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Communication via Responsibility Reporting and its Effect on Firm Value in Finland

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ABSTRACT

In this paper, we first analyzed the responsibility reporting literature with an emphasis on the linkage between responsibility reporting and a firm's performance and valuation. Based on the literature review, we developed a research question: How does communication via responsibility reporting affect firm value? We analyzed the market valuation of listed Finnish firms through a conventional valuation model combined with responsibility reporting. The starting point for our valuation was the Ohlson model. We expanded upon the conventional valuation by studying whether communication via responsibility reporting is related to firm valuation. Our research question is linked to the broader academic question of whether earnings worth as an information source has been erased over the last few years. In addition, we contribute to the literature that tries to understand the link between corporate social responsibility and firm performance/share performance. Specifically, we focused on responsibility reporting according to the Global Reporting Initiative (GRI) and especially on whether the existence of these reports provides a further explanation for firm value.

Our sample was a population type that covered all listed Finnish firms that have adopted GRI. No other responsibility reporting practice was used by listed firms in their responsibility reporting communication during the years 2002–2005. The other necessary information for valuation models was obtained from Thomson Financial Services (commercial database).

The applied model supported the conclusion that communication via GRI responsibility reporting is an important explanatory factor for a firm's market value. The result indicates that responsibility reporting is a part of a firm's communication tools in order to decrease information asymmetry between managers and investors. In other words, GRI responsibility reporting is called for in order to produce a more precise market valuation of a firm.

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Introduction

Listed firms' communication to their stakeholders is increasingly challenging. Firms' performance is increasingly related, for example, to their intangible assets and R&D. In line with this, a significant portion of a firm's value is based on future expectations and less on fundamentals. Shortcomings in (investor) communication can cause a firm several difficulties that are often reflected in its cost of capital (Healy and Palepu, 2001). Severe communication problems between firms and investors (high information asymmetry) could even lead to a loss of trust on the part of investors and an increase in the cost of, say, equity capital (Hail, 2002).

One important dimension of firm-to-else communication is the firm's responsibility disclosures (Slater and Gilbert, 2004). Several studies have tried to explain the reasons for a certain level and quality of responsibility disclosures. Cormier *et al.* (2005) identify determinants of corporate environmental disclosure employing several theories that rely on economic incentives, public pressures, and institutional theory. Their major argument was that the quality of environmental disclosure is driven by the level of management's accountability to a particular stakeholder group. First, management is directly accountable to shareholders and debt holders. This should create an incentive for high-quality disclosures in order to minimize a firm's cost of capital (Cormier *et al.*, 2005). Second, a firm is a part of its societal context and a wide range of other stakeholders affects it, including employees, suppliers, customers, and citizens in general. According to legitimacy theory, a firm responds to public pressures via its environmental disclosure. Finally, management considers a firm's institutional context in determining environmental disclosure quality. That institutional context could be either firm- or country-specific (Cormier *et al.*, 2005). The main results indicated that information costs (risk, reliance on capital markets, trading volume, ownership) are important determinants of a firm's environmental disclosure strategy. Also, public pressures and industry membership affect the quality of corporate environmental disclosure. In line with institutional theory, imitation and routine are related to environmental disclosure quality.

Also others have found that variations in demand for responsibility reporting affect the actual corporate social responsibility (CSR) presentation. For example, Maignan and Ralston (2002) found that French and Dutch businesses were less eager to convey good citizenship images on the web compared to their Anglo counterparts. Overall, their study shows that a country's attitude to responsibility reporting had an impact on how dedicated a firm is to social responsibility.

Firms will face challenges in their sustainability communication in several areas, such as eco-innovations, environmental innovations, and product improvements (Halila and Horte, 2006). Modern western consumers are increasingly well informed about the consequences of a firm's activities. Research has shown that the more attention a medium devotes to an issue in a firm context, the more the issue will become associated with the firm among the users of that medium (Meijer and Kleinnijenhuis, 2006). Due the multidimensional and complex nature of sustainable development in a firm, there are several ways to measure it. The development of the Global Reporting Initiative's (GRI's) guidelines on sustainability reporting is a significant step in assisting firms to achieve more systematic measurement and communication of sustainability issues to investors and other stakeholders. GRI was launched in 1997 jointly by the Coalition for Environmentally Responsible Economies and the United Nations Environmental Program. The goal of the initiative is to develop a global reporting framework for sustainable reporting (Clarkson *et al.*, 2008). The GRI guidelines follow 11 principles: transparency, inclusiveness, auditability, completeness, relevance, sustainability context, accuracy, neutrality, comparability, clarity, and timeliness. These principles should guide those producing sustainable reports in making the reports useful to stakeholders (Clarkson *et al.*, 2008).

Researchers are attempting to understand the link between CSR and competitive advantage (Porter and Kramer, 2006). Instead of focusing on the determinants of sustainable disclosures, these studies relate disclosures to firm performance and stock performance. Some evidence is available that firms with strong environmental management enjoy a better financial performance (Klassen and McLaughlin, 1996; Clarkson *et al.*, 2006). There is also evidence that emission reduction is positively associated with firm performance (return on sales, return on assets, and return on equity) within one to two years (Hart and Ahuja, 1996). Contrary results are also reported. King and Lenox (2001) find evidence of an association between lower pollution and higher financial valuation (Tobin's

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q). However, according to the authors, this association might be due to firm's fixed characteristics and strategic position rather than lower pollution.

The investment community analyzes firms from a broad perspective, including responsibility issues in their agenda (Cormier *et al.*, 1993). Examples of responsibility oriented institutional investors can be termed ethical funds. Simultaneously to these developments, the tools for the broader analysis of firms have been created; for example, responsibility ratings such as the Dow Jones Sustainability Index and FTSE4Good series. Principles for Responsible Investing (PRI, www.unpri.org/) and the Enhanced Analytics Initiative (EAI, www.enhancedanalytics.com/portal/ep/home.do) are two important developments designed to enhance responsibility in investing. In early 2005, the UN Secretary-General invited a group of the world's largest institutional investors to a forum to develop the PRI. EAI, in turn, is an international collaboration between asset owners and asset managers aimed at encouraging better investment research; in particular, research taking into account extra-financial issues, such as externalities not well captured by market mechanisms (e.g., pollution), the medium- to long-term horizon (e.g., global warming), and the policy and regulatory framework (e.g., greenhouse gas emissions). Variations in investors' skills, experience, and incentives, among others, can affect the use of information disclosed by a firm (Kothari, 2001; Shleifer, 2003).

The links between responsibility reporting and its effect on firm value are still incomplete and the results somewhat mixed. Guenster *et al.* (2005) analyzed whether corporate eco-efficiency (the ability to create more value while using fewer environmental resources) had economic value. Their eco-efficiency measure reflects not only historical environmental performance but also identifies future environmental risks and opportunities. The eco-efficiency score reflects environmental performance in five areas: historical liabilities in consequence of a firm's past environmental behavior, contemporaneous operating risk, sustainability and eco-efficiency risk, managerial efficiency risk, and business prospects resulting from eco-efficiency. Obtained results show a positive but asymmetrical relation between eco-efficiency and a firm's Tobin's *q* (market value of assets divided by the book value of assets). Furthermore, results suggest that the market incorporates environmental information with a drift. Their data comprise US-listed firms. A study in the Egyptian context gives additional insight. Wahba (2008) found out that environmental responsibility (proxied by certification of ISO environmental standard) exerted a positive and significant coefficient on the firm market value.

Another study, by Hassel *et al.* (2005), investigates the value-relevance of environmental performance using Swedish data. They found that environmental performance (measured by an environmental index) had a negative influence on the market value of firms. This finding supported the cost-concerned school arguing that environmental investments represent only increased costs. Our study will focus on more recent Finnish data using officially available responsibility reports, and will address the important research void between responsibility reporting and firm valuation.

Some shortcomings exist in responsibility research – besides the limited amount of research concerning a link between responsibility reporting and firm value – despite recent increased activity. The nature of prior responsibility research is that it is rather isolated; special purpose analyses that lack any strong attempt (or even the possibility) to generalize the results (Griffin and Mahon, 1997). In addition, there were no links available to the firms' periodical reporting. There has also been a call for a better defined external environmental monitoring system enabling external screening of environmental issues in a firm (Ulhoi *et al.*, 1996). In line with these prior calls for additional research, we analyze firm value and tightly link it to the periodical reporting information.

In Finland, all listed firms that publish responsibility reports apply GRI guidelines on sustainability reporting (information received from *2future*, Finland's leading consulting firm in the field of corporate responsibility services). Our study covers all available responsibility reporting executed by Finnish-listed firms during the research period 2002–2005.

In line with the GRI guidelines (www.globalreporting.org), responsibility reports are part of these firms' periodical reporting. Despite the merits of GRI, some doubts regarding the usefulness of the GRI guidelines are also presented (Vogel, 2005). The GRI checklist is steadily growing and, according to financial analysts, this could create difficulties for the effective use of these reports (Greeves and Lapido, 2004). New light could be shed on this issue by empirical investigation into the actual value-relevance of a GRI report to a firm's market value. There is already evidence that environmental performance and the level of discretionary environmental disclosures (GRI-based measure) are positively associated (Clarkson *et al.*, 2008). However, evidence for the value-relevance of GRI is scant.

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The empirical motivation for this paper includes the increased demand to integrate responsibility into corporate financial reporting as well as to further link it to responsibility performance and firm value. Our specific research question is: How does communication via responsibility reporting affect firm value?

Responsibility Reporting and Valuation and Regression Models

Our method applies the residual income valuation model presented in Ohlson (1995). We express the market value of equity as a function of the book value of equity, accounting earnings, and responsibility reporting (GRI). The last variable (GRI) is a proxy for other value-relevant information (Hassel *et al.*, 2005). The first part of this section will motivate the use of GRI in our model, and the second part will derive the model in detail.

Our motivation for including the GRI variable in the valuation model is in line with the academic literature and GRI developers as the following literature shows. Responsibility reporting is considered to have the potential to provide critical information for investors that is normally absent from financial reports. This information completes financial reports often with forward-looking information that can enhance the report users' understanding of such key value drivers as human capital formation, corporate governance, the management of environmental risks and liabilities, as well as the capacity to innovate. (Eggles *et al.*, 2001) Responsibility information is seen as relevant both for understanding the external environment in which the company conducts its business and assessing the elements that underpin the company's competitive advantage.

The quality of responsibility management can help investors to distinguish companies that are efficient and well positioned to protect their market competitiveness. Certain specific factors can help drive a company's value and, therefore, their disclosure is of interest to investors. These factors include a range of different competencies, actions and liabilities. For investors, current reporting delivers insufficient information on the intangible assets that may account for well over half the market's capitalization today. As a result, investors are making decisions based on incomplete information because they lack disclosures on how responsibility enhances value creation.

There is a growing body of evidence to support the assertion that responsibility can generate business benefits. There is, however, no irrefutable evidence of 'cause and effect'. Nevertheless, there is some statistical evidence of a link between responsibility performance and firm value. Advocates of responsibility argue that companies with good corporate governance and environmental and social performance deliver above-average financial returns and share performance. Some studies have demonstrated a statistical link between responsibility performance and share price (Graves and Waddock, 2000; Orlitzky *et al.*, 2003).

Greeves and Ladipo (2004) tested the value-relevance of responsibility reporting through an examination of the 'GRI pioneers' i.e., the first companies to adopt the GRI guidelines. They compared the performance of these GRI pioneers with that of the 'non-GRI reporting' companies in the Standard & Poor's (S&P) 1200 with respect to: share price volatility (beta), five-year revenue growth, and five-year operating profit margins. Their analysis indicated that as a group, the early adopters of the GRI had on average marginally lower share-price volatility and higher operating profit margins despite slower revenue growth. Moreover, they found that those companies which not only refer to the GRI guidelines when preparing their responsibility reports but publish a detailed 'GRI index' have, on average, substantially lower share-price volatility and significantly higher profit margins, with marginally higher revenue growth.

Also, the organizations working toward the development of GRI reporting share the view that GRI has stock market benefits. For example, the GRI (2002) guidelines argue that one of their benefits is: 'Responsibility reporting may reduce volatility and uncertainty in share price for publicly traded enterprises, as well as reducing the cost of capital (GRI, 2002). Fuller and more regular information disclosure, including much of what analysts seek from managers on an ad hoc basis, can add stability to a company's financial condition by avoiding major swings in investor behavior caused by untimely or unexpected disclosures.'

Overall, though scarce, the academic literature, together with organizations offering recommendations (such as the GRI and PRI) share the view that high-quality GRI reporting will be beneficial for stock markets. This view is supported by economics-based voluntary disclosure theory, where firms seek to reveal and inform their

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performance type to investors and other stakeholders (Clarkson *et al.*, 2008). The empirical evidence for the factual benefits of better GRI reporting, however, remains relatively unaddressed as an issue in the academic literature. This paper aims to contribute to filling this void.

In our valuation model, the market value of equity is a function of the book value of equity, accounting earnings, and responsibility reporting (GRI). Our model for firm value will be based on the seminal work by Ohlson (1995). Since its introduction, it has been a highly influential model in firm valuation (Callen and Segal, 2005; Gregory *et al.*, 2005). An equity statement that has no income other than net income from the income statement is a clean-surplus accounting statement (Penman, 2001). Based on a clean surplus accounting relation, it is possible to express a firm's security price as a function of the firm's book value of equity plus abnormal earnings as follows (Dechow *et al.*, 1999):

$$P_t = b_t + a_1 x_t^a + a_2 v_t \tag{1}$$

where:
$x_t^a = x_t - rb_{t-1}$, *where abnormal earnings (= abnormal net income) equal current period's earnings minus normal rate of return for the equity capital b for the period t-1*
P_t = *market value of a company on date t*

$$\alpha_1 = \omega/(1 + r - \omega)$$

$$\alpha_2 = (1 + r)/[(1 + r - \omega)(1 + r - \gamma)]$$

$$v_t = \mathrm{E}_t[x_{t+1}^a] - \omega x_t^a$$

The empirical implementation of the model requires three variables (b_t, x_t, and v_t) and three parameters (ω, γ, and r) to be provided as inputs (Dechow *et al.*, 1999). With regard to the variables, book value (b_t) and earnings (x_t) are basically readily available. We, however, are primarily interested in examining how a firm's responsibility reporting affects market value. Dechow *et al.* (1999) estimate the other information variable through markets' consensus forecast. In other words, analysts' forecasts are meant to capture and reflect all value-relevant information in addition to accounting data. Since we are interested in only one part of the other information, i.e., responsibility reporting, we use the responsibility reporting variable GRI as a proxy for the other information variable v_t (Hassel *et al.*, 2005). This allows us to study the effect of GRI on market value.

In the empirical implementation, following prior literature, we can apply a combination of values zero and one for variables ω (abnormal earnings persistence parameter) and γ ('other information' persistence parameter). In this case, we concentrate only on the parameter ω, since the other information variable (v_t) has been replaced with the responsibility reporting variable. With parameter value one (persistent abnormal earnings) for ω in Equation (1) results in the following earnings based valuation model V_t:

$$\omega = 1 \rightarrow \mathrm{V}_t = b_t + \frac{x_t}{r} - b_{t-1} \tag{2}$$

Equation (2) shows the linkage between earnings based value V_t, book value and abnormal earnings. Finally, in Equation (3), we can express market value of equity P_t as a function of earnings based value V_t and responsibility reporting (GRI).

$$\ln P_t = \beta_0 + \beta_1 \ln V_t + \beta_2 \mathrm{GRI} \tag{3}$$

For variables P_t and V_t a natural logarithm format was applied in an attempt to avoid the possibility of extreme values contaminating the results. This regression model recognizes the theoretical relationship between market value (P_t) and earnings based value (V_t). Finally, the model in Equation (3) allows us to study whether responsibility reporting has incremental value-relevance.

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Institutional Setting

For our research sample, we focus on Finland as it has a tradition of high-quality financial reporting (Lindahl and Schadewitz, 2008). Additionally, the sample firms were best able to implement new innovations or recommendations in their financial reporting (recognized pioneers in responsibility-type reporting). This insight was gained in collaboration with an environmental disclosure expert. The sample we use is all OMX-Helsinki-listed firms that have published GRI-based reports during the years 2002–2005.

A tradition of high-quality accounting means reliable, transparent financial reporting and, in turn, a reliable starting point for valuation purposes. The Corruption Perceptions Index, produced by Transparency International and Passau University (McAdam and Rummel, 2004; http://transparency.org.) ranks countries. In the 2005 ranking, which included 159 countries, Finland was ranked second.

A number of accounting studies (Ball *et al.*, 2000; 2006; Pincus *et al.*, 2002; Lara and Mora, 2004) have built differential analysis around the distinction between code law and common law. According to these papers, accounting is practiced differently in common law and code law countries. Common law is a market-oriented system (as in Australia, Canada, the UK, and the USA) and code law is a planning-oriented system (as in Germany and Japan). Finland is a code law country in this respect. Because northern European countries follow this tradition, the results obtained could, in this respect, be generalized for other northern European countries.

In several countries, national regulations specifically requiring various types of environmental disclosure began to emerge in the late 1990s in recognition of the material importance of environmental risks and liabilities. Denmark and the Netherlands became the first two countries to mandate environmental reporting for certain industrial sectors. In 2003, the Netherlands upgraded its requirements to embrace the full spectrum of responsibility and align with the GRI's framework. Economic regulations adopted in France in 2001 require listed companies to include detailed environmental and social information in their annual reports.

The application of the International Accounting Standards (IAS) at EU level (EC Regulation No. 1606/2002) requires organizations to account for changes to asset values stemming from environmental factors if they are financial (e.g., trading permits). The EU Modernization Directive (2003/51/EC) requires organizations seeking a stock-market listing to disclose risks associated with capital assets and requires financial regulators to assess those risks (in line with Commission Recommendation 2001/453/EC).[1]

Setting minimum mandatory standards for EU countries, the Accounts Modernization Directive (2003) requires all large companies (not just quoted ones) and medium-sized companies to include a fair review of the development and performance of the company's business and its position in their annual reports, including – 'to the extent necessary for an understanding' – information on environmental and employee matters. Large companies are also expected to produce non-financial key performance indicators. The EU has, since January 2005, demanded sustainable development disclosures from all member countries for all listed firms. Several countries have transposed the directive to national level. In 2003, the Finnish Accounting Board issued a general guidance on the recognition, measurement and disclosure of environmental issues as a part of a financial statement. In 2006, the disclosure requirements were enlarged to the Review of the Board of Directors. The Finnish Accounting Board's general guidance (KILA 12.9.2006) defines a complete set of environmental and social performance indicators and related qualitative information to be disclosed in the Review of the Board of Directors when these issues are material for business.

The importance of the EU Accounting Directives has recently declined somewhat among listed companies. The reason for this is that, as of 2005, these companies must prepare their consolidated financial statements according to the IAS. Most of the issues regarding recognition and the measurement of environmental and social issues are covered by IAS 16, 20, 36, 37 and 38, which have already been introduced to a certain degree in many countries. In IAS, however, responsibility is not emphasized as a special area and is addressed along with other issues. Responsibility-related references are included in the IAS Standards 36 (Impairment of Assets), 37 (Provisions and Contingent Liabilities) and 38 (Intangible Assets). Tradable emission rights will be reported on and accounted for under IAS 38 and allocated free of charge under IAS 20, as government grants.

[1] European Commission Recommendation of 30 May 2001 on the recognition, measurement and disclosure of environmental issues in the annual accounts and annual reports of companies (2001/453/EC).

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The content of responsibility-oriented financial reporting practices should generally improve with the application of IAS and additional reporting requirements in annual reports. Nonetheless, important concerns remain. The data reported are not standardized, which can pose difficulties for comparative reviews. Although the legal requirement for companies to report on their environmental performance is rapidly increasing in Europe, the varying degree and quality of local interpretation means that investors find it difficult to rely on information being quantitative, comprehensive and comparable.

There are no mandatory requirements for responsibility reporting in Finland. However, the GRI guidelines, as a framework for voluntary responsibility disclosure, are well established in Finland. According to the environmental disclosure expert, GRI guidelines are practically the only guidance followed in responsibility reporting in Finland. Several companies regularly publish GRI responsibility reports. Based on the KPMG International Survey of Corporate Responsibility Reporting (2005), Finland was one of the top countries for responsibility reporting (KPMG, 2005).

Data and Results

The recognition of responsibility value drivers in our study is based on the GRI reports. GRI-based reporting began in Finland in 2000, when the Kesko Group became the first Finnish-listed company to publish a responsibility report following the GRI guidelines for the year 2000. More systematic GRI-based responsibility reporting practices began to emerge after the launch of the second version of the GRI guidelines in 2002. That is also the first year in the sample. Our data are intertemporal and cover annual and GRI-based responsibility reports for all OMX-Helsinki-listed firms for the years from 2002 to 2005. The number of GRI-based responsibility reports increased from 7 in 2002 to 15 in 2005. Seventeen (36.9%) of those reports had independent external assurance, where a third party has reviewed the relevance and credibility of the disclosed information. Further, the number of reports with explicit GRI content index was 37 (80.4%). In line with prior research, finance and insurance sector firms are excluded. It should be mentioned that we searched for information on how the sample firms have performed regarding their financial reporting quality.

We were also interested in forming a picture of GRI reporters' overall reporting quality. We based our analysis on success and public recognition in financial reporting competitions and rankings. The results of the three well-recognized rankings and financial reporting competitions (H&H Webranking (www.webranking.eu), Best Investor Webpages Competition (www.talouselämä.fi; *Talouselämä* is a well-recognized business magazine in Finland), and Company Disclosure and Financial Reporting Competition (www.omxnordicexchange.com)) gave us insight into the GRI firms' overall reporting quality. In general, firms publishing GRI reports performed very well in these competitions. For example, 7 out of the 15 GRI firms we use in our studies were in the top 10 in H&H Webranking in 2002 and 2005. In the Best Investor Webpages Competition, firms following GRI reporting are frequently among the finalists. With regard to the Company Disclosure and Financial Reporting Competition, the majority of the awarded firms were those following also GRI reporting (2003–2005). The overall performance of GRI firms in terms of reporting is strong.[2] The descriptive statistics of the applied variables are displayed in Table 1.

Variable	Mean	Std. Deviation	Minimum	Q1	Median	Q3	Maximum
P_t	5.831	1.694	2.053	4.719	5.571	6.725	12.119
V_t	5.620	1.669	0.361	4.534	5.541	6.585	11.932
GRI	0.127	0.333	0	0	0	0	1

Table 1. Descriptive statistics for variables
n = 276
P_t = market value of a company on day t.
V_t = market value of a company according to a valuation model (Equation (2)).
GRI = An indicator variable (0/1) showing whether a firm based its reporting on Global Reporting Initiative (GRI) guidelines.

[2] More details available from the authors on request.

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Negative earnings do not have a clear interpretation in a valuation model such as the one applied here. They were thus eliminated (about 9% of the sample). The mean and standard deviations figures in Table 1 are very close between the market value variable (P_t) and earnings-based valuation variable (V_t). The same is also true of the median and other descriptive statistics values for P_t and V_t. The mean value of the GRI indicator variable at 0.127 shows that during the research period 2002 through 2005 only a relatively small fraction of listed firms were active in their responsibility reporting. At the beginning of the research, we had 46 GRI reporting firm-year observations. We then collected the main listed firms from OMX Helsinki for the period 2001–2005. We also defined variables x_t, b_t, b_{t-1} and r. That leaves us with n = 354 (43 GRI reporting firm-year observations and 311 others). For the pricing model n = 276 (35 GRI firm-year observations and 241 others).

In the return computations we applied a market model; in other words returns were market and risk adjusted. Risk-free return was computed on a yearly basis as a 12-month average figure based on the Finnish government bond rate (10 years maturity). Market model beta was based on daily data and market return was based on long-run market development during the period 2002–2005. In order to restrict the potential domination of larger firms, we applied a portfolio index where the maximum weight for one firm was 10%. Throughout the years, the risk-free rate and beta were allowed to change in order to compute the cost of equity capital consistent with the market model. The book values of equities were based on firms' annual balance sheet information (accounting year end values). The market values of companies are year-end market capitalizations. The source for the data applied was Thomson Financial Services (commercially available).

Table 2 shows that, overall, the share price is highly correlated with the value-based-on-earnings valuation model (0.855). In contrast, the *GRI* variable is not so strongly correlated with a price variable (0.551) or earnings-based value variable (0.509). However, it should be mentioned that in all cases the correlation level is statistically highly significant. Visual inspection shows that there is no heteroscedasticity with the data. Furthermore, the data passed the Gauss-Markov conditions.

Regression results, based on Equation (3), are reported in Table 3. The table shows that, overall, the model explained market valuation well, Adj. R^2 being 74.7%. More importantly, the obtained results reported in Table 3 support the conclusion that GRI responsibility reporting has been beneficial for firm value. Specifically, the *GRI* coefficient is high (0.792) and so is its statistical significance (1% level). We estimate the regression model also without the *GRI* variable and discover, based on F-test, that the inclusion of *GRI* has incremental value (significance 1% level). The regression results are reported in Table 3, Panel B and F-test in Panel C.

The results strongly support the view that earnings only partially capture the relevant valuation information. This is in line with several recent studies that have raised concerns regarding earnings informativeness (Collins *et al.*, 1997). To be specific, one of their fundamental findings was that the incremental value-relevance of 'bottom line' earnings has declined, and it has been replaced by the increasing value-relevance of book values. Our model takes both of these parameters, accounting earnings, and book values, into account. Despite that, the *GRI* variable gained a highly significant coefficient. In other words, GRI responsibility disclosures have value-relevant information above and beyond that given in the earnings and book value.

n = 276	P_t	V_t	GRI
P_t	1		
V_t	0.855***	1	
GRI	0.551***	0.509***	1

Table 2. Correlations between variables
P_t = market value of a company on day t.
V_t = market value of a company according to a valuation model (Equation (2)).
GRI = An indicator variable (0/1) showing whether a firm based its reporting on Global Reporting Initiative (GRI) guidelines.
*** Designates statistical significance at the 1% level.

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Panel A: Regression with responsibility reporting variable, P_t as the dependent variable

Variables	Coef.	t-value	p-value
Intercept	1.302	6.605	0.000
V_t	0.788	22.043	0.000
GRI	0.792	4.424	0.000
Adj. R^2	0.747		
n	276		

Panel B: Regression without responsibility reporting variable, P_t as the dependent variable

Variables	Coef.	t-value	p-value
Intercept	0.950	5.098	0.000
V_t	0.868	27.310	0.000
Adj. R^2	0.730		
n	276		

P_t = market value of a company on day t.
V_t = market value of a company according to a valuation model (Equation (2)).
GRI = An indicator variable (0/1) showing whether a firm based its reporting on Global Reporting Initiative (GRI) guidelines.

Panel C: F-test between regressions with and without the responsibility variable

$F_{1.273}$	$F_{statistical}$
6.729***	19.574

Table 3. Regressions with and without responsibility reporting variable
$F_{critical} < F_{statistical}$ designates that there is a statistical difference between adjusted R^2s in panel A and panel B.
*** Designates statistical significance at the 1% level.

Conclusions

In this paper, we first analyzed the responsibility reporting literature with an emphasis on the linkage between reporting and firm performance and firm valuation. Based on the literature review, we developed a research question: How does the communication via responsibility reporting affect firm value? The market valuation of listed Finnish firms through a conventional valuation model combined with responsibility reporting was analyzed. The starting point for our valuation was the Ohlson model. We expanded upon the conventional valuation by studying whether communication via responsibility reporting is related to a firm's valuation. Our research question is linked to the broader academic question of whether earnings worth as an information source has been erased over the last few years. In addition to that, we contribute to the literature that tries to understand the link between CSR and firm performance/share performance. Specifically, we focused on responsibility reporting according to the GRI and especially on whether the existence of those reports provides a further explanation for firm value.

Our sample was a population type that covered all listed Finnish firms that have adopted GRI. No other responsibility reporting practice was used by listed firms in their responsibility reporting communication during the years 2002–2005. The other necessary information for valuation models was obtained from Thomson Financial Services (commercial database).

The applied model supported the conclusion that communication via GRI responsibility reporting is an important explanatory factor for a firm's market value. The result indicates that responsibility reporting is a part of a firm's communication tools in order to decrease information asymmetry between managers and investors. In other words, GRI responsibility reporting is called for in order to produce a more precise market valuation of a firm.

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The findings reported here have theoretical, managerial, as well as legislative importance. Theoretically, the Ohlson model has gained wide support because it offers a sound theoretical relation between accounting information (especially earnings) and market value. The results show that other information – in this case GRI responsibility disclosures – contribute to the market value of a firm. The contribution is beyond what earnings together with book values can predict.

In modern capital markets, a firm's share-price behavior is a highly important issue. In the long run, it is best for all stakeholders that the share price correctly reflects the 'true' economic value of a firm. Our results show that managers can increase the informativeness of share prices via responsibility reporting. It is beneficial for firms to communicate GRI responsibility information as a part of their annual reporting practice. This research finding supports the conclusion that theory-based conventional valuation models can be refined by explicitly taking into account responsibility information in a firm's disclosures.

The results obtained highlight the importance of responsibility disclosures for firm value. Nowadays, responsibility reporting is conducted on a voluntary basis in Finland. However, the increased importance of responsibility issues is also raising the demand for responsibility information. This, in turn, highlights the role of regulators in this important reporting issue. Also in general there are attempts to include sustainability concerns in policy assessment procedures (Weaver and Jordan, 2008). Our hope is that the results here have provided additional insight into this responsibility reporting issue and indicate that it has value relevance. This issue should also carry weight for regulators and other policy when they execute their function.

Because only a relatively small fraction of Finnish firms publish responsibility reports, further research could usefully study the major determinants for the reporting or non-reporting of responsibility information.

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