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Implications of Past Unethical Risk Behaviour of Board Members and CEOs on the Environmental Performance and Reporting Quality of Firms

Lars G. Hassel
Åbo Akademi University, School of Business and Economics
FI-20500 Turku, Finland and
Umeå University, Umeå School of Business and Economics
SE-90187 Umeå, Sweden
Lars.Hassel@abo.fi

Juha-Pekka Kallunki
University of Oulu, Department of Accounting and Finance
P.O. Box 4600, FIN-90014 University of Oulu, Finland
Juha-Pekka.kallunki@oulu.fi

Henrik Nilsson
Stockholm School of Economics, Department of Accounting
P.O. Box 6501, SE-113 83 Stockholm, Sweden
Henrik.Nilsson@hhs.se

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Abstract

We investigate how the past unethical risk behaviour (PURB) of board members and top executives relates to the environmental performance and the quality of environmental reporting of Swedish listed firms. By focusing on past criminal convictions, suspected crimes, non-payment records and bankruptcy histories, we create a composite measure of ethical and risk preferences of these important company officials. Besides behavioural aspects, our empirical analysis also addresses how their investments in the firm, relative to their total wealth, influence environmental performance. The goal is to improve our understanding of the importance of the character of board members and the CEO for the environmental strategy of the firm. The results show a negative relation between board members' PURB and the environmental performance of the firm. Boards with a higher proportion of risk-prone, unethical members seem to focus less on the environmental concerns of their businesses. The relation between board ownership and environmental performance is also negative. The result is consistent with board members with a large stake of their total wealth invested in the company considering environmental performance as costly in the short term. In accordance with prior research, we also document a positive relation between the proportion of women on the board and the environmental performance of the firm. Finally, our findings show that board members are more important than the CEO for the environmental performance of the firm, consistent with the board's central role of developing the firm's environmental strategy. Overall, the paper demonstrates the importance of diverse board members for the sustainability of the firm.

1. Introduction

Corporate social responsibility (CSR) is a term used to describe a firm taking responsibility for the impact of its activities upon a broader group of stakeholders. It is often described in terms of environmental and social performance and used in the context of voluntary CSR engagements, commitment to foster ethical issues and non-financial performance reporting (Heal, 2004). Sometimes these activities are discussed in terms of sacrificing profits for the social interest (Reinhardt et al., 2009). During the twenty-first century, a growing interest in the environmental and social performance of the firm has emerged and become apparent to the financial markets. For example, in the latest UN Global Compact CEO survey (2010), more than 90 per cent of CEOs globally agreed that sustainability is an 'important' or 'very important' factor for the future success of their business. Moreover, 81 per cent declared that sustainability issues are now fully embedded into the strategy and operations of their organizations. Independent risk and performance ratings by ASSET4 (Thomson Reuters), GES Investment Services (GES) and Kinder, Lyndenberg and Domini (KLD) demonstrate a

heterogeneity in CSR performance across firms (Ioannou and Serafeim, 2010). While the knowledge of how firms can improve their environmental performance has improved over the years, little is still known about how corporate governance separates the environmental leaders from the laggards. There are national regulations, such as a CO_2 tax in Sweden, stipulating minimum levels of environmental performance. Based on both cross-company and -industry variability in CSR ratings, we can conclude that some firms design and implement a wide range of environmental and social strategies. Environmental or sustainability leaders invest in environmental, social and governmental issues that far exceed current regulation. An interesting question is what makes some companies voluntarily do more than required, while others decide only barely to follow minimum levels of current legislation. A number of motives have been proposed to explain outstanding environmental performance. According to Hong et al. (2011), these can be broadly grouped into two categories: (*i*) financial performance and value-enhancing motives and (*ii*) environmental and social performance driven by values with non-profit motives. The advocates of the value-enhancing view see environmental and social efforts as a way to increase competitive advantage and improve financial returns for the firm and its investors by doing good while doing well. Investments in environmental/social programmes are expected to increase profit in the long run through the reduced cost of conflicts with society, improved production efficiency, better relations with regulators, increased brand value, higher employee productivity and reduced overall risk and cost of capital (Heal, 2005). The main non-profit motives are driven by philanthropic and altruistic managers acting in accordance with their own values consuming corporate goodness as a perk or use it as an entrenchment device. Such a policy can also lead to overinvestment in CSR doing good but not financially so well.

In accordance with the value-enhancing motives, numerous academic studies have investigated the relation between environmental performance and the performance of the firm in terms of profitability and firm value (e.g. Orlitzky et al., 2003). These studies differ in both results and methodologies; recent investigations have highlighted potential endogeneity problems in this research, i.e. financially wealthy firms might spend more on CSR simply because they can afford to (Hong, 2011). Also, based on results from previous studies, the relation between environmental and financial performance seems both complex and non-linear. Traditionally, however, research has not focused on why or why not organizations choose to act in a socially responsible manner (Campbell, 2007; Rowley & Berman, 2000; Ullman, 1985). Researchers have, therefore, recently argued that future studies should focus on attempting to find a link between corporate social and financial performance to better

understand why some companies perform better than others in terms of environmental and social objectives (Campbell, 2007; Margolis et al., 2007). Along this line, studies have investigated how firm-specific factors and country-specific institutional factors affect the social and environmental performance of firms (see Artiach et al., 2009; Ioannou and Serafeim, 2010). Most relevant to our research is the work by Post et al. (2011) and Krüger (2011). Both studies address the question of how corporate governance, or to be more specific, board composition, affects the environmental performance of firms. They use traditional measures of board composition, such as the proportion of outside directors and women on the board, as proxies for board diversity. We extend this line of research by focusing on the characteristics of board members and top executives. Board decisions are made, influenced and monitored by individuals, and the quality of these decisions may vary not only regarding the firm's characteristics and the structure of governance mechanisms, but also regarding the characteristics of directors and senior executives. This paper shifts the focus to the individual level by investigating the importance of board members' and CEOs' characteristics for the environmental performance and reporting quality of firms listed on the Swedish stock market. More specifically, we examine how past unethical risk behaviour (PURB) is associated with the environmental performance and reporting quality of the firm. PURB is measured in terms of prior criminal records, bankruptcy histories and non-payment records of board members on listed Swedish companies. We use this metric to proxy for board members' and CEOs' ethical and risk preferences. Ethics and risk are two important constructs that have previously been theoretically and empirically linked to environmental concerns on both the individual and the firm level.

Our measure is theoretically linked to environmental performance by the Upper Echelon theory, the environmental concern literature and established theories within the behavioural field linking criminal convictions to risk taking and adverse behaviour. According to the Upper Echelon theory, managerial experiences, values and cognitive styles, such as honesty, affect managers' choices and, consequently, corporate decisions (Hambrick, 1984). Research on environmental concerns indicates that environmental values can vary across demographic characteristics and personal traits (see Fransson and Gärling [1999] for a review). Based on this literature, we argue that criminal convictions, together with information about non-payment records and multiple bankruptcies, can be used as a proxy for CEOs' and board members' preference for the importance of environmental performance and risk management. We hypothesize that when the proportion of board members with past unethical records grows and/or when the company has a convicted CEO, the environmental performance and the

quality of environmental reporting of the firm will be lower due to the board becoming more short-term oriented, having more limited risk awareness, having inadequate monitoring and control mechanisms and, ultimately, having a lower strategic decision-making capability in general. A board with a higher proportion of unethical, risk-prone individuals is less likely to manage potential environmental risks or be able to reflect on positive cash-flow effects from exploiting environmental opportunities. In addition to environmental performance, we also examine how the quality of environmental reporting is related to PURB. After controlling for environmental performance, we expect boards with a high proportion of unethical, risk-prone individuals to pay less attention to the environmental reporting of their firms. A positive relation, on the other hand, would be consistent with window dressing as suggested by sociological disclosure theories (e.g. Patten, 2002). Furthermore, based on incentive literature and previous research on the importance of board composition for the firm's financial performance, we study how the individual ownership incentives of CEOs and board members affect the environmental performance. Specifically, we examine whether firms into which board members and/or CEOs have invested much of their total personal wealth perform better environmentally. Unlike previous studies, we measure equity incentives in relation to the total wealth of the firm's key players. By relating individual economic incentives to environmental and social performance, we gain further insights into whether board members see investments in environmental activities as costly or potentially value increasing. Hence, in our setting, we can control for the extent board members vote with their wallets. By studying how ownership incentives affect environmental performance, we provide additional insights into the continuing debate on whether the environmental performance of the firm is perceived to create or destroy shareholder value.

The results show a negative relation between the proportion of board members with PURB and the firm's environmental performance. Hence, firms with a larger proportion of risk-prone, unethical board members seem to focus less on the implications of environmental risks and opportunities for their businesses. The same type of association is found for the relation between PURB and the firm's environmental reporting. However, this effect becomes insignificant after controlling for environmental performance in a multivariate setting. Concerning the relation between board ownership and environmental performance, we document a negative association between the two variables. The result is consistent with board members with a large stake of their total wealth invested in the company considering environmental performance as costly in the short term. In accordance with prior research, we also document a positive relation between the proportion of women on the board and the

environmental activities within the firm. Additionally, our findings show that board characteristics are more important than the CEO's for the firm's environmental performance, consistent with the board's central role of developing the firm's environmental strategy. Overall, the paper emphasises the importance of having diverse board members.

The remainder of the paper is organized as follows: in Section 2, we review the literature and develop our testable predictions. Section 3 discusses the sample, data and empirical models. Section 4 presents our empirical analysis and results and Section 5 discusses our conclusions and policy implications.

2. Theoretical background

Our work is mainly related to three streams of research in the literature. We start by presenting some important work linking environmental and financial performance and also discuss previous studies investigating determinants of environmental performance. We then review relevant findings from the literature linking board composition to the financial performance of firms and based on recent evidence how corporate governance and board structure relate to the environmental performance of firms. Finally, we address models linking prior convictions, non-payment records and involvement in bankruptcy to adverse behavioural traits and discuss how they are related to the ethical and risk behaviour of board members and CEOs and, ultimately, to the environmental performance of firms.

2.1 Environmental and financial performance

Considerable research has focused on the relation between environmental and financial performance and, ultimately, firm value. As indicated by Orlitzky et al. (2003), the results have been somewhat mixed, producing two opposing views with respect to the value relevance of environmental performance. Proponents of the negative relation argue that environmental investments and high environmental and/or social performance represent overspending, with increased costs resulting in decreased earnings and lower market values (e.g. Walley and Whitehead, 1994; Barnett, 2007). Investments in employee relations and environmentally friendly production practices, charitable donations, the promotion of community development and the regeneration of economically and environmentally depressed areas represent mainly cash outflows leading to market values trading at discount. The advocates of the positive view see environmental and social efforts as a way to increase

competitive advantage and improve the financial returns to the firm and provide a premium to the investors. Investments in environmental/social programmes are expected to increase profit in the long run through the reduced cost of conflicts with society, improved production efficiency, better relations with regulators, increased brand value, employee productivity and reduced overall risk and cost of capital (Heal, 2005). This could potentially make companies more attractive to investors, customers, employees and other stakeholder groups. Consequently, environmental and social performance can affect financial performance either directly through an efficient utilization of human and material resources for the business case, or indirectly through a positive image held by customers, suppliers and the community (Orlitzky et al., 2003; Brammer et al., 2006). Theoretical work by Porter and van der Linde (1995) and Brännlund and Lundgren (2009) has, based on a Porter effect, suggested that proactive environmental policies improve financial performance through increased competitiveness and productivity by improvements in both product differentiation and process innovations. Clarkson et al. (2011) have demonstrated that environmental leaders in high-impact US sectors, with sufficient financial resources and management capabilities, can exploit the financial benefits of a proactive environmental strategy. Firms need both financial resources and management competence to capitalize on environmental opportunities. A third body of research is sceptical about the relation between CSR performance and economic performance (e.g. Hong et al., 2011).

The mixed results within the field have been explained by the various research methodologies and designs used, the variation in the measurement of environmental and social performance and differences in the measurement of financial performance. The variation in previous results also suggests that the relation between environmental and financial performance is complex and can be non-linear and dependent on the industry context (Semenova, 2011). Researchers have, therefore, recently argued that future studies should focus on attempting to find a link between corporate social performance and value in order to better understand why some companies adopt corporate social strategies and what actually determines the CSR performance of firms (Campbell, 2007; Margolis et al., 2007). Along this line, Ioannou and Serafeim (2010) investigate how country-specific institutional factors affect the social and environmental performance of firms. In a large global, longitudinal study, they find that political institutions, followed by legal and labour market institutions, are the most important country determinants of firms' social and environmental performance. In contrast, capital market institutions have a more limited role as drivers of environmental and social performance. Artiach et al. (2009) focus on how firm-specific factors affect environmental

performance when companies are members of the Dow Jones Sustainability World Index. Their results indicate that size, growth and, to some extent, profitability are important determinants of CSP. They find no support for the hypothesis that high CSR performers create more free cash flows and lower leverage than other firms. More recently, researchers have started to investigate how corporate governance is related to the sustainability of firms.

2.2 Board composition and environmental performance

Corporate boards consist of individuals who collectively share their opinions and make decisions in board meetings regarding the current and future operations of firms. The boards of directors are not only responsible for the strategic decision making of firms, but they can also significantly influence tactical corporate decisions, in particular by monitoring the decisions of senior executives (Larcker et al., 2007). Furthermore, the CEO is often a member of the board. Although board decisions are based on collective opinion sharing and decision making, the composition of the board, and particularly the characteristics of its members, has been found to play a significant role in its actions (e.g. Raheja, 2005; Adams and Ferreira, 2008; Fischer et al., 2009). In essence, a board consists of individuals and its composition and diversity play a crucial role in its effectiveness as a governance mechanism (Fama, 1980; Fama and Jensen, 1983). Moreover, it has been demonstrated that the strategic decision making will vary in boards with different characteristics (see, for example, Weisback, 1988; Coles et al., 2008). For instance, Westphal and Frederickson (2001) suggest that board members' beliefs and prior experience influence CEO selection and, ultimately, the firm's strategic direction. Research in the fields of accounting and finance has also showed that board composition matters for the financial performance of firms (see Hermalin and Weisbach, 2003; Adams et al., 2010, for a review).

The relation between corporate governance and the firm's sustainability has recently been put on the research agenda. Most relevant to our research is the work by Post et al. (2011), Bear et al. (2011) and Krüger (2011). These three studies address the question of how board composition affects the environmental performance of firms. Post et al. use KLD ratings for environmental performance and find that the proportion of outside board directors is associated with higher KLD scores. Moreover, firms whose boards composed of three or more female directors received higher ratings. Board composition in terms of age and education also seems to have some effect on environmental concerns and strengths. An event study by Krüger (2011) examines whether and how positive and negative social responsibility events relate to the characteristics of a firm's board of directors. Results show that a higher

percentage of experienced inside directors are associated with less frequent negative events. The proportion of female board members and the directors' equity ownership also influence KLD scores. Previous studies have not considered the behavioural characteristics of board members and the CEO for the firm's environmental performance. A natural extension of the research by Post et al. (2011) and Krüger (2011) is to examine how behavioural traits of board members and executives affect the sustainability of firms.

2.3 Linking personal characteristics to environmental performance

This paper proposes that CEOs and individual board members with different personalities vary systematically in their information processing of, and their attitudes and behaviour towards, environmental risks and opportunities. Board members will, because of their own characteristics and as members of a group, treat environmental risks and opportunities differently. A board composed of a high proportion of individuals with little or no interest in, or knowledge of, environmental issues potentially has consequences for the sustainability of the firm. Fransson and Gärling (1999) show that knowledge, an internal locus of control (positive control beliefs), personal responsibility and perceived threats to personal health are factors positively related to the environmental concerns of individuals. Different aspects of ethics and its effect on environmental concerns have also been investigated. Nilsson et al. (2004) find support for religious belief being positively related to environmental concerns among individuals in general. In addition, results from the field of finance indicate that individuals differ in values and concern for environmental and social issues. Hong and Kostovetsky (2012) demonstrate that portfolio managers who make private campaign donations to Democratic politicians invest less of their managed portfolios (relative to Republican donors) in firms deemed socially irresponsible. Democrats tend to exclude tobacco, guns, or arms or companies with bad employee relations or diversity records.

According to the Upper Echelon theory, managerial experiences, values and cognitive styles, such as honesty, affect managers' choices and, consequently, corporate decisions (Hambrick, 1984, 2007; Hackbarth, 2008). Board members' and executives' choices are assumed to be influenced by their personal traits, experiences, incentives and values. Empirical results have showed that managerial overconfidence, over-optimism, the illusion of control and sensation seeking have financial consequences for firms. Greater risk taking accounts for higher corporate debt levels (Ben-David et al., 2007), investment distortions (Malmendier and Tate, 2005), unsuccessful mergers and acquisitions (Roll, 1986; Malmendier and Tate, 2008) and overall company risk taking (Cain and McKeon, 2010). In

accordance with the Upper Echelon theory, Giuli and Kostovetsky (2011) find that firms perform better environmentally and socially when they have Democratic rather than Republican founders, CEOs, and directors and when they have their headquarters in a Democratic state. Also extreme personal traits have been linked to CSR. Research by Boddy et al. (2010) indicates that firms with psychopaths in top management tend to be associated with less socially responsible policies, at least in the eyes of their employees.

We maintain the notion that managerial traits can affect both financial and environmental corporate decisions. Furthermore, we contend that personal traits, such as unethical behaviour and extreme risk taking, captured in this paper by a tendency among company officials to commit crimes, be suspected of crimes, not pay their bills and frequently be involved in bankruptcies will affect strategic decision making and, ultimately, the firm's environmental performance and reporting quality. The paper proposes that, as senior company officials, these individuals' information processing of, and attitude towards, environmental risk and opportunities will have a significant impact on their decision making on the firm's environmental strategy.

2.4 Personal traits related to criminal records, non-payment records and bankruptcy activities

Amir et al. (2011) present evidence that a not-insignificant proportion of board members in Swedish listed firms have been convicted of crimes. They find evidence that a greater proportion of fraudulent board members results in the lower accounting quality and profitability of the firm. In a similar study in the United States, Davidson et al. (2011) show that board members with a criminal record have a relatively high propensity to commit accounting fraud. The results from the two studies can best be understood by looking at prior behavioural-related research suggesting that several aspects of individuals' characteristics are related to their unethical, antisocial or even criminal behaviour. Donaldson et al. (2001) state that '[t]he criminology literature defines crime as an act of force or fraud undertaken in the pursuit of self interest, and argues that individuals with greater propensities to commit crimes are likely to have low self-control and are less likely to conform to social norms and laws'. In general, individuals displaying hedonistic or overconfident behaviour are more likely to commit crimes. For example, Jones and Kavanagh (1996) show that individuals who lack conventional morality and are effective manipulators of others exhibit significantly more unethical behavioural tendencies than other people. Blickle and Schlegel (2006) argue that low behavioural self-control, high hedonism, high narcissism and high conscientiousness are

positively related to the likelihood of committing white-collar business crimes. The high proportion of fraudulent individuals found by Amir et al. (2011) supports the research by Pech and Slade (2007), who suggest that firms sometimes appoint and promote to top managerial positions individuals who may be incompetent, narcissistic or good at manipulating other members of the group. They conclude that these individuals can be characterized as organizational sociopaths, sometimes promoted repeatedly until they reach the highest levels of the organizational hierarchy. In addition, Jones et al. (2004) suggest that business cultures actually tolerate and favour manipulative, egotistical and self-centred managerial behaviour. If the organizational cultures described in these studies are widespread among firms, finding fraudulent individuals on boards of directors and in top management may be quite common. The results in Amir et al. (2011) show that having unscrupulous board members most likely reduces the board's ability to effectively monitor and advise the management. In particular, board members with lower ethical standards who fail to follow the principles and norms of society would be expected to put less emphasis on corporate governance rules and principles that require board members to monitor and advise the management. These board members are more interested in enjoying their private benefits of being on the board, such as monetary compensation and reputation, rather than putting in maximum effort. Studies even suggest that these personal characteristics may result in poor business decisions because the individuals with these characteristics are not appointed to their positions due to their skills, but because they can manipulate those who promote them (e.g. Pech and Slade, 2007). Research also shows that individuals with psychopathic traits are keener to make unethical decisions through moral disengagement (Stevens et al., 2012).

Two more common, and less extreme, behavioural attributes that have been documented as associated with criminal behaviour are sensation seeking and overconfidence. Sensation seeking may be defined as an individual's tendency to take physical, social, legal or financial risks simply for the sake of the thrill (Zuckerman, 1994). Sensation seekers are relatively fearless and take risks because of the thrill resulting from risk taking, not because of the expected utility resulting from actions that involve greater risk. Levenson (1990) argues that sensation seeking is associated with antisocial behaviour. Overconfidence among individuals is perhaps the most robust finding in the literature on the psychology of judgement (DeBondt and Thaler, 1995). Overconfident individuals are overly optimistic, underestimate their own personal risks and take too few precautions (Sandroni and Squintani, 2004; Malmendier and Tate, 2008; Shefrin, 2010). They are especially overconfident about outcomes they believe are under their control and to which they are firmly committed. Overconfidence is strongly

related to committing crimes. Overconfident individuals underestimate the probability of getting caught and punished and are generally less deterred by punishment (Garoupa, 2003; Palmer and Hollin, 2004; Walters, 2009). Sandroni and Squintani (2004) find that overconfidence has been recognized as a major determinant of traffic accidents in many different countries. Moreover, McKenna (1993) shows that the illusion of control characterizes risky drivers. Grinblatt and Keloharju (2009) measure the attitude of investors towards risk in terms of the number of speeding tickets they have received and find a positive relation between the number of speeding tickets and risk taking in the stock market.[1] This study suggests that even a relatively minor traffic offence, such as speeding, can capture differences in risk behaviour. Amir et al. (2011) demonstrate that overconfidence is the most likely explanatory factor behind the negative relation between fraudulent boards and volatility of earnings. Board members who have exhibited fraudulent behaviour (e.g. have been convicted of crimes) may have a greater tendency to have an overconfident behaviour and display extreme risk taking. They may advise or even require the management to take unwarranted operating and financial risks. For instance, they may recommend to the management that it implements over-risky business strategies or enters overly speculative investment projects that do not, for example, consider environmental implications, possibly resulting in future costs. The potential for environmental incidents increases in companies overconfident in their environmental risk management. In summary, behavioural and criminology literature suggest that criminal convictions can be used as a proxy for personality traits, such as dishonesty and excessive risk-seeking behaviour.

3. Hypothesis development

3.1 Past unethical risk behaviour and environmental performance

Bénabou and Tirole (2010) discuss three views on why firms might engage in CSR actions, such as voluntary environmental performance-enhancing activities and disclosures. First, CSR as a business case can increase competitive advantage, decrease operating risk and boost long-term profitability. Second, the delegated philanthropy view sees the firm as a channel for expressing good citizenship values. Among stakeholders, there are investors and customers willing to sacrifice returns in order to improve the environment and society in general.

[1] Fisman and Miguel (2007) find that the number of unpaid parking tickets by United Nations diplomats is significantly related to the level of corruption and legal enforcement in their home countries. This study shows that even the most common traffic offence may be used as an indication of character.

Derwall et al. (2010), for instance, provide evidence of both a values-driven and a profit-seeking segment among institutional investors. The former is prepared to sacrifice returns for a common good. This view also assumes that some stakeholders demand that corporations engage in philanthropy on their behalf and that the executives and board implement their desires. The last reason is individually oriented and reflects board members' own values to engage in philanthropy. This could be driven by altruism, i.e. a genuine desire to improve society. Alternatively, social and self-esteem image concerns might affect individual behaviour. For instance, several recent experimental studies suggest that buying social prestige is one important incentive for individuals to engage in social behaviour (e.g. Lacetera and Macis, 2008; Funk, 2008).

As previously discussed, the results in Amir et al. (2011) suggest that the characteristics of board members and CEOs that are linked to the propensity to break the law have a negative effect on financial performance. The main reasons for this finding are said to be excessive risk taking and poor monitoring. We extend these findings and suggest that the results also have implications for the firm's environmental performance. In fact, the negative link between the characteristics of company officials and the firm's environmental performance should be even stronger since the firm's environmental strategy is under the direct control of the board and the CEO. We suggest that board members and CEOs with a criminal record, ceteris paribus, are more short-term oriented, are less concerned about the environment, underestimate environmental risks and are less knowledgeable to exploit environmental opportunities. Hence, a high proportion of unethical, risk-prone board members decrease the probability of environmental advocates on the board safeguarding against over-optimistic groupthink, systematically asking the management to present worst-case scenarios and suggesting strategies that consider environmental risks and their handling. Furthermore, it is less likely that an unethical, risk-prone board considers environmental opportunities that negatively affect short-term profit and are critical to long-term value maximization based on sustainability. We propose that when the proportion of convicted board members increases, their concerns for environmental risk management will decrease and their capability of exploiting environmental opportunities will be lower.

To enhance the validity of the construct of unethical risk behaviour, the paper goes beyond prior convictions or suspected serious crimes by introducing a composite measure of company officials' PURB by adding two economic decision variables. First, we include the non-payment records of board members. Not paying bills is unethical per se and also indicates poor monitoring skills. Moreover, overconfident and overly optimistic individuals

overestimate their ability to avoid negative events and, consequently, underestimate the risk of their overborrowing (e.g. Kilborn, 2002; Sullivan et al., 1999). They underestimate the risk of the mismatch between their present borrowing and future income, or that small incremental borrowing could lead to substantial financial problems. The same type of behaviour could apply when underestimating environmental risks. In addition, it has been observed in insurance research that a person's credit history predicts various types of accidents because similar personal traits, including sensation seeking and excessive risk taking, are found in individuals who do not behave responsibly in financial matters (e.g. Brockett and Golden, 2007). Therefore, the individual payment defaults of CEOs and directors reflect the same adverse managerial traits that have been found to affect corporate financial decisions. Individuals who cannot manage and monitor their own personal finances are less likely to be useful as monitors, advisors or strategic decision makers in financial and environmental concerns at firm level. Second, we include a measure of the past bankruptcy involvement of board members and CEOs. Being involved in multiple bankruptcies could, among other things, be a result of fraud, extreme risk taking, free-rider behaviour, poor monitoring skills or managerial incompetence in general. All the three subdimensions mentioned are proxies for the unethical risk behaviour of board members. The paper constructs a composite measure for PURB based on the past bankruptcy histories and non-payment records of the individual board members or the CEO, together with their criminal convictions or suspected crimes. We expect a negative relation between PURB and the firm's environmental performance. The following hypotheses will be tested (stated in alternate form):

H1. There is a negative relation between the proportion of convicted board members and the environmental performance of the firm.

H2. There is a negative relation between there being a convicted CEO and the environmental performance of the firm.

3.2. Past unethical risk behaviour and the quality of environmental reporting

Alongside mandatory financial disclosures, companies also voluntarily report on their environmental impacts. Voluntary disclosures are meant to remove information asymmetries between the firm and external stakeholders. In a situation where environmental disclosures are mainly voluntary, we can also expect differences in the scope and quality of such reports.

Not all firms choose to make voluntary disclosures and those made have different qualities and vary in auditor assurance.

In a review of environmental disclosure research, Berthelot et al. (2003) suggest that a firm's voluntary environmental disclosures increase with firm size, the environmental impact of the industry in which the firm operates, the greater diversity of ownership, the firm's media exposure, the likelihood of environmental incidents and the concerns of non-governmental organizations about a firm's environmental performance. The financial characteristics of the firm, such as profitability and leverage, have also been found to relate to environmental disclosures (Brammer and Pawlin, 2006).

Research on the relation between environmental performance and reporting has provided mixed evidence and an explanation for two competing incentives or theoretical views. Voluntary disclosure theory posits that firms with a superior environmental performance have incentives to increase transparency and a management competence to supply quality disclosures, while environmentally lagging firms can lack the management capability or have problems mimicking the leading environmental performers (Clarkson et al., 2008, 2010). Consequently, the relation between environmental performance and reporting quality is expected to be positive. In contrast, sociopolitical theories suggest that environmentally lagging firms want to enhance their legitimacy by increasing their environmental disclosures. Similarly, positive disclosures have been found in politically and environmentally sensitive industries (Deagan and Gordon, 1996; Halme and Huse, 1997) and among high-emitting firms (Patten, 2002), which would be in line with sociopolitical theories.

Al-Tuwaijri et al. (2004) see limitations in the previous studies because financial and environmental performance and environmental disclosures are jointly determined by the responsibility of the management's overall strategy. The study demonstrates that all three corporate functions are statistically related. Good environmental performance is associated with good financial performance and factual environmental disclosures. Our paper extends research on environmental disclosures by introducing new aspects on board structure as a factor influencing voluntary environmental disclosures. Board structures and board independence have been found to have a bearing on voluntary disclosures in general, but the findings on voluntary environmental reporting are inconclusive. The degree of non-financial disclosures that are forward looking and strategic tend to increase with more-independent directors (Lim et al., 2007). Voluntary environmental disclosures have not been found to be related to the number of non-executive directors (Brammer and Pavelin, 2006) or the size of the board (Halme and Huse, 1997). Haniffa and Cook (2002) find in a more limited cultural

setting in Malaysia that non-executive chairpersons actually tend to be less transparent and keep information private.

We extend the governance research to include the characteristics of board members as determinants of the quality of voluntary disclosure. The proportion of unethical board members is suggested to be related to the quality of voluntary disclosure. Disclosure is costly not only because of the figures involved in measuring, verifying and publishing information, but also because it reveals future strategic directions that the board wants to take. It is expected that there are fewer board decisions to provide voluntary information when the number of unethical board members increases. We expect a negative relation between PURB and the quality of the firm's environmental reporting. The same effect was proposed for environmental performance, which means that we follow the recommendations of Al-Tuwaijri et al. (2004), namely that environmental performance and voluntary disclosures are simultaneously determined. The following hypotheses will be tested (stated in alternate form):

H1. There is a negative relation between the proportion of convicted board members and the quality of the firm's environmental reporting.

H2. There is a negative relation between there being a convicted CEO and the quality of the firm's environmental reporting.

3.3. Economic incentives, gender and the environmental performance of the firm

Research on individual environmental concern suggests that multiple aspects of board composition can affect the firm's environmental performance. This paper also considers the economic incentives of board members and CEOs and the gender issue in terms of the proportion of female board members.

Agency theory suggests a positive relation between the equity incentives of board members and executives and the firm's financial performance (e.g. Jensen, 1993). Empirical research provides some evidence that board members with significant equity ownership in the firm have incentives for conducting a more efficient monitoring of performance. Most executive compensation literature is based on the notion that equity incentives improve CEO performance and align outcomes in line with the objective of company owners. Regarding equity incentives for board members, Bhagat and Black (2002) report that independent board members who hold significant stock positions add value to the firm, while other independent board members do not. In addition, Bhagat and Bolton (2008) find that the stock ownership of

board members increases the firm's operating performance. The theoretical relation between the equity holdings of board members and CEOs and the firm's environmental performance is somewhat more complex. Krüger (2011) reports using KLD data that positive social responsibility events, such as positive changes in the environmental aspects, are less frequent in firms when the proportion of directors with equity ownership decreases. In other words, the results indicate a positive relation between ownership and social performance. Kassinis and Vafeas (2002) present contradictory results. They find that the likelihood of becoming a defendant in an environmental lawsuit increases with the level of inside ownership. We suggest that one important factor determining this relation is whether board members and CEOs expect a positive relation between environmental and financial performance. We propose that board members with large investments in their company, relative to their total wealth, will not agree to a proactive environmental strategy above the legal requirements if they do not firmly believe that active environmental management improves cash flows or reduces risk. Similarly, sceptics with large stakes in firms are not likely to suggest or approve investments in environmental performance if they expect reductions in personal wealth. By adopting an incentive measure that relates equity holdings to total wealth, we are able to measure incentives in a novel way, thereby contributing to our knowledge of perceived benefits with CSR investments among board members and CEOs. The two competing theories result in conflicting predictions on how wealth incentives are related to the environmental performance of the firm (alternate form):

H3A: There is a positive relation between the wealth incentives of board members and CEOs and the firm's environmental performance.

H3B: There is a negative relation between the wealth incentives of board members and CEOs and the firm's environmental performance.

Our last hypothesis focuses on the gender distribution of the board. Corporate governance studies show that a higher proportion of females on the board enhance the board's ability to monitor the management. For instance, Adams and Ferreira (2008) show that US companies with greater gender diversity on boards invest more effort in monitoring their own activities. These results indicate that appointing female board members may result in more–effective monitoring because, compared with their male counterparts, they are less likely to lack morality and exhibit other fraudulent behaviour. However, Adams and Ferreira (2009)

also show that gender diversity generally affects financial performance negatively. The main reason suggested for this result is that in some types of firms women are too stringent in their monitoring. Krüger (2011) shows that female representation on the board affects the firm's social performance. He finds that firms with a higher percentage of women on the board exhibit a more pro-social behaviour. The result is supported by experimental evidence that women are more concerned with altruism. Similar results are presented by Post et al. (2011). They find that boards with at least three women have a higher environmental performance measured in terms of KLD environmental strength scores. Both results are consistent with Hunter et al. (2004), whose findings show that women typically display somewhat higher levels of environmental concern and behavioural adjustments relative to men. Consequently, our last hypothesis is stated as follows (alternate form):

H4: There is a positive relation between the proportion of women on the board and the environmental performance of the firm.

4. Sample selection and empirical models

4.1 Sample

The initial sample for this study was drawn from the NASDAQ OMXS stock market index SIX 300 list of companies, for which GES Investment Services provides environmental performance and reporting ratings. This is a market-capitalization weighted index of large, medium and small Swedish listed firms published since 1995. Our sample includes ratings from the period 2005 to 2008. The number of companies in each year is fairly stable, ranging from 268 to 275. However, in the first year of the sample period (2005), the population of companies contains only 100 large and medium-sized firms. Since the impact of environmental/social information on the market value of companies is increasing over time, we cover the time period of all available ratings. Our environmental data set consists of 316 companies which were rated from 2005 to 2008 at least once. We removed thirty-one non-Swedish companies with headquarters abroad and for which we lacked information to measure PURB. The total number of firm-year observations with environmental data equals 837. After removing observations with missing accounting data and deleting the 1 per cent of the distribution of each accounting variable used in the models, 752 observations remained.

GES Investment Services provides the financial sector with analyses of companies' ESG performance based on international standards on the environment, human rights and

business ethics (Schäfer et al., 2006). The company-specific environmental index is based on two subdimensions, namely preparedness and performance. Preparedness is a broad measure of environmental reporting that, besides regular reporting, also includes how well the company discloses its environmental policies, environmental management systems, the level of staff training and how well the index captures the environmental performance. We use this metric to measure the quality of environmental reporting. Performance covers how a company handles environmental impacts and risks in terms of product performance, energy use, GHG and VOC emissions, waste treatment, and other activities. The environmental aspects of the GES rating are assessed on a seven-point, non-numerical scale from major strength (a) to major weakness (c). In the subsequent empirical analysis, the GES non-numerical ratings are converted into numerical scores, with the highest performance-ranked (a) companies receiving a seven rating and the lowest performance-ranked (c) companies a rating of one. Altogether, the GES systematic screening evaluates the environmental performance of processes and products and the transparency and quality of disclosures. The environmental performance of companies is evaluated based on a number of criteria, including the eco- and energy efficiency of operations, the use of recycled materials and the development of environmentally beneficial products. We use this measure as a proxy for the environmental performance of the firm.[2] In addition, this study also uses a GES rating of general environmental risk that reflects the environmental risk of the company's industry. Energy-intensive sectors, for example metals and mining and pulp and paper, receive higher environmental industry risk scores. We use this as a measure of the industry's general environmental risk. The GES Investment Services ratings are based on information obtained from companies' official documents, including annual and interim reports, and through a direct dialogue in the form of surveys or site visits.

The identities of directors and CEOs of Swedish companies were obtained from Finansinspektionen (The Swedish Financial Supervisory Authority). Data on criminal activities were taken from Brå (The Swedish National Council for Crime Prevention). This data set contains information on all crimes committed by all Swedish citizens since 1974, regardless of whether these convictions have been expunged from the official crime records. Specifically, it contains information about individuals who have been found guilty by a court of law or received summary punishments by prosecutors. The information contained in the

[2] Semenova and Hassel (2011) have shown that GES's environmental performance index has a high convergent validity with the Asset4 environmental pillar and the environmental strengths dimension of KLD in the US universe. Additionally, the industry risk in GES converges with the KLD environmental concerns and the Asset4 emissions intensity.

database is collected from all Swedish courts and prosecution authorities. For each registered director, this data set includes details of the crime (an exact reference to the law violated) and the punishment (the length of unconditional prison sentences, suspended sentences and monetary fines). The database does not, however, contain information on minor offences, such as speeding, parking and violations of local by-laws.

While criminal convictions are undoubtedly evidence of criminal behaviour, focusing only on actual convictions could potentially cause a selection bias. This is because the burden of proof beyond any reasonable doubt is greater in more-serious crimes. Consequently, serious crimes are likely to be under-represented in the data set of actual criminal convictions. This selection bias could be reduced by including data on individuals suspected of serious crimes (Korsell, 2001). Our data set contains information on all Swedish citizens who have been suspected of serious crimes for which the penalty is prison. Suspected of a crime in this study means that a police investigation had been launched but the prosecutor decided later on not to pursue the case in court, or lost the case in court.

Data on the stockholdings of directors and senior executives were taken from Euroclear Sweden, which maintains an electronic database on the ownership of all Swedish stocks at the end of July and December of each year. Data on directors' and CEOs' other wealth (real estate, mutual funds, bank holdings and investments in debt securities) were obtained from the Swedish tax authorities and are reported annually. Finally, accounting and market data for Swedish listed firms were obtained from Thomson Datastream.

4.2 Empirical models

The main purpose is to study the link between senior company officials' PURB and the environmental performance and reporting of the firm. We start our modelling of environmental performance by estimating the following single-equation regression models guided by previous research:

$$ENVPER_{it} = \alpha_0 + \beta_1 BCRIME_{it} + \beta_2 CEOCRIME_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it}, \quad (1)$$

$$ENVPER_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 CEOPURB_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it} \quad (2)$$

where $ENVPER_{it}$ is a measure of environmental performance provided by GES Investment Services; $BCRIME_{it}$ measures the proportion of board members convicted or suspected of crimes; $CEOCRIME_{it}$ is an indicator variable taking the value of '1' if the CEO has been

convicted or suspected of crimes, and '0' otherwise; $BPURB_{it}$ is a compound measure composed of the sum of three variables used to measure the unethical risk behaviour of board members: first, $BCRIME_{it,}$ as defined above; second, $PAYMENT_{it}$, i.e. the number of board members with a non-payment record divided by the total number of board members for firm i at fiscal year-end t; and, third, $BANKRUPTCY_{it}$ is the number of firm i's board members who have served on at least three boards of other bankrupt firms divided by firm i's total number of board members at fiscal year-end t. $CEOPURB_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes or has a non-payment record or has served on at least three boards of other bankrupt firms, and '0' otherwise. Hence, the first regression model contains variables defined in terms of past criminal activities only, while the measures used in the second model also take into account non-payment records and bankruptcy histories. $BOARDOWN_{it}$ is the average market value of the board member's holdings in the firm divided by the average value of his/her total wealth and $CEOOWN_{it}$ is the CEO's holdings in the firm divided by the value of his/her total wealth. $GENDER_{it}$ is the proportion of male board members for firm i at year-end t. ROE_{it} is net income divided by the opening balance of shareholders' equity. $LEVERAGE_{it}$ is interest-bearing debt divided by total assets. PB_{it} is the market value of equity divided by the book value of equity and $SIZE_{it}$ is the logarithm of total assets. Next, we estimate the following regression models to examine the influence of board members' and CEOs' PURB on the quality of environmental reporting:

$$ENVREP_{it} = \alpha_0 + \beta_1 BCRIME_{it} + \beta_2 CEOCRIME_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it} \quad (3)$$

$$ENVREP_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 CEOPURB_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it} \quad (4)$$

where $ENVREP_{it}$ is a measure of the quality of environmental reporting, as provided by GES Investment Services. All other variables are defined as above.

Based on research by Ullman (1985), Al-Tuwaijri et al. (2004) argue that the financial performance, environmental reporting and its quality are jointly determined by the firm's overall company strategy. To control for the potential endogenous relation between these three variables, the above studies simultaneously estimate a three-equation model. Similar modelling of environmental performance and reporting in somewhat different settings has later been found in work by Aerts and Cormier (2009) and Barron et al. (2009). We follow this approach and estimate the following simultaneous-equation model (3SLS regression model):

$$ENVPER_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 BOARDOWN_{it} + \beta_3 CEOPURB_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 SIZE_{it} + \varepsilon_{it}, \quad 5.1$$

$$ENVREP_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 CEOPURB_{it} \beta_3 ENVPER_{it} + \beta_4 ENVRISK_{it} + \beta_5 PB_{it} + \beta_6 LEVERAGE_{it} + \beta_7 SIZE_{it} + \varepsilon_{it} \quad 5.2$$

$$ROE_{it} = \alpha_0 + \beta_1 BUNETHIC_{it} + \beta_2 BOARDOWN_{it} + \beta_3 CEOPURB_{it} + \beta_4 CEOOWN_{it} + \beta_5 PROFPROP_{it} + \beta_6 ENVPER_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it} \quad 5.3$$

where *PROFPROP* is defined as the proportion of professional board members with three or more board assignments.

4.3 *Results: Descriptive statistics and univariate analysis*

The unbalanced panel includes 264 firms during the period 2004–2007 and covers a total of 752 firm-year observations. The number of senior company officials included in the sample amounts to 1,915. Of these, 1,780 have been registered as board members and 297 as CEOs during the four-year period. As we know, some CEOs also act as board members of other firms. Table 1 shows that 357, i.e. 20.1 per cent of the individuals registered as board members, have been convicted of crime. The corresponding average for the Swedish population is 25 per cent (Svensson, 2011).

Insert Table 1 about here

The proportion of convicted CEOs is somewhat higher (29%). The same pattern is found for individuals suspected of serious crimes, with 8.5 per cent of the board members being suspected, but not convicted, of a crime while the figure is slightly higher for CEOs (11.1 %). A different pattern emerges for the other two PURB factors. The proportion of board members with a non-payment record is somewhat higher than for CEOs (2.4% vs. 2.0%). The proportion of individuals with a history of multiple bankruptcies is also higher among board members than CEOs (1.4% vs. 0.7%). Appendix A presents a list of the laws violated by board members and CEOs of listed firms on the NASDAQ OMX Stockholm Stock Exchange.

Table 2 presents the descriptive characteristics of dependent and independent firm-level variables. The average (median) value of environmental performance (ENVPER) is 2.41 (2.0) on a scale from one to seven, indicating that the majority of sample firms are low performers or environmental laggards. The average value for environmental performance is somewhat higher (3.11). The average number of convicted or suspected board members is 0.29. The

table also shows that there are firms with only law-abiding board members and others whose board members have all broken the law.

Insert Table 2 about here

In 33 per cent of the firm-year observations, a CEO has been suspected or convicted of a crime. When including also non-payment records and bankruptcy histories in the measurement of past unethical behaviour (BPURB), the proportion increases to 37 per cent, indicating that some board members have a history of non-payment and multiple bankruptcies in addition to being convicted of a crime. Average board ownership in relation to total wealth is 11 per cent (BOARDOWN). Not surprisingly, this figure is higher for CEOs, equalling 46 per cent on average (CEOOWNER). Executive stock options and stock savings plans explain this high figure. In addition, some of the companies are managed by their founders and there are family companies in the sample. The table also shows that only 19 per cent of the board members are women. Whether these women seem to make a difference to the environmental performance is investigated in later sections. *PROFPROP* is another board-composition variable, describing the proportion of professional board members with three or more board assignments. On average, 17 per cent of the board members in our sample firms are professionals in that respect. Additionally, the average environmental risk is 3.45 (ENVRISK), with a standard deviation of 2.07, indicating that the sample companies come from both high- and low-risk industries with respect to their environmental impact. Finally, the Swedish sample includes large-, mid- and small-cap companies (SIZE).

Table 3 presents Person (below diagonal) and Spearman (above diagonal) pair-wise correlation coefficients for all dependent and independent variables included later in the models. The main dependent variables of interest (ENVPER and ENVREP) are positively correlated as expected. For instance, Clarkson et al. (2008) find a positive relation between environmental performance and the level of discretional environmental disclosures. Both variables are also negatively correlated with *BCRIME, BPURB, BOARDOWN, CEOOWN* and *GENDER*. Hence, past unethical and risk-prone behaviour and large ownership in the firm in relation to total wealth seem to have a negative impact on environmental performance and reporting. However, no univariate linear association can be found between CEOs with a criminal record (*CEOCRIME*) and environmental performance or reporting. What is also noteworthy is the positive correlation between environmental performance and profitability (*PROF*).

Insert Table 3 about here

We continue the univariate analysis in Table 3 by investigating whether firms with a high or low environmental performance are different with respect to board composition and top management. The table is constructed by first sorting all firm-year observations based on their environmental performance rating. We then put observations with ratings of 1–3 in the low portfolio, those with a rating of 4 in the average portfolio, and the ones with ratings of 5–7 are sorted into the high environmental performance portfolio (similar results are obtained when sorting ratings of 1 and 2 into the 'low' portfolio, 3–5 into the 'medium' portfolio and 6 and 7 into the 'high' environmental performance portfolio). We then test whether the mean values of the variables of interest are significantly different between the environmental leaders and laggards.

Insert Table 3 about here

The results reported in Table 3 largely support our hypotheses. The proportion of board members with past convictions (BCRIME) is statistically higher in the low-performance category compared with the high-performance category (0.31 vs. 0.21; $p = 0.000$). The same results hold for the composite measure that includes also non-payment records and bankruptcy histories (BPURB), 0.41 versus 0.24 with a t-stat equal to 6.94. However, no difference between high and low performers is observed in terms of convicted CEOs. Results also confirm that the proportion of women is significantly greater in firms with a high environmental performance. Leading environmental performers are also more profitable, larger in size and operating in industries with a greater environmental impact. In the next section, we investigate whether these univariate results also hold in a multivariate setting.

Insert Table 4 about here

Table 4 reports the results of estimating OLS models to test whether the link between the proportion of unethical board members and the firm's environmental performance holds true after controlling for other factors documented in the literature that influence environmental performance. The first models include results for unethical boards only measured in terms of criminal convictions while the other regression model also controls for CEO criminal

convictions. In equations three and four, the composite measure of PURB takes into account non-payment records and bankruptcy histories too. All four models corroborate the negative relation between the proportion of board members with PURB and environmental performance as documented in Table 3. Coefficient values range from -0.351 to -0.496, with p-values equal to 0.063 or lower. Hence, none of the reasons for firms or individuals engaging in environmental activities presented by Bénabou and Tirole (2010) seem to apply to firms with a high proportion of board members with PURB. Results remain insignificant for CEOs. The CEO profile does not affect the firm's environmental performance. One possible explanation for this is the board's importance in strategic decision making in Sweden. In this country, the proportion of firms with a concentrated ownership structure is relatively high compared with Anglo-Saxon countries, which make significant owner representatives on the board powerful. Also, as discussed in Kassinis and Vafeas (2005), environmental performance has been put on the board's agenda. Inference regarding female boardroom representation and its effect on environmental performance remains unchanged. All four regressions show that a higher proportion of men result in a lower environmental performance. This confirms the finding by Krüger (2010) and Post et al. (2011) that three or more female board members provide a higher KLD strength and less negative incidents. A negative relation between board ownership and environmental performance is found in all four models. However, only in equations three and four is the result statistically significant. Whether board members' investment in the firm, relative to their total wealth, seems to affect their strategic decision making is further investigated in Table 6, where we simultaneously model environmental and financial performance. Besides board members' PURB, the firm's size and the industry are important factors in explaining environmental performance. The importance of size and industry has also been documented in a number of previous studies (Walls et al., 2012; de Villiers, 2011; Brammer and Pavelin, 2006; Halme and Huse, 1997).

Insert Table 5 about here

In Table 5, we replace environmental performance with environmental reporting. Compared with the equations estimated in Table 4, the variables gender and board ownership are removed since there is no theoretical support linking them to the quality of environmental reporting. The correlation table documented a high correlation between environmental performance and reporting. Not surprisingly, we also observe a negative relation between the proportion of board members with PURB and the quality of environmental reporting. Hence,

firms with a high proportion of unethical board members use fewer resources on environmental investments and the reporting of environmental activities lacks scope and transparency. Growth companies, measured in terms of high price-to-book ratios, and large companies in high-risk industries are pressured by stakeholders and have resources to disclose environmental reporting of a higher quality.

Table 6 presents results from the simultaneous modelling of environmental performance, environmental reporting and financial performance. Because of consistent results, we drop *BCRIME* and *CEOCRIME* and present results only for the aggregated measures *BPURB* and *CEOPURB*.

Insert Table 6 about here

The main outcomes concerning board members' PURB presented in Tables 3 and 4 remain unchanged in the simultaneous equation model. An increase in the proportion of board members with unethical risk behaviour (BPURB) leads to a decrease in environmental performance (-0.681; $p = 0.014$). There is no evidence that an unethical CEO is in charge of an environmental leader or laggard. Additionally, there is nothing to suggest that CEOs or unethical boards are involved in potential greenwashing to improve their image or environmental philanthropy through environmental reporting. The gender effect finds further support. A larger proportion of female board members can enhance environmental risk management and produce a more proactive environmental strategy to exploit environmental opportunities. Board members' investments in the firm, in relation to their total wealth, seem to affect the environmental performance negatively (-0.548; $p = 0.014$). When members have more funds at stake, they become more risk averse, short-sighted, reluctant to overinvest and sceptical about the economic benefits of environmental management. Krüger (2010) finds more positive than negative environmental KLD events when the proportion of directors with equity ownership increases. His study does not, however, control for the proportion of directors with private wealth ownership, but when ownership increases, managers tend to more actively control for negative incidents. Since our measure includes the proportion of private total wealth, this study is more likely to capture true investment incentives. Kassinis and Vafeas (2005), on the other hand, find that the probability of being involved in an environmental litigation increases with inside board member ownership. They suggest that the result can be explained by the fact that concentrated ownership makes managers adopt more-socially irresponsible behaviour. Based on our findings, we suggest that board members with

large investments in their firm become financially oriented and tend to consider environmental performance costly in the short term. Investments in environmental improvement activities are regarded as costly with uncertain economic benefits. Consistent with the arguments presented in Hong et al. (2011) and the resource-based view of Clarkson et al. (2011), we find a positive relation between financial performance (*ROE*) and environmental performance (2.046; $p = 0.096$). In the simultaneous setting, environmental performance has a negative effect on financial performance (-0.060; $p = 0.000$), supporting the argument by Hong et al. (2011) that CSR (including environmental protection) is costly and its marginal benefit finite. When board characteristics and the board member's character are considered, this paper does not support the findings of Clarkson et al. (2011) that a proactive environmental management improves financial performance. The relation between environmental and financial performance needs to incorporate the interaction between corporate governance and environmental performance (Walls et al., 2012).

The single most important determinant for financial performance in Table 6 is CEO ownership relative to total private wealth. This result is in line with studies linking executive incentives to financial performance (Core and Guay, 2010).

As for the determinants of environmental reporting, results show that environmental performance (ENVPER) is by far the single most important factor for the reporting quality. The positive relation between environmental performance and reporting is consistent with the economic disclosure theories and results presented in Clarkson et al. (2008). Significant results are also found for leverage (LEVERAGE). The proportion of board members with past unethical risk behaviour (BPURB) does not affect environmental reporting after controlling for environmental performance. In summary, the environmental performance, leverage and size account for most of the quality of the firm's environmental reporting. The findings in this paper across industries are consistent with the factors found in Clarkson et al. (2008, 2011) to explain the variation in the quality of environmental reporting in polluting industries in the United States and Australia when using a scoring metric for reporting quality based on GRI.

5. Robustness tests (coming)

6. Summary

Given that firms can handle risks and increase shareholder wealth (Guenster et al., 2011) through proactive environmental management, we could expect that environmental performance is an important objective for the board of directors and the CEO. When appointing directors to the board, shareholders want to ensure that proper attention is given to environmental risks and opportunities. While previous research has investigated some of the board-structure issues in the domain of corporate governance (de Villiers et al., 2012) that can affect the firm's environmental performance, this paper is the first study to introduce the role of the character of the board members and the CEO when making strategic group decisions on environmental management and reporting at the board level. PURB, based on the criminal records of the individual board members and the CEOs, was used as a proxy for how the firms consider and respond to environmental risks and opportunities.

An earlier paper by Amir et al. (2011) found evidence that a not-insignificant proportion of board members in Swedish listed firms have been convicted of crimes. They find support for a greater proportion of fraudulent board members resulting in inferior accounting quality, a volatility of earnings and the lower profitability of the firm. Risk taking in these firms does not seem to lead to better financial returns. In a similar study in the United States, Davidson et al. (2011) show that board members with criminal records have a relatively high propensity to commit accounting fraud. The results from the two studies can best be understood by looking at prior behavioural-related research, suggesting that several aspects of an individual's character are related to his/her unethical, antisocial or even criminal behaviour. This paper thus proposed that when the proportion of board members with criminal records increases, the board is less able and willing to understand, monitor and pursue environmental concerns and the firm takes greater environmental risks. Pech and Slade (2007) have even suggested that firms appoint individuals to top positions who possess some degree of psychopathic or narcissistic traits, and are especially adept at manipulating peers. Stevens et al. (2012) conclude that these successful psychopaths are less likely to engage in ethical business dilemmas, such as environmental concerns.

In this paper, we show how the character of board members and CEOs affects firms' environmental performance and reporting quality. We contribute to the literature by demonstrating that their PURB, measured in terms of prior convictions, non-payment records and involvement in bankruptcies, is linked to environmental performance and reporting quality. Our analysis consistently shows that as the proportion of board members with these

traits increases, the scores for environmental performance and reporting quality provided by GES Investment Services decrease. In that respect, our results are consistent with previous studies based on KLD data on large-cap US firms, namely that board composition is related to environmental performance (de Villiers et al., 2011; Walls et al., 2012; Post et al., 2011; Krüger, 2010). Overall, the paper demonstrates the importance of having a diversified group of board members who balance different characters when group decisions are made. Individuals with PURB records can have psychopathic or narcissistic traits. When these individuals take over a board, excessive risk taking and poor monitoring can result in the firm becoming an environmental laggard exposed to environmental risks.

This paper advances previous research in several ways. It is the first paper to consider the character of board members by constructing an ethical compass of the board based on past fraudulent behaviour. In this way, the paper extends previous frameworks, namely the resource-based view and the more traditional research on board structure, to explain environmental performance and reporting quality. An empirical extension is that previous research has been conducted in limited settings in polluting industries or based on the KLD universe in the United States, while this paper uses a Swedish sample across industries with small-, mid- and large-cap companies based on GES Investment Services ratings. GES provides a unique metric to capture the general risk of the industry and the company's specific environmental performance and reporting quality, going beyond traditional narrow emissions-related performance measures.

The policy implications of this paper are that nomination committees should screen the background of board candidates to ensure that members with fraudulent past records are at least in the minority. Today, it can be risky to be an owner of an environmental-laggard firm.

6. References

Aerts, W., & Cormier, D. (2009). Media legitimacy and corporate environmental communication. *Accounting, Organizations and Society*, *34*, 1–27.

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, *94*, 291–309.

Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role of boards of directors in corporate governance: A conceptual framework and survey. *Journal of Economic Literature*, *48*, 58–107.

Al-Tuwaijri, S. A., Christensen, T. E., & Hughes, K. E. (2004). The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. *Accounting, Organizations and Society*, *29*, 447–471.

Amir, E., Kallunki, J. P., & Nilsson, H. (2011). Criminal convictions and risk taking: Empirical evidence from Sweden. SIRP working paper.

Artiach, T., Lee, D., Nelson, D., & Walker, J. (2009). The determinants of corporate sustainability performance. *Accounting and Finance*, *50*, 31–51.

Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of Management Review*, *32*, 794–816.

Baron, D., Harjoto, M. A., & Jo, H. (2009). The economics and politics of corporate social performance. Working paper: Stanford Graduate School of Business.

Bear, S., Rahman, N., & Post, C. (2011). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97*, 207–222.

Bénabou, R., & Tirole, J. (2010). Individual and corporate social responsibility. *Economica*, *77*, 1–19.

Ben-David, I., Graham, J. R., & Harvey, C. R. (2007). Managerial overconfidence and corporate policies. NBER working paper.

Berthelot, S., Cormier, D., & Magnan, M. (2003). Environmental disclosure research: Review and synthesis. *Journal of Accounting Literature*, *22*, 1–44.

Bhagat, S., & Black, B. (2002). The non-correlation between board independence and long-term firm performance. *Journal of Corporation Law*, *27*, 231–273.

Bhagat, S., & Bolton, B. (2008). Corporate governance and firm performance. *Journal of Corporate Finance*, *14*, 257–273.

Blickle, G., Schlegel, A., Fassbender, P., & Klein, U. (2006). Some personality correlates of business white-collar crime. *Applied Psychology: An International Review*, *55*, 220–233.

Brammer, S., & Pavelin, S. (2006). Voluntary environmental disclosures by large UK companies. *Journal of Business Finance & Accounting*, *33*, 1168–1188.

Brocket, P. L., & Golden, L. L. (2007). Biological and psychobehavioral correlates of credit scores and automobile insurance losses: Toward an explication of why credit scoring works. *Journal of Risk and Insurance, 74*, 23–63.

Brännlund, R., & Lundgren, T. (2009). Environmental policy without cost? A review of the Porter hypothesis. SIRP working paper.

Cain, M. D., & McKeon, S. B. (2010). Sensation seeking and firm risk: Evidence from CEO pilots. Working paper (University of Notre Dame).

Campbell, J. L. (2007). Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. *Academy of Management Review*, *32*, 946–967.

Clarkson, P. M., Overell, M. B., & Chapple, L. (2011). Environmental reporting and its relation to corporate environmental performance. *Abacus*, *47*, 27–60.

Clarkson, P. M., Li, Y., Richardsson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of Accounting and Public Policy*, *30*, 122–144.

Clarkson, P. M., Li, Y., Richardsson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, *33*, 303–327.

Core, J., & Guay, W. (2010). Is CEO pay too high and are incentives too low? A wealth-based contracting framework. *Academy of Management Perspectives, 24*, 5–19.

De Villiers, C., Naiker, V., & van Staden, C. J. (2011). The effect of board characteristics on firm environmental performance. *Journal of Management*, *37*, 1636–1663.

Derwall, J., Koedijk, K., & Horst, J. T. (2011). A tale of values-driven and profit-seeking social investors. *Journal of Banking & Finance*, *35*, 2137–2147.

Fama, E. (1980). Agency problems and the theory of the firm. *Journal of Political Economy*, *88*, 288–307.

Fama, E., & Jensen, M. C. (1983). Separation of ownership and control. *Journal of Law and Economics*, *26*, 301–326.

Fischer, P. E., Gramlich, J. D., Miller, B. P., & White, H. D. (2009). Investor perceptions of board performance: Evidence from uncontested director elections. *Journal of Accounting and Economics*, *48*, 172–189.

Fransson, N., & Gärling, T. (1999). Environmental concern: Conceptual definitions, measurement methods, and research findings. *Journal of Environmental Psychology*, *19*, 369–382.

Funk, P. (2010). Social incentives and voter turnout: Evidence from the Swiss mail ballot system. *Journal of the European Economic Association*, *8*, 1077–1103.

Garoupa, N. (2003). Behavioral economic analysis of crime: A critical review. *European Journal of Law and Economics*, *15*, 5–15.

Giuli di, A., & Kostovetsky, L. (2011). Are red or blue companies more likely to be green? Politics and corporate social responsibility. http://ssrn.com/abstract=1785562

Guenster, N., Bzauer, R., Derwall, J., & Koedijk, K. (2011). The economic value of corporate eco-efficiency. *European Financial Management*, *17*, 679–704.

Hackbarth, D. (2008). Managerial traits and capital structure decisions. *Journal of Financial and Quantitative Analysis*, *43*, 843–881.

Halme, M., & Huse, M. (1997). The influence of corporate governance, industry and country factors on environmental reporting. *Scandinavian Journal of Management*, *13*, 137–157.

Hambrick, D. (2007). Upper echelons theory: An update. *Academy of Management Review, 32*, 334–343.

Hambrick, D., & Mason, P. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*, 193–206.

Haniffa, R. M., & Cooke, T. E. (2002). Culture, corporate governance and disclosure in Malaysian corporations. *Abacus*, *38*, 317–349.

Heal, G. (2005). Corporate social responsibility: An economic and financial framework. *The Geneva Papers*, *30*, 387–409.

Hermalin, B. E., & Weisbach, M. S. (2003). Boards of directors as an endogenously determined institution: A survey of the economic literature. *Economic Policy Review*, Federal Reserve Bank of New York.

Hong, H., Kubikz, J. D., & Scheinkmanx, J. A. (2011). Financial constraints on corporate goodness. Working paper: Princeton University.

Hong, H., & Kostovetsky, L. (2012). Red and blue investing: Values and finance. *Journal of Financial Economics, 103*, 1–19.

Hunter, L. M., Hatch, A., & Johnson, A. (2004). Cross-national gender variation in environmental behaviors. *Social Science Quarterly*, *85*, 677–694.

Ioannou, I., & Serafeim, G. (2010). What drives corporate social performance? International evidence from social, environmental and governance scores. Working paper: Harvard Business School.

Jones, G. E., & Kavanagh, M. J. (1996). An experimental examination of the effects of individual and situational factors on unethical behavior intentions in the workplace. *Journal of Business Ethics*, *15*, 511–523.

Jones, R., Lasky, B., Russell-Gale, H., & le Fevre, M. (2004). Leadership and the development of dominant and countercultures: A narcissistic perspective. *Leadership and Organization Development Journal*, *25*, 216–233.

Kassinis, G., & Vafeas, N. (2005). Corporate boards and outside stakeholders as determinants of environmental litigation. *Strategic Management Journal*, *23*, 399–415.

Kilborn, J. J. (2002). Who's in charge here? Putting clients in their place. *Georgia Law Review*, *37*, 1–20.

Korsell, L. (2001). Three decades of researching and combating economic crime: The Swedish case. In S. A. Lindgren (Ed.), *White-collar crime research: Old views and future potentials* (pp. 91–106). Stockholm: The National Council for Crime Prevention.

Krüger, P. (2011). Corporate social responsibility and the board of directors. Working paper: Toulouse School of Economics.

Lacatera, N., & Macis, M. (2008). Social image concerns and pro-social behaviour. IZA discussion paper no. 3771.

Larcker, D., Richardson, G., & Tuna, I. (2007). Corporate governance, accounting outcomes, and organizational performance. *Accounting Review*, *82*, 963–1008.

Levenson, M. R. (1990). Risk taking and personality. *Journal of Personality and Social Psychology*, *38*, 1073–1080.

Lin, S., Matolcsy, Z., & Chow, D. (2007). The association between board composition and different types of voluntary disclosure. SSRN 988622.

Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. *Journal of Finance*, *60*, 2661–2700.

Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, *89*, 20–43.

Margolis, J., Elfenbein, H., & Walsh, J. (2007). Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Working paper: Harvard Business School.

McKenna, F. P. (1993). It won't happen to me: Unrealistic optimism or illusion of control? *British Journal of Psychology*, *84*, 39–50.

Nilsson, A., von Borgstede, C., & Biel, A. (2004). Willingness to accept climate change strategies: The effect of values and norms. *Journal of Environmental Psychology*, *24*, 267–277.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, *24*, 403–441.

Patten, D. (2002). The relation between environmental performance and environmental disclosures: A research note. *Accounting, Organisations and Society*, *27*, 763–773.

Palmer, E. J., & Hollin, C. R. (2004). The use of the psychological inventory of criminal thinking styles with English young offenders. *Legal and Criminological Psychology*, *8*, 175–181.

Pech, R. J., & Slade, B. W. (2007). Organisational sociopaths: Rarely challenged, often promoted. Why? *Society and Business Review*, *2*, 254–269.

Porter, M. E., & van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *Journal of Economic Perspectives*, *9*, 97–118.

Post, C., Rahman, N., & Rubow, E. (2010). Green governance: Boards of directors' composition and environmental corporate social responsibility. *Business & Society*, *50*, 189–223.

Raheja, C. (2005). Determinants of board size and composition: A theory of corporate boards. *Journal of Financial and Quantitative Analysis*, *40*, 283–306.

Reinhardt, F. L., Stavins, R. N., & Victor, R. H. (2008). Corporate social responsibility through an economic lens. *Review of Environmental Economics and Policy*, *2*, 219–239.

Roll, R. (1986). The hubris hypothesis of corporate takeovers. *Journal of Business*, *59*, 197–211.

Rowley, T., & Berman, S. (2000). A brand new brand of CSP. *Business & Society*, *39*, 397–418.

Sandroni, A., & Squintani, F. (2004). The overconfidence problem in insurance markets. ELSE working paper.

Shefrin, H. (2010). *Behavioralizing finance*. Hanover, MA: Now Publishers.

Schäfer, H., Beer, J., Zenker, J., & Fernandes, P. (2006). Who is who in corporate social responsibility rating. A survey of internationally established rating systems that measure corporate responsibility. Working paper: Bertelsmann Foundation and University Stuttgart.

Semenova, N., & Hassel, L. (2011). Corporate environmental performance: Consistency of metrics and identification of drivers. SIRP working paper.

Semenova, N., & Hassel, L. (2011). Asymmetry in value relevance of environmental performance: Role of industry and size. SIRP working paper.

Svensson, R. (2000), *Strategiska brott: Vilka brott förutsäger en fortsatt brottskarriär?* [Strategic Offences] Brå-report, the Swedish National Council for Crime Prevention, vol. 3, 1–53.

Stevens, G. W., Deuling, J. K., & Armenakis, A. A. (2012). Successful psychopaths: Are they unethical decision makers and why? *Journal of Business Ethics*, *105*, 139–149.

Ullmann, A. (1985). Data in search of a theory: A critical examination of relationships among social performance, social responsibility, and economic performance of U.S. firms. *Academy of Management Review*, *10*, 540–557.

Walters, R. (2009). Eco-crime. In J. Muncie, R. Walters, & D. Talbot (Eds.), *Crime: Local and global* (pp. 174–208). Cullompton: Willan Publishing.

Walley, N., & Whitehead, B. (1994). It's not easy being green. *Harvard Business Review*, *72*, 46–52.

Walls, J. L., Berrone, P., & Phan, P. H. (2012). Corporate governance and environmental performance: Is there really a link. *Strategic Management Journal* (forthcoming).

Westphal, J. D., & Fredricksson, J. W. (2001). Who directs strategic change? Director experience, the selection of new CEOs, and change in corporate strategy. *Strategic Management Journal*, *22*, 1113–1137.

Zuckerman, M. (1994). *Behavioral expression and biosocial bases of sensation seeking*. Cambridge: Cambridge University Press.

Table 1
Proportions of Board Members and CEOs Documented in the Crime, Suspected-Crime, Non-payment or Bankruptcy Records*

	BOARD MEMBERS		CEOs	
	N	%	N	%
Convicted	357	20.1	86	29.0
Suspected	152	8.5	33	11.1
Non-payment	42	2.4	6	2.0
Bankruptcy	26	1.4	2	0.7

Note: This table provides information on the number of board members and CEOs in the sample companies who have been convicted of a crime, suspected of a serious crime or have been documented in the non-payment records and who have served as board members of at least three other bankrupt firms.

Table 2
Characteristics of Sample Firms*

Variables	Mean	Median	Std.	Min.	Max.
$ENVPER_{it}$	2,41	2,00	1,66	1,00	7,00
$ENVREP_{it}$	3,11	3,00	1,86	1,00	7,00
$BCRIME_{it}$	0,29	0,27	0,18	0,00	1,00
$CEOCRIME_{it}$	0,33	0,00	0,47	0,00	1,00
$BPURB_{it}$	0,37	0,33	0,26	0,00	1,00
$BOARDOWN_{it}$	0,11	0,02	0,19	0,00	1,00
$CEOOWNER_{it}$	0,46	0,40	0,38	0,00	1,00
$GENDER_{it}$	0,81	0,83	0,13	0,33	1,00
$ENVRISK_{it}$	3,45	3,00	2,07	1,00	7,00
ROE_{it}	0,15	0,17	0,27	-1.37	1,38
$PROFPROP_{it}$	0,17	0,14	0,17	0,00	1,00
$SIZE_{it}$	7,71	7,43	2,03	3,74	14,29
LEV_{it}	0,19	0,15	0,17	0,00	0,67
PB_{it}	3,00	2,40	2,25	0,43	18,1
QR_{it}	2,22	0,15	1,04	0,00	10,81

*Note: $ENVPER_{it}$ is a measure of environmental performance and $ENVREP_{it}$ is a measure of the quality of environmental reporting. Both are provided by GES Investment Services. $BCRIME_{it}$ measures the proportion of board members convicted or suspected of crimes. $CEOCRIME_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes, and '0' otherwise. $BPURB_{it}$ is a compound measure composed of the sum of three variables used to measure unethical behaviour: first, $BCRIME_{it}$ as defined above; second, $PAYMENT_{it}$ is the number of board members with a non-payment record divided by the total number of board members for firm i at fiscal year-end t; and, third, $BANKRUPTCY_{it}$ is the number of firm i's board members who have served on at least three boards of other bankrupt firms divided by firm i's total number of board members at fiscal year-end t. $CEOUNETHIC_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes or has a non-payment record or has served on at least three boards of other bankrupt firms, and '0' otherwise. $BOARDOWN_{it}$ is the average market value of the board member's holdings in the firm divided by the average value of his/her total wealth and $CEOOWN_{it}$ is the CEO's holdings in the firm divided by the value of his/her total wealth. $GENDER_{it}$ is the proportion of male board members for firm i at year-end t. ROE_{it} is net income divided by the opening balance of shareholders' equity. $LEVERAGE_{it}$ is interest-bearing debt divided by total assets. PB_{it} is the market value of equity divided by the book value of equity and $SIZE_{it}$ is the logarithm of total assets; $PROFPROP_{it}$ is the proportion of firm i's board members with three or more board memberships in the listed Swedish firms at the end of year t.

Table 3
Correlation Matrix for the Main Variables*

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	$ENVPER_{it}$	**1,00**	0,79	-0,16	-0,00	-0,19	-0,09	-0,09	-0,13	0,47	0,11	0,10	0,51	0,20	0,01	-0,17
2	$ENVREP_{it}$	0.80	**1,00**	-0,17	-0,01	-0,19	-0,11	-0,04	-0,08	0,49	0,15	0,13	0,55	0,28	-0,00	-0,21
3	$BCRIME_{it}$	-0.18	-0,19	**1,00**	0,20	0,79	-0,01	0,08	0,16	-0,16	0,05	0,04	-0,07	0,05	-0,07	-0,06
4	$CEOCRIME_{it}$	0.00	-0,02	0,19	**1,00**	0,20	0,04	0,04	-0,01	-0,06	0,00	-0,00	0,04	-0,00	-0,01	-0,14
5	$BPURB_{it}$	-0,20	-0,20	0,77	0,21	**1,00**	-0,02	0,05	0,18	-0,16	0,03	0,06	-0,13	-0,00	-0,03	-0,05
6	$BOARDOWN_{it}$	-0,09	-0,13	0,05	0,08	0,02	**1,00**	0,31	0,03	-0,17	0,16	0,02	0,00	-0,06	0,05	0,03
7	$CEOOWN_{it}$	-0,13	-0,08	0,10	0,04	0,06	0,32	**1,00**	0,15	-0,04	0,06	-0,06	-0,16	-0,01	0,03	-0,02
8	$GENDER_{it}$	-0,14	-0,10	0,18	-0,01	0,19	0,08	0,15	**1,00**	0,10	-0,07	0,05	-0,10	0,08	-0,14	0,03
9	$ENVRISK_{it}$	0,44	0,48	-0,17	-0,07	-0,15	-0,08	-0,05	0,13	**1,00**	-0,06	0,01	0,17	0,18	0,07	-0,07
10	ROE_{it}	0,10	0,15	0,05	0,00	0,05	0,09	0,09	-0,03	-0,06	**1,00**	0,12	0,28	0,06	0,25	-0,05
11	$PROF_{it}$	0,04	0,07	0,08	0,00	0,13	-0,06	-0,07	0,07	-0,03	0,12	**1,00**	0,40	0,10	-0,05	-0,11
12	$SIZE_{it}$	0,55	0,56	-0,09	0,04	-0,15	-0,06	-0,21	-0,12	0,16	0,27	0,35	**1,00**	0,42	-0,14	-0,30
13	LEV_{it}	0,16	0,23	0,06	0,00	0,00	-0,02	0,02	0,09	0,12	0,08	0,06	0,37	**1,00**	-0,19	-0,42
14	PB_{it}	0,00	-0,02	-0,07	0,01	-0,03	0,09	0,03	-0,11	0,02	0,11	-0,08	-0,14	-0,16	**1,00**	0,14
15	QR_{it}	-0,12	-0,12	-0,05	-0,06	-0,04	0,01	0,02	0,05	-0,09	0,00	0,02	0,02	-0,05	0,04	**1,00**

*Note: $ENVPER_{it}$ is a measure of environmental performance and $ENVREP_{it}$ is a measure of the quality of environmental reporting. Both are provided by GES Investment Services. $BCRIME_{it}$ measures the proportion of board members convicted or suspected of crimes. $CEOCRIME_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes, and '0' otherwise. $BPURB_{it}$ is a compound measure composed of the sum of three variables used to measure unethical behaviour: first, $BCRIME_{it}$ as defined above; second, $PAYMENT_{it}$ is the number of board members with a non-payment record divided by the total number of board members for firm i at fiscal year-end t; and, third, $BANKRUPTCY_{it}$ is the number of firm i's board members who have served on at least three boards of other bankrupt firms divided by firm i's total number of board members at fiscal year-end t. $CEOUNETHIC_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes or has a non-payment record or has served on at least three boards of other bankrupt firms, and '0' otherwise. $BOARDOWN_{it}$ is the average market value of the board member's holdings in the firm divided by the average value of his/her total wealth and $CEOOWN_{it}$ is the CEO's holdings in the firm divided by the value of his/her total wealth. $GENDER_{it}$ is the proportion of male board members for firm i at year-end t. ROE_{it} is net income divided by the opening balance of shareholders' equity. $LEVERAGE_{it}$ is interest-bearing debt divided by total assets. PB_{it} is the market value of equity divided by the book value of equity and $SIZE_{it}$ is the logarithm of total assets; $PROFPROP_{it}$ is the proportion of firm i's board members with three or more board memberships in the listed Swedish firms at the end of year t. A correlation coefficient greater than 0.05 is significant at 0.10 level of significance or higher. **Pearson correlation coefficients are above the diagonal and Spearman correlation coefficients below.**

Table 4
Unconditional Analysis of Determinants of Environmental Performance and the Quality of Environmental Reporting*

Panel A: Environmental Performance	Low (n=492)	Medium (n=150)	High (n=110)	t-Test for difference
$ENVPER_{it}$	1,41	4,00	5,32	-41.89 (0.000)
$ENVREP_{it}$	2,03	4,59	5,98	-34.14 (0.000)
$BCRIME_{it}$	0,31	0,29	0,21	6.44 (0.000)
$CEOCRIME_{it}$	0,32	0,41	0,31	-0.02 (0.982)
$BPURB_{it}$	0,41	0,37	0,24	6.94 (0.000)
$BOARDOWN_{it}$	0,14	0,08	0,10	2.10 (0.036)
$CEOOWN_{it}$	0,49	0,44	0,37	2.79 (0.005)
$GENDER_{it}$	0,82	0,80	0,77	3.64 (0.000)
$ENVRISK_{it}$	2,85	4,06	5,34	-13.73 (0.000)
ROE_{it}	0,12	0,22	0,19	-4.10 (0.000)
$PROF_{it}$	0,17	0,17	0,20	-2.81 (0.005)
$SIZE_{it}$	6,97	8,33	10,23	-18.95 (0.000)
LEV_{it}	0,17	0,25	0,22	-3.70 (0.000)
PB_{it}	2,99	3,33	2,68	1.54 (0.124)
QR_{it}	2,76	1,27	1,06	4.72 (0.000)

Panel B: Environmental Reporting	Low (n=410)	Medium (n=161)	High (n=181)	t-Test for difference
$ENVPER_{it}$	1,359	2,73	4,51	-29.69 (0.000)
$ENVREP_{it}$	1,629	4,00	5,71	-59.64 (0.000)
$BCRIME_{it}$	0,313	0,29	0,24	5.24 (0.000)
$CEOCRIME_{it}$	0,346	0,27	0,36	-0.43 (0.670)
$BPURB_{it}$	0,415	0,36	0,30	5.35 (0.000)
$BOARDOWN_{it}$	0,142	0,10	0,08	3.90 (0.000)
$CEOOWN_{it}$	0,481	0,50	0,39	2.60 (0.009)
$GENDER_{it}$	0,821	0,81	0,78	2.99 (0.002)
$ENVRISK_{it}$	2,632	4,01	4,84	-13.17 (0.000)
ROE_{it}	0,112	0,19	0,20	-4.38 (0.000)
$PROF_{it}$	0,163	0,17	0,19	-2.16 (0.031)
$SIZE_{it}$	6,852	7,91	9,51	-17.58 (0.000)
LEV_{it}	0,151	0,25	0,23	-6.10 (0.000)
PB_{it}	2,975	3,23	2,89	0.45 (0.655)
QR_{it}	3,036	1,48	1,02	4.75 (0.000)

*Note: $ENVPER_{it}$ is a measure of environmental performance and $ENVREP_{it}$ is a measure of the quality of environmental reporting. Both are provided by GES Investment Services. $BCRIME_{it}$ measures the proportion of board members convicted or suspected of crimes. $CEOCRIME_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes, and '0' otherwise. $BPURB_{it}$ is a compound measure composed of the sum of three variables used to measure unethical behaviour: first, $BCRIME_{it}$ as defined above; second, $PAYMENT_{it}$ is the number of board members with a non-payment record divided by the total number of board members for firm i at fiscal year-end t; and, third, $BANKRUPTCY_{it}$ is the number of firm i's board members who have served on at least three boards of other bankrupt firms divided by firm i's total number of board members at fiscal year-end t. $CEOUNETHIC_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes or has a non-payment record or has served on at least three boards of other bankrupt firms, and '0' otherwise. $BOARDOWN_{it}$ is the average market value of the board member's holdings in the firm divided by the average value of his/her total wealth and $CEOOWN_{it}$ is the CEO's holdings in the firm divided by the value of his/her total wealth. $GENDER_{it}$ is the proportion of male board members for firm i at year-end t. ROE_{it} is net income divided by the opening balance of shareholders' equity. $LEVERAGE_{it}$ is interest-bearing debt divided by total assets. PB_{it} is the market value of equity divided by the book value of equity and $SIZE_{it}$ is the logarithm of total assets; $PROFPROP_{it}$ is the proportion of firm i's board members with three or more board memberships in the listed Swedish firms at the end of year

Table 5
Environmental Performance and Criminal Convictions (CRIME)/Unethical Behaviour (UNETHIC)*

Variable	Exp. Sign	Eq. 1	Eq. 2	Eq. 3	Eq. 4
$BCRIME_{it}$	-	**-0.488**	**-0.496**		
		(0,042)	**(0,063)**		
$BPURB_{it}$	-			**-0.351**	**-0.448**
				(0,045)	**(0,014)**
$CEOCRIME_{it}$	-		-0.053		
			(0,594)		
$CEOPURB_{it}$	-				-0,031
					(0,752)
$BOARDOWN_{it}$	?	-0.074	-0.100	**-0.608**	**-0.882**
		(0,684)	(0,609)	**(0,008)**	**(0,000)**
$CEOOWN_{it}$	?		0.159		**0.271**
			(0,215)		**(0,039)**
$GENDER_{it}$	-	**-0.739**	**-0.836**	**-0.738**	**-0.668**
		(0,029)	**(0,027)**	**(0,040)**	**(0,073)**
ROE_{it}	?	-0.203	-0.270	**-0.304**	-0.242
		(0,213)	(0,132)	**(0,076)**	(0,171)
PB_{it}	?	**0.070**	**0.075**	**0.086**	0.082
		(0,001)	**(0,001)**	**(0,000)**	**(0,000)**
$LEVERAGE_{it}$	?	-0,397	-0,482	**-0,795**	**-0,602**
		(0,199)	(0,143)	**(0,015)**	(0,065)
$SIZE_{it}$	?	**0.442**	**0.456**	**0.427**	**0.457**
		(0,000)	**(0,000)**	**(0,000)**	**(0,000)**
Year fixed effects		YES	YES	YES	YES
Industry fixed effects		YES	YES	YES	YES
Adjusted R^2					
Observations					

*Note: The table provides results for estimating the following equations:

Eq. 1:

$$ENVPER_{it} = \alpha_0 + \beta_1 BCRIME_{it} + \beta_2 BOARDOWN_{it} + \beta_3 GENDER_{it} + \beta_4 ROE_{it} + \beta_5 PB_{it} + \beta_6 LEVERAGE_{it} + \beta_3 SIZE_{it} + \varepsilon_{it},$$

Eq. 2:

$$ENVPER_{it} = \alpha_0 + \beta_1 BCRIME_{it} + \beta_2 CEOCRIME_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it},$$

Eq. 3:

$$ENVPER_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 BOARDOWN_{it} + \beta_3 GENDER_{it} + \beta_4 ROE_{it} + \beta_5 PB_{it} + \beta_6 LEVERAGE_{it} + \beta_3 SIZE_{it} + \varepsilon_{it},$$

Eq. 4:

$$ENVPER_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 CEOPURB_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it},$$

where $ENVPER_{it}$ is a measure of environmental performance and $ENVREP_{it}$ is a measure of the quality of environmental reporting. Both are provided by GES Investment Services. $BCRIME_{it}$ measures the proportion of board members convicted or suspected of crimes. $CEOCRIME_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes, and '0' otherwise. $BPURB_{it}$ is a compound measure composed of the sum of three variables used to measure unethical behaviour: first, $BCRIME_{it}$ as defined above; second, $PAYMENT_{it}$ is the number of board members with a non-payment record divided by the total number of board members for firm i at fiscal year-end t; and, third, $BANKRUPTCY_{it}$ is the number of firm i's board members who have served on at least three boards of other bankrupt firms divided by firm i's total number of board members at fiscal year-end t. $CEOUNETHIC_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes or has a non-payment record or has served on at least three boards of other bankrupt firms, and '0' otherwise. $BOARDOWN_{it}$ is the average market value of the board member's holdings in the firm divided by the average value of his/her total wealth and $CEOOWN_{it}$ is the CEO's holdings in the firm divided by the value of his/her total wealth. $GENDER_{it}$ is the proportion of male board members for firm i at year-end t. ROE_{it} is net income divided by the opening balance of shareholders' equity. $LEVERAGE_{it}$ is interest-bearing debt divided by total assets. PB_{it} is the market value of equity divided by the book value of equity and $SIZE_{it}$ is the logarithm of total assets.

Table 6
Quality of Environmental Reporting and Criminal Convictions (CRIME)/Unethical Behaviour (UNETHIC)*

Variable	Exp. Sign	Eq. 1	Eq. 2	Eq. 3	Eq. 4
$BCRIME_{it}$	-	**-0.566**	**-0.540**		
		(0,035)	**(0,050)**		
$BPURB_{it}$	-			**-0.412**	**-0.399**
				(0,028)	**(0,038)**
$CEOCRIME_{it}$	-		-0.045		
			(0,667)		
$CEOPURB_{it}$	-				-0,031
					(0,769)
ROE_{it}	?	-0.012	-0.015	-0.003	-0.004
		(0,947)	(0,936)	(0,988)	(0,980)
PB_{it}	?	**0.040**	**0.040**	**0.039**	**0.039**
		(0,094)	**(0,092)**	**(0,093)**	**(0,093)**
$LEVERAGE_{it}$	?	-0.047	-0.048	-0.140	-0.141
		(0,892)	(0,890)	(0,683)	(0,681)
$SIZE_{it}$	?	**0.459**	**0.459**	**0.457**	**0.458**
		(0,000)	**(0,000)**	**(0,000)**	**(0,000)**
Year fixed effects		YES	YES	YES	YES
Industry fixed effects		YES	YES	YES	YES
Adjusted R^2					
Observations					

*Note: The table provides results for estimating the following equations:

Eq. 1:

$$ENVREP_{it} = \alpha_0 + \beta_1 BCRIME_{it} + \beta_2 BOARDOWN_{it} + \beta_3 GENDER_{it} + \beta_4 ROE_{it} + \beta_5 PB_{it} + \beta_6 LEVERAGE_{it} + \beta_3 SIZE_{it} + \varepsilon_{it},$$

Eq. 2:

$$ENVREP_{it} = \alpha_0 + \beta_1 BCRIME_{it} + \beta_2 CEOCRIME_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it},$$

Eq. 3:

$$ENVREP_{it} = \alpha_0 + \beta_1 BUNETHIC_{it} + \beta_2 BOARDOWN_{it} + \beta_3 GENDER_{it} + \beta_4 ROE_{it} + \beta_5 PB_{it} + \beta_6 LEVERAGE_{it} + \beta_3 SIZE_{it} + \varepsilon_{it},$$

Eq. 4:

$$ENVREP_{it} = \alpha_0 + \beta_1 BUNETHIC_{it} + \beta_2 CEOUNETHIC_{it} + \beta_3 BOARDOWN_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it},$$

where $ENVPER_{it}$ is a measure of environmental performance and $ENVREP_{it}$ is a measure of the quality of environmental reporting. Both are provided by GES Investment Services. $BCRIME_{it}$ measures the proportion of board members convicted or suspected of crimes. $CEOCRIME_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes, and '0' otherwise. $BPURB_{it}$ is a compound measure composed of the sum of three variables used to measure unethical behaviour: first, $BCRIME_{it}$ as defined above; second, $PAYMENT_{it}$ is the number of board members with a non-payment record divided by the total number of board members for firm i at fiscal year-end t; and, third, $BANKRUPTCY_{it}$ is the number of firm i's board members who have served on at least three boards of other bankrupt firms divided by firm i's total number of board members at fiscal year-end t. $CEOUNETHIC_{it}$ is an indicator variable taking the value of '1' if the CEO has been convicted or suspected of crimes or has a non-payment record or has served on at least three boards of other bankrupt firms, and '0' otherwise. $BOARDOWN_{it}$ is the average market value of the board member's holdings in the firm divided by the average value of his/her total wealth and $CEOOWN_{it}$ is the CEO's holdings in the firm divided by the value of his/her total wealth. $GENDER_{it}$ is the proportion of male board members for firm i at year-end t. ROE_{it} is net income divided by the opening balance of shareholders' equity. $LEVERAGE_{it}$ is interest-bearing debt divided by total assets. PB_{it} is the market value of equity divided by the book value of equity and $SIZE_{it}$ is the logarithm of total assets.

Table 7
Simultaneous Estimation of Environmental Performance, Environmental Reporting and Financial Performance

Variable	Exp. Sign	ENVPER	ENVREP	ROE
$ENVPER_{it}$			**1.047**	**-0.060**
			(0.000)	**(0.000)**
$BPURB_{it}$	-	**-0.681**	-0.006	0.031
		(0,014)	(0.978)	(0.557)
$CEOPURB_{it}$	-	0,132	-0,101	-0.032
		(0.253)	(0,273)	(0.137)
$BOARDOWN_{it}$	?	**-0.548**		0,046
		(0.051)		(0.397)
$CEOOWN_{it}$	?	0.077		**0.100**
		(0.659)		**(0.000)**
$GENDER_{it}$	-	**-1.466**		
		(0.000)		
$ENVRISK_{it}$	?	**0.345**	0.042	
		(0.000)	(0.115)	
$PROFPROP_{it}$	?			-0.085
				(0.220)
ROE_{it}		2.046		
		(0.096)		
PB_{it}	?		-0.018	**0.022**
			(0.333)	**(0.000)**
$LEVERAGE_{it}$	?		**0.566**	-0.041
			(0.022)	(0.517)
$SIZE_{it}$	?	**0.291**	0.041	**0.079**
		(0.000)	(0.505)	**(0.000)**
Year fixed effects		YES	YES	YES
Adjusted R^2		0.17	0.17	--
Observations		1,762	1,762	1,762

*Note: The table provides results for simultaneously estimating the following two equations:

$$ENVPER_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 BOARDOWN_{it} + \beta_3 CEOPURB_{it} + \beta_4 CEOOWN_{it} + \beta_5 GENDER_{it} + \beta_6 ROE_{it} + \beta_7 SIZE_{it} + \varepsilon_{it}, \quad 5.1$$

$$ENVREP_{it} = \alpha_0 + \beta_1 BPURB_{it} + \beta_2 CEOPURB_{it} \beta_3 ENVPER_{it} + \beta_4 ENVRISK_{it} + \beta_5 PB_{it} + \beta_6 LEVERAGE_{it} + \beta_7 SIZE_{it} + \varepsilon_{it} \quad 5.2$$

$$ROE_{it} = \alpha_0 + \beta_1 BUNETHIC_{it} + \beta_2 BOARDOWN_{it} + \beta_3 CEOPURB_{it} + \beta_4 CEOOWN_{it} + \beta_5 PROFPROP_{it} + \beta_6 ENVPER_{it} + \beta_7 PB_{it} + \beta_8 LEVERAGE_{it} + \beta_9 SIZE_{it} + \varepsilon_{it} \quad 5.3$$

All variables as above.

APPENDIX 1
Laws Broken by Board Members and CEOs

Code	Title	No. of convictions	Example	Minimum penalty	Maximum penalty
1951:649	Law on Penalties for Certain Traffic Offences	137	Drunken or reckless driving	Fines	2 years in prison
1972:603	Road Traffic Ordinance	101	Various traffic-related crimes, all types of vehicles	Fines	Fines
1998:1276	Road Traffic Ordinance	77	Various traffic-related crimes, all kinds of vehicles	Fines	Fines
1960:418	Law on Penalties for the Smuggling of Goods	51	Importing/exporting goods without proper payment of duty or other taxes	Fines	6 years in prison
Ch. 8	On Theft, Robbery and Other Crimes of Stealing	39	Shoplifting, robbery	Fines	10 years in prison
1972:595	Motor Vehicle Ordinance	27	Driving a car whilst banned from driving	Fines	Fines
Chap. 3	On Crimes against Life and Health	15	Assault, manslaughter	Fines	Life in prison
1986:300	The Navigation Ordinance	13	Violation of international navigation rules	Fines	Fines
Chap. 9	On Fraud and Other Dishonesty	12	Fraud	Fines	6 years in prison
1941:967	The National Service Act	9	Failure to report for military service	Fines	1 year in prison
Chap. 12	On Crimes Inflicting Damage	6	Damage to public property	Fines	4 years in prison
1968:64	Penal Law on Narcotics	6	Using or dealing drugs	Fines	10 years in prison
1990:1342	The Insider Act	6	Insider trading based on non-public information	Fines	2 years in prison
1956:617	The Public Order Act	5	Arranging public meetings without a permit	Fines	6 months in prison
	All other crimes	79			
	Total no. of crime convictions	**579**			
	No. of suspected crimes	**163**			
	Total convictions/suspected crimes	**74**			