1c to 4c are estimated separately for both groups, using six measures to represent the interaction between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*). The results for Equation 1c with share price as the dependent variable are presented in Table 5.19 (overleaf). The results for Equation 2c with the market-to-book ratio as the dependent variable are presented in Table 5.20 (page after Table 5.19).

The results of the analyses for the two accounting-based measures of financial performance (future cash flows and future profitability) are discussed but not tabulated. There is no significant association of the interaction between *CSRdiscl* and *CSRass* with actual future cash flows or with actual future profitability. Associations of *CSRdiscl* and *CSRass* with accounting-based measures of financial performance are in line with the main effects reported in Sections 5.6.2.1 and 5.6.2.2.

Table 5.19: Regression results: Share price, CSR disclosure and CSR assurance for environmentally sensitive and non-sensitive industries

Interaction variables between CSR disclosure and CSR assurance						
PANEL A – Environmentally sensitive industries						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1BV_{i,t}$	0.860 (<0.001)	0.861 (<0.001)	0.860 (<0.001)	0.861 (<0.001)	0.860 (<0.001)	0.861 (<0.001)
$\beta_2E_{i,t}$	7.853 (<0.001)	7.841 (<0.001)	7.846 (<0.001)	7.840 (<0.001)	7.855 (<0.001)	7.866 (<0.001)
$\beta_3Size_{i,t}$	2.012 (0.034)	2.023 (0.037)	2.001 (0.030)	2.054 (0.031)	1.941 (0.036)	1.780 (0.041)
$B_4CSRdiscl_{i,t}$	0.035 (0.497)	0.448 (0.434)	0.276 (0.456)	0.454 (0.432)	2.457 (0.337)	3.954 (0.248)
$B_5CSRass_{i,t}$	-0.968 (0.368)	-0.876 (0.444)	-0.274 (0.458)	-1.088 (0.431)	-0.407 (0.432)	2.345 (0.248)
$B_6CSRdiscl*CSRass_{i,t}$	-0.065 (0.985)	-1.553 (0.673)	-0.598 (0.692)	-1.606 (0.662)	-1.557 (0.652)	-4.021 (0.448)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.797	0.797	0.797	0.797	0.797	0.797
F-statistic	63.991 (<0.001)	64.018 (<0.001)	64.010 (<0.001)	64.028 (<0.001)	64.018 (<0.001)	64.071 (<0.001)
N	771	771	771	771	771	771
PANEL B – Environmentally non-sensitive industries						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1BV_{i,t}$	0.830 (0.000)	0.834 (0.000)	0.831 (0.000)	0.835 (0.000)	0.831 (0.000)	0.829 (0.000)
$\beta_2E_{i,t}$	10.087 (0.000)	10.052 (0.000)	10.078 (0.000)	10.043 (0.000)	10.075 (0.000)	10.106 (0.000)
$\beta_3Size_{i,t}$	1.900 (0.011)	1.956 (0.013)	1.867 (0.014)	1.959 (0.013)	1.850 (0.014)	1.618 (0.015)
$B_4CSRdiscl_{i,t}$	0.057 (0.392)	0.259 (0.129)	0.492 (0.164)	0.266 (0.127)	2.084 (0.048)	4.748 (0.448)
$B_5CSRass_{i,t}$	-3.956 (0.028)	-11.219 (0.005)	-4.066 (0.014)	-11.312 (0.005)	-3.470 (0.020)	1.818 (0.263)
$B_6CSRdiscl*CSRass_{i,t}$	2.478 (0.258)	3.838 (0.189)	1.362 (0.207)	3.836 (0.201)	2.393 (0.264)	-2.410 (0.281)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.869	0.870	0.870	0.870	0.870	0.870
F-statistic	237.009 (<0.001)	237.505 (<0.001)	237.238 (<0.001)	237.522 (<0.001)	237.222 (<0.001)	237.432 (<0.001)
N	1 844	1 844	1 844	1 844	1 844	1 844
Total N	2 615	2 615	2 615	2 615	2 615	2 615

Notes:
The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level. The p-values of *CSRdiscl* and *CSRass* are presented one-tailed. The sample is divided into two groups – firms in **e**nvironmentally sensitive industries and firms in **e**nvironmentally non-sensitive industries.

Equation 1c: $P_{i,t}=\beta_0 + \beta_1 BV_{i,t} + \beta_2 E_{i,t} + \beta_3 Size_{i,t} + \beta_4 CSRdiscl_{i,t} + \beta_5 CSRass_{i,t} + \beta_6 CSRdiscl*CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$. Year and industry subscripts are suppressed in the description of the variables below.

P is the share price measured three months after the end of the financial year. *BV* is the book value of equity at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *E* is the net income after tax at the end of the financial year, scaled by the number of shares in issue three months after the end of the financial year. *Size* is measured as the natural logarithm of the market value of equity. Six interaction variables between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*) are used in the analysis. *CSRdiscl*CSRass* is represented by *IncARDum*AssScope*, *IncARLev*AssDum*, *IncARLev*AssScope*, *IncARLev*AssScopeDum*, *IncARLevDum*AssScope* and *StdaloneWebDum*AssScope*, as discussed in Section 3.4.4.1. Equation 1c is estimated separately for each of the interaction measures, using in the same regression the individual measures of *CSRdiscl* and *CSRass*, of which the interaction measure (*CSRdiscl*CSRass*) is a function. If, for example, *CSRdiscl*CSRass* is represented by the measure *IncARDum*AssScope* in a regression, then *CSRdiscl* is represented by *IncARDum*, and *CSRass* by *AssScope*. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

Table 5.20: Regression results: Market-to-book ratio, CSR disclosure and CSR assurance for environmentally sensitive and non-sensitive industries

Interaction variables between CSR disclosure and CSR assurance						
PANEL A – Environmentally sensitive industries						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1 Size_{i,t}$	0.088 (<0.001)	0.086 (<0.001)	0.088 (<0.001)	0.086 (<0.001)	0.087 (<0.001)	0.088 (<0.001)
$B_2 StockTurn_{i,t}$	-0.056 (0.029)	-0.057 (0.027)	-0.057 (0.028)	-0.057 (0.027)	-0.056 (0.027)	-0.056 (0.029)
$B_3 ROA_{i,t}$	8.011 (<0.001)	8.011 (<0.001)	8.017 (<0.001)	8.017 (<0.001)	8.030 (<0.001)	8.023 (<0.001)
$B_4 Capex_{i,t}$	0.755 (0.004)	0.763 (0.004)	0.756 (0.004)	0.760 (0.004)	0.748 (0.004)	0.756 (0.004)
$B_5 Lev_{i,t}$	-0.772 (<0.001)	-0.775 (<0.001)	-0.775 (<0.001)	-0.775 (<0.001)	-0.771 (<0.001)	-0.774 (<0.001)
$B_6 Dividend_{i,t}$	-0.128 (<0.122)	-0.129 (<0.121)	-0.128 (<0.123)	-0.129 (<0.121)	-0.126 (<0.127)	-0.129 (<0.122)
$B_7 Intang_{i,t}$	0.313 (0.057)	0.323 (0.057)	0.315 (0.055)	0.322 (0.050)	0.315 (0.055)	0.317 (0.054)
$B_8 R\&D_{i,t}$	0.150 (0.050)	0.150 (0.049)	0.153 (0.045)	0.152 (0.047)	0.157 (0.040)	0.152 (0.046)
$B_9 StdDevSP_{i,t}$	0.073 (0.004)	0.073 (0.004)	0.073 (0.004)	0.073 (0.004)	0.074 (0.004)	0.073 (0.004)
$B_{10} CSRdiscl_{i,t}$	-0.037 (0.266)	-0.002 (0.467)	-0.014 (0.308)	-0.005 (0.427)	-0.020 (0.379)	-0.015 (0.408)
$B_{11} CSRass_{i,t}$	-0.030 (0.178)	-0.032 (0.323)	-0.032 (0.134)	-0.037 (0.301)	-0.037 (0.182)	-0.004 (0.472)
$B_{12} CSRdiscl*CSRass_{i,t}$	0.013 (0.735)	-0.008 (0.834)	-0.008 (0.610)	-0.003 (0.944)	0.034 (0.378)	-0.019 (0.742)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.611	0.611	0.611	0.611	0.612	0.611
F-statistic	23.439 (<0.001)	23.401 (<0.001)	23.436 (<0.001)	23.397 (<0.001)	23.462 (<0.001)	23.433 (<0.001)
N	771	771	771	771	771	771
PANEL B – Environmentally non-sensitive industries						
	IncARDum* AssScope	***IncARLev* AssDum***	***IncARLev* AssScope***	***IncARLev* AssScopeDum***	***IncARLevDum* AssScope***	***StdaloneWebDum *AssScope***
$B_1 Size_{i,t}$	0.128 (<0.001)	0.128 (<0.001)	0.128 (<0.001)	0.128 (<0.001)	0.127 (<0.001)	0.129 (<0.001)
$B_2 StockTurn_{i,t}$	-0.012 (0.460)	-0.011 (0.456)	-0.011 (0.461)	-0.011 (0.456)	-0.010 (0.501)	-0.012 (0.448)
$B_3 ROA_{i,t}$	8.727 (<0.001)	8.717 (<0.001)	8.724 (<0.001)	8.714 (<0.001)	8.720 (<0.001)	8.731 (<0.001)
$B_4 Capex_{i,t}$	-0.609 (0.005)	-0.609 (0.005)	-0.610 (0.005)	-0.610 (0.005)	-0.614 (0.005)	-0.607 (0.005)
$B_5 Lev_{i,t}$	-0.592 (<0.001)	-0.585 (<0.001)	-0.585 (<0.001)	-0.585 (<0.001)	-0.583 (<0.001)	-0.589 (<0.001)
$B_6 Dividend_{i,t}$	-0.231 (<0.001)	-0.230 (<0.001)	-0.230 (<0.001)	-0.230 (<0.001)	-0.228 (<0.001)	-0.229 (<0.001)
$B_7 Intang_{i,t}$	-0.127 (0.149)	-0.125 (0.149)	-0.125 (0.156)	-0.125 (0.156)	-0.128 (0.143)	-0.123 (0.165)
$B_8 R\&D_{i,t}$	0.084 (0.053)	0.086 (0.048)	0.086 (0.049)	0.086 (0.049)	0.088 (0.042)	0.081 (0.065)
$B_9 StdDevSP_{i,t}$	0.015 (0.340)	0.014 (0.360)	0.014 (0.373)	0.014 (0.373)	0.014 (0.360)	0.016 (0.326)
$B_{10} CSRdiscl_{i,t}$	0.043 (0.110)	0.029 (0.045)	0.027 (0.055)	0.030 (0.040)	0.082 (0.012)	0.007 (0.415)

$B_{11}CSRass_{i,t}$	-0.024 (0.131)	-0.067 (0.081)	-0.032 (0.051)	-0.061 (0.099)	-0.024 (0.091)	-0.015 (0.327)
$B_{12}CSRdiscl*CSRass_{i,t}$	0.007 (0.782)	0.014 (0.618)	0.010 (0.385)	0.011 (0.702)	0.009 (0.711)	-0.038 (0.297)
YR indicators	Included	Included	Included	Included	Included	Included
IND indicators	Included	Included	Included	Included	Included	Included
Adjusted R^2	0.643	0.644	0.644	0.644	0.644	0.643
F-statistic	58.263 (<0.001)	58.413 (<0.001)	58.431 (<0.001)	58.402 (<0.001)	58.524 (<0.001)	58.204 (<0.001)
N	1 844	1 844	1 844	1 844	1 844	1 844
Total N	2 615	2 615	2 615	2 615	2 615	2 615

Notes:

The p-values are indicated in parentheses: p<0.01 indicates significance at a 1% level, p<0.05 shows significance at a 5% level, and p<0.10 shows significance at a 10% level. The p-values of *CSRdiscl* and *CSRass* are presented one-tailed. The sample is divided into two groups – firms in environmentally sensitive and firms in non-sensitive industries.

Equation 2c: $MtB_{i,t}=\beta_0 + \beta_1 Size_{i,t} + \beta_2 StockTurn_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Capex_{i,t} + \beta_5 Lev_{i,t} + \beta_6 Dividend_{i,t} + \beta_7 Intang_{i,t} + \beta_8 R\&D_{i,t} + \beta_9 StdDevSP_{i,t} + B_{10} CSRdiscl_{i,t} + B_{11} CSRass_{i,t} + B_{12} CSRdiscl*CSRass_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t.}$ Year and firm subscripts (*i*,*t*), are suppressed in the description of the variables included in the equation.

MtB is calculated as the market value of equity, scaled by the total assets at the end of the financial year. *Size* is measured as the natural log of the market value of equity at the end of the financial year. *StockTurn* represents the trading volume of stock (shares) for the year. *ROA* is calculated as the net income after interest and tax for the year, scaled by the total assets at the end of the financial year. *Capex* is the capital expenditure as a percentage of sales. *Lev* is the total debt, scaled by the total assets at the end of the financial year. *Dividend* is an indicator variable that shows whether the firm declared dividends in the financial year. *Intang* represents intangible assets, calculated as 1 minus net property plant and equipment, scaled by the total assets at the end of the financial year. *R&D* is a measure of research and development intensity – a score of 1 is awarded if the R&D-to-sales ratio is in the top quintile of the sample. *StdDevSP* represents share price volatility, calculated as the standard deviation of daily stock (or share) return. *CSRdiscl*CSRass* is represented by *IncARDum*AssScope*, *IncARLev*AssDum*, *IncARLev*AssScope*, *IncARLev*AssScopeDum*, *IncARLevDum*AssScope* and *StdaloneWebDum*AssScope*, as discussed in Section 3.4.4.1. Equation 2c is estimated separately for each of the interaction measures, using in the same regression the individual measures of *CSRdiscl* and *CSRass*, of which the interaction measure (*CSRdiscl*CSRass*) is a function. *YR* is an indicator variable to control for fixed-year effects. *IND* is an indicator variable to control for fixed-industry effects. Standard errors are clustered per industry and per country.

Table 5.19 (above) presents the results for Equation 1c. The interaction between CSR disclosure and CSR assurance (β_6*CSRdiscl*CSRass*) is not significant for firms in environmentally sensitive industries (see Panel A). The association of share price with CSR disclosure (β_4*CSRdiscl*) as well as with CSR assurance (β_5*CSRass*) is also not significant for firms in environmentally sensitive industries. The results in Panel B indicate that the association between share price and CSR disclosure (β_4*CSRdiscl* – using *IncARLevDum* as measure of *CSRdiscl*) is positive and significant in the model where the measure of CSR disclosure, *IncARLevDum*, is interacted with *AssScope*. *CSRass* has a negative and significant association with share price for all the model specifications except for the model where *StdaloneWebDum*AssScope* represents the interaction variable.

Similar evidence is provided in Table 5.20 (above) with the market-to-book ratio as the dependent variable. The interaction between CSR disclosure and CSR assurance is not sensitive to industry classification – the association between *CSRdiscl*CSRass* is not significant for firms in environmentally sensitive versus non-sensitive industries. However, both *CSRdiscl* and *CSRass* are only significant when the regression model is estimated for firms in environmentally non-sensitive industries. *CSRdiscl* has a positive and significant association with the market-to-book ratio where the measure of disclosure represents either the level of inclusion of CSR information in the annual report (*IncARLev*) or inclusion of CSR in the annual report at a level higher than the sample mean (*IncARLevDum*). *CSRass* has a negative and significant association with the market-to-book value for majority of the measures used.

The untabulated results for the interaction between CSR disclosure and CSR assurance and its association with accounting-based measures of financial performance are in line with the results reported earlier in this thesis. Similarly, the association of CSR disclosure, as well as CSR

assurance, with the accounting-based measures of financial performance are also in line with results reported earlier.

5.6.3.4 CSR performance and corporate governance

The results I reported earlier for the share price model and the market-to-book ratio model remain robust when I control for CSR performance and corporate governance. Results reported earlier with future cash flows and future profitability as the dependent variables also remain robust when I control for CSR performance and corporate governance.

5.6.3.5 Accounting quality

Results reported earlier for the share price model and the market-to-book ratio model are not sensitive when I control for CSR performance and corporate governance. Results reported earlier with future cash flows and future profitability as the dependent variables also remain robust when I control for CSR performance and corporate governance.

5.6.3.6 Country sensitivity

In summary, there is no significant association between *CSRdiscl*CSRass* and any of the dependent variables in Equations 1c to 4c. The results reported earlier remain robust for *CSRdiscl*CSRass* when country sensitivity is controlled for by eliminating Japan, Denmark, France, India, Indonesia, Malaysia, Nigeria, Norway, Singapore, the UK, the US, South Africa and countries with fewer than 20 observations one at a time from the sample. Associations between CSR disclosure (*CSRdiscl*) and market-based measures of financial performance are also not affected when the identified countries are eliminated one at a time from the sample (similar to the results reported in Chapter 4). Although the interaction between *CSRdiscl* and *CSRass* is not affected when the identified countries are eliminated one at a time from the sample, it is evident from the results that the negative and significant association of CSR assurance (*CSRass*) with the

respective dependent variables as reported in Section 5.4.7 are influenced by whether CSR disclosure is required or is in the process of being mandated in a country.

5.6.4 Summary of findings

There is no evidence that CSR assurance is a signal of the quality of disclosure to investors which reduces information asymmetry and inclines investors to increase the price they are prepared to pay for shares in a firm. Including CSR disclosure together with CSR assurance in regression models provide evidence that CSR disclosure has a marginally positive association with market-based measures of financial performance, but only when the level of inclusion of CSR information is higher than that of the sample mean, driven by firms in environmentally non-sensitive industries (supporting the results presented in Chapter 4). Evidence is also provided that CSR assurance has a negative association with market-based measures of financial performance. The results of additional tests suggest that the negative association is driven by firms in non-sensitive industries in countries where CSR disclosure is required or is in the process of being mandated.

In summary, there is no significant association between average one- to three-year-ahead cash flows from operations and future profitability and any of the measures of CSR assurance. The original results indicate a negative association between the scope of the assurance statement (*AssScope*) and future profitability, driven by firms in non-sensitive industries. This association is not supported when I control for CSR performance, corporate governance and accounting quality. The findings are not sensitive to country-effects. The only significant association is that between the inclusion of CSR disclosure in the annual report at a level higher than that of the sample mean (*IncARLevDum*), and average one-year-ahead future cash flow. Similar to the results in respect of market-based measures of financial performance as discussed in Section 4.5.1, this result is driven

by firms in environmentally non-sensitive industries. No significant associations are reported between CSR disclosure and future profitability.

The interaction variable between CSR disclosure and CSR assurance (*CSRdiscl*CSRass*) is not significant in any of the regression models. CSR assurance is provided on CSR disclosure, thus the interaction variable effectively captures the interaction between disclosure and assurance if assurance is provided by a firm.

The interpretation of the findings as well as the limitations of the study are discussed in Chapter 6.

5.7 CONCLUSION

This chapter provides the descriptive statistics for the three measures of CSR assurance. The regression results for the third hypothesis of the study (H_3), namely that there is no association between CSR assurance and market-based measures of financial performance (share price and market-to-book ratio), are documented. The chapter shows that there is no evidence that supports H_3. Instead, evidence is provided of a negative and significant association between CSR assurance and market-based measures of financial performance. The results of the additional tests suggest that the association is driven by firms in environmentally non-sensitive industries in countries where CSR disclosure is required or is in the process of being mandated.

This chapter also details the regression results for the fourth hypothesis (H_4) which is stated in the null form. The hypothesis predicts no association between CSR assurance and accounting-based measures of financial performance (actual future cash flows and actual future profitability). The overall results provide evidence that support H_4. No significant associations are reported except for a negative and significant association between CSR assurance and one-year-ahead

profitability, which is driven by firms in environmentally non-sensitive industries and countries where CSR disclosure is required or is in the process of being mandated.

Chapter 6 is the final chapter of the thesis. The main findings of the study are discussed and the limitations of the study are identified. Chapter 6 also includes a discussion of the contribution of the study and identifies areas for future research.

CHAPTER 6:
CONCLUSION

6.1 INTRODUCTION

The objective of this study is to evaluate whether CSR assurance represents a signal of the quality of CSR disclosure to shareholders and potential investors. As part of this objective, I also evaluate whether the associations of CSR disclosure and CSR assurance with financial performance are in the same, or in opposite directions. This study tests the association between firms' CSR disclosure and their financial performance, as well as the association between firms' CSR assurance and their financial performance. I also evaluate whether these associations are affected when both CSR disclosure and CSR assurance are regressed on financial performance, along with other control variables.

In this study, I use two market-based measures of financial performance (share price and market-to-book ratio), and two accounting-based measures of financial performance (actual future cash flows and actual future profitability).

Two hypotheses are developed for the association between CSR disclosure and financial performance. The hypothesis regarding the association between CSR disclosure and market-based measures of financial performance is stated in the alternate form and predicts a positive association (H_1). The hypothesis regarding the association between CSR disclosure and accounting-based measures of financial performance is stated in the null form (H_2). Four measures of CSR disclosure are used. Three of these relate to the inclusion of CSR information in the annual report and one relates to CSR information published in a stand-alone CSR report and/or available on a firm's website.

Two hypotheses are also developed for the association of CSR assurance with market-based measures of financial performance (H_3), and with accounting-based measures of financial performance (H_4). Both hypotheses are stated in the null form. Three measures of CSR assurance are used, one of which relates to whether assurance is provided or not, and two of which relate to the scope of the CSR assurance statement.

The remainder of this final chapter of the thesis is organised as follows: Section 6.2 summarises the findings and discusses their interpretation; Section 6.3 discusses the contribution of the study; Section 6.4 points out the limitations of the study; Section 6.5 identifies areas for future research, and Section 6.6 presents the concluding comments on the study.

6.2 FINDINGS AND INTERPRETATION

The overall results show that shareholders and potential investors do not deem CSR assurance to be a signal of the quality of CSR disclosure. Instead, it is possible that shareholders and potential investors may perceive CSR assurance as an indication that managers are trying to "manage" CSR concerns. The results provide evidence that the associations of CSR disclosure and CSR assurance with market-based measures of financial performance are in opposite directions. The association between CSR disclosure and market-based measures of financial performance is positive for CSR disclosure under certain conditions (as discussed below), and is driven by firms in environmentally non-sensitive industries. By contrast, the association between CSR assurance and market-based measures of financial performance is negative. The additional tests suggest that this negative association is driven by firms in non-sensitive industries from countries where some form of CSR disclosure is required or in the process of being mandated.

The findings in respect of each of the hypotheses relating to CSR disclosure and CSR assurance are discussed in different sections. To facilitate the discussion process, the summary of the

findings is detailed with reference to each of the hypotheses. Section 6.2.1 summarises and discusses the findings regarding the association between CSR disclosure and financial performance. Section 6.2.2 then summarises and discusses the findings for the possible associations between CSR assurance and financial performance. Section 6.2.2 also discusses the findings for the inclusion of CSR disclosure together with CSR assurance and an interaction variable between disclosure and assurance in the regression models.

6.2.1 Association between CSR disclosure and financial performance

6.2.1.1 H_1: CSR disclosure and market-based measures of financial performance

The first hypothesis predicts a positive association between CSR disclosure and market-based measures of financial performance. The results show that $H_{1,}$ is supported, but only when the level of inclusion of CSR information in the annual report is higher than that of the sample mean. This result is driven by firms in environmentally non-sensitive industries. The result is robust throughout the sample period and also when additional tests are performed.

More specifically, the results of my study indicate a positive and significant association at a 10% level between higher levels of CSR included in the annual report (using a measure that indicates whether the level of inclusion of CSR information in the annual report is higher than that of the sample mean) and the share price of firms. The findings also show a positive and significant association at a 10% level with the market-to-book ratio. These positive associations are driven by firms in environmentally non-sensitive industries. The results remain robust when additional sensitivity tests are performed.

The positive and significant association between higher levels of CSR disclosure (higher than the sample mean) included in the annual report of firms in environmentally non-sensitive industries

may be attributable to the possibility that the inclusion of CSR disclosure in the annual report by these firms is more voluntary than for firms in environmentally sensitive industries. Disclosures by environmentally sensitive firms are often regulated (Cho & Patten 2007; Clarkson *et al.* 2011; De Villiers *et al.* 2011) and may have become expected disclosures, as Cahan *et al*. (2016) suggest. Firms in environmentally sensitive industries are more subject to political scrutiny, for example, by governments and environmental groups (Blacconierre & Patten 1994; Freedman & Stagliano 1991; Malik 2015), resulting in higher levels of disclosure to pre-empt political scrutiny.

It is important to note that the association of CSR disclosure with share price, as well as with market-to-book ratio is only positive and significant for firms in non-sensitive industries when the level of inclusion in the annual report is higher than the sample mean. This suggests, in line with the argument proposed by Cahan *et al.* (2016), that a certain amount of CSR disclosure may also have become expected for firms in non-sensitive industries. Thus, only the additional disclosures (inclusion in the annual report at a level higher than the sample mean) are positively associated with share price and market-to-book ratio.

The positive and significant association between CSR disclosure and market-based measures of financial performance may be due to the fact that market participants are able to derive more information value from CSR disclosures by firms in environmentally non-sensitive industries (because disclosure is generally required and expected from firms in sensitive industries). An alternative explanation for the positive association may be that firms that disclose more in industries where it is less expected (non-sensitive industries) may be doing so because they have pre-existing CSR credibility issues which are not fully captured in the measure of CSR performance used in the additional tests, but which the market is already aware of, in an attempt

to overcome the market's negative view. These firms may actually be partially successful – if they did not disclose the information, the financial consequences may be worse for them.

Overall, the results are not significant for any of the other measures of CSR disclosure, although CSR disclosure provided during 2008 in a stand-alone CSR report, and/or available on the firm's website, shows a positive and significant association with both share price and market-to-book ratio at the 5% and 10% levels in the main analyses, as well as in the additional analyses, where the sample is split between firms in environmentally sensitive industries and firms in non-sensitive industries. However, the positive and significant association between CSR disclosure provided in a stand-alone CSR report and/or published on the firm's website, and market-based measures of financial performance is no longer evident when I control for CSR performance and corporate governance. These results remain robust when the other additional tests are performed.

Stand-alone CSR reports were the most popular medium for CSR disclosures during 2008. The inclusion of CSR information in the annual report was a relatively new concept then, and only 9% of firms included CSR information in their annual reports (KPMG 2008, 2011). A possible explanation for why the positive and significant association is no longer evident when CSR performance and corporate governance are controlled for, is that my measures of CSR performance and corporate governance are based on the ESG scores constructed by the Thomson Reuters ESG database. The data to compile the ESG scores are collected from the public domain and covers approximately 700 data points. Thus, it is possible that my measure for CSR performance and corporate governance is in essence a proxy for CSR disclosure.

6.2.1.2 H_2: CSR disclosure and accounting-based measures of financial performance

The second hypothesis predicts that there is no association between CSR disclosure and accounting-based measures of financial performance. In summary, H_2 is supported. The results

show very little association between CSR disclosure and the two accounting-based measures of financial performance, namely actual future cash flows and actual future profitability.

The only significant association is that between inclusion of CSR disclosure in the annual report which is higher than that of the sample mean and average one-year-ahead future cash flows. Again the result is driven by firms in environmentally non-sensitive industries. The positive and significant association for one-year-ahead future cash flows supports the earlier findings of a positive and significant association with market-based measures of financial performance.

No significant associations are reported for future profitability. The results are robust to various additional tests, as discussed in Section 3.3.4. Given the overall lack of significance of associations of CSR disclosure with actual future cash flows and with actual future profitability, the results suggest that it is unlikely that investors use CSR disclosure as relevant information when they estimate future cash flows and future profitability. The results indicate that CSR disclosure does not result overall in higher actual future cash flows (except for the average-one-year ahead actual cash flows for firms in environmentally non-sensitive industries), or in higher actual future profitability.

6.2.2 Association between CSR assurance and financial performance

6.2.2.1 H_3: CSR assurance and market-based measures of financial performance

The third hypothesis predicts no association between CSR assurance and market-based measures of financial performance. H_3 is rejected. The results of the study indicate a negative and significant association between market-based measures of financial performance and CSR assurance. The results are robust for the three measures of CSR assurance used in this study (a measure indicating whether CSR assurance is provided or not, a measure ranging between 0 and 3

in respect of the scope of the assurance statement provided, and an indicator of whether the scope of the assurance statement is higher than that of the sample mean).

These results are sensitive to industry effects. CSR assurance provided by firms in environmentally sensitive industries is not significantly associated with market-based measures of financial performance. By contrast, CSR assurance provided by firms in environmentally non-sensitive industries show a negative and significant association with market-based measures of financial performance. Furthermore, the results of the additional tests suggest that the negative and significant association for firms in non-sensitive industries is driven by firms in countries where some form of CSR disclosure is required, or is in the process of being mandated. The results are not sensitive to year-interaction effects and other additional sensitivity tests.

A possible explanation for the negative and significant association between CSR assurance and market-based measures of financial performance could be that investors may hold a perception that firms use assurance to create a positive image of the firm, and that assurance may signal pre-existing CSR concerns (Birkey *et al*. 2016; Michelon *et al*. 2015). Alternatively, following the arguments in Cahan *et al*. (2016) and the arguments and findings of Simnett *et al*. (2009), it may be argued that CSR assurance is provided in industries where it is less expected (environmentally non-sensitive industries) to counteract negative market perceptions caused by pre-existing CSR credibility issues that the market already knows about. Following the logic of this argument, for these firms, the negative financial consequences might have been bigger in the absence of CSR assurance. I control for CSR performance in this study using a measure based on the Thomson Reuters ESG database. The ESG database collects data from the public domain, covering a large number of data points, as mentioned earlier. Therefore, even though I control for CSR

performance in general, specific negative CSR issues may still affect the financial consequences of firms.

A non-significant association, as well as a negative and significant association, between CSR assurance and market-based measures of financial performance may also be attributable to inconsistent assurance practices. Inconsistencies result mainly from the absence of a generally accepted assurance standard and the range of assurance providers involved, which may vary from environmental or other specialists to professional accountants (as discussed in Section 2.2.2). Such inconsistencies may jeopardise the credibility of CSR assurance, which may result in CSR assurance's not being relevant to investors. It may also result in a situation where CSR assurance is relevant to investors, but following signalling theory, not in a positive direction, as expected by managers. Shareholders may deem CSR assurance to be a cost with no financial benefits, ultimately affecting the firm negatively.

The association between market-based measures of financial performance and CSR assurance that is not significant for firms in environmentally sensitive industries may furthermore be attributable to stricter regulations for these firms than for firms in non-sensitive industries in terms of certain disclosure requirements (Cho & Patten 2007; Clarkson *et al.* 2011; De Villiers *et al.* 2011). Firms in environmentally sensitive industries are more subject to political scrutiny, for example, by governments and environmental groups. My findings in respect of firms in environmentally sensitive industries, as well as of firms in non-sensitive industries from countries where some form of CSR disclosure is required or in the process of being mandated, support the arguments of Cho *et al*. (2014) and Casey and Grenier (2015) who suggest that stringent CSR disclosure requirements may be replacing the need for assurance. Where that is the case, assurance may be seen as a cost, resulting in no financial benefits, which could lead to a reduction in share price.

6.2.2.2 H_4: CSR assurance and accounting-based measures of financial performance

The fourth hypothesis predicts that there is no association between CSR assurance and accounting-based measures of financial performance. H_4 is supported. The overall results are robust to all the additional tests described in Section 3.4.3. CSR assurance displays no association with the two accounting-based measures of financial performance, namely actual future cash flows and actual future profitability, for the one- to three-year-ahead actual cash flows or actual future profitability. The results suggest that it is unlikely that CSR assurance is taken into account by investors when they estimate future cash flows and future profitability in share price valuation. The results also indicate that where managers of firms go through the process of providing CSR assurance (and are theoretically in a position to identify and address CSR risks on a timely basis), this does not result in higher actual future cash flows or higher actual future profitability in the one- to three-year-ahead period.

6.2.2.3 CSR disclosure and CSR assurance

The overall results of the study indicate that the associations between CSR disclosure and CSR assurance with market-based measures of financial performance are in opposite directions. The results also indicate that CSR assurance does not represent a signal of the quality of CSR disclosure to investors which reduces the information asymmetry and which, according to signalling theory, results in investors' increasing the price they are prepared to pay for shares in a firm.

The findings discussed in Sections 6.2.1.1 and 6.2.2.1 regarding the association of CSR disclosure and CSR assurance with market-based measures of financial performance are supported when CSR disclosure, CSR assurance and an interaction variable between CSR disclosure and CSR assurance are included in the regression models. The coefficient of the interaction variable

between CSR disclosure and CSR assurance when both variables are included in the same regression model is not significant for any of the measures and models used. The results are robust in respect of the various additional tests performed.

The overall findings indicate a negative and significant association between CSR assurance and market-based measures of financial performance, and that this association depends on industry classification and whether some form of CSR disclosure is required or in the process of being mandated in a country. Associations are more likely to be negative and significant for firms in environmentally non-sensitive industries in countries where some form of CSR disclosure is required or in the process of being mandated than for firms in environmentally sensitive industries or firms in non-sensitive industries in other countries where CSR disclosure is not required. In addition, the associations between higher levels of CSR information included in the annual report of a firm and market-based measures of financial performance are more likely to be positive and significant for firms in environmentally non-sensitive industries than for firms in environmentally sensitive industries. Whether or not CSR disclosure is required or in the process of being mandated in a country does not have an effect on this association.

Also, similar to the originally reported results discussed in Sections 6.2.1.2 and 6.2.2.2, there is no significant association between the measures of CSR assurance and the average one- to three-year-ahead cash flows from operations and future profitability. The only significant association is that between the inclusion of CSR disclosure in the annual report at a level higher than that of the sample mean and the average one-year-ahead actual future cash flows. Similar to the results in respect of the market-based measures of financial performance, this result is driven by firms in environmentally non-sensitive industries. No significant associations are reported between CSR disclosure and actual future profitability.

6.3 CONTRIBUTION

This study makes a number of contributions to the academic literature, as well as some practical contributions. The contributions of the study in respect of the association between CSR disclosure and financial performance are discussed first, followed the contributions in respect of CSR assurance and whether CSR assurance is a signal of the quality of disclosure.

This is the first study to focus on the level of inclusion of CSR disclosure in the annual report as a measure of CSR disclosure. Given the increasing trend for firms to include CSR information in their annual reports (KPMG 2008, 2011, 2013a, 2015), this measure is relevant because it enables me to evaluate whether the inclusion of CSR information in firms' annual reports is associated with their financial performance.

Two prior cross-country studies examined the financial consequences of CSR disclosure, one using European data and share price as a measure of financial performance (De Villiers & Marques 2016), and the other using a global dataset and firm value as a measure of financial performance (Cahan *et al*. 2016). These studies provide evidence of a positive association between CSR disclosure using the level of compliance with the GRI guidelines as a measure of disclosure (De Villiers & Marques 2016) and unexpected CSR disclosure (representing the difference between the actual disclosure scores in a KPMG survey and the expected disclosure score for each firm) (Cahan *et al*. 2016). De Villiers and Marques (2016) used data from 2007 to 2010, whereas Cahan *et al*. (2016) used 2008 data in their main analyses, combined with 2011 data, in their additional analyses. My study is similar to those by Cahan *et al*. (2016) and De Villiers and Marques (2016) in terms of the research design followed, except that I use both share price and market-to-book ratio (a measure of firm value) to test the stated hypotheses.

The results show a positive and significant association of CSR disclosure with share price as well as with the market-to-book ratio, but only when the level of inclusion in the annual report is higher than that of the sample mean, and these results are driven by firms in environmentally non-sensitive industries. This is the first study to report this finding. This finding will be of interest to regulators, standard-setters, academics, managers and investors:

- These results will be relevant to governments and stock-exchanges interested in mandating the inclusion of CSR disclosure in the annual reports of firms, because they suggest that information disclosed in this manner is relevant to investors when they make investment decisions.
- There has been an increase in the percentage of firms that are including CSR information in their annual reports. Hence, the findings in respect of CSR disclosure will be of interest to regulators, standard setters and academics who believe that the inclusion of CSR information in annual reports can be seen as the first step towards integrated reporting, as Adams and Simnett (2011), Eccles *et al*. 2015 and Stent and Dowler (2015) suggest. The results of the study will also be of interest to those who support the integrated reporting initiative.
- The findings on the positive association of the inclusion of CSR disclosure in firms' annual reports at a level higher than that of the sample mean with market-based measures of financial performance will be of interest to managers of firms in non-sensitive industries when they make decisions regarding the level of inclusion of CSR in the annual report. Managers may have an incentive to increase the level of inclusion of CSR in the annual report.
- The above findings on CSR disclosure will also be of interest to managers of firms in environmentally sensitive industries. The association of CSR disclosure with share price and with the market-to-book ratio is not significant for firms in these industries, but CSR disclosure is often mandated for firms in these industries, as discussed earlier, and may have

become expected disclosures (Cahan *et al*. 2016). It is thus possible that firms in environmentally sensitive industries that disclose less than the expected disclosure may be penalised by the market.

A reduction in information asymmetry may result in an increase or a decrease in a firm's share price, depending on how the market assesses the information. I build on the findings reported by Fuhrmann *et al*. (2017), who have shown that CSR assurance may reduce the information asymmetry between agents (managers) and principals (shareholders or owners). I evaluate whether CSR assurance represents a signal of the quality of CSR disclosure to investors, resulting in a reduction in information asymmetry, which should lead to a positive association with share price and the market-to-book ratio.

This is the first cross-country study to test the association of CSR assurance with both share price and the market-to-book ratio. It is also the first cross-country study which covers a longer sample period (2008, 2011 and 2013), and evaluates whether the results are representative throughout the sample period. The measures of CSR assurance used in this study focus on whether assurance is provided or not, and the scope of the assurance statement. These measures of CSR assurance, compiled based on data collected by KPMG during its global surveys of CSR reporting practices, allows analyses across sample years and different countries.

An unpublished thesis by Salman (2016) testing the association between CSR assurance and market capitalisation (using a model based on Cahan *et al*. 2016) of 50 New Zealand and 100 Australian firms during 2014 is relevant to my study. Salman (2016) concludes that CSR assurance is significantly associated with market capitalisation, but that the quality of the assurance process (using content analysis to score the quality of the assurance process) is not associated with market capitalisation. Another relevant cross-country study is a thesis by

Benschop (2017), who tested the association between CSR assurance and share price for 525 European firms during 2016. The findings of Benschop's thesis are relevant to the measures of CSR assurance used in my study. Benschop (2017) found a positive association between a firm's share price and whether the firm provides CSR assurance or not, but a negative association between the scope of the assurance statement and share price.

Irrespective of some differences regarding specific research objectives, the findings of prior cross-country studies on the association between CSR assurance and market-based measures of financial performance are inconclusive. This study contributes to the CSR assurance literature by conducting a cross-country study investigating the association of CSR assurance (providing assurance and the scope of the assurance statement) with share price and the market-to-book ratio by following a more rigorous research design than those of Salman (2016) and Benschop (2017). I control for firm-level characteristics that could have an association with (or be a proxy for) CSR assurance, such as firm-level corporate governance and a firm's accounting quality, which prior studies did not control for.

Furthermore, in terms of the research design that I followed, this study goes beyond prior research by splitting the sample into two sub-samples, namely environmentally sensitive industries and environmentally non-sensitive industries. The prior cross-country studies mentioned above controlled for fixed-industry effects by including an indicator variable in their regression model (similar to what I do in my main analyses) but did not evaluate whether associations are different for firms in environmentally sensitive industries compared to firms in non-sensitive industries.

This is the first study to control for country-level institutional strength, which could affect associations between CSR assurance and financial performance. It is also the first study to evaluate whether the results are sensitive to country-specific influences. Country-specific

influences may arise in countries where some form of CSR disclosure is required or is in the process of being mandated, as well as in countries with large representation in the sample. In addition, I measure the scope of the assurance statement using a range between 0 and 3, whereas Benschop (2017) used an indicator variable (coded 1 or 0) to represent the scope of the assurance statement. The measure that I use covers a broader range, which enables more accurate inferences regarding possible associations.

The results of this study indicate that investors do not see CSR assurance as a signal of the quality of CSR disclosure. The findings show that the association of CSR disclosure with financial performance and CSR assurance with financial performance are in opposite directions. This is the first study to provide results that show a negative association between CSR assurance and market-based measures of financial performance which is driven by firms in environmentally non-sensitive industries. The additional tests suggest that the negative associations for firms in non-sensitive industries are driven by firms in countries where some form of CSR disclosure is required or is in the process of being mandated. The findings and possible interpretations thereof will be of interest to academics, managers and regulators:

- The finding that CSR assurance does not represent a signal of the quality of CSR disclosure to shareholders and potential investors will be of interest to academics interested in signalling theory. It will also be of interest to regulators interested in mandating CSR assurance, since it is possible that firms that are not required to provide CSR assurance may still provide it because they have pre-existing CSR credibility issues (Simnett *et al*. 2009).

- The findings regarding CSR assurance will be of interest to all managers making decisions regarding CSR assurance, since they suggest that CSR assurance is viewed with suspicion by shareholders, or that shareholders are aware of, and concerned about, the firm's current CSR

assurance practices, and view CSR assurance as a cost that exceeds the benefits of providing such assurance. The results suggest that assurance provided under these circumstances is relevant to investors when they make investment decisions, but that it may be seen as a cost resulting in no financial benefits. Regulators and standard setters will be interested in these findings too, as these results suggest that inconsistency in CSR assurance practices may not achieve the desired outcome, namely improved credibility of CSR disclosure.

- The negative association between CSR assurance and the market-based measures of financial performance will be of interest to managers of firms with pre-existing CSR credibility issues in both environmentally sensitive and non-sensitive industries. The reason is that it is plausible that where there are pre-existing CSR issues, the market is not deceived by CSR assurance (although it is possible that the financial performance of such firms would have been affected even more negatively if assurance were not provided).
- The findings will also be of interest to managers of firms in environmentally sensitive and non-sensitive industries who do not provide CSR assurance to manage the impressions of investors. The results suggest that investors do not deem CSR assurance to be a signal of the quality of disclosure, perhaps because shareholders may be aware of the inconsistency in CSR assurance practices and thus do not believe that CSR assurance enhances the credibility of CSR disclosure. An alternative reason may be that providing CSR assurance may have become expected from firms in environmentally sensitive industries. Following this line of argument, which is based on Cahan *et al.*'s (2016) work, managers (firms) who do not provide assurance where investors expect it may potentially be penalised by the market.
- Academics interested in governance will be interested in the results of the additional country-level tests. The findings suggest that the negative association between CSR assurance and market-based measures of financial performance is driven by firms in countries where CSR

disclosure is required or in the process of being mandated. These results suggest that country-level CSR disclosure requirements may act as a substitute for firm-level governance and replace the need for CSR assurance, as Cho *et al*. (2014) and Casey and Grenier (2015) argue.

6.4 LIMITATIONS

The limitations of the study are summarised below.

Firstly, the results may not be generalizable to smaller firms listed on a stock exchange. The results may also not be generalizable to financial firms, since these firms have been eliminated from the sample due to their unique financial characteristics.

Secondly, the composite measure of country-level institutional strength included as a control variable in the additional tests is calculated by converting the individual country-characteristic scores, as identified by Cahan *et al.* (2016) and included in their measure of institutional strength, into percentile-ranked scores and combining them into a single score. A more sophisticated approach would be to use principal component analysis of the individual characteristics included in the composite country-level measure and to include those characteristics that statistically load into the calculated factor of the score.

Thirdly, the measure of CSR disclosure used in my study as an indicator of whether information is published as a stand-alone CSR report and/or whether CSR information is published on the firm's website does not enable me to make inferences regarding the difference between a stand-alone report and other CSR information. Examples of other kinds of CSR information are photos or videos which may be available on a firm's website, as suggested by Chong *et al*. (2016) and Lodhia (2018).

Fourthly, the measures of CSR performance and corporate governance that I use in this study are based on scores from the Thomson Reuters ESG database. ESG data is collected from the public domain and covers approximately 700 data points. It is possible that a particular negative CSR issue relates to specific data points, with the result that such an aspect may not have a major effect on a firm's overall ESG score. The only way in which specific CSR issues (news) could be controlled for is to hand-collect information on each observation included in the sample. This is not practical in a sample of 2 615 observations from 39 countries.

Fifthly, it is possible that the level of assurance provided by firms (Casey & Grenier 2015; Cohen & Simnett 2015; Hodge *et al*. 2009; Holder-Webb *et al*. 2009; Michelon *et al*. 2018), as well as who the assurance providers are, could affect the association of CSR assurance with market- and accounting-based measures of financial performance (Casey & Grenier 2015; Cheng *et al*. 2015; Peters & Romi 2015).

Finally, it is not clear from the data whether CSR assurance was provided on CSR information included in an annual report, a stand-alone report, or information published on a firm's website. Based on Agency Theory and the Efficient Market Hypothesis, it is assumed that capital markets are effective and that information becomes known to market participants (Deegan 2009; Scott 2010), thus providing the basis for following a method where CSR assurance is applied to all forms of CSR disclosure to evaluate possible associations.

6.5 AREAS FOR FUTURE RESEARCH

CSR disclosure has become a standard business practice for most large listed firms, with a global average reporting rate of 71% in 2013, compared to 64% in 2011 (KPMG 2013a). CSR disclosure can be published in an Integrated Report, included in an annual report, or published in a stand-alone CSR report and/or be available on a firm's website. By contrast, the percentage of firms

providing CSR assurance has remained relatively static, with 38% of the 100 largest firms included in the KPMG surveys during 2013 and 2011 providing CSR assurance (KPMG 2013a).

Future research may include investigation into the areas suggested below:

- The findings of this study do not support Agency Theory, and more specifically the argument that CSR assurance acts as a signal of the quality of CSR disclosure. Interviews with managers of firms in environmentally sensitive industries as well as firms in environmentally non-sensitive industries may reveal why firms (and particular managers) provide CSR assurance where it is not required.
- The two main CSR reporting areas where growth is anticipated are Integrated Reporting and increased CSR assurance (KPMG 2013a, 2015). Limited data are currently available on specific CSR assurance trends (for example, the level of assurance provided, and information regarding assurance providers, which often needs to be hand-collected for each observation). Future research could continue to contribute towards the literature by conducting comprehensive studies in different countries where data could be hand-collected to focus on all aspects of CSR assurance. Furthermore, the effect of applying a standard format for CSR or Integrated Reporting on financial performance should be evaluated. Such a study should be possible in a cross-country setting once the GRI Standard (as referred to in Section 2.2.1) has become effective.
- Based on the findings and arguments by Simnett *et al*. (2009), the results of my study suggest the possibility that CSR assurance may represent an indication (or signal) of pre-existing CSR credibility issues to shareholders and potential investors that they are already aware of. This study also argues, based on the arguments in Cahan *et al*. (2016) regarding expected CSR disclosures, that providing assurance may have become expected for firms in environmentally sensitive industries, resulting in different associations between CSR assurance and financial

performance than for firms in non-sensitive industries. Future research could follow up on these arguments and evaluate whether pre-existing CSR credibility issues (which need to be hand-collected) affect associations between CSR assurance and financial performance differently for firms in environmentally sensitive industries than for firms in non-sensitive industries.

- The results of the study regarding the association between CSR assurance and market-based measures of financial performance (share price and market-to-book ratio) show a negative association which is driven by firms in environmentally non-sensitive industries in countries where some form of CSR disclosure is required or is in the process of being mandated. Future research could explore how different country-level CSR disclosure requirements affect the association between CSR assurance and market-based measures of financial performance.
- It is possible that country-level institutional strength could have an interaction effect with CSR disclosure, or CSR assurance, or the interaction between disclosure and assurance, which may in turn influence associations with share price and the market-to-book ratio. Composite measures of CSR disclosure and CSR assurance that cover a broader range, in terms of both the scope of the disclosure and the CSR assurance provided, will be necessary to evaluate the interaction role of country-level institutional strength.
- Future research could evaluate how effective other popular communication media such as Twitter, Facebook and Instagram are in communicating CSR information about a firm, as suggested by Chong *et al*. (2016) and Lodhia (2018). Future research could evaluate the extent to which popular communication media are used by shareholders and potential investors to make investment decisions.
- Finally, future research could extend the current literature on the association between CSR performance and tax aggressiveness (as called for by Dowling 2014; Hanlon & Heitzman

2010; Lanis & Richardson 2012). It could evaluate the association between CSR disclosure, CSR assurance and tax aggressiveness in a cross-country setting, building on the suggestions of Hanlon and Heitzman (2010), Lanis and Richardson (2012), and Watson (2015).

6.6 CONCLUDING REMARKS

CSR reporting practices revolve around managers' decisions regarding CSR disclosure, as well as CSR assurance. Globally, CSR disclosure has become part of many large firms' business practises (KPMG 2011, 2013a). However, CSR disclosure practises (the *what*, *how much* and *where*) are still developing. Based on the statistics in the KPMG survey data, CSR assurance has not yet reached the stage where it has become a common business practise for firms to provide assurance.

The KPMG survey data provided the ideal basis for a cross-country study where the association of CSR disclosure with financial performance as well as CSR assurance with financial performance could be evaluated. The data enabled me to evaluate in a cross-country setting whether providing assurance represents a signal of the quality of disclosure to shareholders and potential investors, to address the research objectives and contribute to the CSR literature. The overall results provide evidence that CSR assurance is not a signal of the quality of CSR disclosure to investors resulting in higher share prices and market-to-book ratios. The overall results also show that the associations of CSR disclosure and CSR assurance with market-based measures of financial performance are in opposite directions. The findings of the study will be of interest to academics, regulators, goverments and firms (managers) when making decisions regarding CSR disclosure and CSR assurance practices.

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APPENDICES

APPENDIX A: SAMPLE COMPOSITION

Appendix A.1: Number of observations per country

Country	Total
Abu Dhabi	11
Australia	94
Belgium	22
Brazil	63
Bulgaria	9
Canada	68
Chile	34
Colombia	9
Czech Republic	5
Denmark	38
Dubai	7
Finland	100
France	125
Germany	66
Greece	41
Hungary	9
India	101
Indonesia	59
Israel	46
Italy	69
Japan	219
Malaysia	65
Mexico	41
Netherlands	62
New Zealand	34
Nigeria	30
Norway	35
Poland	18
Portugal	19
Romania	13
Singapore	107
South Africa	183
South Korea	136
Spain	54
Sweden	80
Switzerland	85
Taiwan	110
United Kingdom (UK)	159
United States (US)	189
Total	**2 615**

KPMG included the largest 100 firms from 22 countries for 2008, from 34 countries for 2011, and from 41 countries for 2013. The KPMG data file for 2008 consisted of 2 170 observations, and not 2 200. Firms not listed on a stock exchange and financial firms were eliminated from my sample.

Appendix A.2: Number of observations per country, industry and year

	2008	2011	2013	Total
ABU DHABI			**11**	**11**
Mining			1	1
Construction			1	1
Manufacturing			7	7
Transport, Communication, Electricity, Gas			1	1
Services			1	1
AUSTRALIA	**24**	**34**	**36**	**94**
Mining	4	6	6	16
Manufacturing	8	9	9	26
Transport, Communication, Electricity, Gas	3	4	5	12
Wholesale trade	2	3	5	10
Retail trade	2	3	2	7
Services	5	9	9	23
BELGIUM			**22**	**22**
Manufacturing			14	14
Transport, Communication, Electricity, Gas			5	5
Retail trade			1	1
Services			2	2
BRAZIL	**17**	**22**	**24**	**63**
Agriculture, Forestry, Fishing		1	2	3
Mining	1	2	2	5
Manufacturing	10	10	14	34
Transport, Communication, Electricity, Gas	6	8	5	19
Retail trade		1	1	2
BULGARIA		**9**		**9**
Agriculture, Forestry, Fishing		1		1
Construction		1		1
Manufacturing		4		4
Transport, Communication, Electricity, Gas		1		1
Wholesale trade		2		2
CANADA	**21**	**25**	**22**	**68**
Mining	4	5	4	13
Manufacturing	7	7	5	19
Transport, Communication, Electricity, Gas	6	7	7	20
Wholesale trade		1	2	3
Retail trade	2	3	2	7
Services	2	2	2	6
CHILE		**25**	**9**	**34**
Agriculture, Forestry, Fishing		1		1
Construction		2		2
Manufacturing		9	4	13
Transport, Communication, Electricity, Gas		7	4	11
Wholesale trade		1		1
Retail trade		1	1	2
Services		4		4

	2008	2011	2013	Total
COLOMBIA			**9**	**9**
Mining			1	1
Manufacturing			2	2
Transport, Communication, Electricity, Gas			4	4
Wholesale trade			1	1
Services			1	1
CZECH REPUBLIC	**5**			**5**
Manufacturing	2			2
Transport, Communication, Electricity, Gas	3			3
DENMARK	**17**	**7**	**14**	**38**
Construction	2		1	3
Manufacturing	12	4	10	26
Transport, Communication, Electricity, Gas	1	3	2	6
Wholesale trade	2		1	3
DUBAI			**7**	**7**
Construction			1	1
Manufacturing			2	2
Transport, Communication, Electricity, Gas			3	3
Services			1	1
FINLAND	**26**	**35**	**39**	**100**
Agriculture, Forestry, Fishing	1	1	1	3
Construction	2	3	3	8
Manufacturing	15	18	23	56
Transport, Communication, Electricity, Gas	2	4	4	10
Wholesale trade	1	2	1	4
Retail trade	1	2	2	5
Services	4	5	5	14
FRANCE	**31**	**36**	**58**	**125**
Mining		1	2	3
Construction	5	5	5	15
Manufacturing	15	17	31	63
Transport, Communication, Electricity, Gas	3	4	5	12
Wholesale trade		1	3	4
Retail trade	4	4	3	11
Services	4	4	9	17
GERMANY		**34**	**32**	**66**
Agriculture, Forestry, Fishing		1	1	2
Mining		1		1
Construction		2	2	4
Manufacturing		18	17	35
Transport, Communication, Electricity, Gas		7	6	13
Wholesale trade		2	3	5
Retail trade		1	1	2
Services		2	2	4

	2008	2011	2013	Total
GREECE		**24**	**17**	**41**
Construction		2		2
Manufacturing		8	7	15
Transport, Communication, Electricity, Gas		5	3	8
Wholesale trade		2	1	3
Retail trade		5	5	10
Services		2	1	3
HUNGARY	**3**	**3**	**3**	**9**
Manufacturing	2	2	2	6
Transport, Communication, Electricity, Gas	1	1	1	3
INDIA		**57**	**44**	**101**
Mining		4	1	5
Construction		5	1	6
Manufacturing		32	30	62
Transport, Communication, Electricity, Gas		10	6	16
Wholesale trade			1	1
Services		6	5	11
INDONESIA			**59**	**59**
Agriculture, Forestry, Fishing			1	1
Mining			9	9
Construction			4	4
Manufacturing			22	22
Transport, Communication, Electricity, Gas			5	5
Wholesale trade			9	9
Retail trade			9	9
ISRAEL		**24**	**22**	**46**
Mining		1	1	2
Construction		2	2	4
Manufacturing		10	11	21
Transport, Communication, Electricity, Gas		5	3	8
Retail trade		3	5	8
Services		3		3
ITALY	**20**	**25**	**24**	**69**
Mining	1	1		2
Construction	1	2	2	5
Manufacturing	10	12	11	33
Transport, Communication, Electricity, Gas	6	7	8	21
Wholesale trade		1	1	2
Retail trade	2	2	2	6
JAPAN	**67**	**78**	**74**	**219**
Construction	3	5	4	12
Manufacturing	42	45	42	129
Transport, Communication, Electricity, Gas	11	14	13	38
Wholesale trade	7	8	10	25
Retail trade	1	3	2	6
Services	3	3	3	9

	2008	2011	2013	Total
MALAYSIA			**65**	**65**
Agriculture, Forestry, Fishing			9	9
Mining			5	5
Construction			8	8
Manufacturing			14	14
Transport, Communication, Electricity, Gas			17	17
Wholesale trade			3	3
Retail trade			2	2
Services			7	7
MEXICO	**8**	**17**	**16**	**41**
Agriculture, Forestry, Fishing	1	1	1	3
Construction	1	3	2	6
Manufacturing	5	6	6	17
Transport, Communication, Electricity, Gas		4	4	8
Retail trade	1	2	2	5
Services		1	1	2
NETHERLANDS	**14**	**24**	**24**	**62**
Mining	1	1	1	3
Construction	1	2	2	5
Manufacturing	8	13	11	32
Transport, Communication, Electricity, Gas		1	2	3
Wholesale trade	1	1	1	3
Retail trade	1	1		2
Services	2	5	7	14
NEW ZEALAND		**16**	**18**	**34**
Agriculture, Forestry, Fishing		2	2	4
Manufacturing		5	3	8
Transport, Communication, Electricity, Gas		5	7	12
Wholesale trade		3	3	6
Retail trade		1	2	3
Services			1	1
NIGERIA		**16**	**14**	**30**
Construction		1	1	2
Manufacturing		13	12	25
Transport, Communication, Electricity, Gas		1		1
Wholesale trade			1	1
Retail trade		1		1
NORWAY	**16**	**1**	**18**	**35**
Agriculture, Forestry, Fishing	1		1	2
Mining	1		3	4
Construction	2		1	3
Manufacturing	9	1	8	18
Transport, Communication, Electricity, Gas	2		3	5
Retail trade			1	1
Services	1		1	2

	2008	2011	2013	Total
POLAND			**18**	**18**
Mining			1	1
Construction			2	2
Manufacturing			5	5
Transport, Communication, Electricity, Gas			4	4
Wholesale trade			5	5
Services			1	1
PORTUGAL	**6**	**7**	**6**	**19**
Construction	1	2	1	4
Manufacturing	1	1	1	3
Transport, Communication, Electricity, Gas		2	2	4
Wholesale trade	2			2
Retail trade	2	2	2	6
ROMANIA	**5**	**5**	**3**	**13**
Mining	1	1	1	3
Manufacturing	4	3	2	9
Transport, Communication, Electricity, Gas		1		1
SINGAPORE		**66**	**41**	**107**
Agriculture, Forestry, Fishing		1	3	4
Mining		2	2	4
Construction		6	4	10
Manufacturing		32	16	48
Transport, Communication, Electricity, Gas		14	11	25
Wholesale trade		4	1	5
Retail trade		3	1	4
Services		4	3	7
SOUTH AFRICA	**53**	**68**	**62**	**183**
Agriculture, Forestry, Fishing	1	1	1	3
Mining	9	8	8	25
Construction	2	5	4	11
Manufacturing	16	23	24	63
Transport, Communication, Electricity, Gas	8	10	8	26
Wholesale trade	2	3	2	7
Retail trade	8	11	7	26
Services	7	7	8	22
SOUTH KOREA	**41**	**37**	**58**	**136**
Construction	4	5	4	13
Manufacturing	25	22	38	85
Transport, Communication, Electricity, Gas	5	3	6	14
Wholesale trade	5	5	6	16
Retail trade	2	2	4	8
SPAIN	**11**	**21**	**22**	**54**
Construction	3	5	6	14
Manufacturing	1	5	7	13
Transport, Communication, Electricity, Gas	6	8	5	19
Retail trade	1	1	1	3
Services		2	3	5

	2008	2011	2013	Total
SWEDEN	**20**	**30**	**30**	**80**
Construction	3	3	3	9
Manufacturing	12	20	18	50
Transport, Communication, Electricity, Gas	2	3	4	9
Retail trade	2	3	3	8
Services	1	1	2	4
SWITZERLAND	**25**	**31**	**29**	**85**
Construction	1	1	1	3
Manufacturing	15	19	17	51
Transport, Communication, Electricity, Gas	4	5	5	14
Wholesale trade	1			1
Retail trade	1	3	3	7
Services	3	3	3	9
TAIWAN		**47**	**63**	**110**
Construction			1	1
Manufacturing		35	49	84
Transport, Communication, Electricity, Gas		7	7	14
Wholesale trade		2	4	6
Retail trade		2	2	4
Services		1		1
UNITED KINGDOM (UK)	**58**	**54**	**47**	**159**
Mining	11	11	7	29
Construction	1			1
Manufacturing	19	23	20	62
Transport, Communication, Electricity, Gas	10	7	6	23
Wholesale trade	2	1	1	4
Retail trade	10	7	9	26
Services	5	5	4	14
UNITED STATES (US)	**60**	**63**	**66**	**189**
Mining	3	2	4	9
Manufacturing	34	33	30	97
Transport, Communication, Electricity, Gas	7	9	11	27
Wholesale trade	5	5	6	16
Retail trade	9	11	11	31
Services	2	3	4	9
Total	**548**	**941**	**1 126**	**2 615**

Appendix A.3: Reconciliation of number of observations in change analysis

Summary:	**Total**
Total sample	**2 615**
Less: Firms with observations for one year only	(594)
Total for change analysis	**2 021**
421 firms with observations for two years	842
393 firms with observations for three years	1 179
Note: Firms with observations for two years are only included if data is available for two consecutive years – both 2008 and 2011, or both 2011 and 2013.	

APPENDIX B: MEASURES OF CSR DISCLOSURE AND CSR ASSURANCE

Measures developed by matching the questionnaires used by KPMG to conduct the 2008, 2011 and 2013 surveys on CSR reporting practices

Measures of CSR disclosure:		2008 questionnaire[15]	2011 questionnaire	2013 questionnaire
1.	**Inclusion in annual report (AR) indicator (*IncARDum*)** Indicates whether or not CSR information is included in the annual report.	Q7.1: 1=fully integrated, or included in the AR (e.g. as a stand-alone type of report/section) or reference to CSR in AR, 0=otherwise.	Q8: Coded 1 if… o F=in directors' report, and separate section, o or E=separate section(s) or chapter(s) on CSR issues and performance only, o or D or G=in directors' report only, with no separate sections, Coded 0 otherwise.	Q13: Coded 1 if… o B=in directors' report and separate section, o A=separate section or chapters on CSR issues and performance only, or o if C=in directors' report only with no separate sections; Coded 0 otherwise.
2.	**Inclusion level (*IncARLev*)** Measures the level of inclusion in the AR.	Q7.1: 3=fully integrated, 2=included in the AR (e.g. as a stand-alone type of section), 1=reference to CSR in AR, 0=otherwise.	Q8: 3=F=referred to as fully integrated or in directors' report and separate section, 2=E=separate section or chapters on CSR issues and performance only, 1=D or G, in directors' report only with no separate sections 0=otherwise (*IncARDum*=0).	Q13: 3=B=in directors' report and separate section, 2=A=separate section or chapters on CSR issues and performance only, 1=C in directors' report only with no separate sections, 0=otherwise (*IncARDum*=0)=0.
3.	**Stand-alone/web dummy (*StdaloneWebDum*)** CSR information in a full (stand-alone) pdf report and/or on the firm's website.	Q20: 1=yes: full pdf report, or on firm's website , 0=otherwise.	Q8: 1=yes for A, B, C or H (full pdf report or website). 0=otherwise.	Q10: 1=yes for A, full pdf report, or B or C, website. 0=otherwise.

[15] The columns for 2008, 2011 and 2013 indicate the questions that were used from the different questionnaires to develop each of the measures.

Measures of CSR assurance:		2008 questionnaire	2011 questionnaire	2013 questionnaire
1.	**Assurance indicator (*AssDum*)** Indicates whether or not a formal assurance statement was provided by a third party (e.g. a technical experts firm, certification bodies, specialist assurance provider, major accountancy firm).	Q50.1: 1=yes 0=otherwise.	Q13: 1=yes 0=otherwise.	Q16: 1=yes 0=otherwise.
2.	**Assurance scope (*AssScope*)** Measures the scope of the formal assurance statement provided by the assurance provider.	Q50.1.1: 3=A=whole report. 2=B=chapters. 1=B.1, indicators. 0=otherwise.	Q14: 3=A=whole report. 2=B.2=chapters and/or combination of chapters and indicators. 1=B.1=indicators. 0=otherwise.	Q17: 3=A=whole report. 2=B or C=chapters and/or combination of chapters and indicators. 1=B=indicators 0=otherwise.
3.	**Assurance level** Measures the level of assurance provided by the assurance provider. ***Please note: This measure could not be used due to a warning by SAS that the validity of a model fit using this measure is questionable. Neither the prediction model to evaluate whether self-selection is an issue, nor the models specified to test the association with financial performance could be reliably estimated. Of the total sample of 2 615 observations, 2 433 scored a 0, another 76 observations scored a 1 and 106 observations scored a 2.***	Q52 2=B=reasonable, positive form of opinion. 1=C=combination of limited and reasonable. 0=A=limited, negative form of option or not known or other.	Q18 2=B=reasonable, positive form of opinion. 1=C=combination of limited and reasonable. Coded 0 if… o A=limited, negative form of opinion o D=not known o E=other.	Q19 2=B=reasonable, positive form of opinion. 1=C=combination of limited and reasonable. Coded 0 if… o A=limited, negative form of opinion o D=not known, or o other.

Notes:
One additional measure was calculated based on whether the *IncARLev* score of the observation is higher than that of the sample mean. The measure is referred to as *IncARLevDum*. If the score is higher than that of the sample mean *IncARLevDum*=1, otherwise=0.
One additional measure was also calculated based on whether the *AssScope* of the observation is higher than that of the sample mean. The measure is referred to as *AssScopeDum*. If the score is higher than the sample mean *AssScopeDum*=1, otherwise=0. The measure *AssLev* was not used in any of the analyses.

APPENDIX C: OTHER CONTROL VARIABLES

Appendix C.1:

Firm-level control variables used in the main analyses

Variable name	Description of variable	Datastream, Thomson Reuters
Size	Size, measured as the natural logarithm of market capitalization.	Market value of equity: WC08001
ROA	Return on assets (ROA), calculated as net income scaled by average total assets.	Return on Assets: WC08326
ROE	Return on equity (ROE), calculated as net income scaled by average total equity.	Return on Equity: WC08301
$AVEROA_{t+1,2,3}$	Average one- to three-year-ahead return on assets.	Return on Assets: WC08326, averaged.
$AVEROE_{t+1,2,3}$	Average one- to three-year-ahead return on equity.	Return on Equity: WC08301, averaged.
Lev	Leverage, total debt divided by total assets.	Leverage: WC08236
Capex	Capital expenditure, measured as the percentage of capital expenditure to total sales.	Capex: WC08421
StdDevSP	Share price volatility, measured as the standard deviation of daily stock return.	Stock return=(P1–P0)/P0, where P0 is the initial stock price and P1 is the closing stock price. Stock price (also referred to as share price): UP
$AVECFO_{t+1,2,3}$	Average cash flows from operations, measured as the average one- to three-year-ahead cash flows from operations, scaled by average total assets.	Cash generated from operations: WC04201, averaged.
CFO	Cash flows from operations scaled by average total assets.	Cash generated from operations: WC04201
P	Share price, measured as the closing market price per share, three months after the end of the financial year.	Share price: UP
BV	Book value per share, with book value measured at the end of the financial year, divided by the number of shares three months after the end of the financial year.	Book value of equity: WC03501 Number of shares: NOSH
E	Earnings per share, with earnings measured at the end of the financial year, divided by the number of shares three months after the end of the financial year.	Net income after tax: WC01751 Number of shares: NOSH
MtB	Market value of equity scaled by the book value of equity.	Market value of equity: WC08001 Book value of equity: WC05476
StockTurn	Stock turnover is the annual share turnover in the underlying stock during a specific year. It is calculated as the total number of shares traded during a specific	Number of stock traded per day: VO summed for the financial year. Number of shares outstanding at year-end: WC05301

Variable name	Description of variable	Datastream, Thomson Reuters
	year, scaled by the average number of shares at the end of the financial year.	
Dividend	Dividend payouts, measured as 1 if the firm has paid a dividend, and 0 otherwise.	Dividends paid: WC04551
Intang	Intangible assets, measured as 1 minus the ratio of net property, plant and equipment (PPE) to total assets.	Intangible assets: WC02649 Net PPE: WC02501 Total assets: WC02999
R&D	Research and development, measured as research and development costs scaled by total sales.	R&D as percentage of sales: WC08341
Notes: The variables summarised in this table are included in the models used in the main analyses as discussed in Chapter 3. Variables included in the additional tests are explained in the relevant sections of Chapter 3, except for the composite measure of country-level institutional strength (*InstStrength*). *InstStrength* is discussed in Appendix C.2. The prediction models estimated to evaluate whether self-selection is an issue that needs to be addressed in the research design are presented in Appendix D, together with a description of the variables used.		

Appendix C.2:
Composite measure of country-level institutional strength

INTRODUCTION

A composite measure of country-level institutional strength (*InstStrength*) is included in the additional tests described in Chapter 3 to control for possible differences in the association between the variables of interest (*CSRdiscl* in Section 3.3, and *CSRass* in Section 3.4) and the measures of financial performance that may be attributable to country-level institutional strength. The measure is also included as a control variable in the prediction models described in Appendix D.

The individual country-level characteristics included in the calculation of the composite measure (see Table C.2.1, overleaf) are identical to those included by Cahan *et al*. (2016) in their robustness test. The correlation coefficients between the individual characteristics included in the composite measure of country-level institutional strength are presented in Table C.2.2 (page after next). As in the studies by Cahan *et al*. (2016), De Villiers and Marques (2016) and Dhaliwal *et al*. (2012), the individual country level variables are highly correlated – the correlation coefficients between the individual country-level characteristics on which the composite country-level measure are based are significant at a level of 0.1% ($p<0.001$), thus supporting the argument for using a composite measure of institutional strength.

Table C.2.1: Individual characteristics included in the composite country-level measure of institutional strength

Individual characteristics included in the composite country-level measure of institutional strength	
InstStrength	The composite country-level measure for institutional strength takes into account the individual country-level characteristics listed below. The composite scores are calculated per country for each year included in the sample. The composite scores are calculated as follows: firstly, percentile ranking scores are awarded for each of the individual country-level characteristics for each period; secondly, the percentile ranking scores for each individual country-level measure for each year are added together to obtain the composite score per country per year. Higher percentile ranking scores for individual characteristics collectively represent higher levels of institutional strength, which are now measured as a composite score (*InstStrength*).
GovtEff	Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies (World Bank 2008a, 2011a, 2013a). This measure can range from -2.5 to 2.5, with higher numbers representing more effective governments.
RegQual	Regulatory quality captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (World Bank 2008b, 2011b, 2013b). This measure can range from -2.5 to 2.5, with higher numbers representing higher regulatory quality.
RuleLaw	The Rule of Law measure captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, and obey the police and the courts, as well as the likelihood of crime and violence in a country (World Bank 2008c, 2011c, 2013c). This measure can range from -2.5 to 2.5, with higher numbers representing higher confidence in a country's legal system.
VoiceAcc	Voice and accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media (World Bank 2008d, 2011d, 2013d). This measure can range from -2.5 to 2.5, with higher numbers representing higher citizen participation.
RCI	The Responsible Competitiveness Index (RCI) is a country-level index that provides a metric for comparing the relationship between corporate responsibility and competitiveness for different countries (AccountAbility 2013). Higher values reflect more accountable countries.
EPI	The Environmental Performance Index (*EPI*) represents a measure of the environmental performance of a country's policies (Yale Law School 2008, 2010, 2012). This measure can range from 0 to 100, with higher numbers representing countries that pursue environmental policy goals more strongly.
PressFree	The Press Freedom Index is an annual ranking of countries compiled and published by Reporters Without Borders, based upon the organization's assessment of the countries' press freedom records in the previous year. It reflects the degree of freedom that journalists, news organizations, and citizens enjoy in each country, and the efforts made by the authorities to respect and ensure respect for this freedom (Reporters Without Borders 2013). This measure can range from 0 to 100, with lower values representing higher freedom of press. The measure is multiplied by -1 before including it in the analysis to align interpretation with other country variables. Thus, higher values indicate higher freedom of press.
Notes: Data are not available per year for *RCI*, *EPI* and *PressFree*. In line with Cahan *et al*. (2016), averages are used for *EPI* because data are available for 2008, 2010 and 2012. The Press Freedom Index is available for 2013 only, and thus the 2013 information is used throughout the sample period. Data for the *RCI* scores for earlier periods are not comparable to the data for current periods, and thus the 2013 scores are used throughout the sample period. Country-level characteristics are relatively static over time, thus it is appropriate to use averages where data per year is not available. For example, the Rule of Law measure developed by Djankov, La Porta, Lopez-de-Silanes and Shleifer (2008), based on 2003 data, is still used as a measure of institutional strength (see De Villiers & Marques 2016). Djankov *et al*. (2008) have 2 806 citations.	

Table C.2.2: Pearson and Spearman Correlation
Composite measure of institutional strength and individual characteristics used as the basis for its calculation

	Country-level InstStrength	***Rule of Law***	***Voice and Accountability***	***Government Effectiveness***	***Regulatory Quality***	***RCI***	***EPI***	***Press Freedom Index***
Country-level InstStrength	1	0.919***	0.809***	0.879***	0.894***	0.923***	0.503***	0.794***
Rule of Law	0.946***	1	0.747***	0.963***	0.947***	0.908***	0.564***	0.689***
Voice and Accountability	0.896***	0.833***	1	0.626***	0.684***	0.728***	0.533***	0.896***
Government Effectiveness	0.894***	0.965***	0.734***	1	0.938***	0.901***	0.551***	0.584***
Regulatory Quality	0.890***	0.952***	0.747***	0.931***	1	0.894***	0.567***	0.658***
RCI	0.924***	0.937***	0.820***	0.901***	0.900***	1	0.566***	0.721***
EPI	0.471***	0.518***	0.553***	0.500***	0.481***	0.547***	1	0.472***
Press Freedom Index	0.818***	0.761***	0.915***	0.651***	0.671***	0.757***	0.450***	1

Notes:

*** All correlations indicated in the table are significant at a 0.1% level, with a p-value <0.001.

Country-level *InstStrength* represents a composite measure of country-level institutional strength that is calculated by taking the indicated individual characteristics into account. The individual characteristics are Rule of Law, Voice and Accountability, Government Effectiveness, Regulatory Quality, the Responsible Competiveness Index (*RCI*), the Environmental Performance index (*EPI*), and the Press Freedom Index. The method for calculating country-level *InstStrength*, as well as a detailed description of the individual characteristics on which the composite measure is based, is discussed in Table C.2.1.

DESCRIPTIVE STATISTICS – *INSTSTRENGTH, CSRDISCL* AND *CSRASS*

Table C.2.3 shows the correlation between country-level institutional strength (*InstStrength*), CSR disclosure and CSR assurance. The correlations between *InstStrength* and CSR disclosure are significant at a 1% level for all three measures of CSR disclosure (*IncARDum*, *IncARLev*, and *StdaloneWebDum*). The correlation between institutional strength and CSR assurance is significant at a 1% level for *AssDum* and at a 5% level for *AssScope*. The correlation between the measures of CSR disclosure and CSR assurance is, as expected, significant at a 1% level. The results suggest that *InstStrength* can have an effect on CSR disclosure and CSR assurance, providing motivation for including a measure of country-level institutional strength as a control variable in Appendix D, where prediction models are estimated.

Table C.2.3: Pearson and Spearman Correlation

	Inst Strength	***IncAR Dum***	***IncAR Lev***	***Stdalone WebDum***	***AssDum***	***AssScope***
InstStrength	1	0.108***	0.112***	0.126***	0.081***	0.036*
IncARDum	0.123***	1	0.867***	0.112***	0.152***	0.111***
IncARLev	0.129***	0.913***	1	0.034*	0.160***	0.122***
StdaloneWebDum	0.122***	0.112***	0.049**	1	0.363***	0.315***
AssDum	0.076***	0.152***	0.160***	0.363***	1	0.870***
AssScope	0.049**	0.134***	0.145***	0.350***	0.963***	1

Notes:
*** Correlation is significant at a 1% level (2-tailed), ** correlation is significant at a 5% level (2-tailed), * correlation is significant at a 10% level (2-tailed).
InstStrength is a composite measure of country-level institutional strength. The measures of CSR disclosure and CSR assurance are discussed in Appendix B.

APPENDIX D:
SELF-SELECTION BIAS –
CSR DISCLOSURE AND CSR ASSURANCE

INTRODUCTION

There is a potential self-selection bias for firms included in the sample to provide CSR disclosure and CSR assurance. Most of the firms in the sample have a choice about whether to disclose CSR information in their annual report, and/or the extent to which CSR information is included in the annual report, whether to publish a stand-alone CSR report and/or to publish information on the firm's website. Most of the firms also have a choice about whether to provide assurance on their CSR information, and the scope of the assurance provided. The sample in this study is based on the 100 largest firms in different countries included in KPMG's 2008, 2011 and 2013 surveys. Prior research provides evidence that larger firms are more likely to disclose CSR information and to provide CSR assurance on their disclosures. Prior research has also identified a number of variables that may predispose firms to provide CSR disclosure and CSR assurance on disclosed information. These variables are included in the predisposition models (see Equations D.1 and D.2 below) or in the additional analyses.

I evaluate whether self-selection bias is an issue that needs to be addressed by estimating prediction models for both CSR disclosure and CSR assurance, as recommended in prior research by Angrist and Pischke (2010) and Guo and Fraser (2009). I perform the Heckman procedure using the variables that, according to prior research, predispose firms to provide CSR disclosure and CSR assurance. I also evaluate whether the Lambda of the Inverse Mills ratio is significant in any of the models with CSR disclosure (*CSRdiscl*) or CSR assurance

(*CSRass*) as the dependent variables, as advised by Angrist and Pischke (2010), De Villiers and Marques (2016) and Guo and Fraser (2009).

PREDICTION MODELS

I specify a regression model, using logit regression and applying the Heckman procedure to evaluate whether self-selection bias is an issue that needs to be addressed with CSR disclosure as an independent variable.

Equation D.1 is specified as follows:

$CSRdiscl_{i,t=}\beta_0 + \beta_1 InstStrength_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Fin_{i,t} + \beta_5 Lev_{i,t} + \beta_6 New_{i,t} + \beta_7 Capex_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(D1)

Equation D.1 is estimated separately for three measures of CSR disclosure (*CSRdiscl*), namely *IncARDum*, *IncARLevDum* and *StdaloneWebDum.* The measures of CSR disclosure represent indicator variables of whether CSR disclosure is included in the annual report of firms (*IncARDum*), whether the level of inclusion in the annual report is higher than that of the sample mean (*IncARLev*Dum), and whether a stand-alone CSR report is published and/or CSR information is published on the firm's website (*StdaloneWebDum*). The firm-level control variables included in the regression are *Size*, return on assets (*ROA*), need for financing (*Fin*), leverage (*Lev*), the age of the property, plant and equipment (*New*), and capital expenditure (*Capex*). Year (*YR*) and industry (*IND*) indicators are included to control for fixed-industry and fixed-year effects. Standard errors are clustered by country and industry, and observations are winsorized at a 1% and a 99% level. The rationale for including the firm-level control variables is discussed below.

Next, Equation D.1 is re-specified to include CSR assurance (*CSRass*) as the dependent variable instead of CSR disclosure (*CSRdiscl*). The adjusted equation is estimated separately for each of the two measures of CSR assurance (*CSRass*), namely *AssDum* and *AssScopeDum.* The measures of assurance represent indicator variables of whether a formal assurance statement is provided by a third party (*AssDum*) and whether the scope of the assurance statement (issued on the whole report, certain chapters or CSR indicators only) is higher than that of the sample mean (referred to as *AssScopeDum*). A logit regression is estimated for *AssDum* and *AssScopeDum*.

Equation D.2 is specified as follows:

$CSRass_{i,t=}\beta_0 + \beta_1 InstStrength_{i,t} + \beta_2 Size_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Fin_{i,t} + \beta_5 Lev_{i,t} + \beta_6 New_{i,t} + \beta_7 Capex_{i,t} + YR_{i,t} + IND_{i,t} + \varepsilon_{i,t}$	(D2)

Firm-level control variables are based on prior CSR disclosure literature (Cahan *et al*. 2016; Clarkson *et al*. 2008; De Villiers *et al*. 2011; De Villiers & Marques 2016), and CSR assurance literature (Casey & Grenier 2015; Herda *et al*. 2014; Simnett *et al.* 2009). The variables are identified as *Size*, measured as the natural logarithm of the total assets for each year. Return on assets (*ROA*) is a proxy for profitability, calculated as the net income per year, scaled by the average total assets. The need for additional financing (*Fin*) is measured as change in debt and common equity, scaled by the average total assets. Leverage (*Lev*) is calculated as the total debt, scaled by the total assets. New assets (*New*) is the average net property, plant and equipment, scaled by gross property, plant and equipment. Capital expenditure (*Capex*) is the capital expenditure, scaled by the total sales. Additional tests include an additional firm-level variable representing the level of international trade by a firm (often included in prediction models of CSR assurance), controlling for sensitive industries,

including CSR performance and corporate governance as control variables, as well as accounting quality in a separate regression. The VIF scores for the different regressions range between 1.562 and 4.293, thus multi-collinearity between variables is not a concern.

RESULTS – SELF-SELECTION BIAS

The results are presented untabulated. The p-values of the Lambda of the Mills ratio for the regressions estimated for Equation D.1 are 0.462 for *IncARDum*, 0.468 for *IncARLevDum* and 0.274 for *StdaloneWebDum*. The p-values of Lambda of the Mills ratio are 0.918 for *AssDum* and 0.875 for *AssScopeDum* in Equation D.2. Self-selection does not appear to be a concern, since none of the p-values are significant. I therefore do not use the two-estimation procedure to obtain a next set of results, in line with the recommendations of Angrist and Pischke (2010) and Guo and Fraser (2009). The results are robust when re-estimating Equations D.1 and D.2 to take into account the additional tests. The p-values of Lambda remain not significant.