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Asymmetric Response: Explaining Corporate Social Disclosure by Multi-National Firms in Environmentally Sensitive Industries

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Abstract— The paper examines the determinants of corporate social disclosure (CSD) using a sample drawn from environmentally sensitive industries. It extends the traditional literature in two respects. First, it is international in scope, examining the accounting disclosure responses of multi-national companies to the pressures implied by the nature and scope of their operations. Second, variables measuring political risk and social development are developed so that these pressures can be measured, thereby introducing new dimensions to the literature. In common with previous studies, financial risk, size and other control variables are included. The relationships are tested econometrically utilising regression techniques not previously applied in the CSD literature but nonetheless more generally appropriate when using count dependent variables. Our results suggest that managers feel an unequal sense of responsibility to different constituencies and their disclosure priorities are determined by stock market accountability, lobbying power of their domestic audience and the political risk of their activities rather than the impact of their activities in countries of operation.

Keywords:
Corporate Social Disclosure; Oil Industry; Financial Reporting

1. Introduction

Why do large multi-national firms make corporate social disclosures (CSDs) in their annual reports? Two possible hypotheses are explored in this paper. First, the 'benign' managerialist hypothesis that the firms are essentially enlightened oligarchies, which recognise their social and environmental impact and their associated responsibilities and make appropriate disclosures. At the centre of this argument is the notion that CSD arises from an ethical code which is espoused by the senior management of the firm and is transmitted 'top down' as a matter of policy. If the benign hypothesis were true, it would be expected that the CSD response would be proportionate to the international scope of the firm's activities.

An alternative second hypothesis is that firms have no such ethical code and that managers merely respond to market, social and political pressures when making CSDs. According to this hypothesis, CSDs reflect differential political, regulatory and lobbying power in different countries. Where these powers are the strongest, the firm makes greater CSDs in response, notwithstanding the objective level of environmental impact in that country. Where powers are weaker, for example in unstable and underdeveloped countries managers face less direct pressure to make CSDs. Actual disclosures may in these circumstances be aimed at the governments and public where the corporation is domiciled, particularly where political, regulatory and lobbying systems are well-developed. If this is so, then managers are motivated to make CSDs as an 'asymmetric response' to the asymmetric power and influence produced by the ownership of resources and differential patterns of regulation.

Such an asymmetric response hypothesis is suggestive of two further detailed relationships. First, CSDs, like other accounting disclosures, are responses to the requirements of shareholders. As a powerful interest group, shareholders demand, and

managers supply, non-financial as well as financial information as part of a risk management process designed to mitigate political risks. Consequently, a second relationship is that CSDs will be made for the benefit of the domestic population rather than for the benefit of populations impacted by the firms' overseas operations. A corollary is that CSDs inculcate a sense in domestic populations that their domiciled corporations are much more socially responsible than they actually are.[1]

It should be noted that in setting up these hypotheses, the study differs from previous theoretical literature in important respects. The next section outlines these differences and reviews the prior empirical literature. Section three sets out the data and model to test the benign and asymmetric response hypotheses. Section four analyses the results. Section five draws conclusions and discusses the implications of the support for the asymmetric response hypothesis.

2. Prior studies of the determinants of CSD

The purpose of the paper is to conduct an empirical test of the null benign hypothesis and the alternative asymmetric response hypotheses as introduced above. There is currently little recent evidence in favour of either hypothesis or indeed on the relationship between international activity and CSD in general. In recent studies the firm's country of origin (Newson and Deegan, 2002) and associated cultural differences contribute to differences in practice (Adams, 2002).[2] Even so, of the large

[1] This aspect of the asymmetric response hypothesis is similar to the 'Maginot' hypothesis (Glasbeek, 1988; Wolfson and Beck, 2005), where, like the French fortifications of 1940, CSDs create a false sense of security.

[2] Where the literature on voluntary disclosure includes international comparison, studies have focused on areas besides CSD, for example intellectual capital (Brennan, 2001, and Bozzolan et al., 2003). For an exceptional example, see Guthrie and Parker (1990).

recent empirical literature on the determinants of CSD (for recent reviews, see Newson and Deegan, 2002; Brown and Fraser, 2006), the overwhelming majority is country specific (for example Deegan and Gordon, 1996; Deegan et al 2002; O'Dwyer, 2002; Cho et al 2006). Gray et al's (2001, p.332) suggestion that 'it is increasingly clear that social and environmental disclosure varies according to country.… Whether, however, any putative relationship between disclosure and corporate characteristics could be expected to exhibit itself consistently across different countries has not been examined systematically', therefore remains an important motivation for further research.

Country specific studies have adopted two distinct approaches. First, there have been *economic* studies which have explained CSD in terms of national stock market reaction and associated accounting metrics (Aerts et al 2008). Second, CSD has been related to the *social context* in which firms operate. In these approaches, either the economic relationship between the firm's management and shareholders is extended to include social and environmental interests as part of a wider definition of the firm's stakeholders, or CSD is seen as a process of legitimating the firm's activities in the eyes of society. To explain the differences between the approaches used in the current paper and the previous economic and social context studies, each aspect of the prior literature is now discussed in turn.

Economic studies have suggested that the stock market acts as an important source of demand for CSD information. Content analyses of website disclosures (Jose and Lee, 2007) and surveys of stock market participants have tended to conclude that CSDs are of moderate relative importance (Belkaoui, 1984; Benjamin and Stanga, 1977; Chenall and Juchau, 1977; Firth, 1979; Epstein and Freedman, 1994) while other ranking studies undertake surveys of potential users to indicate their needs and

demands for social information (e.g., Buzby and Falk, 1979; Belkaoui, 1980; Dierkes and Antal, 1985). These studies find CSD to be of importance to users, and, in some cases, at least equally important as financial items of disclosure. More recently, Deegan and Rankin (1997) asked respondents to consider whether different decisions would be made depending on the availability of CSD, finding that environmental disclosures are important and material to investors. From an agency theory perspective, as shareholders become aware of the effect of social and environmental performance of the firms in which they invest, managers will emphasise social and environmental performance by disclosing social and environmental information in the annual reports (Ness and Mirza, 1991). Other studies (Milne and Chan, 1999, Murray et al, 2006) however, suggest investors largely ignore narrative social disclosure, whilst Toms (2002) and Hasseldine et al (2005) find that specific, auditable, and quantitative disclosures are more useful in building corporate social reputation.

To compound the problems of interpreting their mixed empirical results, these studies are often either mis-specified, under-theorised, fail to discriminate between hypotheses (Gray et al., 1995a; Tilt and Symes, 1999; Milne, 2002; Al-Tuwaijri et al 2004) or, lacking an international dimension, too limited in scope. In general, they are unable to accommodate structural conflicts of interest and inequalities (Tinker et al., 1991). Specifically for the purposes of the current study, if the demand for CSD is expressed only as a function of stock market calculation, although stock market participants may reflect social and political pressures in their valuations, the influence of these wider pressures cannot be quantified or differentiated from the underlying financial value of the disclosure. As the scope of international activity expands, it is expected that the firm faces greater pressure to disclose from a wider range of international financial institutions whose expectations may be complementary. At the

same time, the political and social pressure for disclosure will potentially increase and these must be differentiated for the purposes of empirical testing.

Legitimacy theory offers a potential solution to the under-theorisation of the economics-based studies. It is founded on the notion of a social contract (Dierkes and Antal, 1985; Gray et al., 1995b) and the dimensions of such a contract potentially increase as the firm diversifies its activities internationally. Accordingly, CSD is sometimes seen as a response to threats to the organisation's legitimacy (Deegan et al 2000; Deegan, 2002). CSD may also be seen as a tool for establishing, protecting or repairing the legitimacy of the organisation in that they may influence public opinion and public policy (Patten, 1991; Cho and Patten 2007) and reduce political, social and economic exposure and pressure (Deegan and Rankin, 1997). Additionally, legitimation through CSD may play a part in influencing the policy process by shaping social and environmental standards, as suggested by Patten (1992: 472).

From the description of these studies, it can be seen that legitimacy theory is potentially nested within the benign hypothesis, as managers seek to fulfil their side of the social contract. The same might be said of ethical perspective stakeholder theory, in which all stakeholders (both primary and secondary) have a right to be provided with information about how the organization is impacting on them, through pollution, community engagement and so on (Deegan, 2000). For Lindblom (1994) the purpose is to influence 'relevant publics'. If a multi-national corporation begins to exploit the natural environment of an underdeveloped country, it follows that the members of that society become a 'relevant public'. However, it seems equally likely that the firm will not seek to manage its relationship with this 'public' if it has underdeveloped political organisation, regulation and lobbying institutions. Some studies have noted the selective nature of corporate legitimation and find that in situations of conflicting

interests, organisations attempt to communicate legitimating characteristics to the most important relevant public and to ignore less important publics (Neu et al., 1998; Oliver, 1991). Acceptance of differential importance provides potential support for the asymmetric response hypothesis, and how 'most important' is defined and measured is very important for empirical testing.

Some of the answer is provided by stakeholder theory. According to this perspective, a stakeholder's power to influence corporate management is viewed as a function of the stakeholder's degree of control over resources required by the organization (Ullmann, 1985). There is some empirical support for stakeholder theory (Roberts, 1992, Neu et al 1998; Magness 2006), but these results need extending. In the existing literature, stakeholders groups are seen as spatially undifferentiated, for example 'shareholders', 'employees', 'publics'. A multi-national company is very likely to deal with more than one national group of shareholders for example. Moreover, in the international context especially, there is no necessary correlation between resource control and CSD because societies in possession of crucial resources, such as oil, are missing other necessary conditions for CSD to occur, for example developed stock markets and structures of political accountability. Meanwhile the absence of such structures may increase the perception of political risk in countries where investment finance is sourced, thereby creating an asymmetric demand for CSD in other locations. In summary therefore the asymmetric response hypothesis offers a refinement of stakeholder theory and the possibility of extending it for the purposes of empirical testing.

Although the stakeholder and legitimacy approaches have achieved significant results, due to the theoretical overlaps discussed above it is not clear how the approaches compare and which of explanation is the more robust. In order to assess

this, and the relative importance of stakeholder groups, the approach adopted in this study is to quantify the economic, social and political variables. Whilst this allows us to see the relative performance of these variables in testable models, a limitation is that it does not provide any generalisable test of stakeholder theory or legitimacy theory, nor offer comparable results to prior studies which have used qualitative approaches, although such results may be complementary to their principle findings. The study below is nonetheless important, since it is the first to simultaneously quantify economic, political and social variables in this fashion. In selecting the oil industry as its principal focus, it provides a useful case study of an environmentally sensitive industry operating in highly differentiated international social and political contexts.

3. Hypotheses, data and variables

3.1. Hypotheses

According to the benign hypothesis, managers feel a sense of social responsibility which applies equally to the citizens of the countries in which they conduct their activities. As a company expands its scope of operations, the benign hypothesis predicts that the scope of the annual report also expands to accommodate the new arrangements of social accountability. If the benign hypothesis is true, CSD will be positively related to the number of countries of operation.

According to the alternative asymmetric response hypothesis, managers apply CSD where they are forced to do so by financial, political and social pressures. They will make differential disclosures reflecting inequalities in lobbying power between countries and between types of institution. For example where political institutions are underdeveloped, managers are less likely to adopt CSD in response to pressures in

that country. To test the asymmetric response hypothesis three proxies are developed to measure financial, political and social accountability, derived respectively from stock market data, indices of political risk and social development.

3.2. Data

The sample comprises 87, 22 and 16 companies from the global Oil and Gas, Chemicals and Transportation industries, respectively. Consistent with Alciatore et al (2004) oil is the primary focus of the study and the chemical and transportation sub-samples were chosen as reference group comparators of firms also engaged in environmentally sensitive activities, but without the evident political pressures associated with oil extraction (Jenkins and Yakovleva, 2006). The dataset is based on year 2000 and the sample of oil and gas production companies was obtained from a population of 1841 oil and gas production companies (as listed on the Wood Mackenzie database). Of these firms, the substantial majority did not have stock market quotations and were therefore excluded from the study. Eliminating other firms with missing data left a sample of 87. Therefore, most abandoned companies happened to be not listed in the stock market or they are only listed once in the best situations. Generally speaking, excluded companies were smaller and less multi-national in scope, which also reduces their potential relevance to the study. The information available for the remaining companies allowed the quantification of the number of countries where a company has oil and gas reserves and the commercial value of these reserves. The sample of 87 oil companies represents 5.54% of the population, and covers US$607,982m commercial reserves, or 72.85% of the population's commercial reserves.

3.3. Model tested

The model tested in the paper can be summarised as follows:

$$CSD = \beta_0 + \beta_1 NOC + \beta_2 SMQ + \beta_3 CONRISK_i + \beta_4 ESI + \beta_5 FRISK \beta_6 SIZE + \beta_7 IND + \varepsilon$$

Where,

CSD = Corporate Social Disclosure;

β_0 = intercept;

β_1 to β_7 = coefficients of slope parameters;

NOC = the number of countries of operation for each company;

SMQ = the number of foreign stock market quotations;

$CONRISK_i$ = the unweighted average political risk of the countries in which firm i operates expressed as a percentage where 0% = minimum degree of risk and 100% = maximum risk;

ESI = the unweighted average environmental sensitivity index (ESI) of the countries in which firm i operates expressed as a percentage where 0% = minimum degree of sensitivity and 100% = maximum sensitivity;

FRISK= the total financial risk measured by the standard deviation of stock returns for the year 2000;

SIZE = a control variable that proxies for corporate size and is measured by the natural logarithm of sales turnover;

IND = the industry classification dummy variable, CHEM = chemical industry firm, OIL = oil industry firm; TRANS = transport industry is used as a reference group; and

ε = error term.

3.4. Dependent variable

CSD as an empirical variable is defined as all the information produced by corporate management in the annual report regarding the interaction between the organisation and its physical and social environment, including issues such as those relating to human resources, community involvement and the natural environment. This study adopts the annual reports as the source of CSD data. The annual report is a statutory, accessible corporate document which speaks about the organisation as a whole, is widely used in prior research (Deegan and Rankin, 1997 Gray et al., 2001; Wiseman 1982: 55) and is viewed as credible by user groups (Tilt, 1994).

Content analysis is used to measure CSD as it has been widely adopted in previous social responsibility disclosure studies (Hackston and Milne, 1996). To facilitate the completion of the content analysis, an interrogation instrument, checklist, and decision rules were developed. The sentence was used as the unit of coding. Reliability was assessed using two rounds of pre-testing by three coders. The two pre-testing rounds produced increasingly convergent views as to what constituted a CSD sentence, and led to the formulation of several decision rules and amendments to the initial checklist.

Two measures of CSD were used. CSD is the total number of sentences and CSDP is the average number of sentences per page, using an approximation to page measurement from the sentence-coded data (after Hackston and Milne, 1996). The central assumption underlying the choice of dependent variable is that expanded disclosures in the Annual Report are complements rather than substitutes, and CSD is the measure that captures this. Therefore, in the regression analysis CSDP is primarily a robustness check on the main model.

3.5. Independent Variables

Number of countries (NOC) is used as a measure of the degree of multi-nationality (extent of multi-national operations) and the MNC's power and is the principal variable used to test the benign hypothesis, where, if true, a positive relationship with CSD is expected. Belkaoui (2001) measures the level of multi-nationality by the ratio of foreign profits / total profits and the number of countries in which the company operates. Meek et al. (1995) measure multi-nationality as a ratio of sales from outside the MNC's home country to total sales. For this study, because expansion into a new country creates a new social responsibility relation and therefore a potentially new accountability relation, number of countries of operation is used and was directly obtained for each company from its annual report.

The number of stock market quotations (SMQ) is used to examine whether financial market pressure contributes a proportionate increase in CSD. This variable is used to test whether or not such listings create financial pressures for more disclosure over and above the mere scope of international operations suggested by the benign hypothesis. A positive relationship between CSD and SMQ would provide support for the asymmetric response hypothesis. The number of stock listings for the sampled companies was obtained from *Datastream*. Listings on more than one stock exchange in any given country are counted as one listing for purpose of this study. This is because, the stock exchanges in one country usually share the same working environment and thus add nothing to the study that aims to investigate the effects of foreign multiple listing. Additionally, only those stock listings occurring before April 2001 are included in the study. Hackston and Milne (1996) provide some evidence that dual and multiple overseas listings may be associated with greater social disclosure. Cooke (1989, 1992) finds an international listing effect on general

voluntary accounting disclosures for Swedish and Japanese companies, respectively and Gray et al. (1993) find the same for their sample of U.S., U.K. and Continental European MNCs.

Country risk (CONRISK) is a proxy for political stability. The study uses the International Country Risk Guide (ICRG) risk rating system to assign a numerical value (risk points) to a predetermined range of risk components, according to a preset weighted scale, for each country covered by the system. Each scale is designed to award the highest value to the lowest risk and the lowest value to the highest risk. The country risk variable refers to different risk aspects of countries where MNCs operate. The country risk measure is used twice in the study as a measure of both the countries' of origin and the countries' of operation political systems (coded [CONRISK(O)] and [CONRISK], respectively). For each sample company the average political risk for all the countries in which the firm operates was computed. In line with the assumption under the benign hypothesis that social responsibility to new publics creates complementary lines of accountability, simple averages were used so that each country carries an equal weighting. The total was then subtracted from 100%, so that firms with operations typically in higher risk countries have higher CONRISK scores.

The Environmental Sustainability Index (ESI) is used to proxy for social development. A high score indicates a high level of development and associated social and environmental regulation. The ESI has been used to proxy for country environmental risk in other contexts (Sandrea, 2003), but not to date in accounting research. The measure includes different areas such as the environmental system (urban air quality, water quantity and quality, land, bio-diversity) in the country, environmental stresses on the system such as air pollution, water pollution/use,

ecosystem stress, waste/consumption, and population, human vulnerability and public health, the social and institutional capacity (their science/technical capacity, rigorous policy debate, environmental regulation and management, tracking environmental conditions, and the public choice failures), and the overall country's global stewardship (its ability to participate in efforts to conserve international environmental resources, and its impact on global commons). For each sample company the average ESI for all the countries in which the firm operates was computed. In similar fashion to the CONRISK variable above, ESI is used twice in the study as a measure of both the countries' of origin and the countries' of operation environmental sensitivity (coded [ESI(O)] and [ESI], respectively). Again, the assumption is that under the benign hypothesis social responsibility to new publics creates complementary lines of accountability, so again simple averages were used so that each country carries an equal weighting. The total was then subtracted from 100%, so that firms with operations typically in socially underdeveloped countries have higher ESI scores.

Financial risk (FRISK) is included in the study as a risk variable in parallel with CONRISK and ESI. It is assumed that if corporate managers engage in CSD in response to widening their scope of operations or exposure to political and social risk then financial risk will also form part of their risk management strategy. Financial risk is computed as the standard deviation of monthly stock returns which was calculated from the share prices for the year 2000 and obtained from the *Datastream* database for each of the sample companies.

3.6. Control variables

A number of studies have examined whether industry sector is able to explain CSD, so controlling for industry membership in the regressions is potentially important. Hackston and Milne (1996) report that disclosures are higher in, what they classify as, high profile industries while Ness and Mirza (1991) found this relationship holds specifically for the oil industry. On the other hand, Cowen et al. (1987), Adams et al. (1995) and Freedman and Jaggi (1986) find that specific areas of disclosure are related to industry sector. Cowen et al. (1987) find that the industry helps to explain energy and community disclosures whilst Adams et al. (1995) conclude that industry sector explains some environmental and some employee disclosures. The sample contains companies from three industries, shown under the IND grouping variable. They are Chemicals (CHEM), Oil (OIL) and Transport (TRAN). Each is chosen for the relative environmental sensitivity of its activities. TRAN is used as a reference group so that the differential effects of CHEM and OIL can be assessed in the analysis.

An association between company size and CSD has been demonstrated in a number of empirical studies (Belkaoui and Karpik, 1989; Cowen et al., 1987; Kelly, 1981; Patten, 1991, 1992; Trotman and Bradley, 1981). Although size appears to be the most consistently reported as having a significant association with CSD, not all CSD studies have supported a size-disclosure relationship, where, for example, Roberts (1992) found no relationship in a US sample. Similarly, in New Zealand, Ng (1985) failed to support hypothesised association between company size and CSD practices. These inconsistencies might reflect differences in the countries of study or even the nature of sampled companies (local, multi-national, or a mix of the two types). Corporate size is measured in different ways in the prior CSD literature such

as by the natural logarithm of book value of total assets (Singhvi and Desai, 1971; Patton and Zelenka, 1997; Inchausti, 1997), by the market value of equity (Lang and Lundholm, 1993), the natural logarithm of turnover (Belkaoui and Karpik, 1989; Patten, 1991; Roberts, 1992). In this study SIZE is the natural logarithm of the turnover, being the most popular measure of corporate size in the past research of CSD.

4. Analysis

4.1. Descriptive statistics

Summary descriptive statistics are reported in Table 1. Preliminary exploration of the data revealed a number of problems. As the dependent variable CSD is a count measure, the most important issue was model specification. As is typical of such data the standard deviation is high relative to the mean. However all companies in the sample made some disclosure and there was no limit on the right hand side of the distribution. Therefore the dependent variable CSD was transformed into a categorical variable CSD1 taking a value of 1 if CSD>0 & CSD<=20; 2 if CSD>20 & CSD<=39; … 5 if CSD >80. The effect of this transformation was to reduce the standard deviation in relation to the mean (Table 1, Panel A). For the same reasons a similar transformation was applied to CSDP, using cut points at CSDP>0, 1, 2, 3, and >4 to create a new categorical variable CSDP1. As can be seen from Table 1, the effect of these transformations was to reduce the standard deviation relative to the mean. To accommodate the categorical dependent variable, ordered probit specification was used.

Table 1 about here

A second problem was the influence of outlying observations in the regression residuals in tests of the full model. Royal Dutch Shell had a particularly disproportionate influence and was removed from subsequent regressions in which the sample size is reported as 124. Cook-Weisberg tests indicated the presence of heteroscedasticity in the residuals, so robust standard errors were used in all models tested (White, 1980). Finally, as can be seen from Table 1 Panel B there was significant cross correlation between several of the independent variables. The CONRISK and ESI variables both measure the general level of development to some extent and therefore some correlation is to be expected. Multicollinearity was dealt with by sequential variable omission and by using stepwise model building.

Table 2 about here

4.2. Discussion of results

Panel A of Table 2 reports the results of six models using CSD1 as the dependent variable. NOC was insignificant in all models tested, including model 1a which offers a specific test of the benign hypothesis. Although NOC always has a positive coefficient, there is no evidence that as the firm diversifies its operations, managers feel any obligation to open up new lines of reporting and accountability to the public in the affected countries.

Model 2a adds the SMQ variable which is highly significant in this and all subsequent models tested. Looking at the results in models 1a-6 inclusive it can be seen that the SMQ variable dominates the NOC variable. International diversification of financial accountability therefore dominates the diversification of operating activity as a determinant of CSD. In addition, the marginal effects are much greater. On

average, the firms were operating in 18 different countries but had only two stock market quotations. Marginal effects analysis shows that an additional stock market quotation increases CSD by around 25%.

The introduction of CONRISK and ESI variables into the analytical models illustrated their differential effects.[3] CONRISK had a higher coefficient in all models in which it was tested compared to CONRISK(O). In contrast, ESI(O) had a higher coefficient and was more significant than ESI in all models. In all models CONRISK (including CONRISK(O)) and ESI (including ESI(O)) variables have positive and negative signs respectively. As expected, exposure to political risk increases CSD whilst relative social underdevelopment reduces it. Model 3a summarises the main results from tests using permutations of these variables.

Models 4 and 5 show the differential impacts of ESI and ESI(O), confirming the latter variable to be more influential. These results suggest that political risk in the destination country and social development in the home country condition the level of CSD. Because CSD is explained more strongly by the level of social development in the multi-nationals' own country, rather than in the country of operation, the benign hypothesis is rejected. Managers do not provide equal accountability to the people of the different countries in which they operate. Managers seem to be giving precedence to publics that can exert more influence on them and but they feel nonetheless obliged to respond to the increased political risk overseas through increased CSD. These results provide support for the asymmetric response hypothesis.

Model 6 reports a stepwise forward selection model using a 0.2 significance level for variable addition. The model confirms the positive relationship between CSD

[3] On average a sample company's engagement in international activities increased its exposure to political risk by 46% and to environmental sensitivity risk by 43% (based on the ratios of CONRISK/CONRISK(O) and ESI/ESI(O) respectively in table 1.

and the two CONRISK variables and the negative relationship with the two ESI variables. In view of the high correlation between CONRISK and ESI and CONRISK(O) and ESI(O) respectively (Table 1), the t-statistics for individual variables must be treated cautiously.

FRISK had a consistently high and negatively significant coefficient. The volatility of the firm's stock therefore seems to act as a strong constraint on CSD. There may be two reasons for this. First, where firms have a high level of combined operating and financial risk, they may be reluctant to disclose details of other aspects of their activities in case the market's perception of their riskiness increases further. Second, the volatility of their stock price may reflect their relatively narrow range of international activities which in itself reduces the necessity for disclosure. The interpretation of this variable is not central to the main objectives of the current paper, but in view of these findings is nonetheless a subject of potential further research.

Dealing with the control variables in turn, the industry control variables showed that whereas oil and transport firms were indistinguishable from one another, firms in the chemical industry make significantly more CSD. Finally, the SIZE variable was positive and significant in all models tested showing strong support for the common finding of a strong relationship between size of firm and CSD.

Panel B of Table 2 shows the results of similar models using CSDP as the dependent variable. Models 1b, 2b and 3b correspond exactly to the same numbered models in Panel A. Also, as in Panel A, model 9 reports the results of a stepwise forward selection model using a 0.2 significance level for variable addition. The results for models 1 and 2 respectively were very similar. Using the alternative dependent variable the result for NOC remains the same. In model 3b neither CONRISK nor ESI(O) were significant, in contrast to model 3a. In other words, these

factors promote an increase in absolute quantity of disclosure (model 3a) but not an increase in the prominence of CSD as a reported issue relative to other disclosures (model 3b). A possible reason is that because disclosures are being made primarily for the consumption of stock market participants and the domestic audience, managers consider the quantity of information to be sufficient, and do not privilege CSD at the expense of other disclosures. As models 7 and 8 in Panel B suggest, they are more likely to do this where CONRISK(O) is high. Again in these models ESI(O) has a larger coefficient and is more significant than ESI, suggesting support for the asymmetric response hypothesis consistent with the Panel A results. Results for control variables are qualitatively similar to Panel A.

5. Conclusions

This paper extends prior literature on CSD determinants in two ways. First, it uses a sample of multinational firms in environmentally sensitive industries to examine their accounting disclosure responses to the pressures implied by the nature and scope of their operations. Second, the paper includes two hitherto unexamined variables measuring political risk and social development in order that these pressures can be measured and their effects directly tested.

The benign hypothesis, which assumes corporate control by enlightened oligarchs of managers, who apply similar standards of social accountability to different groups of people across the globe, is rejected. The alternative asymmetric response hypothesis is favoured by the evidence presented above. According to this hypothesis, the domestic public is comforted by the presence of impressively detailed CSDs in annual reports but is in ignorance of the true threat presented by corporate activities internationally. Meanwhile in countries where environmental protection is

weak, local populations are all too well aware of the impacts of corporate activity but lack the defence mechanisms offered by CSD in more developed countries. As the survey results show, whatever the conscience of an individual manager, collectively managers are motivated by the need to satisfy the requirements of stock market participants first, their domestic public second and the people affected by their international activities last. To the investor in the developed world, this 'Maginot' of CSD offers scant protection from the changes in material conditions that necessarily follow from the exploitation of the world's resources by oil companies and others, and like the French generals of 1940 they will find that whilst paying attention to their neat line of forts, everything else was being lost.

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Table 1: Descriptive Statistics and Correlation Matrix

A: Variable descriptives

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*	*Swilk*
CSD	64.544	61.356	1	258	0.000
CSDP	3.093	2.976	0.040	12.320	0.000
CSD1	2.838	1.732	1	5	0.033
CSDP1	2.862	1.579	1	5	0.272
ESI	50.568	9.937	25.570	77.260	0.808
ESI_O	35.295	9.370	19.530	62.440	0.000
CONRISK	28.119	6.022	17.1	45.58	0.083
CONRISK_O	19.261	6.965	9.500	52.500	0.000
CHEM	0.185	0.390	0	1	
OIL	0.685	0.466	0	1	
SIZE	6.433	1.051	3.580	8.380	0.000
FRISK	0.120	0.050	0.020	0.300	0.000
NOC	17.855	22.541	2	150	0.000
SMQ	2.298	1.385	1	9	0.000

B: Correlations

	CSD1	*CONRISK*	*CONRIS~O*	*ESI*	*ESI_O*	*CHEM*	*OIL*	*SIZE*	*FRISK*	*NOC*	*SMQ*
CSD1	1.000	0.215	-0.103	0.105	-0.068			0.466			
CONRISK		1.000	0.254	0.618	0.147			0.125			
CONRISK_O			1.000	0.324	0.627			-0.024			
ESI			0.345	1.000	0.474			0.258			
ESI_O			0.528	0.493	1.000			0.200			
CHEM	0.294	-0.064	-0.112	0.185	0.179	1.000					
OIL	-0.193	0.192	0.190	-0.078	-0.224	-0.705	1.000				
SIZE						0.153	-0.210	1.000			
FRISK	-0.461	-0.115	0.114	-0.047	0.021	-0.081	0.117	-0.371	1.000		
NOC	0.385	0.420	0.123	0.435	0.246	0.225	-0.228	0.578	-0.364	1.000	
SMQ	0.361	0.158	-0.018	0.144	0.009	0.264	-0.185	0.231	-0.259	0.280	1.000

Table 2:
Regressions on Corporate Social Disclosure

A: Dependent variable = CSD1

	Model					
	(1a)	*(2a)*	*(3a)*	*(4)*	*(5)*	*(6)*
NOC	0.005	0.003	0.002	0.004	0.004	
SMQ		0.282***	0.256***	0.262***	0.279***	0.251***
CONRISK			0.033**			0.061***
CONRISK (O)						0.032**
ESI					-0.016*	-0.033**
ESI(O)			-0.027**	-0.023**		-0.029**
FRISK	-7.620***	-6.955***	-6.679***	-6.643***	-6.992***	-7.846***
CHEM	0.934**	0.742**	0.770**	0.812**	0.871**	0.943**
OIL	0.368	0.278	0.117	0.276	0.364	
SIZE	0.516***	0.486***	0.521***	0.523***	0.520***	0.597***
Psuedo R^2	0.154	0.179	0.199	0.190	0.185	0.216
Chi Sq	58.290	83.620	75.420	76.880	81.430	97.350
N	124	124	124	124	124	124

B: Dependent variable = CSDP1

	Model					
	(1b)	*(2b)*	*(3b)*	*(7)*	*(8)*	*(9)*
NOC	0.006	0.004	0.004	0.004	0.005	
SMQ		0.279***	0.268***	0.254***	0.278***	0.262***
CONRISK			0.005			
CONRISK_O				0.046***	0.026**	0.049***
ESI					-0.018*	
ESI_O			-0.010	-0.033**		-0.035**
FRISK	-5.543***	-4.681**	-4.428**	-5.531**	-5.653**	-5.941***
CHEM	0.969***	0.745**	0.759**	0.884**	0.929**	0.637***
OIL	0.493	0.415	0.387	0.302	0.464*	
SIZE	0.501***	0.476***	0.491***	0.537***	0.524***	0.548***
Psuedo R^2	0.133	0.158	0.161	0.174	0.168	0.171
Chi Sq	56.010	81.320	79.830	85.910	83.690	79.770
N	124	124	124	124	124	124

Significance levels
*** $p < .01$
** $p < .05$
* $p < .10$

Based on White's (1980) heteroscedastic consistent standard errors.