Environmental Disclosure Within Legal and Accounting Contexts: An International Perspective*

Bjorn N. Jorgensen
Columbia University

Naomi S. Soderstrom
University of Colorado at Boulder

Abstract

We investigate how environmental disclosures vary under commercial and environmental laws across countries. Using results from an international survey of managers, we find evidence that legal institutions affect managers' reports of corporate environmental disclosures. We further document that reported environmental disclosures are related to GDP per capita. Finally, we find evidence that reported environmental disclosures and disclosure regulations are codetermined, that is, across countries, reported environmental disclosures vary with legal institutions, environmental regulation, and disclosure regulation.

* Current draft: July 2007. Please do not quote without permission. The authors would like to thank participants at the 2007 APIRA conference, 2007 European Accounting Association meeting, the 2007 International Accounting Section meeting, Gavin Cassar, Nabil Elias, and Katherine Gunny for helpful comments.

Environmental Disclosure Within Legal and Accounting Contexts: An International Perspective

Industrial activity has a large impact on the environment. Recent concerns about global warming and emissions trading markets for greenhouse gases have intensified stakeholder interest in corporate environmental activities and impacts. Response to this increase in interest has varied across corporations and across countries. While for most of the world, environmental reporting has developed voluntarily (e.g., through voluntary standards such as the Global Reporting Initiative), some countries have passed legislation mandating corporate environmental reporting (e.g., Denmark's "green accounts," that detail raw materials used and waste produced). The first purpose of this paper is to document diversity in international environmental disclosures. We document that legal origin (or possibly, which colonial power ruled historically) is associated with the degree of cross-country variation in managers' reports of environmental disclosures. We also explore the relation between reported environmental disclosures and the general level of environmental regulation. We find that more stringent environmental laws are associated with higher levels of reported disclosure. Finally, we relate environmental disclosures to another common type of corporate disclosure: disclosure of accounting information. Accounting disclosures provide an interesting contrast to environmental disclosures because while the precise rules associated with accounting disclosure vary from country to country, there is a much longer tradition of accounting disclosure and most countries have some form of mandated accounting disclosure. We find a strong relation between the level of reported environmental disclosure and the level of reported accounting disclosure regulation.

Prior papers investigate environmental disclosures in individual countries – including Australia (Tilt, 2001), Canada (Li, Richardson, and Thornton, 1997; and McConomy and Li 1999), Finland (Niskanen and Nierminen, 2001), Germany (Cormier, Magnan and Velthoven, 2005), Spain (Larrinaga, Carrasco, Correa, Llena and Moneva, 2002), UK (Campbell, 2004), and USA (Patten, 2002). For example, McConomy and Li (1999) investigate early adoption of environmental disclosures as an example of voluntary disclosure. They find that market valuation of removal and site restoration costs for oil and gas and mining companies includes estimates of future as well as current liabilities. Patten (2002) documents a negative relation between environmental performance and environmental disclosures. Other studies compare environmental disclosures in a small cross section of countries, such as Nyquist (2003), who examines Scandinavian countries, and Israel (2004), whose sample includes 12 countries. While many important insights have already been gained from this literature, none of the papers take into consideration the relation, if any, between environmental disclosures and other disclosure practices and general legal institutions.[1] Thus, in contrast to prior research, we provide preliminary evidence on these relations, using a large cross-section of countries. Another strength of our study is that while prior literature has focused on developed countries, our sample includes both developing and emerging markets. These markets constitute a large proportion of world population and are responsible for an increasing amount of worldwide pollution.

The remainder of the paper is organized as follows: Section 2 provides a review of the literature and our theoretical development. Section 3 describes our data. Section 4 details our results. Section 5 concludes.

[1] Kolk, Walhain, and Wateringen (2001) provide descriptive statistics about how environmental reporting for the

2. Literature Review and Theoretical Development

The public receives information about firms' environmental exposures from many sources, including the media, regulators and management. When managers make disclosures, some are mandated, while other disclosures are voluntary, or at the discretion of management. In the U.S., few financial accounting standards address disclosure of environmental activities/liabilities. During the 1990's, the primary accounting standards addressing environmental issues included Statement of Financial Accounting Standards (SFAS) No. 5, "Accounting for Contingencies" and requirements associated with disclosure of asbestos remediation costs (Emerging Issues Task Force (EITF) 89-13 Accounting for the Cost of Asbestos Removal) and other remediation expenditures (EITF 90-8 Capitalization of Costs to Treat Environmental Contamination).[2] In the early 1990's, the U.S. Securities and Exchange Commission (SEC) became concerned about the lack of disclosure of environmental issues in financial statements. The SEC issued Staff Accounting Bulletin (SAB) 92, which increased the disclosures required in the Management Discussion and Analysis section of financial reports submitted to the SEC, (i.e., for publicly traded companies).[3] The additional disclosures required under SAB 92 include enhancements to Item 103, which requires the corporation to describe its legal proceedings (this includes administrative and legal activities, pending and contemplated, that could affect the corporation or subsidiaries); Item 303, which requires a discussion of any known trends or any known demands, commitments, events, or uncertainties that are likely to affect the registrant's liquidity in a material way; and Financial Reporting Release 36, which

---

Global 250 is related to country and industry, but do not perform any statistical analyses formally exploring the relations.

[2] Operating under the auspices of the Financial Accounting Standards Board, the EITF publishes accounting guidance for issues that are too specific for a formal accounting standard.

[3] See Alciatore, Dee and Easton (2004), for more detail about disclosure requirements.

requires disclosure when management is unable to determine that a material effect is "not reasonably likely" to occur.

An extensive literature documents the value relevance of corporate reporting related to the environment, in the sense that stock price movements are associated with firms' disclosures about environmental exposures. Studies have examined the relation between stock market valuation and environmental disclosures whether disclosed in separate reports (e.g., Hughes 2000), in notes to the financial statements (e.g., Clarkson, Li and Richardson 2004), or as environmental liabilities in the balance sheets of publicly traded companies (e.g., Barth and McNichols 1994; McConomy and Li 1999; and Bewley 2005). It is not surprising that reported environmental disclosures are value relevant, given that environmental liabilities can be large in magnitude. Consider, for example, the costs associated with nuclear decommissioning costs. For a nuclear power plant that is operating today, future costs of clean-up are foreseeable and estimable (D'Souza, Jacob and Soderstrom (2000) report a mean projected cleanup cost of over $300 million per plant). Even though current cash flows are unaffected, SFAS 143, "Accounting for Asset Retirement Obligations" requires that a liability be recorded as the liability is incurred, which in this case, is upon initial operation of the plant (see D'Souza, Jacob and Soderstrom 2000).

Required disclosure of environmental issues in financial statements varies from country to country. For example, while U.S. GAAP is silent with respect to disclosure of emissions trading allowances, under International Financial Reporting Standards (IFRS), International Accounting Standard (IAS) 20 requires recognition of the allowances as grants from the government.

Accounting regulation is not the sole source of environmental information. Various laws and regulations impose reporting requirements on corporations and much of this information is available to the public. For example, in the U.S., the Emergency Planning and Community Right to Know Act (EPCRA) of 1986 created the Toxic Release Inventory, which required that each manufacturing facility prepare annual public reports of the release of specific toxics.[4] In Denmark, some industries face mandatory environmental reporting requiring (un-audited) disclosures of raw materials used and waste produced.[5]

To assess the impact of regulation that mandates environmental disclosure, one should consider what reported environmental disclosures would have arisen voluntarily in the absence of regulation. Li, Richardson, and Thornton (1997) model the incentives for voluntary disclosure of environmental information by making two assumptions from Dye (1985). First, investors assign some probability that a firm's manager is uninformed about environmental exposures. Second, a manager can credibly disclose environmental exposures, but cannot credibly disclose that s/he is uninformed (even if true). The prediction following from these two assumptions is that informed managers will truthfully disclose their environmental liabilities when exposures are small, but they have an incentive not to disclose their environmental liabilities when exposures are large. A lack of reported environmental disclosure can therefore mean that the firm has no environmental exposures, that the manager has no information about such environmental exposures, or that the manager is selectively withholding unfavorable news. In equilibrium, investors correctly anticipate managers' incentives for voluntary disclosures and price stock accordingly. Consequently, the predicted effect of regulation mandating disclosure is

[4] Bennear (2005) provides evidence that firms strategically manage their operating decisions to remain below the threshold for reporting the use and release of chemicals. Consistent with managers trying to minimize any negative consequences from having to reporting large quantities of releases, there was a dramatic decrease in levels of toxic releases following implementation of mandatory reporting (EPA 1995).

that firms increase their reported environmental disclosures by making public more environmental information that would otherwise have been undisclosed.

While the above model presumes perfect credibility of disclosures, that is, managers cannot make untruthful disclosures, credibility may arise endogenously as a consequence of the penalties from deviating and not telling the truth. Three institutions that are in place and enforce truthful reporting by managers are disclosure rules, audits, and the legal system. First, if disclosure rules and principles (such as, U.S. GAAP or environmental reporting requirements) allow excessive flexibility in reporting of information the firm, managers have leeway to report a wide range of outcomes for a given set of transactions.[6] Second, auditors' role, among others, is to review that the reports prepared by management are prepared in a manner consistent with the reporting rules. A low quality audit from an auditor, who is not independent from the client firm's management, is not likely to safeguard the owners of the firm against misreporting. Fortunately, ample empirical evidence suggests that disclosures are more credible due to auditing (e.g., McConomy 1998).

In a strong financial reporting environment, there should be an overlap between high quality disclosure of financial information and high quality disclosure of environmental information. Stronger accounting rules will result in more truthful and complete reporting. Such reporting will include (where appropriate), disclosure of relevant environmental information if it impacts how investors should view financial results.

---

[5] Source: www.eogs.dk/sw598.asp.

[6] For example, several states in the U.S. (e.g., Massachusetts, Oregon, and Washington) require selected companies to report results of analyses of potential pollution prevention projects. In some states, the companies are required to pursue any projects that have a positive net present value (NPV). If, for some reason, managers do not wish to take on these capital projects (i.e., if the company does not have investment capital available), they have an incentive to change assumptions of the analyses so that the NPV appears unfavorable. The lack of precise guidance about conducting these analyses allows this behavior to occur.

While accounting disclosure rules may affect the required amount of environmental disclosures, the nature of the accounting disclosure requirements will impact the amount of environmental information actually disclosed. For example, while the U.S. is viewed as having high quality rules governing auditing and accounting, it is not *a priori* clear whether environmental disclosures should be higher or lower in the U.S. than in other countries. On the one hand, accounting rules can make a difference. The SEC has delegated the authority to make accounting rules to a private standard setter, currently the Financial Accounting Standards Board (FASB). Under SFAS No. 5, Accounting for Contingencies, the FASB requires that public firms record a contingent liability on their balance sheets for environmental exposure if the event is "probable and reasonably estimable." In contrast, public firms in the European Union prepare their financial statements using International Financial Reporting Standards (IFRS). Under IFRS, firms report a contingent liability on their balance sheets if the event is "more likely than not and estimable." The interpretation of the term "probable" used in the U.S. accounting rules (U.S. GAAP) is that the probability is more than 80 or 90 percent, while "more likely than not" is interpreted to be more than 50 percent. Consequently, European firms are required to estimate the cost outflows an uncertain event that is estimated to occur within a 50 to 70 percent probability range even though the same event would not require recording in the balance sheet for a U.S. company. On the other hand, U.S. regulators may enforce the rules more strictly than their foreign counterparts.

The third institution is the legal system in place to enforce existing laws and rules and develop new laws and rules as needed. These legal systems affect incentives faced by both management and auditors. In recent years, corporate governance has received a lot of attention in the media and in the evolution of laws. For example, in the U.S., the Sarbanes-Oxley Act of

2002 requires, among others, a section 404 audit of internal controls and that Chief Executive Officers and Chief Financial Officers sign the financial statements and increased their exposure to legal liability. In addition, if a legal system is ambiguous in assigning penalties to auditors, it can affect the auditors' incentives to provide a high quality audit (see Schwartz, 1998). Significant variation exists in legal systems across countries. We thus argue that a country-level analysis of variation in reported environmental disclosures should control for legal institutions.

Our country-level approach is similar to that of recent papers in economics, finance, and accounting – including Barro (1991), La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998, 1999), Bushman and Smith (2001), Battacharya, Daouk and Welker (2003), and Clayton, Jorgensen and Kavajecz (2006). In particular, La Porta et al. (1998) document variation in legal traditions around the world. They classify countries into common or civil law and further classify civil law countries based on legal origin being French, German, and Scandinavian. They find that firms with common law offer more protection to shareholders, but that civil law countries develop other substitute mechanisms. Collectively, these studies document cross-country variation between institutional characteristics and firms' decisions regarding capital structure and corporate governance, investors' decisions regarding dispersion of ownership, and governments' decisions regarding regulation and trading of securities. Our contribution is to examine how these institutional factors impact environmental disclosures.

3. Data

Table 1 describes the variables used in the study. Our data source for measures of environmental disclosures, environmental reporting regulation, auditing and accounting regulation, and GDP is *The Global Competitiveness Report* for 2004-2006. This report

summarizes responses (mean and standard deviation for each question) to an international survey, sponsored by Harvard University and the World Economic Forum. Respondents are executives and business leaders in up to 117 countries. The latest survey involved a total of 10,993 executives (an average of 94 responses per country).

Our survey questions of interest pertain to environmental disclosures and environmental and accounting regulation.[7] It is important to note that our measures are manager perceptions of our constructs rather than objective measures. For example, instead of having an objective measure of the quality of environmental reporting within each country, we have answers to the survey question, "Corporate environmental reporting in your country is (1 = nonexistent, 7 = widespread)." Unless managers from a given country have an idiosyncratic systematic bias to over- or under-state reporting quality, our survey-based measure should be unbiased (although undoubtedly noisy). We also attempt to control for systematic bias within the group of managers responding to the survey by using lags of the independent variables. Thus, for example, we test to see whether managers' assessments of environmental reporting prevalence relate to the prior year's reported level of environmental reporting regulation.

Using survey data raises a suite of additional concerns/caveats. First, the survey items used are single item measures of possibly complex constructs, some of those constructs typically measured with multi-item scales – for example, accounting disclosure may cover quantity of information disclosed as well as the quality and credibility of what is being disclosed. Further, even face validity may be a concern. Note that the "prevalence and effectiveness of environmental reporting" scale has "nonexistent" at one end (1) and "widely used and effective" at the other (7), so it is possible that what the question really captures was unclear to the

respondents. Unfortunately, we had no control over these measures since we did not prepare the survey questions, nor perform the survey. Further, we would have potentially preferred to use the individual respondent as the unit of analysis (rather than country), while accounting for country differences with categorical variables. This is not possible because we only have summary information at the country level. Nevertheless, the benefit of this survey is the extensive cross-section of countries covered. Concerns about validity and reliability notwithstanding, we conclude that these measures are very rough surrogates for the constructs that we identify.

Our survey data stem from a report summarizing the survey which contains average response for each country. In our analyses, we omit three country observations (China, East Timor, and Egypt) because of inability to clearly classify legal origin. For example, Egypt is a civil law country with English legal origin.

Based on Reynolds and Flores (1989), we employ two categorical variables that classify each country by legal system (common law, civil law, or other) and by legal origin (English, French, German, and Scandinavian or other). These classifications are applied to commercial law in 49 countries by La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998). The authors further recognize that since laws' origin can differ even within countries, any legal classification unavoidably entails some discretion. For example, both U.S. and Canada are classified as predominantly common law countries. However, the state of Louisiana and the providence of Quebec have laws that originate from French civil law tradition, so the classification is not exclusive. The legal classifications, however, apply equally to both commercial laws and environmental laws. Since we have a larger cross-section of countries than prior studies, we use

[7] During this period, for example, the Kyoto Protocol concerning reduction of global emissions of greenhouse

the augmented Reynolds and Flores (1989) classification from Clayton et al. (2006). We also use 2004 GDP per capita provided in *The Global Competitiveness Report*. Finally, we include a control for the impact of each country on the environment from the Global Footprint Network (http://www.footprintnetwork.org/gfn_sub.php?content=datamethods).

4. Results

We first perform univariate analyses of environmental reporting for the countries in our sample. These results are reported in Table 2. Panels A through E of Table 2 list the sample countries and provide means for our variables by legal origin. We might expect that regulation of environmental disclosures dominates in economies that are more regulated. For example, Denmark (Panel D) has the highest level of mandated environmental disclosures worldwide, which is likely attributable to recent laws that require public firms to provide environmental reports. The lowest levels of environmental disclosures are generally in emerging and developing market economies, with Brazil (Panel B) being a notable exception.

Table 2, Panel F provides sample summary statistics and tests for differences in means between legal origins. The tests reveal no statistically significant variation between common law and civil law countries. When we follow La Porta et al. (1998) and partition civil law countries based on their legal origin, however, a clear ordering emerges. Our variables consistently rank Scandinavian legal origin countries the highest, followed by German, and then English legal origin countries. Further, French legal origin countries rank the lowest for our environmental variables, while Socialist countries rank the lowest for our commercial variables: strength of auditing and accounting standards and GDP per capita. This is reasonable, since we would

gasses came into force. Signatory countries may have increased environmental regulation and reporting regulation

expect that auditing and accounting standards are the least important in socialist legal origin economies that have not traditionally been guided by capital market forces. In addition, cursory examination of the data within Panels A and B suggests that corporate environmental reporting is more prevalent within those countries that have higher GDP per capita. This is consistent with the hypothesis that countries require a minimum standard of living (approximated here by GDP per capita) before environmental concerns emerge and regulation regarding the environmental disclosures become important.

Table 3 separately analyzes the association between legal origin and reported environmental disclosures (panel A), environmental reporting regulation (panel B), and strength of auditing and accounting standards (panel C). We follow La Porta et al. (1998) and report regression models[8] including the log of GDP per capita in some models to control for heteroscedasticity. We also include footprint of each country. We expect that countries with greater impacts on the environment are more likely to have extensive environmental regulations and higher reporting levels. For each analysis, the high adjusted R^2 indicates that a large part of cross-country variation is explained by economic development and legal characteristics. As expected, economic development is strongly positively associated with each dependent variable. Ecological footprint is also significantly associated with environmental disclosure and regulations. After controlling for these factors, relative to common law countries, civil law countries have on average lower levels of reported environmental disclosures, environmental reporting regulation, and strength of auditing and accounting standards. This effect appears to be mainly driven by countries of French and Socialist legal origin. For the Scandinavian legal origin countries, after controlling for the Scandinavian countries' higher level of economic

---

as a result.

development, reported environmental disclosures are also lower than in countries with English legal origin. While model 1 in panel B indicates that German origin countries have significantly higher levels of environmental regulation, this result appears to be driven by GDP levels (the coefficient becomes insignificant in model 4).

English legal origin countries likely have the highest emphasis on capital markets and therefore the highest need for strong auditing and accounting standards. Consequently, all other legal origins should exhibit less strong auditing and accounting standards. Results reported in the panel C of Table 3 are consistent with this conjecture. While not focusing on disclosure rules, La Porta et al. (1998) analyze the relation between legal origin and a measure of quality of accounting standards. Similar to the last two columns of Panel C of Table 3, La Porta et al's regression of a measure of quality of accounting standards on GDP per capita and legal variables reveals qualitatively similar results to ours in both sign and magnitude.[9]

In section 2, we argued that environmental reporting quality relates to auditing and accounting regulation and environmental reporting regulation. Table 4 examines these associations, controlling for economic development, country legal characteristics, and footprint. We find that both auditing and accounting regulation and environmental reporting regulation are positively associated with reported environmental disclosures, although in our last regressions, environmental reporting regulation dominates auditing and accounting standards. Legal origin continues to play a significant role in environmental reporting, even after controlling for auditing and accounting standards and environmental regulation. With the exception of German origin, all

[8] We follow the literature and report ordinary least squares estimates even though the bounded dependent variable could suggest that these estimates need not be unbiased.

[9] The La Porta et al. accounting variable is based on scoring of information content in annual reports. While their variable is created based on evaluations that may involve some discretion, their variable is less susceptible to the biases associated with a survey. We therefore derive comfort from the similarity in results. Subsequent papers do

of the other legal systems are associated with lower levels of environmental reporting than in countries with legal systems of English origin.

5. Conclusions, Limitations and Implications

Policymakers, economists and activists continue to debate the connection between a country's wealth and its environmental regulations. Some argue that richer countries can afford to take care of the environment and therefore enact more laws to limit emissions. Many argue that additional disclosure laws are needed, since in their absence, firms wouldn't volunteer potentially negative information. Common counterarguments support the notion that firms face incentives to increase transparency — such as cultivating a good public image, or even responding to consumer or investor pressure. In its extreme, the unraveling principle suggests that all firms would disclose all costless verifiable information voluntarily. In this light, our finding that regulation of environmental reporting is positively associated with resulting reported environmental disclosures is potentially important.

Overall, our results suggest that reported environmental disclosures are related to legal origin, economic development, and ecological footprint. In univariate analyses, Scandinavian legal origin countries present the highest level of regulation of environmental reporting, the highest level of auditing and accounting standards, and the highest levels of reported environmental disclosure, followed by countries of German and English legal origin. Multivariate analyses, however, reveal that the primary drivers of environmental reporting are GDP per capita and footprint. After controlling for these factors, countries of English and German origin exhibit the highest level of environmental reporting—quite different from the

---

focus on the interaction between law and accounting, see Ball, Kothari, Robin (2000) and Hung (2001), among

univariate results. These results may indicate that economic and environmental factors can substitute for elements of the legal system to increase the level of environmental reporting.

Like other studies in this line of research, endogeneity is a concern, see Sloan (2001). When we document variation between environmental disclosures and legal country characteristics, one cannot infer a causality (i.e., that the countries' legal factors cause the managers' environmental disclosures) simply because the legal institutions we study were in place before firms made their choices. Legal institutions might have been implemented in anticipation firms' environmental disclosure decisions, or both may correlate with a third (causal) variable. In this case, legal institutions and environmental disclosure choices are simply codetermined, leading to an endogeneity problem. Thus, as is the case with other papers in this literature, we do not claim to establish causality. We explore a possible link between a country's institutions and its firms' environmental disclosure choices without ascribing causality.

As in La Porta et al. (1998), this study underscores the role of legal origin in determining economic outcomes and the benefits from partitioning civil law countries based on their legal origin. To further improve our understanding of what determines environmental reporting, a natural next step would be to develop more objective measures of environmental reporting that discriminate between the different channels through which such information becomes available. In this study we could not discriminate between government-mandated environmental reporting and voluntary environmental reporting. With such measures, it is possible to investigate what institutional factors determine managers' propensity to make voluntary disclosures of environmental information.

---

others.

References

Alciatore, Mimi, Carol Callaway Dee, and Peter Easton. 2004. Changes in Environmental Regulation and Reporting: The Case of the Petroleum Industry from 1989 to 1998. *Journal of Accounting and Public Policy* 23 (July/August): 295-304.

Ball, Ray, S. P. Kothari, and Ashok Robin. 2000. The Effect of International Institutional Factors on Properties of Accounting Earnings. *Journal of Accounting and Economics* 29 (1): 1-51.

Barro, Robert J. 1991. Economic Growth in a Cross Section of Countries. *Quarterly Journal of Economics* 106 (May): 407-443.

Barth, Mary E., and Maureen F. McNichols. 1994. Estimation and Market Valuation of Environmental Liabilities Relating to Superfund Sites. *Journal of Accounting Research Supplement* 32: 177-209

Bhattacharya, Utpal, Hazem Daouk, and Michael Welker. 2003. The World Price of Earnings Opacity. The Accounting Review 78 (3): 641-678.

Bennear, Lori S. 2005. Strategic Response to Regulatory Thresholds: Evidence from the Massachusetts Toxics Use Reduction Act. Working paper, Duke University.

Bewley, Kathryn. 2005. The Impact of Financial Reporting Regulation on the Market Valuation of Reported Environmental Liabilities: Preliminary Evidence from US and Canadian Public Companies. *Journal of International Financial Management and Accounting* 16 (1): 1-48.

Bushman, Robert M., and Abbie J. Smith. 2001. Financial Accounting Information and Corporate Governance. *Journal of Accounting and Economics* 32 (1-3): 237-333.

Campbell, David. 2004. A Longitudinal and Cross-sectional Analysis of Environmental Disclosure in UK Companies – A Research Note. *The British Accounting Review* 36 (1): 107-117.

Clayton, Matthew J., Bjorn N. Jorgensen, and Kenneth A. Kavajecz. 2006. On the Formation and Structure of International Exchanges. *Journal of Financial Markets* 9 (1): 27-48.

Cormier, Denis, Michel Magnan, and Barbara van Velthoven. 2005. Environmental Disclosure Quality in Large German Companies: Economic Incentives, Public Pressures or Institutional Conditions. *European Accounting Review* 14 (1): 3-39.

D'Souza, Julia, John Jacob, and Naomi S. Soderstrom. 2000. Nuclear Decommissioning Costs: The Impact of Recoverability Risk on Valuation. *Journal of Accounting and Economics* 29 (2): 207-30.

Dye, Ronald A. 1985. Disclosure of Nonproprietary Information. *Journal of Accounting Research* 23 (1): 123-145.

EPA Journal, 1995. Release of toxic chemicals down in'93. 21 (2): 4-5.

Hughes II, K. E. 2000. The Value Relevance of Nonfinancial Measures of Air Pollution in the Electric Utility Industry. *The Accounting Review* 75 (April): 209-228.

Hung, Mingyi. 2001. Accounting Standards and Value Relevance of Earnings: An International Analysis. *Journal of Accounting and Economics* 30 (3), 401-420.

Israel, Debra K. 2004. International Support for Environmental Protection. *Environment and Development Economics* 9 (6): 757-780.

Kolk, Ans, Seb Walhain, and Susanne van de Wateringen. 2001. Environmental Reporting by the Global 250: Exploring the Influence of Nationality and Sector. *Business Strategy and the Environment* 10 (1): 15-28.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny. 1998. Law and Finance. *Journal of Political Economy* 106 (December): 1113-1155.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny. 1999. Agency Problems and Dividend Policies Around the World. *Journal of Finance* 54 (April): 471-517.

Larringa, Carlos, Francisco Carrasco, Carmen Correa, Fernando Llena, and Jose M. Moneva. 2002. Accountability and Accounting Regulation: The Case of the Spanish Environmental Disclosure Standard. *The European Accounting Review* 11 (4): 723-740.

Li, Yue, Gordon D. Richardson, and Daniel B. Thornton. 1997. Corporate Disclosure of Environmental Liability Information: Theory and Evidence. *Contemporary Accounting Research* 14 (3): 435-474.

Li, Yue, and Bruce J. McConomy. 1999. An Empirical Examination of Factors Affecting the Timing of Environmental Accounting Standard Adoption and the Impact on Corporate Valuation. Journal of Accounting Auditing and Finance 14 (3): 279-313.

McConomy, Bruce J. 1998. Bias and Accuracy of Management Earnings Forecasts: An Evaluation of the Impact of Auditing. *Contemporary Accounting Research* 15 (2): 167-195.

Niskanen, Jyrki, and Terhi Nierminen. 2001. The Objectivity of Corporate Environmental Reporting: A Study of Finnish Listed Firms' Environmental Disclosures. *Business Strategy and the Environment* 10 (Jan/Feb): 29-37.

Nyquist, Siv. 2003. The Legislation of Environmental Disclosure in Three Nordic Countries – A Comparison. *Business Strategy and the Environment* 12 (1): 12-25.

Patten, Denis M. 2002. The Relation Between Environmental Performance and Environmental Disclosure: A research Note. *Accounting Organizations and Society* 27 (8): 763-773.

Reynolds, Thomas H., and Arturo A. Flores. 1989. Foreign Law: Current Sources of Codes and Basic Legislation in Jurisdictions of the World. Rothman.

Schwartz, Rachel. 1998. Auditors' Liability, Vague Due Care, and Auditing Standards. *Review of Quantitative Finance and Accounting* 11: 183-207.

Sloan, Richard G. 2001. Financial Accounting and Corporate Governance: A Discussion. *Journal of Accounting and Economics* 32 (1-3): 335-347.

The World Bank. 2002. World Development Report 2002: Building Institutions for Markets. The World

Bank, Washington, DC.

Tilt, Carol Ann. 2001. The Content and Disclosure of Australian Corporate Environmental Policies. *Accounting, Auditing & Accountability Journal* 14 (2): 196-212.

Table 1
The variables

Variable	Description
Legal origin	Identifies the legal origin of the laws of each country as English common law, French civil law, German civil law, Scandinavian civil law, or Socialist civil law.
Prevalence of Corporate Environmental Reporting	Corporate environmental reporting in your country is (1 = nonexistent, 7 = widespread)
Strength of auditing and accounting standards	Financial auditing and reporting standards regarding company financial performance in your country are (1 = extremely weak, 7 = extremely strong – among the best in the world)
Extent of government-mandated environmental reporting	Government-mandated disclosure of environmental performance and pollutant release in your country is (1 = nonexistent, 7 = widely used and effective)
Gross Domestic Product (GDP) per capita	GDP per capita from year 2004 is reported in U.S. dollars. This variable enters into the regressions in log form.

Legal origin data is based on Reynolds and Flores (1989). Survey data are from The Global Competitiveness Reports for 2004-2005 and 2005-2006. Prevalence of Corporate Environmental Reporting is question 10.10 in the 2004-2005 survey and question 9.09 in the 2005-2006 survey. Strength of auditing and accounting standards is question 9.24 in the 2004-2005 survey. Extent of government-mandated environmental reporting is question 10.05 in the 2004-2005 survey and question 9.03 in the 2005-2006 survey. GDP per capita is from the 2004-2005 Global Competitiveness Report.

Table 2
Environmental Reporting, Related Regulation, and GDP Around the World

Panel A. Survey Responses by Legal Origin: English Origin

Country	Prevalence of corporate environmental reporting (2005-2006)	Government-mandated disclosure of environmental performance and pollutant release (2005-2006)	Strength of auditing and accounting standards (2004-2005)	Gross Domestic Product (GDP) per capita
Australia	5.2	5.3	6.2	$29,682
Bahrain	2.8	2.9	5.7	$18,817
Bangladesh	2.4	3.0	3.5	$1,875
Botswana	3.6	3.3	4.6	$10,169
Canada	5.3	5.3	6.3	$32,921
Cyprus	3.4	4.0	5.4	$19,633
Gambia	3.1	3.4	3.9	$1,903
Ghana	3.7	4.0	5.2	$2,475
Guyana	2.4	2.3	3.8	$4,579
Hong Kong SAR	3.5	4.1	5.9	$30,558
India	3.8	4.1	5.4	$3,029
Ireland	4.5	4.9	6.0	$37,663
Israel	4.6	4.5	5.8	$22,077
Jamaica	2.7	2.7	5.3	$4,327
Kenya	3.4	3.7	4.8	$1,075
Malawi	3.0	2.4	5.1	$569
Malaysia	4.6	4.8	5.6	$10,423
Namibia	3.4	3.4	5.9	$6,449
New Zealand	5.1	5.0	6.2	$23,925
Nigeria	3.7	3.7	3.9	$1,120
Pakistan	3.1	2.7	3.9	$2,404
Singapore	4.8	5.5	5.9	$26,799
South Africa	4.7	4.2	6.2	$10,603
Sri Lanka	3.2	3.1	5.2	$3,882
Tanzania	3.3	3.3	4.1	$673
Thailand	3.7	4.1	5.0	$7,901
Trinidad and Tobago	2.8	2.7	4.8	$12,794
Uganda	3.8	3.3	3.8	$1,728
United Arab Emirates	3.4	4.1	4.8	$23,818
United Kingdom	5.6	5.4	6.6	$28,968
United States	5.4	5.4	6.1	$39,498
Zimbabwe	3.5	2.8	5.0	$2,309
English Origin Average	**3.8**	**3.9**	**5.2**	**$13,270**

Table 2 (Continued)
Environmental Reporting, Related Regulation, and GDP Around the World

Panel B. Survey Responses by Legal Origin: French Origin

Country	Prevalence of corporate environmental reporting (2005-2006)	Government-mandated disclosure of environmental performance and pollutant release (2005-2006)	Strength of auditing and accounting standards (2004-2005)	Gross Domestic Product (GDP) per capita
Algeria	2.4	2.6	3.0	$6,722
Argentina	3.0	2.8	3.7	$12,468
Belgium	4.9	4.9	5.8	$30,062
Bolivia	2.4	2.3	3.2	$2,902
Brazil	4.1	3.9	5.0	$8,328
Chad	2.2	2.2	2.6	$1,555
Chile	4.0	4.0	5.3	$10,869
Colombia	3.4	3.4	4.2	$6,959
Costa Rica	3.5	3.8	4.5	$9,887
Dominican Republic	2.0	2.1	3.4	$6,761
Ecuador	2.4	2.3	3.5	$3,819
El Salvador	2.9	2.7	4.7	$4,379
Ethiopia	2.4	2.3	3.6	$814
France	5.2	5.3	6.1	$27,913
Greece	3.4	3.7	4.8	$20,362
Guatemala	2.3	2.2	3.6	$4,009
Honduras	2.5	2.4	3.5	$2,682
Indonesia	3.6	3.6	4.1	$3,622
Italy	3.6	4.2	3.7	$28,172
Luxembourg	4.6	4.1	5.7	$63,609
Madagascar	3.3	3.0	3.5	$854
Mali	3.2	2.7	3.7	$1,024
Malta	2.5	2.8	5.5	$19,302
Mauritius	3.0	3.2	5.1	$12,215
Mexico	3.1	3.4	4.5	$9,666
Morocco	3.0	2.8	4.5	$4,227
Mozambique	3.0	3.2	3.6	$1,247
Netherlands	5.5	5.4	6.0	$29,253
Nicaragua	2.4	2.7	3.6	$2,677
Panama	3.0	4.0	4.6	$6,997
Paraguay	2.1	2.1	3.0	$4,553
Peru	2.8	2.8	4.6	$5,299
Philippines	3.1	3.1	5.1	$4,561
Portugal	3.8	4.3	5.1	$19,038
Spain	4.1	4.4	4.9	$23,627
Tunisia	4.0	4.2	4.9	$7,732
Turkey	3.2	4.0	4.3	$7,503
Uruguay	2.7	3.2	3.7	$9,107
Venezuela	2.5	2.3	3.9	$5,571
French Origin Average	**3.2**	**3.3**	**4.3**	**$11,035**

Table 2 (Continued)
Environmental Reporting, Related Regulation, and GDP Around the World

Panel C. Survey Responses by Legal Origin: German Origin

Country	Prevalence of corporate environmental reporting (2005-2006)	Government-mandated disclosure of environmental performance and pollutant release (2005-2006)	Strength of auditing and accounting standards (2004-2005)	Gross Domestic Product (GDP) per capita
Austria	4.8	5.5	5.8	$31,406
Germany	5.9	6.1	6.1	$28,889
Japan	5.7	5.6	5.6	$29,906
Korea	4.6	4.7	4.8	$21,305
Switzerland	5.2	5.3	5.9	$31,690
Taiwan	4.9	5.0	5.3	$25,614
German Origin Average	**5.2**	**5.4**	**5.6**	**$28,135**

Panel D. Survey Responses by Legal Origin: Scandinavian Origin

Country	Prevalence of corporate environmental reporting (2005-2006)	Government-mandated disclosure of environmental performance and pollutant release (2005-2006)	Strength of auditing and accounting standards (2004-2005)	Gross Domestic Product (GDP) per capita
Denmark	5.9	6.2	5.9	$33,089
Finland	5.7	5.8	6.1	$29,305
Iceland	4.6	5.2	6.2	$33,269
Norway	5.9	5.9	5.9	$40,005
Sweden	5.8	5.8	6.2	$28,205
Scandinavian Origin Average	**5.6**	**5.8**	**6.1**	**$32,775**

Table 2 (Continued)
Environmental Reporting, Related Regulation, and GDP Around the World

Panel E. Survey Responses by Legal Origin: Socialist Origin

Country	Prevalence of corporate environmental reporting (2005-2006)	Government-mandated disclosure of environmental performance and pollutant release (2005-2006)	Strength of auditing and accounting standards (2004-2005)	Gross Domestic Product (GDP) per capita
Albania	2.6	2.3	3.5	$4,937
Armenia	2.7	2.9	3.9	$3,806
Azerbaijan	2.9	3.3	3.8	$3,968
Bosnia and Herzegovina	2.2	2.3	3.4	$5,504
Bulgaria	2.7	3.2	4.4	$8,500
Cambodia	2.6	2.7	3.0	$2,074
Croatia	3.4	3.4	4.2	$11,568
Czech Republic	4.0	4.9	4.3	$18,357
Estonia	4.1	4.9	5.6	$15,217
Georgia	2.3	2.7	3.6	$2,774
Hungary	4.7	4.6	4.9	$15,546
Kazakhstan	4.3	3.6	3.9	$7,418
Kyrgyz Republic	2.0	2.2	3.8	$1,934
Latvia	3.3	3.9	4.8	$11,845
Lithuania	4.3	4.4	4.9	$12,919
Macedonia, FYR	2.5	3.0	4.4	$7,237
Moldova	3.7	3.0	3.7	$2,119
Mongolia	2.1	2.2	3.9	$1,918
Poland	3.8	3.9	4.3	$12,244
Romania	3.4	3.2	4.1	$7,641
Russian Federation	3.3	2.9	3.8	$10,179
Serbia and Montenegro	2.3	2.7	3.5	$4,858
Slovak Republic	3.9	4.9	4.5	$15,066
Slovenia	5.0	5.0	5.0	$20,306
Tajikistan	3.4	3.0	3.1	$1,246
Ukraine	4.0	3.1	3.6	$6,554
Vietnam	2.9	3.1	3.2	$2,570
Socialist Average	**3.3**	**3.4**	**4.0**	**$8,085**

Table 2 (Continued)
Environmental Reporting, Related Regulation, and GDP Around the World

Panel F. Sample Summary Statistics and Tests of Means for Different Legal Origins

Country	Prevalence of corporate environmental reporting (2005-2006)	Government-mandated disclosure of environmental performance and pollutant release (2005-2006)	Strength of auditing and accounting standards (2004-2005)	Gross Domestic Product (GDP) per capita
English Origin Average	3.8	3.9	5.2	$13,270
French Origin Average	3.2	3.3	4.3	$11,035
German Origin Average	5.2	5.4	5.6	$28,135
Scandinavian Origin Average	5.6	5.8	6.1	$32,775
Socialist Average	3.3	3.4	4.0	$8,085
Common Average	3.8	3.9	5.2	$13,270
Civil Average	3.5	3.6	4.4	$12,745
Worldwide Average	3.6	3.7	4.6	$12,789
Tests of means (t-statistics)				
English vs. French	2.811**	2.543*	4.127**	0.761
English vs. German	3.607**	3.706**	1.075	2.854**
English vs. Scandinavian	4.241**	4.354**	2.196*	3.415**
English vs. Socialist	2.283*	1.953#	5.633**	1.992#
French vs. German	5.477**	5.499**	3.389**	3.387**
French vs. Scandinavian	6.067**	6.136**	4.343**	3.945**
French vs. Socialist	0.313	0.399	1.347	1.176
German vs. Scandinavian	1.224	1.561	2.156#	1.786
German vs. Socialist	5.320**	5.282**	5.599**	8.335**
Scandinavian vs. Socialist	5.878**	5.912**	6.998**	9.331**
Common vs. Civil	0.131	0.336	2.575*	0.286

Notes: # $p < .06$, * $p < .05$, ** $p < .01$

Table 3
Relation of Legal Origin and Economic Development with Environmental and Accounting Characteristics

Panel A: Environmental Reporting, Legal Origin and Economic Development

The dependent variable is environmental reporting.

Variable	Model 1	Model 2	Model 3	Model 4[1]
Intercept	3.101***	-0.274	-0.386	1.089
Log of GDP per capita		0.387***	0.455***	0.273**
Civil Law			-0.578**	
French Origin	-0.648***			-0.747***
German Origin	0.615			0.427
Scandinavian Origin	-0.112***			-0.091***
Socialist Origin	-0.709***			-0.732***
Footprint	0.340***	0.161**	0.133**	
Adjusted R^2	61%	47%	52%	63%

Regressions are at the country level, with a sample size of 100 per regression, * p<.10, ** p<.05, ***p<.01
[1]Coefficients for both French and Socialist Origin differ significantly from the coefficient for Scandinavian Origin at p< .01 (F=15.28, 13.91 respectively), but French and Socialist Origin do not statistically differ from each other (F=0.01 n.s.).

Panel B: Environmental Regulation, Legal Origin and Economic Development

The dependent variable is environmental regulation.

Variable	Model 1	Model 2	Model 3	Model 4[1]
Intercept	2.952***	-1.066	-1.149	-0.020***
Log of GDP per capita		0.481***	0.534***	0.404***
Civil Law			-0.428**	
French Origin	-0.498***			-0.645***
German Origin	0.795**			0.517
Scandinavian Origin	-0.094***			-0.062**
Socialist Origin	-0.550***			-0.585***
Footprint	0.378***	0.162***	0.141**	0.180***
Adjusted R^2	63%	57%	59%	67%

Regressions are at the country level, with a sample size of 106 per regression, * p<.10, ** p<.05, ***p<.01
[1]Coefficients for both French and Socialist Origin differ significantly from the coefficient for Scandinavian Origin at p< .01 (F=12.26, 9.41 respectively), but French and Socialist Origin do not statistically differ from each other (F=0.14 n.s.).

Panel C: Auditing and Accounting Standards, Legal Origin and Economic Development

The dependent variable is Auditing and Accounting Standards.

Variable	Model 1	Model 2	Model 3	Model 4[1]
Intercept	4.458***	0.447	-0.251	1.129
Log of GDP per capita		0.436***	0.561***	0.452***
Civil Law			-1.013**	
French Origin	-0.776***			-0.941***
German Origin	-0.087			-0.398
Scandinavian Origin	-0.088***			-0.053**
Socialist Origin	-1.152***			-1.191***
Footprint	0.283***	0.096	0.046	0.061
Adjusted R^2	62%	45%	64%	69%

Regressions are at the country level, with a sample size of 106 per regression, * p<.10, ** p<.05, ***p<.01
[1]Coefficients for both French and Socialist Origin differ significantly from the coefficient for Scandinavian Origin at p< .01 (F=38.63, 60.45 respectively). French and Socialist Origin also differ from each other statistically, but at a relatively low level of significance (F=3.32, p<.10).

Table 4
Association of Legal Origin and Regulatory Stringency with Environmental Reporting

The dependent variable in all models is environmental reporting.

Independent Variable	Environmental Reporting Regulation		Auditing and Accounting Standards		Both Auditing and Accounting Standards and Environmental Reporting Regulation	
Intercept	.008	0.552	-0.552	0.533	-0.042	0.195
Auditing and Accounting Standards			0.660***	0.492***	0.093	0.081
Environmental Reporting Regulation	0.868***	0.791***			0.823***	0.757***
Log of GDP Per Capita	0.050	0.007	0.085	0.051	0.020	-0.020
Civil	-0.290***		0.091		-0.213*	
French Origin		-0.277***		-0.284		-0.220*
German Origin		0.008		0.623**		0.059
Scandinavian Origin		-0.038		-0.065***		-0.036**
Socialist Origin		-0.368***		-0.147		-0.288**
Footprint	0.025	0.073*	0.102*	0.196***	0.027	0.075*
N	91	91	100	100	91	91
Adjusted R^2	88%	87%	64%	69%	88%	89%

Notes: * p < .10, ** p < .05, *** p < .01