

RELATIONSHIP BETWEEN EARNINGS
MANAGEMENT AND CORPORATE STRATEGIES:
SOCIAL RESPONSIBILITY AND ENTERPRISE RISK
MANAGEMENT

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A mi familia, os quiero.

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Abstract

This thesis revolves around financial transparency and its relationship with social transparency (CSR disclosure) and risk management at the managerial level. The first chapter identifies regulatory (10K) reports as the preferred disclosing channel for “social-transparent” companies (social-disclosing firms which are “high” in social activities) while “social-labeled” companies (social-disclosing firms which are “low” in social activities) choose to initiate disclosure in voluntary standalone CSR reports. The second chapter uses this identification strategy to examine whether “social-transparent” companies are also financially transparent. I find that “social-labeled” firms decrease the quality of financial information in the first period after first issuance of a CSR voluntary report. Contrarily, “social-transparent” firms increase the quality of their financial reporting after initiation of CSR disclosure on the 10K, suggesting equal financial and social transparent behavior. In the last chapter, I show how the implementation of an Enterprise Risk Management Committee (ERMC) has a negative impact transaction-based earnings management but not clear impact on accrual based earnings management.

Resumen

Esta tesis gira en torno a la transparencia financiera y su relación con la transparencia social (RSC) y con la gestión de riesgos a nivel gerencial. En el primer capítulo identifiqué las cuentas anuales (10K) como el canal de divulgación seleccionado por las empresas "socio-transparentes" (empresas divulgadoras con altos niveles previos de actividad social), mientras que las empresas "socio-etiquetadas" (empresas divulgadoras con bajos niveles previos de actividad social) optan por emitir esta información en informes voluntarios no oficiales. En el segundo capítulo se utiliza esta estrategia de identificación para examinar si las empresas socialmente transparentes son también empresas transparentes en su comunicación financiera. Los resultados sugieren que las empresas "socio-etiquetadas" incrementan la discrecionalidad contable durante el periodo inmediatamente posterior a la emisión de un informe de RSC voluntario. Por el contrario, las empresas "socio-transparentes" incrementan su calidad financiera tras iniciar la comunicación de su actividad social en las cuentas anuales, mostrando igual intención de ser transparentes tanto social como financieramente. En el último capítulo se muestra cómo la implementación de un Comité de Gestión de Riesgo Empresarial (ERMC) reduce la discrecionalidad la manipulación contable realizada a través de transacciones, pero no muestra evidencia de impacto sobre la manipulación realizada a nivel contable.

Preface

Social transparency and financial transparency have been in the spotlight of investors and corporate stakeholders during the past decades. Firms have opted to disclose CSR information through different channels. Many companies have used the management report section of the 10-K's as the main channel for disclosure of their CSR information. However, companies have substituted or complemented communication on the 10-K by releasing voluntary and self-prepared CSR reports, which are frequently available on the company's website. The policy of public dissemination (disclosure) of CSR activity can be considered a separate element of the company's CSR strategy and a part of the firm's communication policy (jointly with the financial disclosure). Given that communication of CSR information is mostly voluntary and not subject to explicit regulation or ex-post scrutiny, it is important that we try to understand both the determinants and the effects of this disclosure on the actual level of CSR activity and its possible effects on the quality of financial disclosure (a relevant element of the firm's communication strategy). Good quality companies (high in CSR activities) may show higher probability to initiate CSR disclosure to distinguish from poor performers. On the other hand, low quality firms may attempt to "dress up" their social concern motivated by the belief that capital providers and stakeholders in general, will not be able to see through this "dressing up" process and reap the benefits of higher transparency (e.g. lower cost of debt, see Dhaliwall et al. 2011). From an economic perspective, voluntary disclosure theory suggests that firms with better performance will provide more voluntary disclosure as long as this "signal" is costly. However, socio-political theories, such as stakeholder theory and legitimacy theory, posit both positive and negative relations between good performers and disclosure, depending upon the strategy adopted by the management. This ambiguity could be behind the mixed results shown by the literature: there may be two types of companies depending on how CSR disclosure is related to CSR activity and the quality of financial information.

In Chapter 1, I analyze the relationship between a firm's prior CSR activity and the decision to initiate CSR disclosure. I examine, in particular, the choice of the channel of disclosure and the subsequent effect that this choice has on the level of CSR activity. I find that companies with higher levels of CSR activity (which we term "socially-transparent" firms), have a higher probability of initiating CSR disclosure through regulatory channels, more explicitly, in the 10-K filings. On the other hand, the decision

to issue CSR information through voluntary standalone reports is not associated with a high level of CSR activity and I interpret that this decision is associated with a desire to use strategically the information about the firm's social commitment (we call firms who do so "socially-labeled" firms). Additionally, I find that after initiation of CSR disclosure, companies that disclose through voluntary reports show a higher and more persistent increase on subsequent social activities, thus suggesting that disclosure through voluntary channels acts as an incentive to avoid inconsistencies and to maintain social legitimacy.

In Chapter 2, I follow a similar identification strategy to analyze if socially transparent companies are equally transparent when disclosing financial information. Results suggest that companies with high levels of past (accrual-based) earnings management show higher probability of initiating CSR disclosure in the 10-K filings. They also suggest that continued disclosure on the 10-Ks is associated with subsequent lower levels of earnings management. These results are suggestive that firms view CSR disclosure on the 10-Ks as a commitment device, so financial and social transparency reinforce one another (thus going beyond being pure complements). On the other hand, initiation of voluntary reports does not seem to be related to prior transparency, but immediately after initiation companies show higher levels of earnings management and less evidence of subsequent reductions in earnings management from continued disclosure. I interpret these results as suggestive that firms view voluntary disclosure as a strategic device, or financial disclosure and social disclosure through voluntary channels as substitutes.

In Chapter 3, I provide initial evidence on the determinants of adoption by firms of Enterprise Risk Management (ERM) mechanisms and on the subsequent effects of such adoption. The results show that the presence of an ERMC is mostly determined by the volatility of previous earnings, but does not respond to the firm's levels of earnings management practices. After implementation, earnings volatility and the use of transaction-based earnings management decrease from the continued presence of the ERM committee, but this is not the case for accrual-based earnings management. These results suggests that an ERMC is effective in reducing opportunistic transactions and perceived measures of risk, but not necessarily in increasing financial transparency

Contents

1. Initiation of CSR Disclosure as a signal of Corporate Social Behavior: Differentiating voluntary CSR reports and regulatory 10k files as disclosing channels	1
1.1 Introduction.....	1
a) Hypotheses on the relations between CSR disclosure and CSR activities	4
b) Research design and data.....	7
b.1) Data sources, sample construction and empirical measures.....	7
b.2) Methodology and empirical models	11
c) Results.....	13
c) Conclusions.....	17
Bibliography	19
Tables.....	23
2. Relationship of corporate communication strategies: are social and financial transparency aligned?	35
2.1 Introduction.....	35
a) The relationship between financial transparency and voluntary CSR disclosure....	38
b) Research design and data.....	43
b.1) Data sources, sample construction and empirical measures.....	43
b.2) Methodology and empirical models	48
c) Results.....	50
c) Conclusions.....	54
Bibliography	57
Tables.....	62
3. Does Enterprise Risk Management reduce accrual-based and transaction-based Earnings Management?	75
3.1 Introduction.....	75
a) Enterprise Risk Management and Earnings Management.....	78
b) Hypothesis development.....	82
c) Research design and data.....	85
d) Results	92
e) Conclusions.....	97
Bibliography	99
Tables.....	102

1. INITIATION OF CSR DISCLOSURE AS A SIGNAL OF CORPORATE SOCIAL BEHAVIOR: DIFFERENTIATING VOLUNTARY CSR REPORTS AND REGULATORY 10K FILES AS DISCLOSING CHANNELS

a) INTRODUCTION

In this paper, we analyze the relationship between a firm's corporate social responsibility (CSR) activity and the decision to initiate disclosure of CSR-related information. We examine, in particular, the choice of the channel of first disclosure and the subsequent effect that this choice has on the level of CSR activity. We find that companies with higher levels of CSR activity (which we term "socially-transparent" firms), have a higher probability of initiating CSR disclosure through regulatory channels, more explicitly, in the 10-K filings. On the other hand, the decision to issue CSR information through voluntary standalone reports is not associated with a high level of CSR activity. Therefore, we postulate that this decision is associated with a desire to use strategically the information about the firm's social commitment (we call firms who do so "socially-labeled" firms). Additionally, we find that after initiation of CSR disclosure, companies that disclose through voluntary reports show a higher and more persistent increase on subsequent social activities, thus suggesting that disclosure through voluntary channels acts as an incentive to avoid inconsistencies and to maintain social legitimacy. Our findings are important in that they suggest that both the decision to initiate disclosure and the channel for disclosure of CSR information have important connections with firms' behavior and strategies.

Throughout the past decades, factors such as the loss of trust after corporate scandals or the perceived importance of environmental issues have led to an increased public sensitivity to the involvement of companies in socially responsible activities, what we call, in a broad sense, CSR activity. A growing number of firms have integrated such activities in their business models and daily operations; to the extent that now CSR is not limited to a redirecting of some company resources to social and environmental issues but has, instead, become an important dimension of firms' strategies. In accordance to this process, the amount of information available about firms' CSR activity has also increased significantly. An increasing number of independent organizations rank companies according to their performance on corporate responsibility (CSR) issues and companies have started to devote resources and attention to the explicit communication of their CSR activity. This policy of public dissemination (disclosure) of CSR

activity can be considered a separate element of the company's CSR strategy and a part of the firm's communication policy. More explicitly, we define CSR disclosure as the voluntary and explicit disclosure by the company of information about CSR activity. In 2010 alone, 348 firms disclosed their CSR activity in the 10-K and 304 companies issued standalone CSR reports. Given that communication of CSR information is mostly voluntary and not subject to explicit regulation or ex-post scrutiny, it is important that we try to understand both the determinants of the decision to disclose and the relationship of disclosure to the actual level of CSR activity.

In view of this increased interest for social, environmental and societal questions in corporate communications, firms have opted to disclose CSR information through different channels. Many companies have used the management report section of the 10-K's as the main channel for disclosure of their CSR information. However, companies have substituted or complemented communication on the 10-K by releasing voluntary and self-prepared CSR reports, which are frequently available on the company's website. The lack of explicit regulation (a required format and content) for CSR disclosure makes the firm's CSR disclosure policy (the choice whether to disclose and the channel for disclosure) an explicit and voluntary decision worth exploring.

From an economic perspective, voluntary disclosure theory suggests that firms with better performance will provide more voluntary disclosure either on the 10-K's or in voluntary self-prepared reports (both voluntary decisions of the company) as long as this "signal" is costly. In other words, we would expect the good firms to disclose through costly channels and use this disclosure as a signal of good performance. However, socio-political theories, such as stakeholder theory and legitimacy theory, posit both positive and negative relations between CSR activities and CSR disclosure, depending upon the strategy adopted by the management. This ambiguity could be behind the mixed results shown by the literature: there may be two types of companies depending on how CSR disclosure is related to CSR activity. First, companies with high CSR activity may understand the positive effects of CSR disclosure –both direct effects on firm value stemming from interpretation of disclosure as a signal but also indirect effects coming from satisfying the stakeholders' demand for information. Such companies will probably decide to disclose CSR information through costly channels. We term this type of companies "socially-transparent" companies. On the other hand, companies that have low levels of social activity may still attempt to "dress up" their social concern by voluntarily disclosing some information about their CSR activities to try to gain legitimacy. Given that this information is voluntary and not subject to strict regulations, the hope is that capital providers, and stakeholders in general, will not be able to see through this "dressing up" process or will

interpret the mere fact of disclosure as showing good CSR behavior. Such companies will probably decide not to disclose CSR information or to do it through the least costly channels. We term these companies “socially-labeled” firms.

Furthermore, note that common to both the voluntary disclosure theory and socio-political theory perspectives, is the view that CSR activity, whether good or poor, is a driver of CSR disclosure. This raises two issues of importance for the policymaker: (1) whether the negative relationship between CSR activity and disclosure implied by some socio-political theories (“socially-labeled” firms) means that encouraging CSR disclosure may be counterproductive to the objective of enhanced CSR activity; and (2) whether CSR reporting can also be a driver of CSR activity.

In this paper, we attempt to shed light on these issues by focusing on the following questions:

Is the level of CSR activity a determinant of decision to initiate CSR disclosure? If so, do “socially-transparent” (high CSR activity) and “socially-labeled” (low CSR activity) companies choose different channels for initial disclosure?

Is initiation of CSR disclosure a driver of CSR activity? If so, do the effects differ depending on the choice of channel for initial disclosure?

Does continued CSR disclosure have an effect on CSR activity?

In the first stage of the analysis, we study the impact of CSR activity on the decision to initiate disclosure. We hypothesize that this decision and the choice of the disclosing channel may be different for socially-transparent and socially-labeled companies. In particular, we identify two main channels for disclosure: (1) disclosing CSR information in regulatory 10-K files and (2) issuing voluntary and standalone CSR reports. We postulate that the costs of disclosing through regulatory files is higher (they are subject to legal scrutiny) so socially-transparent companies will be more likely to initiate disclosure through 10-K files than socially-labeled companies. In a second stage of the analysis we examine the effect of initiation of disclosure on CSR activity by looking at the impact on subsequent activity of initiation and of continued disclosure.

We use data for a large set of US firms for which we collect both accounting information and information about their social activities, including, in particular, the channels through which they disclose their social information. Our findings suggest that, indeed, companies with higher levels of CSR activity have a higher probability of initiating CSR disclosure through the 10-Ks. We also find that initiation of disclosure on the 10-Ks is followed by a one period increase of CSR activity, which disappears in the second period after initiation. Moreover, we find no relationship between CSR activity and continued disclosure on the 10-K. We interpret these results as

suggestive that “socially-transparent” companies disclose on the 10-K their true actions and disclosure is, therefore, not affecting subsequent CSR activity. On the other hand, we find that initiation of CSR disclosure by means of voluntary reports is not related to prior levels of CSR activity. This result suggests that “socially-labeled” companies likely choose voluntary reports as the disclosing channel to “dress up” their social commitment. However, after the initial disclosure these firms increase their social engagement during the four following periods. Moreover, continued disclosure on voluntary reports is positively associated with higher levels of CSR activity. We interpret these results as suggestive that firms view at first voluntary disclosure as a strategic device, but once the company has initiated disclosure the need to keep the legitimacy leads to an increase in CSR activity. In other words, disclosure in voluntary reports seems to act as a commitment device that drives higher future CSR activity.

We believe our results help reconcile previous contradictory findings on the CSR literature, which found both a positive and a negative relationship between CSR disclosure and CSR activities and show that both the timing and the channel of disclosure are factors which affect the relationship between social commitment and social transparency.

The rest of the paper is structured as follows. Section a) presents a brief review of the literature on the relationship between CSR activity and CSR disclosure and develops our main hypotheses. Section b) explains our data and the empirical analyses. Section c) presents the results and comments on some robustness analyses. Section d) concludes.

a) HYPOTHESES ON THE RELATIONS BETWEEN CSR DISCLOSURE AND CSR ACTIVITIES

The CSR literature has reported apparently contradicting findings on the association between CSR activity and CSR disclosure. Many studies have shown evidence that firms with better performance on selected measures of social responsibility provide at the same time more disclosure (e.g., Al-Tuwaijri et al., 2004; Clarkson et al., 2008), thus suggesting that both are, in some sense, complementary within the company’s CSR strategy. On the other hand, there is also evidence that more social and environmental disclosures are made by firms with poor CSR performance (see, among others, Hughes et al., 2001) or from companies in industries that are more environmentally sensitive (e.g., Adams, et al. 1998; Aerts and Cormier, 2009) suggesting a sort of substitution between CSR activity and disclosure. Finally, some studies have found no significant association between CSR activity and CSR disclosure (e.g., Freedman and Jaggi,

1982; Fekrat et al. 1996). Others have postulated that the main factor related to social responsibility disclosure may be industry affiliation. Industries with high public visibility or a potentially more important environmental impact or having less favorable public images would disclose more social responsibility information than their counterparts (Patten 2002; Adams et al., 1998; Tsang, 1998; Clarke and Gibson-Sweet, 1999; Campbell et al., 2003; Patten and Crampton, 2004).

Regarding the channel of disclosure, inclusion of (voluntary) CSR information on the compulsory 10-K files is an indicator of the importance of CSR to the reporting entity (Krippendorf, 1980). The annual report is considered the main tool used by companies to inform their stakeholders about CSR issues (see, for example, Gray et al., 1995; Neu et al., 1998). More recently, however, voluntary self-prepared reports, publicly available on the companies' websites, have become an alternative channel through which companies disclose CSR information. Recent studies have focused on the companies' webpages as the main CSR communication channel (Williams and Pei, 1999; Patten, 2002; Patten and Crampton, 2004; Frost et al., 2005; Branco and Rodrigues, 2008). There is to our knowledge, however, no analysis on the company's characteristics or strategies determining the choice on the disclosing channel.

We formalize our hypotheses now, starting with the decision to initiate disclosure of CSR information. We use two alternative perspectives, one grounded on neoclassic economic theory and one grounded on more socio-political approaches. From an economic perspective, voluntary disclosure theory suggests that firms with better performance, which in our context refers to higher CSR activity, will provide more voluntary disclosure, especially when this "signal" is costly. The notion is that superior socially-active firms will signal this higher CSR activity by pointing to objective social indicators, which are difficult to mimic by inferior performing firms or have a higher cost (which can be explicit or implicit). Inferior firms will choose to disclose less or through channels that are not costly or to be silent on their social performance (see, Dye, 1985; Verrecchia, 1983). Thus, companies whose activities are of better quality (higher CSR activity) will be more likely to use a costly CSR disclosure channel in their communication strategy compared with less socially committed companies. We term higher-quality firms, disclosing through costly channels, "socially-transparent" companies.

Theories from a socio-political perspective provide alternative insights on the decision to disclose. Stakeholder theory suggests that disclosure of information about a company's social behavior and outcomes helps to build a positive image with stakeholders. CSR disclosure would then contribute to enhance the effects of CSR activity on corporate reputation or could work as a

substitute of CSR activity (Hasseldine et al., 2005; Toms, 2002). Along similar lines, legitimacy theory (quite dominant in CSR research: see, e.g., Deegan, 2002; Patten and Crampton, 2004; Neu et al., 1998) highlights that social legitimacy comes from the assumption that companies are embedded in the social environment in which they operate, and that their performance and expectations are affected by the environment. Legitimacy theory would then suggest that CSR provides an important way of communicating with stakeholders and convince them that the company is fulfilling their expectations.¹ Hence, CSR activities and disclosure appear as alternative mechanisms that companies use to be perceived as acting according to the stakeholders' expectations.² CSR disclosure would then constitute a legitimacy instrument that could be strategically used by a company with low CSR activity to demonstrate its adherence to such expectations. This would suggest that these companies with low CSR activity would still have an incentive to disclose, although through channels with low or no cost. Given that this information is voluntary and not subject to strict regulations, the hope is that capital providers, and stakeholders in general, will not be able to see through this “dressing up” process or will interpret the mere fact of disclosure as showing good CSR behavior.³ We call these firms “socially-labeled” companies.

Although a lack of reporting standards ensures that companies pick and choose if and how they share their social activity in the annual report (Forbes, 2011), firms are aware that the information in the 10-Ks is both filed with the regulator and publicly accessible to all investors. Thus, disclosure in the 10-Ks is subject to high levels of scrutiny and to potentially costly sanctions (apart from the indirect costs of lost legitimacy) in case of inaccuracies or misreporting. On the other hand, information contained on standalone voluntary reports is not only subject to no specific requirements but it is also subject to a lower level of scrutiny, and the costs of inaccuracies or misreporting are only the indirect costs of lost legitimacy. Thus, we postulate that “socially-labeled” companies are more likely to use voluntary channels (e.g., the firm's webpage or voluntary reports) (strategically) *as a substitute of social commitment*. Whereas “socially-transparent” firms are more likely to use channels subject to costly scrutiny

¹ Under this perspective, stakeholder's theory and legitimacy theory should be considered complementary rather than alternative (Gray et al., 1995).

² Note that legitimacy theory would suggest that “socially-transparent” companies also have a legitimacy incentive to disclose CSR information. The key implication from neoclassical economic theory is that the choice of channel would be one which has a higher cost and, therefore, can be used as a signaling device.

³ This does not mean that disclosure may not act as a subsequent commitment device to increase CSR activity: indeed, our empirical results suggest that once CSR disclosure is initiated by these “socially-labeled” companies, their levels of CSR activity increase significantly.

(e.g., official filings) for CSR disclosure as a *signaling strategy* or as a *complement* to social commitment. Thus, our first hypothesis is:

Hypothesis H1a: *higher levels of CSR activity* will be associated with a *higher probability of initiating CSR disclosure* on the 10-K files.

Hypothesis H1b: *lower levels of CSR activity* will be associated with a *higher probability of initiating CSR disclosure* on voluntary standalone CSR.

Once CSR disclosure has started, legitimacy may be threatened if stakeholders observe inconsistencies between the actions and the information disclosed by the company. Hence, once CSR disclosure has been initiated, “socially-labeled” companies will have a higher incentive to increase their CSR activity to maintain the legitimacy gained by disclosure. Therefore, our next hypothesis refers to the effect of CSR disclosure on subsequent CSR activity.

Hypothesis H2: in order to maintain stakeholders’ legitimacy, *initiation of CSR disclosure* will be associated to *higher* subsequent levels of CSR activity for “socially-labeled” companies.

We have no priors regarding the impact of initiation of CSR disclosure by “socially-transparent” companies. These companies have both an incentive to keep (or increase) the level of CSR activity to maintain legitimacy (and disclosure as a costly signal) and an incentive to act strategically and reduce the level of CSR activity. We therefore leave the effect on subsequent CSR activity of initiation of CSR disclosure by “socially-transparent” companies unspecified.

b) RESEARCH DESIGN AND DATA

Data sources, sample construction and empirical measures

We describe now the data sources, construction of the sample and the empirical measures we use to proxy for the variables we use in the empirical analyses of our hypotheses. A summary of this information is shown in Table 1.

Measures of CSR disclosure

We search for CSR disclosure in U.S. firms throughout three main sources: (1) 10-K SEC files, (2) CorporateRegister.com, (3) company websites. We obtain the 10-K information through a CSR keywords text-search. This search provides us with the companies that include CSR information in the legally structured mandatory reports, which are compulsory and filed with the SEC. The information contained in these 10-Ks is subject to explicit scrutiny by the regulator, apart from all stakeholders. Thus, we take disclosure on the 10-K as a proxy for the “more costly” disclosure. Key to our analysis is the fact that the decision of disclosing socially

responsible actions on the 10-Ks is not compulsory: in particular, initiation of CSR disclosure has not occurred at a specific moment for all companies (see Table 2a). The last two sources provide us with information on self-prepared socially related reports that companies voluntarily decide to publish and that, despite being publicly available, is not subject to explicit legal scrutiny. We take these channels of disclosure as proxying for the “less costly” disclosure.

Table 2a shows the industry and year distribution of disclosure for the Compustat universe. During the 1987-2010 period, 792 firms disclosed CSR information on 3,934 10-K reports and 694 companies published 3,291 voluntary self-prepared CSR reports.⁴ Panel A of the table shows that, consistent with the broad scope of CSR disclosure, many non-pollution-prone industries, including the Food and Retail industries, actively disclose their social activities. The Textile industry has the largest proportion of firms, which include CSR information on the 10-K’s (19.1%) and publish voluntary reports (19.7%), while Transportation has the lowest proportion of disclosing firms (0.8% and 1.1%, respectively). Panel B shows that, by period, there is an increasing trend in the number of CSR disclosures. Disclosure on the 10-K files started in 1987, going from one disclosing company to 599 in 2010 (251 companies simultaneously disclosing on 10-K and voluntary reports and 348 disclosing only on the 10-K). Our records of publication of self-prepared voluntary reports show that such reports started in 1990, going from one company to 458 in 2010 (251 simultaneously disclosing on 10-K and voluntary reports and 207 disclosing only through voluntary reports).

We use these disclosure data to generate measures of initiation of CSR disclosure and continued disclosure. In particular, we construct six variables:

FD_10K_{it} (initial disclosure year on 10-Kfiles) is a dummy variable which takes value 1 if company *i* initiates disclosure of CSR on the 10-K files in year *t* and 0 otherwise.

FD_REP_{it} (initial disclosure year on CSR-voluntary-reports) is a dummy variable which takes value 1 if company *i* initiates disclosure of CSR on self-prepared voluntary reports in year *t* and 0 otherwise.

FIRSTD_{it} (initial disclosure year) is a dummy variable that takes value 1 if company *i* initiates disclosure of CSR in year *t*, regardless of the channel, and 0 otherwise.

The above three variables allow us to perform an analysis of "time to disclosure" and of the impact of initiation of disclosure. In order to measure the impact of continued disclosure over

⁴After elimination of financials, our final sample contains 1,172 different firms that disclose in at least one of the two channels.

time, we define three variables:

10K_{it} (continued CSR disclosure on 10-K files) is a dummy variable which takes value 1 if company *i* discloses CSR information on the 10-K file of year *t* and 0 otherwise.

REP_{it} (continued disclosure on CSR-voluntary reports) is a dummy variable which takes value 1 if company *i* discloses CSR information on a self-prepared voluntary report in year *t* and 0 otherwise.

DSCL_{it} (continued CSR disclosure) is a dummy variable which takes value 1 if company *i* discloses CSR information, either in the 10-K or in a voluntary report, in year *t* and 0 otherwise.

Measures of CSR Activity

Data on CSR activity come from the MSCI KLD database (hereafter, KLD). KLD has been widely used in CSR research (Ruf et al., 1993; Sharfman, 1996; Waddock and Graves, 1997; Berman et al., 1999; Statman, 2000; Hillman and Keim, 2001; Dhaliwal et al., 2011; Kim et al., 2012). The database uses a combination of surveys, firms' financial statements, articles on companies in the popular press, academic journals (especially law journals), and government reports to assess a firm's CSR activity. The KLD ratings model includes over 50 indicators in seven categories of three topic areas (ESG): Environment, Social and Corporate Governance. It also includes business involvement data for some *controversial* business issues such as Alcohol or Gambling. All ratings are binary variables: if a company meets specific criteria established for each rating, the rating is assigned a value of 1, and 0 otherwise. Table A1 (Appendix) specifies the main CSR issues covered by KLD and Table A2 (Appendix) shows descriptive statistics of the main items measured. We use the final KLD rating as a measure of CSR activity (**CSRA**) as well as the separate scores of CSR strengths and concerns (**CSR_STR**, **CSR_CON**). KLD covers mainly large size companies.⁵ After matching KLD with Compustat, we obtain an initial sample of 24,352 firm-year observations, which are reduced to 19,255 after removing companies in the financial sectors (SIC 6000 to 6999).

Control Variables

For control variables, we use data from COMPUSTAT, which contains accounting information for the majority of SEC filing firms. In the analyses on the determinants for initiation of CSR disclosure (H1a –H1b) we include several control variables that the literature has associated with the decision to disclose information. We first control for overall quality of financial disclosure

⁵ Coverage of the KLD database is: from 1991, the largest US Companies and those included in the MSCI KLD 400 Social Index; from 2001 the 1,000 Largest US Companies; from 2003, the 3,000 Largest US Companies.

using the yearly rank of the residuals from a modified Jones Model (**FDQ**).⁶ This measure has been frequently used in the accounting literature to proxy for the quality of the information contained in the firm's financial statements (Dechow et al., 1995). Asset profitability (**ROA**) and growth opportunities (proxied by Tobin's Q, **TQ**), are included since profitable and growing corporations use voluntary disclosure to avoid regulation given that they are more exposed to political pressure and public scrutiny (Ng and Koh, 1994; Gamerschlag et al., 2011), and have the necessary funds to devote to CSR activities (Cowen et al., 1987; Hackston and Milne, 1996; Pirsch et al., 2007). We include size (**SIZE**), since large firms are more likely to be subject to public resentment, consumer hostility, militant employees, and the attention of government regulatory bodies and therefore have a bigger group of influential stakeholders (Hackston and Milne, 1996; Knox et al., 2006). We also include leverage (**DEBT**) because highly leveraged firms disclose voluntary information in order to reduce their agency costs and cost of capital (Jensen and Meckling, 1976). Finally, we use a dummy variable for firms with global interests (**GLB**). Such firms have a higher tendency to disclose voluntarily given their international status (Singhvi and Desai, 1971; Cooke, 1989; Hossain et al., 1995; Robb et al., 2001).⁷

Table 2b shows some descriptive statistics. Note that the table is composed of two panels, each of which in turn shows two columns of descriptives. Given that KLD data on CSR activity are available for a (relatively) limited set of companies (3,035 max.), we show in Panel A descriptive statistics for the companies with KLD data (columns 2-5) and those without such data (columns 6-9). We also show the p-values of tests of the differences in the means and medians (columns 10-11). The two groups differ along several dimensions: KLD companies are larger in size, more global and more profitable (**ROA**). Thus, our results are better extrapolated to comparable companies. Admittedly, this has traditionally been a limitation of CSR analyses.

⁶ This rank is normalized to lie between 0 and 1 in order to avoid the effect of changing numbers of companies throughout our sample years.

⁷ROA, SIZE, DEBT and TQ are winsorized at the top and bottom 1% of their distributions.

Within the sample of KLD companies, the 23.8% of total companies and the 13.96% firm-year observations, initiated CSR disclosure between 1987 and 2010. In Panel B-Table 2b, we show descriptive statistics for CSR disclosing versus non-disclosing companies of the KLD-firms sample. CSR activity is larger for disclosing firms than for non-disclosing firms: average **CSRA** for disclosing firms is -0.012 (**CSR_STR** of 3.041 and **CSR_CON** of 3.104), compared to -0.513 for non-disclosing firms (**CSR_STR** of 0.652 and **CSR_CON** of 1.445). For the control variables, mean values of **ROA** (.011 vs -.188), **SIZE** (7.437 vs 4.256), **TQ** (3.499 vs 2.784) and **GLB** (.850vs .647) are, again, higher for CSR disclosing firms. **DEBT**, however, is slightly higher for non-disclosing firms (0.259 vs 0.287). Overall, we observe significant differences between the groups of firms based on CSR disclosure, which justify our analysis, especially the matching estimators estimated in section 4.2.

Methodology and empirical models

We review now the main empirical analyses that we carry out to test our main hypotheses.

"Time-to-disclosure" model

Hypotheses H1a and H1b postulate that the decision to initiate CSR disclosure is a function of the level of past CSR activity. In order to test this effect, we set up a "time-to-disclosure" discrete-time duration model, where we specify the hazard rate (the probability of initiating disclosure at time t conditional on not having disclosed up to time t) as a logit function of time-varying variables, which include, in particular, past **CSRA** or past **CSR_STR** and **CSR_CON**. We estimate the following logit models:

$$P(\text{Initiation}_{it} = 1 | \text{Initiation}_{it'} = 0, t' < t) = \frac{e^{\beta_0 + \beta_1 \text{CSRA}_{i,t-1} + \sum \beta_j \text{CONTROLS}_{j,it}}}{1 + e^{\beta_0 + \beta_1 \text{CSRA}_{i,t-1} + \sum \beta_j \text{CONTROLS}_{j,it}}} \quad (1)$$

$$P(\text{Initiation}_{it} = 1 | \text{Initiation}_{it'} = 0, t' < t) = \frac{e^{\beta_0 + \beta_1 \text{CSR_STR}_{i,t-1} + \beta_2 \text{CSR_CON}_{i,t-1} + \sum \beta_j \text{CTROLS}_{j,it}}}{1 + e^{\beta_0 + \beta_1 \text{CSR_STR}_{i,t-1} + \beta_2 \text{CSR_CON}_{i,t-1} + \sum \beta_j \text{CTROLS}_{j,it}}}$$

where Initiation_{it} is one of the three measures of initiation of disclosure (**FIRSTD**, **FD_10K**, **FD_REP**), and $\text{CSRA}_{i,t-1}$, $\text{CSR_STR}_{i,t-1}$ and $\text{CSR_CON}_{i,t-1}$ are lagged values of the measures of CSR activity. Note the conditioning in the probability: for our specification to be a correct "time-to-disclosure" model we need for the disclosing company i each dependent variable in the pre-initiation disclosure period to be zero, the initiation year to be one, and the post-initiation periods to be eliminated from the dataset (see Jenkins, 1995). For non-disclosing companies, the full

time series (of zeros) must be included, representing an observation for which the event, disclosure, is not observed in the sample period. Once the data have been structured, the model can be estimated as a standard logit model.

Matching estimators

In our hypothesis H2, we postulate that initiation of CSR disclosure may have an immediate impact on subsequent social commitment (CSR activity). However, in the "time to disclosure" model (1) we have specifically stated that the decision to initiate disclosure may be related to previous levels of CSR activity. In order to account for this endogeneity and measure, as much as possible, the "causal" impact of initiation of disclosure on subsequent social actions, we use nearest-neighbor matching estimators (Roberts and Whited, 2012). In particular, for every company which initiates disclosure at year t , we find, in the year of initiation of disclosure, m ($m=1, 2, 3$) non-disclosing companies in the same industry which are the most similar in terms of the matching variables **CSR_STR**, **CSR_CON**, **ROA**, **DEBT** and **SIZE**.⁸ For the "closest" match we use a Mahalanobis distance on the matching variables (Roberts and Whited, 2012). Once we have the set of non-disclosing companies, which are "close matches" to those that initiate disclosure, we compare over time the measures of CSR activity for the two sets of companies by running significance tests on the average difference in yearly changes and cumulative changes between the two groups for several horizons (1 to 4 years). This procedure alleviates the impact of the endogeneity of the decision to initiate disclosure, at least to the extent that the matching observables contain significant determinants of the decision to initiate disclosure. We expect that, potentially, the effects of initiation via the different channels may be different. Therefore, we perform three matching estimators using as indicators of treatment the three variables which identify initiation of disclosure: **FIRSTD** (initiation regardless of the channel), **FD_10K** (initiation through 10-Ks) and **FD_REP** (initiation through voluntary reports).

Regression models for the impact of continued disclosure

Indirectly, our hypothesis H2 also postulates that continued disclosure may have an impact on subsequent CSR activity. Thus, we analyze the impact of continued disclosure estimating the following traditional panel regressions (which are parallel to the prior literature):

$$CSRA_{it} = \beta_0 + \beta_2 DSCL_{i,t-1} + \sum \beta_j CONTROLS_{j,i,t} + \alpha_i + \varepsilon_{i,t}$$

⁸ Note that the estimator we describe is really estimating the *average treatment effect on the treated*, since we are only finding matches for the treated observations.

$$CSR_STR_{it} = \beta_0 + \beta_2 DSCL_{i,t-1} + \sum \beta_j CONTROLS_{j,i,t} + \alpha_i + \varepsilon_{i,t} \quad (2)$$

$$CSR_CON_{it} = \beta_0 + \beta_2 DSCL_{i,t-1} + \sum \beta_j CONTROLS_{j,i,t} + \alpha_i + \varepsilon_{i,t}$$

where **CSRA**_{it} is the aggregate measure of social commitment (**CSR_STR**_{it} minus **CSR_CON**_{it}) and **DSCL**_{it-1} is one of the three variables of continued disclosure defined above (**DSCL**, **10K**, **REP**) lagged one period. In one of the specifications, we also include the interaction of **10K** and **REP**, to see if simultaneous disclosure through different channels has an added effect on CSR activity.

c) RESULTS

We comment now on the empirical results although, for conciseness, we omit most of the discussion on the control variables: when significant, results for the controls are consistent with our expectations and with previous findings.

The decision to initiate CSR disclosure

Table 3a shows the results of the discrete-time duration model (1) for the probability of initiating CSR disclosure regardless of the channel (dependent variable is **FIRSTD**). The four columns correspond to versions of the baseline model, which differ on the proxies for CSR activity and on the inclusion of the time trend. The results for the control variables, in general, are consistent across specifications. Some interesting results can still be pointed out. **ROA** is positively related whereas **TQ** is negatively related to the probability of initiating disclosure. In other words, profitable firms, which are undervalued, are more likely to start CSR disclosures. **SIZE** and **DEBT** are positively related to initiation of CSR disclosure. There is no apparent time trend in the probability of initiating disclosure or a relationship with the measure of quality of financial disclosure (**FDQ**). **GDP** growth seems to be negatively related to the probability of initiating disclosure: in other words, companies are more likely to start disclosing their CSR activity during economic downturns. Our main results concern the coefficients of the measures of CSR activity. However, we find no significant relationship with any of the proxies for CSR activity (**CSRA**, in columns (1)-(2) and the separate **CSR_STR** and **CSR_CON** in columns (3)-(4)).

Table 3b shows the results obtained by differentiating the disclosure channel chosen for first disclosure: columns (1)-(4) correspond to first disclosure on the 10-Ks (**FD_10K**) and columns (5)-(8) estimate the same specifications using first disclosure on voluntary reports (**FD_REP**). Results of the controls are consistent with those in Table 3a, except that **ROA** and **TQ** are not

significantly related to the probability of initiating disclosure on the 10-Ks. **TIME** is significantly positively related to **FD_10K** but not to **FD_REP**. These results suggest that companies have been increasingly incorporating CSR disclosures into the 10-Ks, whereas this time trend is less clear in the issuing of voluntary reports. Regarding our main regressors, neither **CSR_CON** nor **CSRA** are significantly related to the probability of disclosure in either channel. However, **CSR_STR** is significantly related to initiation of disclosure through the 10-Ks (note the t-stats of 2.23 and 2.00 in columns (3) and (4)). In other words, companies with high CSR activity (measured through the number of strengths) are more likely to start disclosing via the 10-Ks, which is in line with our prediction in H1a and suggests that “socially-transparent” companies understand CSR disclosure on the 10-K as a signaling device of high CSR strengths. Voluntary reports, on the other hand, do not seem to respond at all to prior levels of any of the CSR measures. We do not find a negative relationship in this case (as we hypothesized in H1b), so there does not seem to be a strategic use of voluntary reports by low CSR activity (“socially-labeled” companies).

The impact of initiation of CSR disclosure: matching estimators

We now use matching estimators to measure the impact of initiation of CSR disclosure on *subsequent* social commitment. We try to ascertain whether initiation of disclosure leads to higher or lower CSR activity. Our hypothesis H2 suggested that “socially-labeled” companies with low CSR activity, which started disclosure, would tend to increase their subsequent levels of CSR activity to maintain their increased legitimacy. Although, we do not have a prior hypothesis for “socially-transparent” companies. The "treatment variables" we use in our analyses are the three indicators of initiation of CSR disclosure already used in the previous section (**FIRSTD**, **FD_10K**, **FD_REP**). The matching procedure is quite standard. For each treated observation (a company which initiates disclosure in time t) we find, among the companies which never disclose, one, two and three ($m=1,2,3$) nearest-neighbor. We use as exact matching variables the year and the industry and as “strict” matching variables, the main variables **CSR_STR**, and **CSR_CON** and the controls variables **ROA**, **DEBT** and **SIZE**. Table 4 shows the results of this matching process: each column contains the mean differences on the controls and matching variables for the treatment and treated groups. The three alternative treatment variables are in the column headings.⁹ The treatment group and the group of matches differ along several dimensions: the two components of **CSRA** measure (**CSR_STR** and

⁹ In all cases we show the average treatment effect on the treated: that is, we only find matches for the *treated* observations (companies which initiate disclosure) and then compare the average value of the variable for the treated observations with that for the group of nearest-neighbor matches.

CSR_CON) differ significantly (treated firms have both higher CSR strengths and higher CSR concerns), although the aggregate measure **CSRA** is consistently similar across values of m in all three treatments (**FIRSTD**, **FD_10K** and **FD_REP**). In addition, the two groups are slightly different on their characteristics: treatment groups (i.e. disclosing firms) are more profitable, larger in size and have higher leverage. Thus, although the matching procedure consists in selecting matches that are similar enough in some of the main variables of interest, we use the bias adjusted estimators of Abadie et al. (2003) to alleviate the impact of these differences in firm characteristics between the treatment and control groups.

Table 5 shows the estimates of the period-by-period (Table 5a) and cumulative (Table 5b) effects of initiation of CSR disclosure on our measures of CSR activity. The numbers estimate the average difference in the three measures of CSR activity between the firms that initiate disclosure (treatment group) and the matching sample of firms (control group). The results for **FIRSTD** (columns (1)-(3)) show some evidence that immediately after CSR-disclosure **CSRA** and **CSR_STR** increase during two periods, but not consistent effect is seen on social concerns (**CSR_CON**). The results for separate disclosure on 10-Ks (columns (4)-(6)) and on voluntary reports (columns (7)-(9)) are more revealing. Initiation of disclosure on the 10-Ks leads to significant increases in **CSRA** and **CSR_STR** exclusively on the period after disclosure: note the non-significant differences in the second to fourth year for both variables. There is some (mild) evidence of an increase in **CSR_CON** on the second year after initiation of disclosure, suggesting a slight relaxation on social commitment. These two effects combined show on Table 5b, where the cumulative effect of initiation of disclosure on the 10-Ks is only noticeable (and significant only for $m=3$) in the first period after initiation of disclosure. Beyond the first period, both strengths and concerns show a significant cumulative increase over time, which leads to no net effect on **CSRA**. The conclusion seems to suggest that initiation of disclosure in the 10-Ks, more likely done by “socially-transparent” companies, has no clear impact on subsequent CSR activity. We explicitly had no priors on this effect, which in any case is consistent with a signaling story of 10-K disclosure.

On the other hand, the results for the impact of initiation of disclosure via voluntary reports are more robust. There is a significant increase in **CSR_STR** after initiation of disclosure via voluntary reports (note the t-stats ranging from 2.90 to 3.76 for **CSR_STR** in the first year effect), and evidence that this effect is repeated over time. Note that there is a significant year-on-year increase in **CSR_STR** in the second and four years after initiation and, less clear, in the third year. The cumulative effect on **CSR_STR** is also quite significant and of high magnitude

(note four years after initiation, **CSR_STR** has increased by 1.5 points: compare with the mean value in Table 2b, Panel A). There is, on the other hand, no evidence at all of an increase in **CSR_CON** for any of the periods after initiation. When we put together these two effects, for companies which start disclosing in voluntary reports **CSRA** increases significantly in at least two periods after initiation, and the cumulative effect is significant at all time periods and of quite high magnitude. This suggests that “socially-labeled” firms, which initiate disclosure via voluntary reports, see such disclosure as a sort of commitment device that is linked to significantly higher subsequent levels of CSR activity.

The impact of continued CSR disclosure

The analyses in Section 4.2 show evidence of an immediate increase on **CSRA** and **CSR_STR** after initiation of CSR disclosure, particularly if this disclosure is done via voluntary reports. For completeness, we investigate the relationship between continued CSR disclosure over time. This, we believe, is an analysis more in the spirit of previous literature (Dhaliwal et al., 2011; Yip et al., 2011; Chih et al., 2007). For this purpose, we estimate model (2) using our four measures of continued disclosure (**DISCL**, **10K**, **REP** and the interaction (**10K×REP**)) as regressors and the different components of CSR activity as dependent variables. Table 6 shows the results using **CSRA** as dependent variable. These are somewhat consistent with those in Table 5. Companies disclosing over time show significant evidence of an increase of **CSRA** if they disclose in voluntary reports (note the significant coefficient of **L.REP**). This effect is much larger if they also disclose in the 10-Ks (note the coefficient of 0.952 on **L.10-K×L.REP**, and the t-stat of 3.70). We find no significant relationship for exclusive disclosure on **L.10K** (exclusive disclosure on regulatory filings).

In Table 7, we use as dependent variables the separate scores of **CSR_STR** and **CSR_CON**. Again, the results are quite consistent with those in Table 5. Note that for unconditional disclosure (columns (1) and (5), with regressor **L.DSCL**) there are both significant continued increases in strengths and concerns of very similar magnitude (1.128 and 0.959 respectively; t-stats of 5.90 and 9.19), implying a zero net effect on **CSRA**. Interestingly, disclosure in regulatory filings shows lower, but similar, increases in both **CSR_STR** and **CSR_CON** (coefficients of 1.084 and 0.902; t-stats of 5.66 and 4.97) which, again lead to a zero net effect on **CSRA**. As mentioned in Section 4.2, this result is consistent with disclosure on the 10-Ks being more of a signaling strategy, which does not necessarily lead to an increase in CSR activity given that the company is already “high” in that dimension. Disclosure in voluntary reports, however, leads to a larger increase in **CSR_STR** but a smaller increase in **CSR_CON**

(coefficients of 1.390 and 0.962; t-stats of 5.88 and 9.34). This suggests a net positive impact on CSR activity of magnitude similar to the net effect estimated in Table 6, which stems from continued voluntary disclosure. The result –again consistent with those of the matching estimators- favors the interpretation that disclosure of CSR activity in the voluntary reports acts as a commitment strategy, in the sense that initiation and continuation of disclosure “forces” the company to step up its CSR activity in order to keep the gain in legitimacy stemming from the disclosure.

Interaction of both types of disclosure (models (4) and (8) in Table 7) suggests that the impact of disclosing through both channels is more significant than disclosing only in one. Note that, given the estimated coefficients in this specification, companies that only disclose through 10-Ks have a zero net effect on **CSRA** (or slightly negative: increase of strengths of 0.702 and increase of concerns of 0.856). Companies that only disclose voluntary reports have a slightly positive effect (increase of strengths of 1.190, increase in concerns of 0.950), and companies which disclose in both experience a large increase in CSR activity (increase of strengths of 2.599, increase of concerns of 1.561).

d) CONCLUSIONS

In this paper, we have analyzed the relationship between “social disclosure” and social activity. We postulate that companies with different motivations to disclose might use different channels of disclosing CSR activities, and we can use those channels to distinguish transparent and social committed companies from those that strategically use CSR disclosing to meet stakeholders (including capital providers) expectations. In particular, we distinguish between CSR disclosure via voluntary standalone reports and CSR disclosure on the regulatory and structured 10-K filings. We believe this distinction to be important, given the potential greater scrutiny to which 10-K filings are subject. Our results show that “socially-transparent” companies, with higher levels of CSR activity, have a higher probability of initiating CSR disclosure in the 10-Ks, which suggests that these companies use disclosure in regulatory filings as a signal of high CSR activity. We also find evidence of a limited increase of CSR activity after initiation of disclosure on the 10-Ks, but no clear evidence of any impact for continued disclosure in the 10-Ks. Again, these results are consistent with the signaling story of disclosure in the 10-Ks. The results for voluntary disclosure are quite different: we find no evidence that initiation of issuance of CSR reports is related to previous higher levels of social action, which suggests that disclosure on this channel is not determined by good CSR performance. However, initiation of CSR disclosure through these channels has a clear and strong effect on subsequent social activity both during the

four subsequent periods and through continued disclosure. These results suggest that “socially-labeled” firms (which disclose but have lower levels of CSR activity), once disclosure initiates, increase their social actions in order to be consistent and maintain legitimacy, so initiation of voluntary disclosure acts as a commitment device for the low-CSR activity firms.

We believe our analyses allow us to disentangle quite interesting dynamics, which, in particular, help reconcile previous contradicting findings on the direction of the relationship between CSR disclosure and CSR activities. Indeed, our results open important avenues for research. First, we show evidence that explicitly differentiating the channels of disclosure is important: the different channels seem to serve different purposes (signaling vs commitment). Second, our emphasis on the dynamic nature of the relationships makes progress towards solving the issue of endogeneity of CSR disclosure with respect to CSR activity and leads to a much richer picture in how these two aspects of social concern interact. Further research into this interaction and into the motivations for disclosure should help understand better the role played by CSR in the context of a firm’s overall strategy. Finally, our last result, which we commented very briefly, may be worth looking at: the different disclosing channels interact, so the consideration of joint effects of the channels for disclosure is a relevant question, which we leave for future research.

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Table 1. Description of variables used in the empirical analysis

Variable Name	Description	Source
CSR Disclosure Variables		
FIRSTD_{it}	1 if company <i>i</i> initiates CSR disclosure during year <i>t</i> , 0 otherwise	<i>LEXIS-NEXIS</i> , & Corporate Register & Companies' Websites
DSCL_{it}	1 if company <i>i</i> discloses CSR during year <i>t</i> , 0 otherwise	Corporate Register & Companies' Websites
FD_REP_{it}	1 if company <i>i</i> initiates CSR disclosure during year <i>t</i> on a voluntary self-prepared report, 0 otherwise	Corporate Register & Companies' Websites
REP_{it}	1 if company <i>i</i> discloses CSR during year <i>t</i> on a voluntary self-prepared report, 0 otherwise	Corporate Register & Companies' Websites
FD_10K_{it}	1 if company <i>i</i> initiates CSR disclosure during year <i>t</i> on the 10-K files, 0 otherwise	<i>LEXIS-NEXIS</i>
10K_{it}	1 if company <i>i</i> discloses CSR during year <i>t</i> on the 10-K files, 0 otherwise	<i>LEXIS-NEXIS</i>
CSR Activity variables		
CSRA_{it}	CSR activity rating: company <i>i</i> 's strengths minus concerns in corporate social responsibility in year <i>t</i>	KLD
CSR_STR_{it}	CSR strengths rating: company <i>i</i> 's strengths in corporate social responsibility in year <i>t</i>	KLD
CSR_CON_{it}	CSR concerns rating: company <i>i</i> 's concerns in corporate social responsibility in year <i>t</i>	KLD
Control variables		
FDQ_{it}	Financial Quality Disclosure: rank of firm <i>i</i> in year <i>t</i> of the absolute value of the residual of an industry-by-industry estimation of Jones' model (Dechow et al., 1995).	Own calculation from Compustat data
ROA_{it}	Income before extraordinary items _{it} / Total assets _{it}	Compustat
SIZE_{it}	Log (market value of equity) _{it}	Compustat
GLB_{it}	1 if company <i>i</i> reports foreign income in year <i>t</i> , 0 otherwise	Compustat
TQ_{it}	Equity Market V _{it} + Liabilities Market V _{it} / Equity Book V _{it} + Liabilities Book V _{it}	Compustat
DEBT_{it}	Total debt _{it} / Total Assets _{it}	Compustat
LIT_i	1 if company <i>i</i> is in a high litigation industry, 0 otherwise (Francis et al. 1994, Skinner 1997, Matsumoto 2002)	See references
BIG4_{it}	1 if firm <i>i</i> 's auditor in year <i>t</i> is a "Big Four", 0 otherwise	Compustat
GDP_t	GDP growth rate in year <i>t</i>	Federal Reserve

Sources: *Corporate Register*: Database of Corporate Register.com; *KLD*: MSCI KLD database; *LEXIS-NEXIS*: search for information on disclosure of CSR activities in the 10-K filings; *Federal Reserve*: FRED database from the Federal Reserve Bank of St. Louis; *Compustat*: variables directly available in Compustat. Interaction variables and additional variables used in some of the analyses are described in the captions of each specific table.

Table 2a: Descriptive statistics of disclosure behavior

Panel A: Distribution by industry

Industry	First CSR disclosure on 10-K		Total CSR disclosures on 10-K		First CSR voluntary report		Total CSR voluntary reports	
	No.	%	No.	%	No.	%	No.	%
Mining & construction	24	3	146	3.7	37	5.3	236	7.2
Food	78	9.9	297	7.5	75	10.8	326	9.9
Textiles, printing	122	15.4	753	19.1	129	18.6	649	19.7
Chemicals	41	5.2	196	5	41	5.9	290	8.8
Pharmaceuticals	106	13.4	517	13.1	62	9	281	8.5
Extractive Industries	37	4.7	198	5	33	4.7	143	4.3
Durable	46	5.8	157	4	11	1.6	27	0.8
Computers	50	6.3	187	4.7	35	5	136	4.1
Transportation	7	0.9	32	0.8	5	0.7	37	1.1
Utilities	31	3.9	214	5.4	28	4	167	5.1
Retail	61	7.7	311	7.9	48	6.9	172	5.2
Financial Institutions	34	4.3	155	3.9	20	2.9	43	1.3
Insurance, real estate	33	4.2	189	4.8	38	5.5	178	5.4
Services	73	9.2	316	8	57	8.2	267	8.1
Others	49	6.2	266	6.8	75	10.8	339	10.3
Total	792	100	3,934	100	694	100	3,291	100

Panel B: Distribution by year

Year	CSR disclosures simultaneously in 10-K and voluntary reports		Initiation of disclosure 10-K		Continued CSR disclosure in 10-K		Initiation disclosure in voluntary reports		Continued CSR disclosure in voluntary reports	
	N	CSRA	N	CSRA	N	CSRA	N	CSRA	N	CSRA
1987			1		1					
1988			5		6		0			
1989			4		9		0			
1990			6		14		1		1	
1991			11		25		1		2	
1992			5		29		2		4	
1993	1		9		38		10		14	
1994	3		3		41		17		31	
1995	5		7		47		19		50	
1996	7		11		57		17		67	
1997	8		13		67		24		90	
1998	9	2	7	3	67	1.22	20	-1	108	-0.46
1999	15	1.3	7	0	66	0.89	26	0.3	128	-0.21
2000	15	0.25	11	2	70	0.47	26	0.29	150	-0.49
2001	21	-0.23	20	-0.67	85	-0.03	51	0.22	194	-0.34
2002	40	0.94	51	-0.3	130	0	43	-0.09	233	0.04
2003	59	0.041	49	-0.94	174	-0.12	37	-0.17	266	-0.23
2004	87	0.43	84	-0.18	252	-0.24	35	-1.12	296	-0.32
2005	126	1.43	87	0.13	326	0.13	42	-0.3	326	0.46
2006	151	1.12	62	-0.48	371	0.01	37	-2	350	0.28
2007	162	1.29	68	0.47	421	0.18	43	-0.84	380	0.36
2008	197	0.05	78	0.68	487	1.22	70	0.75	442	1.42
2009	222	0.66	85	-0.89	552	-0.12	82	-1.1	507	-0.18
2010	251	3.03	108	0.82	599	1.03	91	0.51	555	2.04
Mean CSRA		0.95		0.28		0.36		-0.35		0.18

Table 2a (continued):

Panel A: Distribution of disclosure of CSR activities by industry, based on the classification in Barth et al. (2013). "First CSR disclosure on 10-K": number of firms in the industry disclosing for the first time in their 10-K filings. "Total CSR disclosures on 10-K": number of firms in the industry disclosing in their 10-K filings. "First CSR voluntary report": number of firms in the industry issuing for the first time a voluntary CSR report. "Total CSR voluntary reports": number of firms in the industry issuing a voluntary CSR report.

Panel B: Distribution of disclosure of CSR activities by year. "CSR disclosures simultaneously...": number of firms disclosing both in their 10-K filings and in voluntary reports. "Initiation disclosure 10-K": number of firms initiating disclosure on 10-K filings. "Continued CSR disclosure in 10-K": number of firms disclosing on 10-K filings. "Initiation disclosure in voluntary reports": number of firms initiating disclosure through a voluntary CSR report. "Continued CSR disclosure in voluntary reports": number of firms disclosing through a voluntary CSR report. "CSRA": average value of **CSRA** for the disclosing companies in each period. "Mean CSRA": average value of **CSRA** for the complete sample period.

Table 2b: Descriptive statistics and correlations

Panel A: KLD firms versus Non-KLD firms within the Compustat universe										
Variable	KLD firms				Non-KLD firms				P-value of tests	
	N	Mean	St. dev.	Median	N	Mean	St. dev.	Median	Means	Medians
FIRSTD	24352	0.019	0.139	0.000	373485	0.001	0.043	0.000	0.000	0.000
FD_10K	24352	0.011	0.104	0.000	373485	0.001	0.037	0.000	0.000	0.000
FD_REP	24352	0.014	0.118	0.000	373485	0.001	0.030	0.000	0.000	0.000
DSCL	24352	0.121	0.326	0.000	373485	0.010	0.102	0.000	0.000	0.000
10K	24352	0.06	0.237	0.000	373485	0.006	0.081	0.000	0.000	0.000
REP	24352	0.084	0.237	0.000	373485	0.005	0.075	0.000	0.000	0.000
CSRA	24352	-0.387	2.233	0.000	--	--	--	--	--	--
CSR_STR	24352	1.473	2.171	1.000	--	--	--	--	--	--
CSR_CON	24352	1.861	1.961	1.000	--	--	--	--	--	--
FDQ	18211	3867	1846	3955	207525	2946	1982	2662	0.000	0.000
ROA	13203	0.005	0.171	0.324	150959	-0.183	0.576	0.008	0.000	0.000
SIZE	12998	7.094	1.565	6.958	65567	4.036	2.087	3.991	0.000	0.000
GLB	10578	0.810	0.392	1.000	37773	0.653	0.475	1.000	0.000	0.000
TQ	12998	3.519	4.029	2.466	65531	2.715	6.856	1.623	0.000	0.000
DEBT	13198	0.233	0.200	0.202	151251	0.289	0.307	0.217	0.000	0.000
LIT	24352	0.200	0.400	0.000	373485	0.151	0.358	0.000	0.000	0.000
BIG4	24352	0.844	0.362	1.000	373485	0.363	0.481	0.000	0.000	0.000
Panel B: CSR-disclosing firms vs CSR non-disclosing firms										
Variable	CSR-disclosing firms				CSR-non disclosing firms				P-value of tests	
	N	Mean	St. dev.	Median	N	Mean	St. dev.	Median	Means	Medians
FIRSTD	34904	0.033	0.180	0.000	--	--	--	--	--	--
FD_10K	34904	0.022	0.148	0.000	--	--	--	--	--	--
FD_REP	34904	0.019	0.139	0.000	--	--	--	--	--	--
DSCL	34904	0.198	0.398	0.000	--	--	--	--	--	--
10K	34904	0.112	0.316	0.000	--	--	--	--	--	--
REP	34904	0.12	0.326	0.000	--	--	--	--	--	--
CSRA	6108	-0.012	3.223	0.000	18244	-0.513	1.766	0.000	0.000	0.000
CSR_STR	6838	3.041	3.161	2.000	18667	0.652	1.287	1.000	0.000	0.000
CSR_CON	6108	3.104	2.775	2.000	18244	1.445	1.366	1.000	0.000	0.000
FDQ	22816	3881	1894	3838	202920	2923	1974	2635	0.000	0.000
ROA	16241	0.011	0.198	0.036	147921	-0.188	0.579	0.007	0.000	0.000
SIZE	7058	7.437	2.129	7.780	71507	4.256	2.122	4.250	0.000	0.000
GLB	9831	0.850	0.357	1.000	38520	0.6468	0.477	1.000	0.000	0.000
TQ	7057	3.499	4.492	2.337	71472	2.784	6.641	1.722	0.000	0.000
DEBT	16231	0.259	0.190	0.242	148218	0.287	0.310	0.211	0.000	0.000
LIT	34904	0.150	0.357	0.000	362933	0.154	0.361	0.000	0.000	0.000
BIG4	34904	0.557	0.496	1.000	362933	0.377	0.484	0.000	0.000	0.000

Table 2b (continued):

Panel C: Correlation matrix for sample firms

	CSRA	CSR_STR	CSR_CON	FDQ	ROA	SIZE	TQ	DEBT
CSRA	--							
CSR_STR	0.564	--						
CSR_CON	-0.557	0.370	--					
FDQ	-0.037	0.107	0.150	--				
ROA	0.062	0.123	0.054	0.296	--			
SIZE	0.036	0.471	0.434	0.276	0.281	--		
TQ	0.134	0.119	-0.030	-0.121	-0.023	0.226	--	
DEBT	-0.126	-0.018	0.123	0.245	-0.015	0.066	-0.138	--

Panel A: *KLD firms*: all firms for which KLD data on CSR activity is available at some point in time. *Non-KLD firms*: firms which do not appear in the KLD database at any point in time. The "P-values of tests" columns show the p-value of a t-test for the difference in means of the different variables for the two groups (Means) and the p-value of a test for equality in the medians of the two groups (Medians). **ROA**, **SIZE**, **TQ** and **DEBT** have been winsorized at the top and bottom one percent of their distributions.

Panel B: *CSR-disclosing firms*: firms for which KLD data are available and we have found evidence of voluntary CSR disclosure. *CSR non-disclosing firms*: firms for which KLD data are available and we have found no evidence of voluntary CSR disclosure. The "P-value of tests" columns show the p-value of a t-test for the difference in means of the different variables for the two groups (Means) and the p-value of a test for equality in the medians of the two groups (Medians). **ROA**, **SIZE**, **TQ** and **DEBT** have been winsorized at the top and bottom one percent of their distributions.

Panel C: Pearson correlation coefficients (for the maximum common sample between pairs of variables within the KLD sample) of the main variables of interest in the analysis (dummy variables excluded) are shown below the main diagonal.

Table 3a: Determinants of initiation of CSR disclosure

	Dependent variable: FIRSTD			
	(1)	(2)	(3)	(4)
L.CSRA	-0.010 (-0.31)	-0.008 (-0.24)		
L.CSR_STR			0.064 (1.62)	0.064 (1.62)
L.CSR_CON			0.084 (1.44)	0.082 (1.38)
TIME		0.037 (0.74)		0.026 (0.50)
L.FDQ	0.001 (0.21)	0.001 (0.34)	0.001 (0.29)	0.001 (0.37)
ROA	4.316*** (3.14)	4.362*** (3.14)	4.800*** (3.49)	4.825*** (3.49)
TQ	-0.033** (-2.34)	-0.031** (-2.17)	-0.025 (-1.45)	-0.024 (-1.39)
DEBT	1.011*** (2.82)	1.017*** (2.81)	0.857** (2.25)	0.862** (2.24)
SIZE	0.687*** (7.78)	0.697*** (7.82)	0.539*** (3.83)	0.548*** (3.78)
GLB	-0.156 (-0.48)	-0.170 (-0.51)	-0.168 (-0.51)	-0.178 (-0.53)
GDP	-44.06*** (-6.29)	-45.80*** (-4.81)	-44.84*** (-6.22)	-46.11*** (-4.79)
LIT	0.053 (0.26)	0.056 (0.28)	0.085 (0.40)	0.086 (0.40)
Constant	-8.12*** (-13.96)	-8.66*** (-12.12)	-7.25*** (-9.07)	-7.64*** (-7.25)
N	3,718	3,718	3,718	3,718

Maximum likelihood estimation of the discrete-time logit duration model (1) for the probability of initiating disclosure in either the 10-K filings or in voluntary reports (Dependent variable: **FIRSTD**).; t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor.

Table 3b: Determinants of initiation of CSR disclosure on the 10-K files and Voluntary Reports

	Dependent variable: FD_10K				Dependent variable: FD_REP			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.CSRA	0.017 (0.37)	0.025 (0.51)			0.003 (0.070)	0.001 (0.01)		
L.CSR_STR			0.093** (2.23)	0.088** (2.00)			0.051 (0.95)	0.051 (0.98)
L.CSR_CON			0.078 (1.53)	0.061 (1.10)			0.044 (0.69)	0.051 (0.79)
TIME		0.289*** (2.88)		0.270*** (2.62)		-0.046 (-0.88)		-0.057 (-1.08)
L.FDQ	-0.001 (-0.19)	0.001 (0.29)	-0.001 (-0.15)	0.001 (0.25)	0.001 (0.41)	0.001 (0.24)	0.001 (0.48)	0.001 (0.30)
ROA	0.663 (0.80)	0.831 (0.94)	1.089 (1.40)	1.176 (1.40)	4.756*** (3.79)	4.670*** (3.86)	5.225*** (4.32)	5.157*** (4.40)
TQ	-0.024 NA	-0.011 NA	-0.009 (-1.29)	0.001 (0.24)	-0.040** (-2.44)	-0.042** (-2.49)	-0.034* (-1.66)	-0.036* (-1.76)
DEBT	1.421** (2.44)	1.451** (2.49)	1.332** (2.25)	1.384** (2.33)	1.337*** (3.64)	1.329*** (3.80)	1.203*** (3.21)	1.189*** (3.39)
SIZE	0.567*** (4.34)	0.613*** (4.49)	0.362*** (3.30)	0.431*** (3.66)	0.889*** (6.91)	0.877*** (6.91)	0.776*** (4.41)	0.753*** (4.37)
GLB	-0.063 (-0.13)	-0.156 (-0.31)	-0.068 (-0.14)	-0.153 (-0.30)	0.213 (0.527)	0.236 (0.561)	0.188 (0.465)	0.215 (0.514)
GDP	-37.88** (-2.135)	-67.06*** (-3.943)	-39.29** (-2.263)	-66.91*** (-3.881)	-26.63* (-1.88)	-26.71** (-2.48)	-26.75* (-1.77)	-26.84** (-2.47)
LIT	-0.188 (-0.77)	-0.186 (-0.73)	-0.182 (-0.80)	-0.192 (-0.79)	0.131 (0.44)	0.125 (0.43)	0.161 (0.54)	0.156 (0.54)
Constant	-7.81*** (-7.57)	-11.33*** (-7.02)	-6.59*** (-6.62)	-10.01*** (-6.05)	-11.28*** (-8.73)	-10.55*** (-10.0)	-10.57*** (-7.26)	-9.63*** (-7.88)
N	3,906	3,906	3,906	3,906	3,670	3,670	3,670	3,670

Maximum likelihood estimation of the discrete-time logit duration model (1).

Columns (1)-(4): analysis of the probability of initiating disclosure in the 10-K filings (Dependent variable: **FD_10K**).

Columns (5)-(8): analysis of the probability of initiating disclosure in voluntary reports (Dependent variable: **FD_REP**).

t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor.

Table 4: Comparison of the matched samples

	Treatment variable: FIRSTD			Treatment variable: FD_10K			Treatment variable: FD_REP		
	(1) m=1	(2) m=2	(3) m=3	(4) m=1	(5) m=2	(6) m=3	(7) m=1	(8) m=2	(9) m=3
CSRA	-0.05 (-0.36)	-0.06 (-0.48)	-0.04 (-0.36)	-0.14 (-0.80)	-0.03 (-0.17)	-0.05 (-0.31)	-0.14 (-0.88)	-0.10 (-0.61)	-0.01 (-0.09)
L.CSRA	-0.13 (-0.67)	-0.15 (-0.87)	-0.11 (-0.68)	-0.02 (-0.08)	-0.08 (-0.34)	-0.07 (-0.30)	-0.32 (-1.46)	-0.14 (-0.75)	-0.06 (-0.34)
CSR_STR	0.67*** (6.45)	0.89*** (8.70)	0.95*** (8.80)	0.50*** (3.529)	0.73*** (5.693)	0.80*** (6.241)	0.69*** (5.07)	0.83*** (6.21)	0.97*** (7.32)
L.CSR_STR	0.84*** (5.85)	0.92*** (6.95)	0.99*** (7.43)	0.64*** (2.976)	0.71*** (3.861)	0.75*** (3.967)	0.75*** (4.12)	0.79*** (4.91)	0.92*** (5.85)
CSR_CON	0.86*** (7.16)	0.95*** (7.72)	1.01*** (7.87)	0.65*** (3.82)	0.76*** (4.94)	0.85*** (5.31)	0.84*** (6.13)	0.93*** (6.96)	0.99*** (7.10)
L.CSR_CON	0.98*** (6.07)	1.10*** (6.94)	1.12*** (7.07)	0.66*** (2.91)	0.82*** (3.89)	0.83*** (3.89)	1.08*** (6.42)	0.96*** (5.97)	1.02*** (6.28)
FDQ	71.16 (0.40)	92.21 (0.59)	76.30 (0.50)	240.4 (1.07)	104.1 (0.52)	195.7 (1.05)	65.79 (0.33)	119.7 (0.67)	104.5 (0.61)
L.FDQ	289.3 (1.59)	262.9* (1.80)	249.7* (1.70)	98.03 (0.41)	2.52 (0.01)	127.3 (0.73)	344.9* (1.71)	295.1* (1.71)	279.8 (1.61)
ROA	0.01** (2.10)	0.01*** (3.18)	0.01*** (3.98)	-0.01 (-0.71)	0.00 (0.26)	0.01 (1.18)	0.01*** (2.66)	0.01*** (3.04)	0.01*** (3.32)
DEBT	0.02*** (2.96)	0.02** (2.389)	0.01** (2.458)	0.03*** (3.03)	0.01* (1.91)	0.01* (1.78)	0.01** (2.24)	0.01 (1.62)	0.01** (2.02)
SIZE	0.65*** (9.09)	0.76*** (11.25)	0.83*** (12.41)	0.33*** (3.65)	0.52*** (5.97)	0.59*** (6.82)	0.71*** (7.91)	0.76*** (10.03)	0.82*** (11.20)
TQ	0.30 (0.66)	0.61 (1.44)	0.76* (1.82)	0.73 (1.49)	0.90* (1.86)	0.92* (1.93)	0.39 (0.68)	0.50 (0.99)	0.71 (1.43)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **CSR_STR**, **CSR_CON**, **ROA**, **DEBT** and **SIZE**. The coefficients in the columns estimate the average difference of the corresponding row variable between each company which initiates CSR disclosure and the group of m (m=1,2,3) matching companies in the year of initiating disclosure; t-statistics are shown in brackets.

Columns (1)-(3): treatment is defined as a 1 for the company which initiates CSR disclosure on any channel in a specific year (**FIRSTD**).

Columns (4)-(6): treatment is defined as a 1 for the company which initiates CSR disclosure on a voluntary report in a specific year (**FD_10K**).

Columns (7)-(9): Treatment variable is initiation of disclosure on voluntary reports (**FD_REP**).

*, ** and ***: average differences in the levels of the variables significant at the 10%, 5% and 1% level. Differences which are significant at the 5% level have been highlighted in boldface.

**Table 5a: Matching estimators of the effect of initiation of CSR disclosure on CSR activities
- period by period effects**

		Treatment variable: FIRSTD			Treatment variable: FD_10K			Treatment variable: FD_REP		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		m=1	m=2	m=3	m=1	m=2	m=3	m=1	m=2	m=3
CSRA	t1-t0	0.31* (1.84)	0.23 (1.54)	0.35** (2.51)	0.35* (1.76)	0.29 (1.52)	0.43** (2.19)	0.45** (2.21)	0.35* (1.93)	0.41** (2.41)
	t2-t1	0.26 (1.45)	0.33** (1.97)	0.29* (1.86)	-0.24 (-0.81)	-0.15 (-0.52)	-0.02 (-0.07)	0.23 (1.17)	0.30* (1.71)	0.32* (1.91)
	t3-t2	-0.10 (-0.52)	-0.02 (-0.13)	-0.06 (-0.35)	0.05 (0.12)	0.16 (0.48)	-0.02 (-0.07)	0.10 (0.42)	0.16 (0.75)	0.07 (0.34)
	t4-t3	0.38 (1.35)	0.27 (1.18)	0.13 (0.66)	-0.06 (-0.14)	-0.09 (-0.24)	0.10 (0.30)	0.83*** (2.60)	0.66** (2.32)	0.44* (1.71)
CSR_STR	t1-t0	0.44*** (3.88)	0.45*** (4.29)	0.50*** (4.79)	0.53*** (3.54)	0.48*** (3.30)	0.57*** (3.91)	0.42*** (2.90)	0.47*** (3.57)	0.49*** (3.76)
	t2-t1	0.19* (1.66)	0.20* (1.86)	0.23** (2.25)	0.12 (0.61)	0.15 (0.79)	0.23 (1.19)	0.35*** (2.72)	0.29** (2.39)	0.34*** (3.06)
	t3-t2	0.01 (0.09)	0.11 (1.04)	0.13 (1.31)	0.05 (0.27)	0.14 (0.86)	0.10 (0.65)	0.179 (1.09)	0.28* (1.87)	0.28** (2.03)
	t4-t3	0.22 (1.24)	0.31** (2.01)	0.28* (1.95)	0.02 (0.08)	0.08 (0.37)	0.20 (0.98)	0.55*** (2.81)	0.54*** (2.82)	0.43** (2.42)
CSR_CON	t1-t0	0.13 (1.09)	0.22** (2.07)	0.14 (1.43)	0.17 (1.15)	0.18 (1.31)	0.14 (1.00)	-0.03 (-0.24)	0.12 (0.86)	0.08 (0.60)
	t2-t1	-0.07 (-0.57)	-0.13 (-1.18)	-0.06 (-0.62)	0.37** (1.99)	0.31* (1.66)	0.26 (1.42)	0.11 (0.76)	-0.01 (-0.11)	0.02 (0.19)
	t3-t2	0.11 (0.83)	0.13 (1.23)	0.19* (1.79)	0.00 (0.01)	-0.02 (-0.09)	0.13 (0.68)	0.07 (0.53)	0.11 (0.93)	0.21* (1.73)
	t4-t3	-0.15 (-0.89)	0.04 (0.28)	0.14 (1.06)	0.09 (0.33)	0.17 (0.81)	0.09 (0.45)	-0.28 (-1.37)	-0.12 (-0.67)	-0.01 (-0.04)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **CSR_STR**, **CSR_CON**, **ROA**, **DEBT** and **SIZE**. The coefficients in the cells report the bias-adjusted average treatment on the treated (Abadie et al., 2003), that is, the average difference between the treatment group and the group of m (m=1,2,3) matching companies in the years after initiating disclosure; t-statistics are shown in brackets. The row headings ti-tj denote that the estimator measures the differences in the changes in the three dependent variables (**CSRA**, **CSR_STR**, **CSR_CON**) between time i and time j=i-1, where t=0 is the treatment period.

Columns (1)-(3): treatment is defined as a 1 for the company which initiates CSR disclosure on any channel in a specific year (**FIRSTD**).

Columns (4)-(6): treatment is defined as a 1 for the company which initiates CSR disclosure on a voluntary report in a specific year (**FD_10K**).

Columns (7)-(9): Treatment variable is initiation of disclosure on voluntary reports (**FD_REP**).

*, ** and ***: significant difference at the 10%, 5% and 1% level. Differences which are significant at the 5% level have been highlighted in boldface.

Table 5b: Matching estimators of the effect of initiation of CSR disclosure on CSR activities - cumulative effects

		Treatment variable: FIRSTD			Treatment variable: FD_10K			Treatment variable: FD_REP		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		m=1	m=2	m=3	m=1	m=2	m=3	m=1	m=2	m=3
CSRA	t1-t0	0.31* (1.85)	0.23 (1.54)	0.35** (2.51)	0.35* (1.76)	0.29 (1.52)	0.42** (2.19)	0.45** (2.21)	0.35* (1.93)	0.41** (2.41)
	t2-t0	0.54** (2.53)	0.62*** (3.30)	0.66*** (3.76)	0.07 (0.23)	0.26 (0.85)	0.42 (1.46)	0.71*** (2.92)	0.65*** (3.14)	0.70*** (3.71)
	t3-t0	0.43** (2.00)	0.59*** (3.21)	0.62*** (3.49)	0.12 (0.37)	0.44 (1.42)	0.40 (1.35)	0.73*** (2.77)	0.71*** (3.07)	0.74*** (3.31)
	t4-t0	0.85*** (3.20)	0.90*** (3.78)	0.83*** (3.76)	-0.08 (-0.21)	0.22 (0.73)	0.42 (1.51)	1.67*** (5.62)	1.45*** (5.06)	1.35*** (4.94)
CSR_STR	t1-t0	0.44*** (3.88)	0.45*** (4.29)	0.50*** (4.79)	0.53*** (3.54)	0.48*** (3.30)	0.57*** (3.91)	0.41*** (2.90)	0.47*** (3.57)	0.49*** (3.76)
	t2-t0	0.63*** (4.41)	0.66*** (4.99)	0.74*** (5.74)	0.68*** (2.98)	0.72*** (3.21)	0.86*** (3.78)	0.75*** (4.34)	0.73*** (4.48)	0.81*** (5.25)
	t3-t0	0.66*** (4.39)	0.77*** (5.40)	0.88*** (6.18)	0.71*** (3.15)	0.88*** (3.98)	0.93*** (4.40)	0.92*** (4.84)	0.96*** (5.18)	1.07*** (5.90)
	t4-t0	0.91*** (4.26)	1.12*** (5.54)	1.22*** (6.16)	0.63** (2.30)	0.89*** (3.36)	1.07*** (4.23)	1.51*** (5.90)	1.55*** (6.21)	1.64*** (6.55)
CSR_CON	t1-t0	0.13 (1.09)	0.22** (2.07)	0.15 (1.43)	0.17 (1.15)	0.18 (1.31)	0.14 (1.00)	-0.03 (-0.24)	0.11 (0.86)	0.07 (0.60)
	t2-t0	0.09 (0.58)	0.04 (0.27)	0.079 (0.58)	0.60** (2.56)	0.45* (1.94)	0.43** (1.97)	0.04 (0.22)	0.07 (0.49)	0.10 (0.65)
	t3-t0	0.23 (1.39)	0.18 (1.34)	0.25* (1.81)	0.58** (2.17)	0.44* (1.73)	0.53** (2.06)	0.19 (0.98)	0.24 (1.43)	0.33** (1.96)
	t4-t0	0.05 (0.29)	0.22 (1.27)	0.38** (2.27)	0.72** (2.54)	0.67*** (2.78)	0.65*** (2.78)	-0.15 (-0.70)	0.10 (0.47)	0.29 (1.40)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **CSR_STR**, **CSR_CON**, **ROA**, **DEBT** and **SIZE**. The coefficients in the cells report the bias-adjusted *average treatment on the treated* (Abadie et al., 2003), that is, the average difference between the treatment group and the group of m ($m=1,2,3$) matching companies in the years after initiating disclosure; t -statistics are shown in brackets. The row headings t - t_0 denote that the estimator measures the differences in the (cumulative) changes in the three dependent variables (**CSRA**, **CSR_STR**, **CSR_CON**) between time t and, the treatment period.

Columns (1)-(3): treatment is defined as a 1 for the company which initiates CSR disclosure on any channel in a specific year (**FIRSTD**).

Columns (4)-(6): treatment is defined as a 1 for the company which initiates CSR disclosure on a voluntary report in a specific year (**FD_10K**).

Columns (7)-(9): Treatment variable is initiation of disclosure on voluntary reports (**FD_REP**).

*, ** and ***: significant difference at the 10%, 5% and 1% level. Differences which are significant at the 5% level have been highlighted in boldface.

Table 6: The effect of continued CSR Disclosure on CSR Activity

	Dependent variable: CSRA			
	(1)	(2)	(3)	(4)
L.DSCL	0.169 (1.37)			
L.10K		0.181 (1.31)		-0.154 (-1.26)
L.REP			0.427** (2.24)	0.239 (1.56)
L.10K × L.REP				0.952*** (3.70)
L.FDQ	0.001 (0.71)	0.001 (0.66)	0.001 (0.80)	0.001 (0.83)
ROA	0.407 (1.32)	0.385 (1.23)	0.442 (1.42)	0.422 (1.38)
TQ	-0.009 (-1.05)	-0.010 (-1.09)	-0.007 (-0.91)	-0.007 (-0.87)
DEBT	-0.848*** (-3.30)	-0.849*** (-3.43)	-0.805*** (-3.09)	-0.743*** (-2.75)
SIZE	-0.486*** (-5.75)	-0.483*** (-5.56)	-0.491*** (-5.83)	-0.491*** (-5.77)
BIG4	-0.377*** (-6.38)	-0.373*** (-6.56)	-0.386*** (-6.54)	-0.391*** (-6.70)
GDP	-1.275 (-0.25)	-1.395 (-0.28)	-0.940 (-0.17)	-0.797 (-0.14)
N	9,628	9,628	9,628	9,628
R ²	0.014	0.014	0.016	0.018

Fixed effects estimates of the continued disclosure model (2) with dependent variable **CSRA**. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. *L.* denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data.

Table 7: The effect of continued CSR Disclosure on CSR Strengths

	Dependent variable: CSR_STR				Dependent variable: CSR_CON			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.DSCL	1.128*** (5.90)				0.959*** (9.19)			
L.10K		1.084*** (5.66)		0.702*** (6.13)		0.902*** (4.97)		0.856*** (5.80)
L.REP			1.390*** (5.88)	1.190*** (5.96)			0.962*** (9.34)	0.950*** (11.54)
L.10K × L.REP				0.707*** (3.79)				-0.245 (-1.26)
L.FDQ	-0.001*** (-2.90)	-0.001*** (-3.13)	-0.001*** (-3.01)	-0.001*** (-3.00)	-0.001*** (-2.93)	-0.001*** (-3.08)	-0.001*** (-3.05)	-0.001*** (-2.91)
ROA	-0.184 (-0.93)	-0.337 (-1.56)	-0.166 (-0.84)	-0.163 (-0.86)	-0.591** (-2.33)	-0.722*** (-2.59)	-0.609** (-2.35)	-0.585** (-2.28)
TQ	-0.057*** (-8.28)	-0.062*** (-8.69)	-0.056*** (-8.27)	-0.054*** (-8.62)	-0.047*** (-4.46)	-0.052*** (-5.16)	-0.048*** (-4.38)	-0.046*** (-4.29)
DEBT	0.062 (0.46)	0.075 (0.53)	0.283** (2.51)	0.219* (1.94)	0.910*** (2.98)	0.924*** (2.92)	1.088*** (3.43)	0.962*** (3.11)
SIZE	0.316*** (4.72)	0.342*** (5.02)	0.334*** (4.90)	0.305*** (4.65)	0.802*** (6.72)	0.825*** (6.95)	0.825*** (6.89)	0.797*** (6.62)
BIG4	0.146** (2.44)	0.178*** (2.90)	0.154** (2.41)	0.122** (2.27)	0.523*** (5.07)	0.550*** (5.29)	0.539*** (4.99)	0.512*** (5.17)
GDP	0.852 (0.19)	0.0403 (0.00)	1.481 (0.348)	1.585 (0.41)	2.128 (0.22)	1.435 (0.13)	2.421 (0.25)	2.381 (0.26)
N	9,628	9,628	9,628	9,628	9,628	9,628	9,628	9,628
R ²	0.076	0.054	0.085	0.099	0.086	0.073	0.082	0.089

Fixed effects estimates of the continued disclosure model (2).

Columns (1)-(4): Dependent variable is **CSR_STR**.

Columns (5)-(8): Dependent variable is **CSR_CON**.

t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% are shown in boldface. *L.* denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data.

2. RELATIONSHIP OF CORPORATE COMMUNICATION STRATEGIES: ARE SOCIAL AND FINANCIAL TRANSPARENCY ALIGNED?

2.1 Introduction

In this paper, we examine the link between "social transparency" and the transparency of financial information. In particular, we examine whether the initiation and continuation of disclosure of CSR activities is linked with more or less earnings management practices, which we use as a proxy for the transparency of financial information. We focus on two different channels of disclosing CSR actions: (1) through compulsory and legally-structured reports, such as the 10-K files and (2) through voluntary and self-prepared reports. Our results reconcile previous, apparently contradictory, findings and underline the importance of the disclosing channel. We show how companies with high levels of past earnings management show higher probability of initiating CSR disclosure in the 10-K filings. We also show that continued disclosure on the 10-Ks is associated with subsequent lower levels of earnings management. We interpret these results as suggestive that firms view CSR disclosure on the 10-Ks as a commitment device, so financial and social transparency reinforce one another (thus going beyond being pure complements). On the other hand, initiation of CSR disclosure on voluntary reports does not seem to be related to prior transparency, but immediately after such initiation, companies show higher levels of earnings management and less evidence of subsequent reductions in earnings management from continued disclosure. We interpret these results as suggestive that firms view voluntary CSR disclosure as a strategic device, or financial disclosure and social disclosure through voluntary channels as substitutes.

There is a growing demand for accurate and transparent information about a company's activities and performance. This demand for transparency comes not only from shareholders and investors but also from all stakeholders. Consequently, companies must devote resources to the processing and dissemination of this information, in what we could call a company's communication policy.

The main component of a company's disclosure of information regards financial reporting. This information, which describes the performance and financial situation of the company, is key to facilitate investors' financial decision-making and it helps good performing firms to distinguish themselves from poor performers. A main characteristic of financial disclosure is that it is subject to a very strict regulation, which tries to guarantee the "financial transparency" of firms and the comparability across firms. We define, therefore, financial transparency as the effort by

managers to produce accounting numbers that are a faithful (and “according to the rules”) representation of the firm's financial situation and are informative about the firm's performance for all stakeholders of the firm. Despite the tight regulation, though, managers still have the possibility to exercise discretion when computing accounting numbers such as earnings and when deciding certain opportunistic transactions. These activities, which we generally denote as “earnings management”, may be carried out with different objectives in mind (there is a large literature regarding the objectives of earnings management), but the end result is that they reduce the transparency of the firm’s financial information.

Another dimension of the firm’s disclosure policy is that related to the firm’s involvement in socially responsible issues (defined in a broad sense). Recent increased sensibility for social issues has led firms to devote more and more resources to socially related activities, and to the explicit disclosure of such activity. We define corporate social responsibility (CSR) disclosure as the explicit communication of the CSR activity and performance of a company. This policy of public dissemination (disclosure) of CSR activity is a separate element of the company’s CSR strategy and of its communication policy. However, contrary to financial disclosure, communication of CSR information is mostly voluntary and not subject to explicit regulation or ex-post scrutiny. Moreover, those companies who decide to disclose CSR information can use diverse channels for such disclosure. For example, 52 percent of Fortune 100 Companies included statements of Corporate Social Responsibility in their 2010 annual reports and 10-Ks (Forbes 2011). Also, the number of companies which publish CSR information on a separate report has been increasing over time: in 2008, 64% of the Global Fortune top 250 companies published corporate responsibility information in standalone reports, compared with 40% in 2005, 30% in 2002 and 28% in 1999 (KPMG 2008). This lack of a required format for disclosure makes a firm's CSR disclosure policy (the choice to disclose and the channel for disclosure) an explicit and voluntary decision which has been shown to be related to the firm’s strategies (Parrondo and Gomez-Biscarri, 2016) and which, therefore probably interacts with the other components of the disclosure policy, especially financial disclosure.

In particular, some companies may view social and financial transparency (i.e. both disclosing and the accuracy of the information disclosed) as complements, suggesting that firms tend to disclose as much or as little as possible along all possible dimensions. Alternatively, social and financial transparency may be seen as substitutes, thus suggesting that firms try to achieve some optimum level of overall disclosure that balances the costs of disclosure with the benefits achieved by disclosure. At the risk of oversimplification, we call the first type of companies

“transparent” and the second type “opportunistic”. In this paper, we attempt to understand the behavior of disclosure-transparent and opportunistic companies concerning social and financial transparency. Given that social transparency is voluntary, we focus our analysis on the decision to issue such information and the channel of choice. We also examine and how this decision interacts with the transparency of financial information. In particular, we focus our analysis on the following questions:

- Is the decision to initiate CSR disclosure related to financial transparency? In other words, are companies with lower or higher financial transparency more likely to initiate disclosure of social information? If so, is the channel chosen for disclosure related to financial transparency?
- Is initiation of CSR disclosure a driver of subsequent financial transparency? If so, do the effects of initiation of disclosure depend on the choice of channel for initial disclosure?
- Does continued CSR disclosure have an effect on financial transparency?

In the first stage of the analysis we examine whether financial transparency influences the decision to initiate disclosure of social information. We measure financial transparency, through the extent to which the firm engages in (accrual or transaction-based) earnings management practices. This analysis should allow us to distinguish whether companies are transparent or opportunistic with respect to their social disclosure. We believe the channel chosen for CSR disclosure may be a mediator of this relationship, so we control for the choice of disclosure channel: we distinguish between companies that initiate CSR disclosure on the compulsory and legally structured reports, such as the 10-K files, from those that use voluntary and self-prepared reports.¹⁰

In a second stage, we analyze whether initiation of CSR disclosure has an effect on subsequent financial transparency (earnings management practices). For this purpose, we use both matching estimators that alleviate the endogeneity of the decision to initiate CSR disclosure and traditional regression analysis which look at the impact of CSR disclosure that is continued in time.

Our sample consists of the largest set of US firms for which we can find accounting and social information, including, in particular, the channels for CSR disclosure. We find that companies with higher levels of past earnings management show higher probability of initiating CSR disclosure in the 10-K filings, suggesting an opportunistic decision to initiate CSR disclosure. However, we find that continued CSR disclosure on the 10-Ks is associated with subsequent

¹⁰ Note that, throughout our sample, disclosing CSR information is always voluntary. Our distinction is in the nature of the disclosing channel, which may be voluntary or compulsory.

lower levels of both accrual-based and transaction-based earnings management. We interpret these results, where both a negative (ex-ante) and a positive (ex-post) relationship is observed, as suggestive that CSR disclosure in official filings works as an incentive to be more financially transparent, acting as a complement of financial transparency. On the other hand, we find no association between prior financial transparency and the decision to initiate disclosure in voluntary CSR reports. However, firms that initiate disclosure through voluntary reports subsequently reduce their financial transparency (increase accrual-based earnings management) on the period after initiation of disclosure. We also observe no clear evidence of subsequent increase in financial transparency (reduction in accrual-based earnings management) from continued disclosure on voluntary reports. We interpret these results as suggestive that companies view voluntary reports as an opportunistic disclosure, and CSR disclosure in this channel acts as a substitute of financial transparency.

We believe our results help reconcile previous contradictory findings on the CSR-earnings management relationship, which found both a positive and a negative relationship between CSR disclosure and earnings management. In particular, we show that both the timing and the channel of disclosure are factors that affect the relationship between social and financial transparency.

The rest of the paper is structured as follows. Section a) presents a brief review of the literature on the relationship between CSR disclosure and earnings management and develops our main hypotheses. Section b) explains our data and the empirical models used in the analyses. Section c) presents and comments on the results. Section d) concludes.

a) THE RELATIONSHIP BETWEEN FINANCIAL TRANSPARENCY AND VOLUNTARY DISCLOSURE OF CSR

The literature on the relationship between firm's corporate social responsibility (CSR) and accounting has focused mainly on the analysis of whether, and how, a firm's CSR activity is related to financial transparency and, more specifically, to earnings management. The evidence shown in this regard has been mixed. Chih et al. (2007) and Kim et al. (2012) found evidence that companies with greater commitment to CSR show lower levels of earnings management (so social commitment and financial transparency would be complements). Others have suggested a strategic use of CSR to compensate for earnings management and show evidence that higher CSR is associated with more earnings management (see, e.g., Prior et al., 2008 or Gargouri et al.,

2010). These contradicting results suggest that companies may view social commitment as a substitute for financial transparency.

Some studies have considered the disclosure of CSR activity as a concept different from CSR activity itself: what companies "say" and companies "do" with respect to social issues may differ (see Gomez-Biscarri and Parrondo, 2016). In this view, CSR disclosure (which we could identify with "social transparency") would be one component of the firms' overall communication policy. The relationship between CSR disclosure and faithful financial disclosure ("financial transparency") may respond to motivations different from those linking financial transparency with CSR activity. Indeed, the concept of whether the two are substitutes or complements can be more naturally applied in these situations: "transparent" companies act as if the two types of disclosure were complements whereas "opportunistic" companies may see them as substitutes, and aim towards optimal combinations of the two disclosures. Studies on the explicit relationship of CSR disclosure with financial transparency have been limited in scope and data sample and, again, have found mixed results. Yip et al. (2011) studied the relationship between CSR disclosure and earnings management in three US industries: the results suggest a negative relationship between CSR disclosure and accrual-based earnings management in the oil and gas industry, but positive in the food industry. Pyo and Lee (2013) examined the association between earnings quality and the voluntary issuance of CSR reports filed with the Global Reporting Initiative (GRI) for Korean listed companies. Their results suggest that firms active in CSR are likely to report earnings of a higher quality (lower discretionary accruals and greater accounting conservatism) and that this negative relationship is more pronounced when firms voluntarily issue CSR reports. On the other hand, Jiang et al. (2013) report that non-state-owned Chinese firms use CSR disclosure as a window-dressing tool for earnings management.

There are, at least, two perspectives that support a **positive relationship** between disclosure of CSR and financial transparency, positing the two types of disclosure to be "complements". One perspective rests on neoclassical economic arguments for voluntary disclosure theory, which suggest that organizations use disclosure to distinguish ("signal") good performing firms from bad performing firms (e.g. Milgrom and Roberts, 1986, or Dye, 1985, Jung and Kwon, 1988, and Verrecchia, 1990).¹¹ A second perspective rests on stakeholder theory, which suggests that a firm's continued existence requires the support of all stakeholders, whose approval must be sought (Ullmann, 1985; Roberts, R.W., 1992). Social and financial disclosure would be part of

¹¹ An alternative version of the signaling argument is that CSR reporting is a useful mechanism to signal the quality of management skills, which in turn imply higher financial performance and transparency (Akpınar et al., 2008).

the dialogue between the company and its stakeholders. Financial transparency has always been relevant but in recent years stakeholders have begun to expect companies to be socially responsible and to communicate such socially responsible actions through CSR disclosure (see Dierkes and Antal 1985 or Gray, Kouhy and Lavers 1995, on how CSR reporting is useful for stakeholders to assess the overall quality of corporate behavior). These two perspectives would both lead to a “complement” relationship between social and financial transparency.

On the other hand, stakeholder theory can also justify a “substitution” between the two types of transparency (disclosure). Given the existence of information asymmetry between managers and stakeholders, CSR disclosure might become a means to negotiate the relationship with stakeholders in order to compensate for precarious financial quality (Roberts, 1992). A similar argument can be constructed from legitimacy theory: Lindblom (1994) mentions how a firm may seek to manipulate public perception by deflecting attention from some issue of concern (e.g. lack of financial transparency) to other related issues through an appeal to, for example, emotional symbols (e.g. good CSR performance). Underlying the above two theories there is a cost/benefit argument or an interpretation of CSR disclosure as a strategic device: all disclosures are costly and have benefits regarding legitimacy or meeting stakeholder’s expectations. An optimal balancing of costs and benefits may imply increasing some dimensions of disclosure (social/ financial) while reducing others (financial/ social) and balance the legitimacy in front of stakeholders.

Most arguments reviewed so far and used in the literature are static in nature: financial and social transparency are considered as pure complements (substitutes) if the relationship between the two is positive (negative). However, if we introduce the decision to initiate social disclosure, this relationship becomes more dynamic. Initiation of CSR disclosure by “transparent” companies would result in a positive relationship (higher social transparency linked to higher financial transparency), while initiation of CSR disclosure in “opportunistic” companies would result in a negative relationship (higher social transparency linked to lower financial transparency). The dynamic aspect of the relationship comes from the fact that initiation of CSR disclosure may then lead to higher or lower subsequent levels of financial transparency. In the first case, initiation of CSR disclosure would act as an incentive for financial transparency (going back to a complementarity story). In the second case, initiation of CSR disclosure would be considered an opportunistic (strategic) decision, which would bring back the argument of substitutability. Therefore, separating the impact of financial transparency on the decision to initiate CSR

disclosure from the subsequent effects of initiation on financial transparency becomes important if we want to truly understand the interplay between the two.

We have made, so far, no explicit mention of the choice of channel for CSR disclosure, but we believe this choice can be quite relevant. Companies have tended to use two channels for disclosure of CSR information. First, inclusion of (voluntary) CSR information on the compulsory 10-K files has been the main tool used by companies to inform their stakeholders about CSR issues (see, for example, Gray et al., 1995b; Neu et al., 1998). More recently, however, voluntary self-prepared reports, usually available to all stakeholders on the companies' websites, have become an alternative channel for CSR disclosure. The two channels differ, however, in one particular aspect. Although a lack of reporting standards ensures that companies pick and choose if and how they share their social activity in the annual report, firms are aware that the information in the 10-Ks is both filed with the regulator and publicly accessible to all investors. Thus, disclosure in the 10-Ks is subject to very high levels of scrutiny and to potentially costly sanctions (apart from the indirect costs of lost legitimacy) in case of inaccuracies or misreporting. On the other hand, information contained on standalone voluntary reports is not only subject to no specific requirements but it is also subject to a lower level of scrutiny, and the costs of inaccuracies or misreporting are only the indirect costs of lost legitimacy. Thus, disclosure on the 10-Ks satisfies the conditions for a costly signal and it is, therefore, more likely to be used as a *signaling strategy* or as a *complement* to financial transparency by "transparent" firms. On the other hand, disclosure in voluntary channels (e.g., the firm's webpage or voluntary reports) is more likely to be used *as a substitute* of financial transparency by "opportunistic" companies.

We build, therefore, our hypotheses along the above arguments, but note that rather than taking the side of the "theory", we take the side of the implications for the relationship between financial and social transparency. That is, the theories reviewed above can support both ex-ante and ex-post complementarity and substitutability stories for social and financial transparency and our interest is specifically the analysis of which of these relationships is prominent and whether the disclosure channel may be a mediating factor in the relationship. For this purpose, we first focus on the relationship between financial transparency and the *decision to initiate* CSR disclosure. Second, we examine the impact of initiation of and continued CSR disclosure on *subsequent* financial transparency. This strategy allows us both to capture the dynamic aspect of

the relationship and to account for (or, at least, alleviate) the endogeneity of initiation of CSR.¹² Third, we distinguish between two channels of CSR disclosure: (1) compulsory and legally structured reports, such as the 10-K files, and (2) voluntary and self-prepared reports.

Our first hypothesis refers to the decision to initiate CSR disclosure. Instead of financial transparency, we frame it in terms of "earnings management", which will be the measure we use of financial transparency. Of course, higher earnings management means lower financial transparency and vice versa.

Hypothesis H1: *higher levels of earnings management* will be associated with a *higher* probability of initiating CSR disclosure if the firm uses CSR disclosure opportunistically or if it uses CSR disclosure as an incentive for subsequent financial transparency.

Corollary H1: if initiation of CSR disclosure is opportunistic, it is more likely to be done through voluntary reports; if initiation of CSR disclosure is an incentive for subsequent financial transparency, it is more likely to be done through official regulatory filings.

Our next hypothesis refers to the effect of CSR disclosure on subsequent financial transparency.

Hypothesis H2: *initiation of CSR disclosure* will be associated to *lower (higher)* subsequent levels of earnings management if the firm has used disclosure as an incentive or complement for financial transparency (has acted opportunistically)

After initiation of CSR disclosure, companies will keep disclosing over time. This relationship between continued CSR disclosure and earnings management has already been explored (Yip et al., 2011, Pyo and Lee, 2013, Jiang et al., 2013). However, we include this analysis in our paper to better understand the mechanisms, and to further explore the effects of the CSR disclosing channel. Hypothesis H3 replicates H2 for this continued disclosure.

Hypothesis H3: *continued CSR disclosure* will be associated to *lower (higher)* subsequent levels of earnings management if the firm has used disclosure as an incentive or complement for financial transparency (has acted opportunistically).

¹² Endogeneity of financial transparency and CSR initiation is in line with our theoretical stories: low or high financial transparency may lead to high (or initiation of) CSR disclosure. This story requires, therefore, statistical analyses which can account for the possible bidirectional causality.

b) RESEARCH DESIGN AND DATA

Data sources, sample construction and empirical measures

We describe now the data sources and construction of the sample and the empirical measures we use to proxy for our main variables. A summary of this information is shown in Table 1.

CSR disclosure Measures

We search for information on CSR disclosure by U.S. firms in three main sources: (1) 10-K SEC files, (2) CorporateRegister.com, (3) company websites. The first source provides legally structured mandatory reports, yet the decision of disclosing socially responsible actions is not compulsory: in particular, initiation of CSR disclosure does not occur at a specific moment for all companies (see Table 2a). The last two sources provide self-prepared socially related reports that companies voluntarily decide to publish. Note, therefore, that the main difference between (1) and (2)-(3) is the fact that (1) is compulsory and filed with the SEC, hence the information contained in it may be subject to scrutiny by the regulator.

Table 2a shows the industry and year distribution of disclosure for the Compustat universe. During the 1987-2010 period, 792 firms disclosed CSR information on 3,934 10-K reports and 694 companies published 3,291 voluntary self-prepared CSR reports.¹³ Consistent with the broad scope of CSR disclosure, many non-pollution-prone industries, including the Food and Retail industries, actively disclose their social activities. The Textile industry has the largest proportion of firms that include CSR information on the 10-K's (19.1%) and publish voluntary reports (19.7%), while Transportation has the lowest proportion of disclosing firms (0.8% and 1.1%, respectively). By period, there is a steadily increasing trend in the number of CSR disclosures. Disclosure on the 10-K files started in 1987, going from 1 to 599 in 2010 (251 simultaneously disclosing on 10-K and voluntary reports and 348 disclosing only on the 10-K). Publication of self-prepared voluntary reports started in 1990, going from 1 to 458 in 2010 (251 simultaneously disclosing on 10-K and voluntary reports and 207 disclosing voluntary reports).

We use these disclosure data to generate measures of initiation of CSR disclosure and continued disclosure. In particular, we construct six variables:

FD_10K_{it} (initial disclosure year on 10-Kfiles) is a dummy variable which takes value 1 if company *i* initiates disclosure of CSR on the 10-K files in year *t* and 0 otherwise.

FD_REP_{it} (initial disclosure year on CSR-voluntary-reports) is a dummy variable which takes

¹³After elimination of financials, our final sample contains 1,172 different firms that disclose in at least one of the two channels.

value 1 if company i initiates disclosure of CSR on self-prepared voluntary reports in year t and 0 otherwise.

FIRSTD_{it} (initial disclosure year) is a dummy variable, which takes value 1 for the year in which company i initiates disclosure of CSR, regardless of the channel, and 0 otherwise. Thus, for a company that discloses both on the 10-K files and on voluntary reports, FIRSTD would be one for the year in which the first means of disclosure was initiated.

The above three variables allow us to perform an analysis of "time to disclosure" and of the impact of initiation of disclosure. In order to measure the impact of continued disclosure over time, we define three variables:

10K_{it} (continued CSR disclosure on 10-K files) is a dummy variable which takes value 1 if company i discloses CSR information on the 10-K file of year t and 0 otherwise.

REP_{it} (continued disclosure on CSR-voluntary reports) is a dummy variable which takes value 1 if company i discloses CSR information on a self-prepared voluntary report in year t and 0 otherwise.

DSCL_{it} (continued CSR disclosure) is a dummy variable which takes value 1 if company i discloses CSR information, either in the 10-K or in a voluntary report, in year t and 0 otherwise.

Measures for Earnings Management

We proxy financial transparency by the extent to which the company engages in earnings management practices. The literature on earnings management focuses on two types of tools that can be used to manipulate earnings measures. First, accounting accruals can be used to shift income from one period to another, thus affecting current measures of earnings. Second, non-optimal transactions (i.e., transactions that would not be done based on efficiency reasons) can be carried out which provide a one-time profit or loss. These *accrual-based* and *transaction-based* earnings management practices, respectively, imply an intention to distort the earnings number and, therefore, direct measurement is not possible. The literature has resorted to indirect ways of measuring the use of these tools (accruals and transactions). These indirect ways rely on two types of methodologies:

(1) looking at the implications of an "abnormal" use of the tool: for example, excessively volatile or smooth earnings relative to cash-flows would suggest a manipulation of accruals;

(2) computing "normal" levels of the tool by specifying some regression equation, and then extracting the "abnormal" or "discretionary" part of the tool as the residual of the regression

equation.

Accrual-based Earnings Management (AEM)

We follow the literature and construct measures of AEM which are composites of earnings smoothing, earnings aggressiveness (Leuz et al., 2003), and the size of discretionary accruals (Dechow et al., 1995). In order to compute these proxies, we first obtain three intermediate measures:

Relative volatility (Leuz et al., 2003): we compute the ratio of the volatility of operating income to that of cash flows: $(\sigma(OPINC_{it}/TA_{it-1})/\sigma(CFO_{it}/TA_{it-1}))$.¹⁴ We take the difference between the absolute value of the ratio and one as a measure of earnings management: note that a ratio lower than one suggests smoothness strategies, whereas a ratio higher than one (much less frequent) suggests aggressive earnings management.¹⁵

Accrual aggressiveness (Leuz et al., 2003): the ratio of yearly accruals relative to cash flows: $[|ACC_{it}|/TA_{i,t-1}]/[|CFO_{it}|/TA_{i,t-1}]$. A higher value indicates a more intense use of accruals. Accruals ACC_{it} are defined as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets.¹⁶

Discretionary accruals (residuals of the modified Jones Model, Dechow et al., 1995): the following regressions of accruals on "accrual determinants" are estimated (by industry: i.e. we use firm-year observations of firms in the same sector, using two-digit SIC codes):

$$ACC_{it}/TA_{it-1} = \beta_0 + \beta_1(1/TA_{it-1}) + \beta_2(\Delta SALE_{it}/TA_{it-1} - \Delta REC_{it}/TA_{it-1}) + \beta_3 PPE_{it}/TA_{it-1} + \varepsilon_{it},$$

where ACC_{it} is computed as above, TA_{it-1} is lagged total assets, $\Delta SALE_{it}$ is the change in sales, ΔREC_{it} is the change in accounts receivable and PPE_{it} is net property, plant, and equipment. We take the absolute value of the residuals as a measure of discretionary accruals.

We combine the above three measures in proxies for AEM following a strategy similar to that in Leuz et al. (2003). That is, we compute the relative inverse rank of each firm's score in each year

¹⁴ The volatilities correspond to past data and are computed as the standard deviation of each variable through an 8-year rolling window.

¹⁵ OPINC, operating income, is item 178 from Compustat; Operating cash-flow, CFO, is item 308 from Compustat. TA_{it-1} are lagged total assets, item 6 from Compustat. SALE is item 12. REC and PPE are items 2 and 8. All variables normalized by lagged total assets have been winsorized at the top and bottom 1%.

¹⁶ $ACC/TA = (\Delta \text{total current assets}/TA - \Delta \text{cash}/TA) - (\Delta \text{total current liabilities}/TA - \Delta \text{short-term debt}/TA - \Delta \text{taxes payable}/TA) - \text{depreciation expense}/TA$.

(so that a higher rank means a higher level of AEM). We construct three rank variables:¹⁷ **rank_em1re1** (inverse yearly rank of the volatility ratio relative to one), **rank_em2** (inverse yearly rank of the ratio of accrual aggressiveness) and **rank_jones** (inverse yearly rank of the absolute value of the residual from the modified Jones model). From these rank variables, we construct two proxies for AEM activity: **AEM1_{it}** is the average of **rank_em1re1**, **rank_em2** and **rank_jones**; **AEM2_{it}** uses only **rank_jones**.

Transaction-based Earnings Management (TEM)

We follow Roychowdhury (2006) and Cohen et al.(2008) and proxy real activities manipulation by abnormal levels of cash flow from operations (CFO), discretionary expenses and production costs. Similarly to discretionary accruals, "normal" levels of CFO, discretionary expenses and production costs are generated via the regressions in Dechow et al. (1998) as implemented in Roychowdhury (2006). First, normal CFO is modeled as a function of sales:

$$CFO_{it}/TA_{it-1} = k_{1t}(1/TA_{it-1}) + k_2(SALE_{it}/TA_{it-1}) + k_3(\Delta SALE_{it}/TA_{it-1}) + \varepsilon_{it}$$

Abnormal CFO is computed as the residual from this (industry-by-industry) regression. Next, production costs are defined as the sum of COGS and changes in inventory during the year. In turn, COGS is modeled in terms of yearly sales and changes in inventory are modeled as a function of change in sales and lagged change in sales. This leads to the following model:

$$PROD_{it}/TA_{it-1} = k_{1t}(1/TA_{it-1}) + k_2SALE_{it}/TA_{it-1} + k_3\Delta SALE_{it}/TA_{it-1} + k_4 \Delta SALE_{it-1}/TA_{it-1} + \varepsilon_{it}$$

Abnormal production costs are computed as the residual from this (industry-by-industry) regression. Finally, discretionary expenses are modeled as a function of lagged sales:¹⁸

$$DISCREX_{it}/TA_{it} = k_{1t}(1/TA_{it-1}) + k_2SALE_{it-1}/TA_{it-1} + \varepsilon_{it}$$

Abnormal discretionary expenses are the residuals from this (industry-by-industry) regression. Once the three abnormal residuals are obtained, we compute the (yearly) relative inverse rank of the absolute values and average them to generate a proxy for transaction earnings management (**TEM1_{it}**). We also average the first two ranks (CFO and PROD) as an alternative proxy (**TEM2_{it}**) which is available for a much larger number of firm-year observations.

¹⁷ We normalize all ranks by the number of existing companies in each period N_t , so the rank measures range from 0 ($1/N_t$, specifically) to 1. This avoids distortions coming from changing numbers of firms throughout the sample period.

¹⁸ CFO is defined above; PROD represents the production costs in period t , defined as the sum of COGS (annual Compustat data item 41) and the change in inventories (annual Compustat data item 3); DISCREX represents the discretionary expenditures in period t , defined as the sum of advertising expenses (annual Compustat data item 45), R&D expenses (annual Compustat data item 46) and SG&A (annual Compustat data item 189).

Control variables

In all our analyses, we control for the level of CSR activity of each firm (Parrondo and Gómez-Biscarri, 2016). Data on CSR activity come from the MSCI KLD database (hereafter, KLD). KLD has been widely used in CSR research (Ruf et al., 1993; Graves and Waddock, 1994; Sharfman, 1996; Waddock and Graves, 1997; Berman et al., 1999; Statman, 2000; Hillman and Keim, 2001; Dhaliwal et al., 2011; Kim et al., 2012). The database uses a combination of surveys, firms' financial statements, articles on companies in the popular press, academic journals (especially law journals), and government reports to assess a firm's CSR activity. The KLD ratings model includes over 50 indicators in three topic areas (ESG): Environment, Social and Corporate Governance. It also includes business involvement data for some *controversial* business issues such as Alcohol or Gambling. All ratings are binary variables: if a company meets specific criteria established for each rating, the rating is assigned a value of 1, and 0 otherwise. We collect the separate scores of CSR strengths and concerns (**CSR_STR_{it}**, **CSR_CON_{it}**) and construct **CSRA_{it}** as the difference between the two separate scores.

For other control variables we use data from Compustat. In the analyses on the determinants for initiation of CSR disclosure (H1 and its corollary) we control for: profitability (**ROA_{it}**) and growth opportunities (**TQ_{it}**), since profitable and growing corporations are more exposed to political pressure and public scrutiny. Profitable and growing firms use voluntary disclosure to avoid regulation (Ng and Koh, 1994; Gamerschlag et al., 2011) and have the necessary funds to devote to CSR activities and disclosure (Cowen et al., 1987; Hackston and Milne, 1996; Pirsch et al., 2007). We control for size (**SIZE_{it}**), since large firms are more likely to be subject to public resentment, consumer hostility, militant employees, and the attention of government regulatory bodies and therefore have a bigger group of influential stakeholders (Hackston and Milne, 1996; Knox et al., 2006). We include leverage (**DEBT_{it}**) since more highly leveraged firms disclose voluntary information in order to reduce their agency costs and cost of capital (Jensen and Meckling, 1976). We include a control for sensitive industries, **LIT_{it}**, which is a dummy variable equal to one if a firm operates in a high-litigation industry (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961 and 7370), and zero otherwise (Francis et al., 1994; Skinner, 1997; Matsumoto, 2002). Firms in industries such as mining, oil or chemical, emphasize information regarding environmental, health, and safety issues (Ness and Mirza, 1991; Clarke and Gibson-Sweet, 1999; Line et al., 2002; Jenkins and Yakovleva, 2006) and are more likely to disclose voluntarily to avoid lawsuits (Skinner, 1997). Finally, we use a dummy variable for firms with global interests (**GLB_{it}**). Such firms have a higher tendency to disclose voluntarily given their

international status (Singhvi and Desai, 1971; Cooke, 1989; Hossain et al., 1995; Robb et al., 2001).¹⁹

Regarding the regressions where the earnings management measures are the dependent variables (H3) we control for similar factors. We control for size, as a proxy for political costs (e.g. Watts and Zimmerman, 1986) and for factors such as the information environment or capital market pressure (Dechow et al., 2010). We control for profitability, since weak financial performance has been shown to provide incentives for earnings management (Kinney and McDaniel, 1989; Petroni, 1992; DeFond and Park, 1997; Balsam et al., 1995; Keating and Zimmerman, 1999; Doyle et al., 2007) and growth opportunities, since growth is associated with greater measurement error and more manipulation opportunities (Richardson et al., 2005). We also control for leverage (Kinney and McDaniel, 1989; Dechow et al., 1996; Efendi et al., 2007) and we finally include GDP growth (\mathbf{GDP}_t) in order to account for cyclical effects and big auditor dummy ($\mathbf{BIG4}_{it}$) for firms using one of the Big 4 auditors.

Methodology and empirical models

"Time-to-disclosure" model

Hypothesis H1 and its corollary postulate that the decision to initiate CSR disclosure is a function of the level of past earnings management practices. In order to test this effect, we set up a "time-to-disclosure" discrete-time duration model, where we specify the hazard rate (the probability of disclosing at time t conditional on not having disclosed up to time t) as a logit function of time-varying variables, which include, in particular past AEM and TEM. We estimate the following logit models:

$$P(\mathit{Initiation}_{it} = 1 | \mathit{Initiation}_{it'} = 0, t' < t) = \frac{e^{\beta_0 + \beta_1 \mathit{AEM}_{i,t-1} + \beta_2 \mathit{TEM}_{i,t-1} + \sum \beta_j \mathit{CONTROLS}_{j,it}}}{1 + e^{\beta_0 + \beta_1 \mathit{AEM}_{i,t-1} + \beta_2 \mathit{TEM}_{i,t-1} + \sum \beta_j \mathit{CONTROLS}_{j,it}}} \quad (1)$$

where $\mathit{Initiation}_{it}$ is one of the three measures of initiation of disclosure (**FIRSTD**, **FD_10K**, **FD_REP**), and $\mathit{AEM}_{i,t-1}$ and $\mathit{TEM}_{i,t-1}$ are lagged values of the earnings management variables. . Note the conditioning in the probability: for our specification to be a correct "time-to-disclosure" model we need for the disclosing company i each dependent variable in the pre-initiation disclosure period to be zero, the initiation year to be one, and the post-initiation periods to be eliminated from the dataset (see Jenkins, 1995). For non-disclosing companies, the full time

¹⁹ROA, SIZE, DEBT and TQ are winsorized at the top and bottom 1% of their distributions.

series (of zeros) must be included, representing an observation for which the event, disclosure, is not observed in the sample period. Once the data have been structured, the model can be estimated as a standard logit model.

Matching estimators

In hypothesis H2, we postulate that initiation of CSR disclosure may have an immediate impact on earnings management practices. However, in the "time to disclosure" model (1) we have also made it explicit that the decision to initiate disclosure may be related to earnings management. In order to account for this endogeneity and measure, as much as possible, the "causal" impact of initiation of disclosure on subsequent earnings management, we use nearest-neighbor matching estimators (Roberts and Whited, 2012). In particular, for every company which initiates disclosure, we find, in the year of initiation of disclosure, m ($m=1, 2, 3$) non-disclosing companies in the same industry which are the most similar in terms of the matching variables.²⁰ For the "closest" match we use a Mahalanobis distance on the matching variables (Roberts and Whited, 2012 (2012)). Once we have the set of non-disclosing companies, which are "close matches" to those that initiate disclosure, we compare over time the measures of CSR activity for the two sets of companies. We run significance tests on the average difference in yearly changes and cumulative changes between the two groups for several horizons (1 to 4 years). This procedure alleviates the impact of the endogeneity of the decision to initiate disclosure, at least to the extent that the matching observables contain significant determinants of the decision to initiate disclosure.

Regression models for the impact of continued disclosure

We also postulate (hypothesis H3) that continued disclosure has an impact on subsequent earnings management. Thus, we analyze the impact of continued disclosure estimating the following panels:

$$EM_{it} = \beta_0 + \beta_2 DSCL_{i,t-1} + \sum \beta_j CONTROLS_{j,i,t} + \alpha_i + \varepsilon_{i,t} \quad (2)$$

where EM_{it} is one of the measures of earnings management (**AEM1** and **AEM2**, **TEM1** and **TEM2**) and $DSCL_{i,t-1}$ is one of the three variables of continued disclosure defined above, lagged one period.

²⁰ Note that the estimator we describe is really estimating the *average treatment effect on the treated*, since we are only finding matches for the treated observations. The specific set of matching variables is specified in the output tables (Tables 4 and 5).

c) RESULTS

We comment now on the empirical results although, for conciseness, we omit most of the discussion on the control variables: when significant, results for the controls are consistent with our expectations and with previous findings.

The decision to initiate CSR disclosure

Tables 3a-3c show the results of the discrete-time duration model (1) for the probability of initiating CSR disclosure. The three tables differ in the indicator for initiation of disclosure used as dependent variable. The columns correspond to versions of the baseline model, which differ on the proxies for previous earnings management included. The results for the control variables, in general, are consistent across earnings management proxies and initiation indicators. Some interesting results can still be pointed out. *ROA* is positively related whereas *TQ* is negatively related to the probability of initiating voluntary reports. In other words, profitable firms that are undervalued are more likely to issue voluntary CSR reports. *SIZE* and *DEBT* are positively related to initiation of CSR disclosure, both in the 10-Ks and in voluntary reports. *TIME* is significantly positively related to FD_10K but not to FD_REP, suggesting that companies have been increasingly incorporating CSR disclosures into the 10-Ks, whereas the time trend is less clear in the issuing of voluntary reports. Finally, companies with higher levels of CSR activity are more likely to initiate CSR disclosure on their 10-Ks, but not in voluntary reports (compare the t-stats for the coefficients of L.CSRA in Tables 3b and 3c). This result suggests that companies understand CSR disclosure on the 10-K as a signaling device of high CSR activity, but this may not be the case for voluntary reports.

In hypothesis H1 and corollary H1, we postulate that earnings management (both AEM and TEM) would be positively related to the probability of initiation of CSR disclosure. This positive relationship holds if the company wants to use CSR disclosure as an incentive (in which case it is more likely to initiate disclosure in the 10-Ks) or opportunistically (in which case it is more likely to issue voluntary reports). The results in Tables 3a-3c suggest, in fact, a positive relationship between earnings management and initiation of disclosure and indeed this relationship differs by the disclosure channel. In particular, the results in 3a are relatively weak, and no clear pattern emerges when we consider initiation of disclosure regardless of the channel. However, Table 3b shows that the probability of initiation of disclosure in 10-Ks is positively related to previous levels of *AEMI* (t-stats are consistently significant and range from 2.02 in column (4) to 2.43 in column (1)), whereas initiation of disclosure on voluntary reports (Table

3c) is not related to any measure of earnings management. No measure of TEM is related to the probability of disclosure in either channel, and neither is the simpler measure *AEM2*. In any case, the results for *AEMI* and CSR disclosure on the 10-Ks are quite robust and, in light of our hypothesis, suggest that social transparency and financial transparency may be ex-ante substitutes. Since higher earnings management is associated with initiation of disclosure in the 10-Ks, the corollary would suggest that this strategy is an incentive for subsequent decreases in earnings management. We show evidence of this effect in section 4.2 and 4.3. Voluntary reports, on the other hand, do not seem to respond at all (as substitutes, complements or an incentive strategy) to prior levels of earnings management (financial transparency).

The impact of initiation of CSR disclosure: matching estimators

We now use matching estimators to measure the impact of initiation of CSR disclosure on *subsequent* earnings management. Our "treatment variables" are the three indicators of initiation of CSR disclosure described above (**FIRSTD**, **FD_10K**, **FD_REP**). For each treated observation (a company which initiates disclosure in time *t*) we find, one, two and three ($m=1,2,3$) nearest-neighbor matches among the companies which have never disclosed. We use as matching variables: the year and industry (for which we require an exact match), the year *t* values of **CSR_STR**, **CSR_CON**, **AEM1** and **TEM2**, and the controls **ROA**, **DEBT** and **SIZE**. Table 4 shows the results of this matching process: each column contains the mean values on the controls and matching variables for the treatment and treated groups, where the treatment variables are in the column headings. As it can be seen, the treatment group and the group of matches are relatively similar: some measures of past earning management (**FIRSTD** and **FD_10K** columns) differ significantly, although not in a consistent manner, across values of *m*. Moreover, the two groups are slightly different on their characteristics: treatment groups (i.e. disclosing firms) are more profitable, larger in size and have higher leverage. Thus, although the matching procedure is selecting matches that are similar enough in the main variables of interest of our analysis, we use the bias adjusted estimators of Abadie et al. (2003) to alleviate the impact of the differences in firm characteristics between the treatment and control groups.

Table 5 shows the estimates of the period-by-period (Table 5a) and cumulative (Table 5b) effects of initiation of CSR disclosure on our measures of earnings management. The numbers estimate the average difference in the four proxies for earnings management between the firms that

initiate disclosure (treatment group) and the matching sample of firms (control group).²¹ The results for **FIRSTD** are not clear-cut: there is some evidence that immediately after CSR-disclosure accrual-based earnings management increases (**AEM2**) and some mild, but not consistent, evidence that there is a reduction of transaction-based earnings management. The results for separate disclosure on 10-Ks and on voluntary reports are more consistent. There is no evidence that initiation of disclosure on 10-Ks leads to significant increases in AEM: note the non-significant differences in the first year both for **AEM1** and for **AEM2**, although after the second year some increase in **AEM2** may be appreciated. Regarding TEM, the results suggest an increase in TEM immediately after disclosure on the 10-Ks, which is reversed in the second year. On the other hand, the results for disclosure via voluntary reports are more robust. There is a significant increase in accrual-based earnings management after initiation of disclosure via voluntary reports; both **AEM1** and **AEM2** significantly increase in the first year after initiation (note the t-stats ranging from 1.52 to 2.25 in the case of **AEM1** and from 2.21 to 2.80 for **AEM2**). More interestingly, we find some evidence that this effect stays over time (significant cumulative effects even after four years). There is also some (mild) evidence of a reduction of transaction-based earnings management, but less consistent than for AEM.

To sum up, increased disclosure of CSR activities in the 10-Ks does not come associated with an immediate reduction in financial transparency, although some evidence of temporary increases in TEM appears. On the other hand, initiation of voluntary CSR disclosure is significantly associated with a subsequent decrease in financial transparency (significant increase in both measures of AEM) which is more permanent in time. This suggests that firms see voluntary CSR disclosure as a substitute of financial transparency, and therefore view the issuing of socially-related information as a strategic device linked to subsequent lower levels of financial transparency.

The impact of continued CSR disclosure

The analyses in Section 4.2 show evidence of an immediate increase on (accrual-based) earnings management after initiation of CSR disclosure if this disclosure comes from voluntary reports. This evidence, we believe, is new to the literature and shows that the relationship between social and financial disclosure is not trivi. For completeness, we investigate the relationship between continued CSR disclosure and earnings management. This, we believe, is an analysis more in the

²¹ In all cases we show the average treatment effect on the treated: that is, we only find matches for the *treated* observations (companies which initiate disclosure) and then compare the average value of the variable for the treated observations with that for the group of nearest-neighbor matches.

spirit of previous literature (e.g., Kim et al., 2012). For this purpose, we estimate model (2) using our three measures of continued disclosure (**DISCL**, **10K**, **REP**) as regressors and the different measures of earnings management as dependent variables. Table 6 shows significant evidence of reduction in TEM in companies disclosing over time (regardless of the outlet). Note the negative coefficients attached to **L.DISCL** in the equations for both **TEM1** and **TEM2** and the t-stats of -4.04 and -4.33, respectively. Given the stickiness of disclosure (i.e. after initiating disclosure, companies tend to continue disclosing), this result is in line with the matching estimators, where some evidence of this negative effect is shown. No significant relationship is found for accrual based earnings management. Table 7, where we distinguish the channel for disclosure, qualifies these results. Interestingly, disclosure in voluntary reports is associated with a significant and negative effect on TEM (t-stats of -3.61 and -3.41 for **TEM1** and **TEM2**, respectively) but not with a significant effect on AEM. This, again, is consistent with the results of the matching estimators, where we find an immediate increase on AEM after initiation that fades away over time and a (not robust) decrease of TEM. Continued disclosure on the 10-Ks is associated with reductions in both AEM (t-stats of -2.01 and -4.26) and TEM (t-stats of -1.27 and -6.94), thus suggesting an increase in financial transparency over time for companies disclosing CSR activities in official documents. These results favor the interpretation that disclosure of CSR activities in the 10-Ks tends to act as a (medium-term) incentive for subsequent higher financial transparency whereas disclosure of CSR activities through voluntary reports is more opportunistic.

The complete dynamic story

The results on continued disclosure, we believe, are consistent with those most commonly found in the accounting literature (Francis et al., 2008, and Yip et al., 2011, for CSR disclosure, and Kim et al., 2012, for CSR activity in general), and help bring our analysis full circle. Regarding disclosure on the 10-Ks, our results suggest a story of CSR disclosure as an *incentive* or a dynamic relationship of complementarity. Companies initiate disclosure of their CSR activities in the 10-Ks, maybe as a compensation or maybe directly as a commitment device when they have low financial transparency, but over time this disclosure leads to reduced earnings management and, therefore, to higher transparency. Thus, financial and social disclosure through the regulatory filings would be seen as complements "in a dynamic sense" by the firm. Regarding voluntary reports, we find no clear relationship between initiation of voluntary CSR disclosure and financial transparency. However, after initiation of CSR disclosure, companies tend to become less transparent (significant increase in AEM after initiation). Additionally,

continued disclosure does not seem to reduce earnings management as clearly. We find no effect on AEM, although there is some evidence of a reduction in TEM. Voluntary CSR reports, therefore, seem to respond more to an opportunistic behavior, so financial and social disclosure via voluntary reports would seem to be considered as substitutes, rather than complements.

Robustness checks

In order to address the robustness of the main results in the previous sections, which support the differential impact of CSR disclosure on EM, we conducted several robustness checks, the results of which are available upon request. Our main conclusions remain unaltered.

1) In the regression-based specifications, alternative numbers of lags of the lagged regressors have been tried. Our tables show the most natural choice (one lag), but other choices led to similar results.

2) We have computed one of our intermediate measures for accrual-based earnings management (the rank of the relative volatilities of operating income and cash-flows) as in Leuz et al. (2003), that is, considering the value of relative volatility as a measure of earnings smoothness and computing directly the inverse rank of relative volatility (so a higher value of relative volatility means more earnings smoothness, and therefore more AEM). Results are not altered substantially, given that most companies present earnings smoothness behavior according to our **rank_em1rell** measure.

3) We have included lagged dependent variables in the analysis of continued disclosure (Tables 6-7). The main tenor of the results does not change, but given that the estimated persistence is not high, we present the simpler models, which are less involved from the econometric standpoint.

4) Different sets of matching variables have been tried, but we have kept the results of the matches that led to a higher number of available matched pairs.

d) CONCLUSIONS

We believe this paper improves our understanding of the link between social transparency (proxied by voluntary disclosure of CSR) and financial transparency (proxied by earnings management activities). This relationship might vary depending on the underlying strategy of the company. Some companies may view initiation of CSR disclosure as a complement of financial transparency or as an incentive for higher subsequent transparency (in which case the two

disclosures function as complements). Alternatively, firms may act opportunistically trying to gain social legitimacy from stakeholders by using one disclosure to compensate for the other (in which case the two act as substitutes). In our analyses we first consider how past levels of earnings management affect initiation of CSR disclosure (in both channels) and then how initiation and continued CSR disclosure relates to subsequent earnings management. Our results suggest that higher levels of past earnings management increase the probability of initiating CSR disclosure in the 10-Ks, which suggests that initiation of CSR disclosure may be seen as a compensation for poor accounting practices.²² We find no effect of initiation of CSR disclosure in the 10Ks on earnings management, however, and consistent with previous literature, we find a negative relationship between continued CSR disclosure in the 10-Ks and both accrual-based and transaction-based earnings management. These results, taken together, give support to the argument that “transparent” companies disclosing CSR in the 10Ks have the intention to be financially transparent and use CSR disclosure as an incentive for further financial transparency.

The results for voluntary disclosure are quite different. We find no evidence that initiation of CSR disclosure on voluntary reports relates to previous levels of earnings management. However, issuing a CSR reports is followed by a significant increase of accrual-based earnings management on the following year, and no effect of continuous disclosure on subsequent accrual-based earnings management. These results suggest that “opportunistic” companies act strategically, not with the intention to be transparent, but with the intention to gain social legitimacy from stakeholders and balance more CSR disclosure with less financial transparency. Our results can be qualified since both transparent and opportunistic firms show a negative relationship between their continuous CSR disclosure and transaction-based earnings management. This suggests that companies view transaction-based management as less desirable overall, probably due to the negative effects of these opportunistic decisions on firm value. We believe our analyses allow us to disentangle very interesting dynamics, which, in particular, help reconcile previous contradicting findings on the direction of the relationship between CSR disclosure and earnings management.

Our results open important avenues for research. First, we show evidence that explicitly differentiating CSR activity versus disclosure is important and, in particular, initiation of disclosure from continuous disclosure. Second, our emphasis on the dynamic nature of the

²² Incidentally, this finding is in line with the literature which observes a positive relationship between CSR and earnings management.

relationships with financial transparency makes progress towards solving the issue of endogeneity of CSR disclosure with respect to accounting practices and leads to a much richer picture in how these two aspects of communication interact. Third, we believe our evidence underlines the importance of considering the channel of disclosure: our results suggest that disclosure in official filings is a commitment device (incentive) whereas voluntary disclosure is more of a strategic tool. Finally, our findings are limited in that we are constrained by the availability of consistent CSR information. Collection of CSR information on a wider cross-section of firms, especially smaller firms, becomes of paramount importance in order to give a broader picture of the relationship between social activity (and transparency) and financial performance (and transparency).

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Table 1. Description of variables used in the empirical analysis

Variable Name	Description	Source
CSR Disclosing Variables		
FIRSTD_{it}	1 if company <i>i</i> initiates CSR disclosure during year <i>t</i> , 0 otherwise	<i>LEXIS-NEXIS</i> , & Corporate Register & Companies' Websites
DSCL_{it}	1 if company <i>i</i> discloses CSR during year <i>t</i> , 0 otherwise	Corporate Register & Companies' Websites
FD_REP_{it}	1 if company <i>i</i> initiates CSR disclosure during year <i>t</i> on a voluntary self-prepared report, 0 otherwise	Corporate Register & Companies' Websites
REP_{it}	1 if company <i>i</i> discloses CSR during year <i>t</i> on a voluntary self-prepared report, 0 otherwise	Corporate Register & Companies' Websites
FD_10K_{it}	1 if company <i>i</i> initiates CSR disclosure during year <i>t</i> on the 10K files, 0 otherwise	<i>LEXIS-NEXIS</i>
10K_{it}	1 if company <i>i</i> discloses CSR during year <i>t</i> on the 10K files, 0 otherwise	<i>LEXIS-NEXIS</i>
Rank variables used to construct EM measures		
rank_em1re1_{it}	Rank in year <i>t</i> of firm <i>i</i> 's value of $ \sigma(\text{op_inc})/\sigma(\text{cfo}) - 1 $, where $\sigma(z)$ is the standard deviation of <i>z</i> computed using past data (Leuz et al., 2003)	Compustat - own
rank_em2_{it}	Rank in year <i>t</i> of firm <i>i</i> 's value of $(\Delta\text{acc} / \Delta\text{cfo})$ (Leuz et al., 2003)	Compustat - own
rank_jones_{it}	Rank in year <i>t</i> of firm <i>i</i> 's value of the residual from a modified Jone's Model (Dechow et al., 1995)	Compustat - own
rank_cfo_{it}	Rank in year <i>t</i> of firm <i>i</i> 's abnormal operations cash flow (Roychowdhury, 2006)	Compustat - own
rank_prod_{it}	Rank in year <i>t</i> of firm <i>i</i> 's abnormal production (Roychowdhury, 2006)	Compustat - own
rank_discrex_{it}	Rank in year <i>t</i> of firm <i>i</i> 's abnormal discretionary expenses (Roychowdhury, 2006)	Compustat - own
Earnings Management Variables		
AEM1_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_em1re1_{it} , rank_em2_{it} and rank_jones_{it}	Compustat - own
AEM2_{it}	Firm <i>i</i> - year <i>t</i> value of rank_jones_{it}	Compustat - own
TEM1_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_cfo_{it} , rank_prod_{it} and rank_discrex_{it}	Compustat - own
TEM2_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_cfo_{it} and rank_prod_{it}	Compustat - own
Panel D: control variables		
CSRA_{it}	CSR activity rating: company <i>i</i> 's strengths minus concerns in corporate social responsibility in year <i>t</i>	KLD
CSR_STR_{it}	CSR strengths rating: company <i>i</i> 's strengths in corporate social responsibility in year <i>t</i>	KLD
CSR_CON_{it}	CSR concerns rating: company <i>i</i> 's concerns in corporate social responsibility in year <i>t</i>	KLD
ROA_{it}	Income before extraordinary items _{it} / Total assets _{it}	Compustat
LIT_i	1 if company <i>i</i> is in a high litigation industry, 0 otherwise (Francis et al. 1994, Skinner 1997, Matsumoto 2002)	See references
SIZE_{it}	Log (market value of equity) _{it}	Compustat
GLB_{it}	1 if company <i>i</i> reports foreign income in year <i>t</i> , 0 otherwise	Compustat
TQ_{it}	Equity Market V _{it} + Liabilities Market V _{it} / Equity Book V _{it} + Liabilities Book V _{it}	Compustat
DEBT_{it}	Total debt _{it} / Total Assets _{it}	Compustat
GDP_t	GDP growth rate in year <i>t</i>	Federal Reserve
BIG4_{it}	1 if firm <i>i</i> 's auditor in year <i>t</i> is a "Big Four", 0 otherwise	Compustat

Sources: *Corporate Register*: Database of Corporate Register.com; *KLD*: MSCI KLD database; *LEXIS-NEXIS*: search for information on disclosure of CSR activities in the 10-K filings; *Federal Reserve*: FRED database from the Federal Reserve Bank of St. Louis; *Compustat*: variables directly available in Compustat; *Compustat - own*: own calculations from Compustat variables. Interaction variables and additional variables used in some of the analyses are described in the captions of each specific table.

Table 2a: Sample distribution

Panel A: Distribution by industry								
Industry	First CSR disclosure on 10-K		Total CSR disclosures on 10-K		First CSR voluntary report		Total CSR voluntary reports	
	No.	%	No.	%	No.	%	No.	%
Mining & construction	24	3	146	3.7	37	5.3	236	7.2
Food	78	9.9	297	7.5	75	10.8	326	9.9
Textiles, printing	122	15.4	753	19.1	129	18.6	649	19.7
Chemicals	41	5.2	196	5	41	5.9	290	8.8
Pharmaceuticals	106	13.4	517	13.1	62	9	281	8.5
Extractive Industries	37	4.7	198	5	33	4.7	143	4.3
Durable	46	5.8	157	4	11	1.6	27	0.8
Computers	50	6.3	187	4.7	35	5	136	4.1
Transportation	7	0.9	32	0.8	5	0.7	37	1.1
Utilities	31	3.9	214	5.4	28	4	167	5.1
Retail	61	7.7	311	7.9	48	6.9	172	5.2
Financial Institutions	34	4.3	155	3.9	20	2.9	43	1.3
Insurance, real estate	33	4.2	189	4.8	38	5.5	178	5.4
Services	73	9.2	316	8	57	8.2	267	8.1
Others	49	6.2	266	6.8	75	10.8	339	10.3
Total	792	100	3,934	100	694	100	3,291	100

Panel B: Distribution by year					
Year	Simultaneous disclosure in 10-K and voluntary report	Initiation of disclosure in 10-K	Continued disclosure in 10-K	Initiation of disclosure in voluntary report	Continued disclosure in voluntary report
1987		1	1		
1988		5	6		
1989		4	9		
1990		6	14	1	1
1991		11	25	1	2
1992		5	29	2	4
1993	1	9	38	10	14
1994	3	3	41	17	31
1995	5	7	47	19	50
1996	7	11	57	17	67
1997	8	13	67	24	90
1998	9	7	67	20	108
1999	15	7	66	26	128
2000	15	11	70	26	150
2001	21	20	85	51	194
2002	40	51	130	43	233
2003	59	49	174	37	266
2004	87	84	252	35	296
2005	126	87	326	42	326
2006	151	62	371	37	350
2007	162	68	421	43	380
2008	197	78	487	70	442
2009	222	85	552	82	507
2010	251	108	599	91	555

Table 2a (continued):

Panel A: Distribution of disclosure of CSR activities by industry, based on the classification in Barth et al. (2013). "First CSR disclosure on 10-K": number of firms in the industry disclosing for the first time in their 10-K filings. "Total CSR disclosures on 10-K": number of firms in the industry disclosing in their 10-K filings. "First CSR voluntary report": number of firms in the industry issuing for the first time a voluntary CSR report. "Total CSR voluntary reports": number of firms in the industry issuing a voluntary CSR report.

Panel B: Distribution of disclosure of CSR activities by year. "Simultaneous...": number of firms disclosing both in their 10-K filings and in voluntary reports. "Initiation of disclosure in 10-K": number of firms initiating disclosure on 10-K filings. "Continued disclosure in 10-K": number of firms disclosing on 10-K filings. "Initiation of disclosure in voluntary report": number of firms initiating disclosure through a voluntary CSR report. "Continued CSR disclosure in voluntary report": number of firms disclosing through a voluntary CSR report.

Table 2b: Descriptive statistics and correlations

Panel A: KLD firms versus Non-KLD firms within the Compustat universe											
KLD firms					Non-KLD firms				P-value of tests		
Variable	N	Mean	St. dev.	Median	N	Mean	St. dev.	Median	Means	Medians	
FIRSTD	24352	0.019	0.139	0.000	373485	0.001	0.043	0.000	0.000	0.000	
FD_10K	24352	0.011	0.104	0.000	373485	0.001	0.037	0.000	0.000	0.000	
FD_REP	24352	0.014	0.118	0.000	373485	0.001	0.030	0.000	0.000	0.000	
DSCL	24352	0.121	0.326	0.000	373485	0.010	0.102	0.000	0.000	0.000	
10K	24352	0.060	0.237	0.000	373485	0.006	0.081	0.000	0.000	0.000	
REP	24352	0.084	0.237	0.000	373485	0.005	0.075	0.000	0.000	0.000	
AEM1	16405	3435	1075	443	76940	3307	1105	3317	0.000	0.000	
AEM2	18211	3867	1846	3955	207525	2946	1982	2662	0.000	0.000	
TEM1	5119	2793	1136	2781	21002	2387	1205	2358	0.000	0.000	
TEM2	21429	4361	1780	4412	134597	3661	1929	3642	0.000	0.000	
CSRA	24352	-0.387	2.233	0.000	--	--	--	--	--	--	
CSR_STR	24352	1.473	2.171	1.000	--	--	--	--	--	--	
CSR_CON	24352	1.861	1.961	1.000	--	--	--	--	--	--	
ROA	13203	0.005	0.171	0.324	150959	-0.183	0.576	0.008	0.000	0.000	
SIZE	12998	7.094	1.565	6.958	65567	4.036	2.087	3.991	0.000	0.000	
TQ	12998	3.519	4.029	2.466	65531	2.715	6.856	1.623	0.000	0.000	
DEBT	13198	0.233	0.200	0.202	151251	0.289	0.307	0.217	0.000	0.000	
LIT	24352	0.200	0.400	0.000	373485	0.151	0.358	0.000	0.000	0.000	
BIG4	24352	0.844	0.362	1.000	373485	0.363	0.481	0.000	0.000	0.000	

Panel B: CSR-disclosing firms vs CSR non-disclosing firms											
CSR-disclosing firms					CSR-non disclosing firms				P-value of tests		
Variable	N	Mean	St. dev.	Median	N	Mean	St. dev.	Median	Means	Medians	
FIRSTD	34904	0.033	0.180	0.000	--	--	--	--	--	--	
FD_10K	34904	0.022	0.148	0.000	--	--	--	--	--	--	
FD_REP	34904	0.019	0.139	0.000	--	--	--	--	--	--	
DSCL	34904	0.198	0.398	0.000	--	--	--	--	--	--	
10K	34904	0.112	0.316	0.000	--	--	--	--	--	--	
REP	34904	0.120	0.326	0.000	--	--	--	--	--	--	
AEM1	12683	3619	1058	3628	80662	3284	1100	3293	0.000	0.000	
AEM2	22816	3881	1894	3838	202920	2923	1974	2635	0.000	0.000	
TEM1	3696	3002	1116	3092	22425	2378	1194	2340	0.000	0.000	
TEM2	17509	4437	1684	4514	138517	3671	1936	3638	0.000	0.000	
CSRA	6108	-0.012	3.223	0.000	18244	-0.513	1.766	0.000	0.000	0.000	
CSR_STR	6838	3.041	3.161	2.000	18667	0.652	1.287	1.000	0.000	0.000	
CSR_CON	6108	3.104	2.775	2.000	18244	1.445	1.366	1.000	0.000	0.000	
ROA	16241	0.011	0.198	0.036	147921	-0.188	0.579	0.007	0.000	0.000	
SIZE	7058	7.437	2.129	7.780	71507	4.256	2.122	4.250	0.000	0.000	
TQ	7057	3.499	4.492	2.337	71472	2.784	6.641	1.722	0.000	0.000	
DEBT	16231	0.259	0.190	0.242	148218	0.287	0.310	0.211	0.000	0.000	
LIT	34904	0.150	0.357	0.000	362933	0.154	0.361	0.000	0.000	0.000	
BIG4	34904	0.557	0.496	1.000	362933	0.377	0.484	0.000	0.000	0.000	

Table 2b (continued):

	AEM1	AEM2	TEM 1	TEM2	CSRA	CSR_ STR	CSR_ CON	ROA	SIZE	TQ
AEM2	0.573	--								
TEM1	0.227	0.407	--							
TEM2	0.230	0.405	0.994	--						
CSRA	0.051	0.062	0.039	0.051	--					
CSR_STR	0.098	0.153	0.097	0.109	0.706	--				
CSR_CON	0.065	0.125	0.079	0.079	-0.331	0.433	--			
ROA	0.199	0.249	0.353	0.346	0.139	0.164	0.042	--		
SIZE	0.160	0.269	0.265	0.276	0.256	0.559	0.419	0.287	--	
TQ	-0.015	-0.052	-0.140	-0.124	0.118	0.142	0.038	-0.005	0.331	--
DEBT	0.111	0.233	0.142	0.137	-0.084	0.015	0.127	-0.065	0.071	-0.005

Panel A: *KLD firms*: all firms for which KLD data on CSR activity is available at some point in time. *Non-KLD firms*: firms which do not appear in the KLD database at any point in time. The "P-values of tests" columns show the p-value of a t-test for the difference in means of the different variables for the two groups (Means) and the p-value of a test for equality in the medians of the two groups (Medians). **ROA**, **SIZE**, **TQ** and **DEBT** have been winsorized at the top and bottom one percent of their distributions.

Panel B: *CSR-disclosing firms*: firms for which KLD data are available and we have found evidence of voluntary CSR disclosure. *CSR non-disclosing firms*: firms for which KLD data are available and we have found no evidence of voluntary CSR disclosure. The "P-value of tests" columns show the p-value of a t-test for the difference in means of the different variables for the two groups (Means) and the p-value of a test for equality in the medians of the two groups (Medians). **ROA**, **SIZE**, **TQ** and **DEBT** have been winsorized at the top and bottom one percent of their distributions.

Panel C: Pearson correlation coefficients (for the maximum common sample between pairs of variables within the KLD sample) of the main variables of interest in the analysis (dummy variables excluded) are shown below the main diagonal.

Table 3a: Determinants of initiation of CSR disclosure

Dependent variable: FIRSTD								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.AEM1	1.119 (1.35)				3.177*** (2.60)	1.049 (1.27)		
L.AEM2		0.144 (0.32)					1.288 (1.21)	0.247 (0.46)
L.TEM1			0.130 (0.09)		-0.262 (-0.16)		-0.149 (-0.11)	
L.TEM2				0.0242 (0.05)		-0.308 (-0.53)		-0.248 (-0.43)
L.CSRA	0.002 (0.04)	-0.008 (-0.24)	0.064 (1.51)	-0.023 (-0.61)	0.080 (1.33)	-0.020 (-0.50)	0.089 (1.19)	-0.026 (-0.73)
TIME	0.041 (0.80)	0.034 (0.72)	0.237** (2.06)	0.041 (0.72)	0.229* (1.90)	0.030 (0.53)	0.235** (2.13)	0.025 (0.48)
ROA	4.122** (2.29)	4.361*** (3.14)	6.682*** (3.12)	3.868*** (2.72)	8.168*** (3.51)	3.832** (2.17)	7.529*** (5.16)	4.109*** (3.07)
TQ	-0.025* (-1.71)	-0.031** (-2.17)	-0.021 (-1.15)	-0.027** (-2.11)	-0.023	-0.028** (-1.97)	-0.017 (-1.09)	-0.033** (-2.37)
DEBT	1.339*** (4.75)	1.019*** (2.83)	1.074** (2.04)	1.085*** (4.11)	1.294 (1.27)	1.399*** (5.04)	0.537 (0.51)	1.080*** (3.20)
SIZE	0.726*** (8.57)	0.698*** (7.83)	0.626*** (10.00)	0.676*** (8.74)	0.703*** (4.00)	0.738*** (8.62)	0.612*** (5.55)	0.705*** (7.66)
GLB	0.0456 (0.10)	-0.169 (-0.50)	0.218 (0.26)	-0.00468 (-0.01)		0.0532 (0.11)	-0.107 (-0.12)	-0.175 (-0.53)
GDP	-44.10*** (-4.74)	-45.94*** (-4.89)	-95.57*** (-3.63)	-46.16*** (-4.72)	-93.17*** (-3.24)	-44.98*** (-4.80)	-100.9*** (-3.47)	-46.58*** (-4.97)
LIT	0.066 (0.31)	0.056 (0.27)	-0.228 (-0.44)	-0.030 (-0.15)	-0.020 (-0.04)	-0.003 (-0.02)	-0.101 (-0.22)	-0.005 (-0.02)
Constant	-9.819*** (-10.44)	-8.624*** (-11.93)	-9.673*** (-6.583)	-8.528*** (-9.16)	-11.89*** (-5.63)	-9.450*** (-9.90)	-9.794*** (-6.42)	-8.387*** (-9.26)
N	3,292	3,538	1,068	3,475	794	3,081	1,029	3,311

Maximum likelihood estimation of the discrete-time logit duration model (1) for the probability of initiating disclosure in either the 10-K filings or in voluntary reports (Dependent variable: **FIRSTD**). The columns differ on the proxies for earnings management included as determinants of initiation of disclosure. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor..

Table 3b: Determinants of initiation of CSR disclosure on 10K reports

Dependent variable: FD_10K								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.AEM1	1.543**				4.486**	1.553**		
	(2.43)				(2.26)	(2.02)		
L.AEM2		0.138					0.471	0.173
		(0.19)					(0.53)	(0.25)
L.TEM1			0.520		-0.238		0.575	
			(0.35)		(-0.46)		(0.54)	
L.TEM2				0.501		0.387		0.499
				(0.52)		(0.41)		(0.51)
L.CSRA	0.025	0.024	0.257***	0.025	0.215***	0.017	0.204***	0.018
	(0.45)	(0.50)	(12.00)	(0.46)	(3.11)	(0.28)	(3.65)	(0.34)
TIME	0.298***	0.286***	0.414**	0.296***	0.398	0.288**	0.384*	0.279**
	(2.94)	(2.95)	(2.02)	(2.64)	(1.57)	(2.51)	(1.78)	(2.51)
ROA	0.332	0.854	5.146**	1.198	2.482	0.214	3.935*	0.714
	(0.32)	(0.97)	(2.21)	(0.99)	(0.66)	(0.19)	(1.70)	(0.74)
TQ	-0.001	-0.011	0.017	-0.003	0.015	0.001	0.013	-0.007
			(0.81)	(-0.45)			(0.63)	
DEBT	1.670***	1.468**	1.457***	1.339***	2.143***	1.598***	1.842**	1.425***
	(2.84)	(2.51)	(3.35)	(3.69)	(4.03)	(3.11)	(2.38)	(2.57)
SIZE	0.634***	0.614***	0.0515	0.568***	0.252	0.615***	0.186	0.594***
	(4.86)	(4.50)	(0.59)	(4.61)	(0.96)	(5.06)	(0.99)	(4.44)
GLB	0.203	-0.153	-0.127	-0.317		0.149	-0.398	-0.218
	(0.25)	(-0.30)	(-0.15)	(-0.60)		(0.17)	(-0.47)	(-0.39)
GDP	-66.49***	-67.25***	-104.6**	-68.50***	-95.13*	-65.34***	-103.5**	-66.19***
	(-3.72)	(-3.94)	(-2.40)	(-4.22)	(-1.87)	(-3.63)	(-2.32)	(-3.83)
LIT	-0.132	-0.190	-0.528	-0.305	-0.332	-0.153	-0.361	-0.208
	(-0.49)	(-0.75)	(-1.06)	(-1.37)	(-0.68)	(-0.61)	(-0.75)	(-0.86)
Constant	-12.80***	-11.25***	-8.050***	-10.94***	-12.05***	-12.65***	-8.871***	-11.21***
	(-10.87)	(-7.21)	(-3.25)	(-4.79)	(-4.67)	(-7.42)	(-3.44)	(-5.16)
N	3,653	3,906	1,187	3,872	896	3,432	1,137	3,669

Maximum likelihood estimation of the discrete-time logit duration model (1) for the probability of initiating disclosure in the 10K filings (Dependent variable: **FD_10K**). The columns differ on the proxies for earnings management included as determinants of initiation of disclosure. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor..

Table 3c: Determinants of initiation of CSR disclosure on voluntary reports

	Dependent variable: FD_REP							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.AEM1	0.725 (0.80)				1.006 (0.71)	0.533 (0.60)		
L.AEM2		0.159 (0.31)					1.297 (0.89)	0.186 (0.33)
L.TEM1			-0.315 (-0.22)		-0.539 (-0.30)		-0.882 (-0.45)	
L.TEM2				-0.481 (-0.82)		-0.867 (-1.51)		-0.822 (-1.18)
L.CSRA	0.009 (0.18)	0.001 (0.01)	0.017 (0.32)	-0.029 (-0.57)	0.021 (0.26)	-0.017 (-0.32)	0.047 (0.52)	-0.023 (-0.45)
TIME	-0.045 (-0.84)	-0.048 (-0.92)	0.103 (1.00)	-0.017 (-0.31)	0.051 (0.48)	-0.040 (-0.72)	0.050 (0.45)	-0.043 (-0.83)
ROA	4.283*** (2.82)	4.670*** (3.86)	6.305*** (3.53)	4.462*** (3.93)	6.595*** (3.19)	4.234*** (3.23)	6.319*** (4.20)	4.623*** (4.43)
TQ	-0.039** (-2.38)	-0.042** (-2.48)	-0.034 (-1.26)	-0.039** (-2.37)	-0.031*** (-2.76)	-0.041** (-2.16)	-0.026 (-1.35)	-0.044** (-2.39)
DEBT	1.593*** (4.27)	1.319*** (3.79)	0.934 (0.71)	1.418*** (4.70)	0.265 (0.14)	1.586*** (4.80)	-0.528 (-0.26)	1.321*** (3.66)
SIZE	0.890*** (7.09)	0.877*** (6.93)	1.068*** (4.22)	0.905*** (7.33)	1.012*** (3.68)	0.916*** (6.29)	0.969*** (3.60)	0.899*** (6.21)
GLB	0.216 (0.52)	0.234 (0.55)	0.491 (0.47)	0.202 (0.56)		0.203 (0.45)		0.223 (0.49)
GDP	-24.85** (-2.38)	-26.86** (-2.54)	-57.07** (-2.47)	-28.88** (-2.31)	-54.97*** (-2.61)	-26.78** (-2.34)	-60.20** (-2.49)	-28.61*** (-2.61)
LIT	0.062 (0.19)	0.127 (0.44)	-0.131 (-0.36)	0.066 (0.20)	-0.344 (-1.04)	-0.0429 (-0.12)	-0.299 (-0.77)	0.023 (0.07)
Constant	-11.05*** (-7.67)	-10.53*** (-9.69)	-13.22*** (-5.70)	-10.68*** (-9.91)	-11.83*** (-4.40)	-10.58*** (-6.99)	-11.30*** (-4.49)	-10.19*** (-7.92)
N	3,420	3,670	1,108	3,607	828	3,201	893	3,435

Maximum likelihood estimation of the discrete-time logit duration model (1) for the probability of initiating disclosure in voluntary reports (Dependent variable: **FD_REP**). The columns differ on the proxies for earnings management included as determinants of initiation of disclosure. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor..

Table 4: Comparison of the matched samples

	Treatment variable: FIRSTD			Treatment variable: FD_10K			Treatment variable: FD_REP		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	m=1	m=2	m=3	m=1	m=2	m=3	m=1	m=2	m=3
CSRA	-0.221 (-1.26)	-0.095 (-0.52)	-0.164 (-0.89)	-0.147 (-0.65)	-0.093 (-0.43)	-0.080 (-0.36)	-0.077 (-0.36)	-0.038 (-0.18)	-0.061 (-0.27)
L.CSRA	-0.163 (-0.70)	-0.146 (-0.66)	-0.144 (-0.65)	-0.013 (-0.04)	-0.116 (-0.39)	0.050 (0.17)	-0.087 (-0.34)	0.005 (0.02)	-0.076 (-0.30)
AEM1	47.48 (0.61)	76.95 (1.16)	51.91 (0.81)	72.82 (0.78)	27.26 (0.31)	6.807 (0.08)	-23.15 (-0.25)	19.58 (0.25)	10.59 (0.14)
AEM2	70.47 (0.43)	148.9 (1.04)	141.3 (1.11)	205.1 (1.04)	70.49 (0.40)	133.0 (0.84)	76.85 (0.41)	173.7 (1.07)	188.0 (1.25)
L.AEM1	326.3** (2.45)	305.9*** (2.62)	294.6*** (2.67)	328.1** (2.16)	147.5 (1.24)	211.8* (1.89)	103.2 (0.66)	117.7 (0.82)	176.9 (1.29)
L.AEM2	395.0* (1.95)	389.2** (2.22)	334.9** (2.10)	226.1 (0.96)	149.8 (0.75)	156.8 (0.90)	167.6 (0.73)	242.4 (1.19)	278.7 (1.49)
TEM1	-103.5 (-0.53)	-27.54 (-0.15)	-35.30 (-0.21)	-220.9 (-1.03)	-225.1 (-1.00)	-233.2 (-1.09)	200.8 (0.86)	130.1 (0.63)	93.52 (0.44)
TEM2	13.32 (0.13)	62.62 (0.66)	97.87 (1.14)	-207.1* (-1.76)	-32.61 (-0.27)	-8.808 (-0.07)	75.98 (0.71)	94.37 (0.91)	148.0 (1.43)
L.TEM1	61.88 (0.27)	197.0 (0.94)	169.5 (0.85)	36.08 (0.14)	104.7 (0.37)	58.73 (0.21)	80.39 (0.31)	164.7 (0.73)	152.2 (0.72)
L.TEM2	115.9 (0.72)	68.64 (0.46)	78.51 (0.57)	12.45 (0.06)	66.75 (0.35)	90.94 (0.53)	129.9 (0.65)	41.00 (0.24)	23.64 (0.14)
ROA	0.013** (2.51)	0.013*** (2.80)	0.014*** (3.25)	0.008 (1.28)	0.001 (-0.00)	0.001 (0.28)	0.008 (1.54)	0.014** (2.55)	0.015*** (3.05)
DEBT	0.023** (2.41)	0.032*** (3.71)	0.027*** (3.24)	0.016 (1.31)	0.023** (2.00)	0.021* (1.85)	0.022* (1.89)	0.027*** (2.79)	0.024** (2.45)
SIZE	0.834*** (10.24)	0.917*** (11.44)	0.997*** (11.85)	0.603*** (5.64)	0.588*** (5.81)	0.651*** (6.50)	0.786*** (8.13)	0.831*** (9.37)	0.912*** (10.13)
TQ	0.752 (1.42)	0.958** (2.18)	0.970** (2.24)	1.232*** (2.80)	0.854* (1.96)	0.903** (2.46)	0.909 (0.28)	0.994 (0.24)	0.940 (0.18)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **CSR_STR**, **CSR_CON**, **AEM1**, **TEM2**, **ROA**, **DEBT** and **SIZE**. The coefficients in the columns estimate the average difference of the corresponding row variable between each company which initiates CSR disclosure and the group of m (m=1,2,3) matching companies in the year of initiating disclosure; t-statistics are shown in brackets.

Columns (1)-(3): treatment is defined as a 1 for the company which initiates CSR disclosure on any channel in a specific year (**FIRSTD**).

Columns (4)-(6): treatment is defined as a 1 for the company which initiates CSR disclosure on a voluntary report in a specific year (**FD_10K**).

Columns (7)-(9): Treatment variable is initiation of disclosure on voluntary reports (**FD_REP**).

*, ** and ***: average differences in the levels of the variables significant at the 10%, 5% and 1% level. Differences which are significant at the 5% level have been highlighted in boldface.

**Table 5a: Effect of initiation of CSR disclosure on Earnings Management
(period-by-period effect)**

		Treatment variable: FIRSTD			Treatment variable: FD_10K			Treatment variable: FD_REP		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		m=1	m=2	m=3	m=1	m=2	m=3	m=1	m=2	m(3)
AEM1	t1-t0	17.38 (0.14)	86.48 (0.81)	87.49 (0.88)	-121.0 (-0.86)	-153.5 (-1.15)	-159.4 (-1.25)	215.8 (1.52)	270.0** (2.25)	248.3** (2.22)
	t2-t1	88.63 (0.56)	15.30 (0.10)	78.40 (0.59)	202.4 (1.05)	200.9 (1.09)	277.4* (1.72)	-134.6 (-0.77)	-184.9 (-1.21)	-138.6 (-0.95)
	t3-t2	-55.36 (-0.40)	6.877 (0.05)	24.43 (0.19)	62.33 (0.31)	60.28 (0.33)	98.48 (0.60)	-195.8 (-1.23)	-4.342 (-0.02)	62.28 (0.43)
	t4-t3	-28.65 (-0.21)	-79.60 (-0.60)	3.081 (0.02)	103.2 (0.52)	-5.709 (-0.03)	-30.01 (-0.17)	119.1 (0.73)	-8.272 (-0.05)	90.91 (0.66)
AEM2	t1-t0	371.5* (1.73)	373.4** (2.06)	332.5** (2.01)	-158.8 (-0.63)	-114.8 (-0.54)	-218.2 (-1.10)	566.3** (2.21)	518.1** (2.47)	526.3*** (2.80)
	t2-t1	-36.59 (-0.17)	6.423 (0.03)	102.5 (0.58)	328.0 (1.19)	301.8 (1.19)	467.7** (2.07)	-268.8 (-1.07)	-192.3 (-0.92)	-138.2 (-0.68)
	t3-t2	-221.9 (-1.08)	-158.6 (-0.82)	-79.28 (-0.42)	96.44 (0.37)	39.24 (0.17)	91.12 (0.43)	-255.4 (-1.10)	-80.71 (-0.35)	-93.03 (-0.42)
	t4-t3	111.4 (0.55)	7.687 (0.043)	104.2 (0.63)	187.2 (0.73)	161.6 (0.76)	135.3 (0.72)	70.64 (0.32)	-62.29 (-0.30)	38.74 (0.20)
TEM1	t1-t0	-234.1 (-1.31)	-74.36 (-0.45)	-240.8* (-1.66)	81.01 (0.41)	239.2 (1.38)	28.02 (0.15)	-658.8** (-2.50)	-333.7 (-1.49)	-508.7*** (-2.74)
	t2-t1	-29.34 (-0.13)	37.83 (0.23)	41.57 (0.27)	-853.6*** (-2.99)	-383.9** (-2.07)	-290.6 (-1.51)	250.9 (1.112)	64.90 (0.33)	-12.11 (-0.05)
	t3-t2	633.0*** (3.35)	332.8** (2.04)	379.9** (2.33)	469.6* (1.75)	198.0 (1.07)	152.6 (0.76)	431.0** (2.14)	232.5 (1.18)	368.8** (2.05)
	t4-t3	-123.7 (-0.60)	-361.3** (-2.33)	-406.6*** (-3.08)	404.7 (1.38)	-87.79 (-0.42)	-158.2 (-0.84)	161.2 (0.61)	-89.04 (-0.48)	-170.3 (-1.06)
TEM2	t1-t0	148.2 (1.09)	31.05 (0.25)	36.35 (0.29)	267.8* (1.72)	254.1* (1.91)	219.3* (1.72)	98.35 (0.64)	-34.89 (-0.24)	-1.235 (-0.00)
	t2-t1	-11.22 (-0.07)	155.1 (1.08)	128.4 (0.90)	134.7 (0.65)	84.18 (0.45)	110.5 (0.59)	-108.0 (-0.60)	61.61 (0.37)	-78.26 (-0.46)
	t3-t2	-118.7 (-0.74)	-74.14 (-0.53)	-21.22 (-0.15)	-396.6* (-1.69)	-249.6 (-1.25)	-173.3 (-0.87)	-97.95 (-0.63)	-69.01 (-0.49)	88.64 (0.66)
	t4-t3	-110.5 (-0.81)	-238.4* (-1.84)	-185.2 (-1.56)	-137.6 (-0.68)	-135.8 (-0.75)	-130.8 (-0.78)	-68.64 (-0.46)	-95.22 (-0.69)	-51.70 (-0.39)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **CSR_STR**, **CSR_CON**, **AEM1**, **TEM2**, **DEBT** and **SIZE**. The coefficients in the cells report the bias-adjusted average treatment on the treated (Abadie et al., 2003), that is, the average difference between the treatment group and the group of m (m=1,2,3) matching companies in the years after initiating disclosure; t-statistics are shown in brackets. The row headings ti-tj denote that the estimator measures the differences in the changes in the dependent variables (**AEM1**, **AEM2**, **TEM1**, **TEM2**) between time i and time j=i-1, where t=0 is the treatment period.

Columns (1)-(3): treatment is defined as a 1 for the company which initiates CSR disclosure on any channel in a specific year (**FIRSTD**).

Columns (4)-(6): treatment is defined as a 1 for the company which initiates CSR disclosure on a voluntary report in a specific year (**FD_10K**).

Columns (7)-(9): Treatment variable is initiation of disclosure on voluntary reports (**FD_REP**).

*, ** and ***: significant difference at the 10%, 5% and 1% level. Differences which are significant at the 5% level have been highlighted in boldface.

Table 5b: Effect of initiation of CSR disclosure on Earnings Management (cumulative effect)

		Treatment variable: FIRSTD			Treatment variable: FD_10K			Treatment variable: FD_REP		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		m=1	m=2	m=3	m=1	m=2	m=3	m=1	m=2	m=3
AEM1	t1-t0	17.38 (0.14)	86.48 (0.81)	87.49 (0.88)	-121.0 (-0.86)	-153.5 (-1.15)	-159.4 (-1.25)	215.8 (1.52)	270.0** (2.25)	248.3** (2.22)
	t2-t0	77.31 (0.66)	110.3 (1.13)	162.3* (1.71)	31.72 (0.22)	61.46 (0.48)	92.18 (0.75)	13.48 (0.097)	98.98 (0.85)	120.7 (1.07)
	t3-t0	37.95 (0.31)	136.3 (1.16)	195.8* (1.80)	52.37 (0.34)	100.2 (0.64)	186.5 (1.29)	-138.9 (-0.94)	149.4 (1.12)	207.6* (1.74)
	t4-t0	-19.28 (-0.16)	85.50 (0.88)	199.8** (2.21)	198.4 (1.39)	164.7 (1.31)	141.4 (1.18)	-65.17 (-0.46)	167.7 (1.43)	336.0*** (3.06)
AEM2	t1-t0	371.5* (1.73)	373.4** (2.06)	332.5** (2.01)	-158.8 (-0.63)	-114.8 (-0.54)	-218.2 (-1.10)	566.3** (2.21)	518.1** (2.47)	526.3*** (2.80)
	t2-t0	336.7* (1.65)	327.9* (1.83)	350.5** (2.03)	59.54 (0.23)	131.5 (0.55)	133.8 (0.58)	379.4 (1.60)	333.9* (1.72)	370.9** (2.03)
	t3-t0	179.1 (0.87)	213.5 (1.08)	307.5 (1.64)	145.9 (0.59)	155.8 (0.72)	169.4 (0.83)	180.3 (0.74)	228.6 (0.98)	308.9 (1.42)
	t4-t0	233.7 (1.09)	227.8 (1.26)	352.7** (2.03)	29.24 (0.10)	219.0 (0.86)	207.8 (0.92)	182.5 (0.75)	169.4 (0.84)	321.5* (1.68)
TEM1	t1-t0	-234.1 (-1.31)	-74.36 (-0.45)	-240.8* (-1.66)	81.01 (0.41)	239.2 (1.38)	28.02 (0.15)	-658.8** (-2.50)	-333.7 (-1.49)	-508.7*** (-2.74)
	t2-t0	-328.6* (-1.723)	73.47 (0.462)	-28.18 (-0.209)	-875.2*** (-2.89)	104.8 (0.459)	51.54 (0.249)	30.56 (0.14)	-52.12 (-0.27)	-209.0 (-1.49)
	t3-t0	707.3*** (4.49)	496.4*** (3.20)	279.7* (1.88)	421.8** (2.02)	283.1 (1.53)	-57.72 (-0.26)	616.9*** (3.04)	222.6 (1.03)	175.6 (1.00)
	t4-t0	515.3** (2.30)	-313.6* (-1.69)	-361.1** (-2.27)	692.4* (1.84)	207.4 (0.72)	-77.81 (-0.32)	158.9 (0.73)	-926.3*** (-4.14)	-859.1*** (-4.58)
TEM2	t1-t0	148.2 (1.09)	31.05 (0.25)	36.35 (0.29)	267.8* (1.72)	254.1* (1.91)	219.3* (1.72)	98.35 (0.64)	-34.89 (-0.24)	-1.235 (-0.00)
	t2-t0	178.0 (1.20)	179.5 (1.37)	141.3 (1.17)	334.4 (1.57)	288.4 (1.56)	262.8 (1.49)	64.39 (0.41)	46.04 (0.32)	-84.14 (-0.66)
	t3-t0	21.88 (0.16)	116.6 (0.95)	109.7 (0.93)	-62.05 (-0.31)	24.94 (0.13)	35.56 (0.21)	0.980 (0.00)	9.741 (0.07)	1.762 (-0.01)
	t4-t0	-126.7 (-0.91)	-155.9 (-1.30)	-118.2 (-1.01)	-263.3 (-1.40)	-121.2 (-0.80)	-104.1 (-0.75)	-106.5 (-0.67)	-151.1 (-1.07)	-124.8 (-0.89)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **CSR_STR**, **CSR_CON**, **AEM1**, **TEM2**, **ROA**, **DEBT** and **SIZE**. The coefficients in the cells report the bias-adjusted *average treatment on the treated* (Abadie et al., 2003), that is, the average difference between the treatment group and the group of m ($m=1,2,3$) matching companies in the years after initiating disclosure; t-statistics are shown in brackets. The row headings t_i-t_0 denote that the estimator measures the differences in the (cumulative) changes in the dependent variables (**AEM1**, **AEM2**, **TEM1**, **TEM2**) between time i and, the treatment period.

Columns (1)-(3): treatment is defined as a 1 for the company which initiates CSR disclosure on any channel in a specific year (**FIRSTD**).

Columns (4)-(6): treatment is defined as a 1 for the company which initiates CSR disclosure on a voluntary report in a specific year (**FD_10K**).

Columns (7)-(9): Treatment variable is initiation of disclosure on voluntary reports (**FD_REP**).

*, ** and ***: significant difference at the 10%, 5% and 1% level. Differences which are significant at the 5% level have been highlighted in boldface.

Table 6: The effect of continued CSR Disclosure on Earnings Management

	Dependent variables: EM measures			
	AEM1 (1)	AEM2 (2)	TEM1 (3)	TEM2 (4)
L.DISCL	-0.018 (-1.50)	0.022** (2.49)	-0.041*** (-4.04)	-0.039*** (-4.33)
L.EM	-0.174*** (-2.65)	-0.177** (-2.28)	-0.050 (-0.58)	-0.007 (-0.12)
L.CSRA	0.001 (0.28)	-0.001 (-0.27)	0.002 (1.47)	0.001* (1.78)
ROA	0.154** (2.32)	0.005 (0.06)	0.031 (1.33)	0.098*** (2.83)
TQ	0.001 (1.17)	0.002* (1.74)	0.004*** (2.74)	0.001 (0.92)
DEBT	-0.012 (-0.61)	0.046 (0.55)	-0.070 (-1.49)	-0.037 (-1.08)
SIZE	0.017* (1.67)	0.003 (0.42)	-0.029** (-1.99)	-0.060*** (-4.44)
BIG4	0.014** (2.24)	0.029*** (6.05)	-0.067*** (-4.36)	-0.035*** (-4.01)
GDP	-0.004 (-0.02)	0.727*** (10.53)	0.622 (0.84)	0.230 (0.58)
N	6,875	7,487	1,994	7,341
R ²	0.035	0.035	0.025	0.016

Fixed effects estimates of the continued disclosure model (2). The column headings denote the specific EM measure used as dependent variable in each specification. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% are shown in boldface. *L.* denotes one-period lagged values of the corresponding regressor. **L.EM** denotes a lagged value of the dependent variable. R² are *within* R², computed for the firm-demeaned data.

Table 7: The effect of continued CSR Disclosure on Earnings Management: controlling for the channel of disclosure

	Dependent variables: EM measures							
	AEM1		AEM2		TEM1		TEM2	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.Rep	-0.011 (-1.02)		-0.003 (-0.341)		-0.056*** (-3.61)		-0.024*** (-3.41)	
L.10K		-0.029** (-2.01)		-0.042*** (-4.26)		-0.031 (-1.27)		-0.040*** (-6.94)
L.EM	-0.174*** (-2.65)	-0.174*** (-2.66)	-0.17** (-2.28)	-0.17** (-2.29)	-0.049 (-0.58)	-0.050 (-0.59)	-0.007 (-0.11)	-0.007 (-0.12)
L.CSRA	0.001 (0.301)	0.001 (0.240)	-0.001 (-0.240)	-0.001 (-0.30)	0.003* (1.72)	0.002 (1.63)	0.001* (1.95)	0.001* (1.76)
ROA	0.158** (2.40)	0.158** (2.40)	-0.00171 (-0.02)	-0.00392 (-0.05)	0.0293 (1.27)	0.0363 (1.39)	0.104*** (2.89)	0.103*** (2.90)
TQ	0.001 (1.26)	0.001 (1.26)	0.001 (1.61)	0.001 (1.43)	0.004*** (2.73)	0.004*** (2.78)	0.001 (1.01)	0.00104 (1.05)
DEBT	-0.011 (-0.55)	-0.004 (-0.22)	0.044 (0.53)	0.053 (0.62)	-0.067 (-1.38)	-0.065 (-1.32)	-0.035 (-1.01)	-0.030 (-0.85)
SIZE	0.016* (1.66)	0.018* (1.77)	0.004 (0.57)	0.006 (0.80)	-0.028** (-1.98)	-0.029* (-1.95)	-0.060*** (-4.40)	-0.060*** (-4.43)
BIG4	0.013** (2.14)	0.014** (2.36)	0.031*** (5.93)	0.033*** (6.30)	-0.067*** (-4.29)	-0.067*** (-4.29)	-0.036*** (-4.23)	-0.035*** (-4.06)
GDP	0.00876 (0.04)	0.0149 (0.08)	0.710*** (7.03)	0.716*** (5.78)	0.640 (0.92)	0.617 (0.75)	0.255 (0.57)	0.262 (0.61)
N	6,875	6,875	7,487	7,487	1,994	1,994	7,341	7,341
R ²	0.035	0.035	0.035	0.035	0.029	0.022	0.015	0.015

Fixed effects estimates of the continued disclosure model (2).

Columns (1)-(2): Dependent variable is **AEM1**.

Columns (3)-(4): Dependent variable is **AEM2**.

Columns (5)-(6): Dependent variable is **TEM1**.

Columns (7)-(8): Dependent variable is **TEM2**.

t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% are shown in boldface. *L.* denotes one-period lagged values of the corresponding regressor. **L.EM** denotes a lagged value of the dependent variable. R² are *within* R², computed for the firm-demeaned data.

3. DOES ENTERPRISE RISK MANAGEMENT REDUCE ACCRUAL-BASED AND TRANSACTION-BASED EARNINGS MANAGEMENT?

3.1 Introduction

This paper provides initial evidence on the determinants of adoption by firms of Enterprise Risk Management (ERM) mechanisms and on the subsequent effects of such adoption. In particular, we relate adoption of ERM mechanisms to the prior distribution of earnings (mean and volatility) and to the extent to which the company was engaging in earnings management practices. We then look at the effects of ERM adoption on subsequent earnings mean and volatility and earnings management practices. We use implementation of an ERM committee (ERMC) as our measure for ERM. Our results show that the presence of an ERMC is mostly determined by the volatility of previous earnings, but does not respond to the firm's levels of earnings management practices. After implementation, earnings volatility and the use of transaction-based earnings management decrease from the continued presence of the ERM committee, but this is not the case for accrual-based earnings management. These results suggest that an ERMC is effective in reducing opportunistic transactions and perceived measures of risk, but not necessarily in increasing financial transparency.

ERM is an institutionalized governance and control system that complements traditional governance and control structures and processes. ERM includes comprehensive risk accountabilities and reporting mechanisms. This approach to risk management increases the information about and the scrutiny of the business at the board level, such as risk and audit committees (Lam, 2003), and at the management level, such as the internal audit function (Beasley, Clune, & Hermanson, 2006). ERM hence may improve detection and monitoring of managerial decisions as a potential factor of risk. Enterprise Risk Management (ERM) enables firms to manage a wide array of risks in an integrated, holistic fashion and shifts the focus of the risk management function from primarily defensive to increasingly offensive and strategic (Liebenberg & Hoyt, 2003). Implementation of ERM is increasing across companies; however, the costs and benefits are still unexplored.

Earnings management (EM) refers to managerial practices intended *“to alter financial reports to either mislead some stakeholders about the underlying economic performance ... or to influence contractual outcomes”* (Healy and Wahlen, 1999). This management of earnings figures may be achieved by means of manipulating accruals (accrual-based earnings

management, AEM) and/or real business activities (transaction-based earnings management, TEM). Among the many objectives suggested for earnings management, two in particular overlap with those that would be achieved by ERM: increasing earnings to achieve some target (analyst expectations or avoidance of losses) and smoothing earnings (reducing the volatility of earnings). Also, both ERM and EM may pursue these objectives with similar practices: for example, both would influence managers' selection and optimization of business *transactions* and the magnitude and timing of accounting *accruals*. Even though goals and practices may be similar, however, the long-term effects of ERM and EM are likely to be different.

In this paper we intend to disentangle this overlap of goals and practices and study the interrelation between ERM and EM. We expect that implementation of ERM mechanisms may be related to the extent to which the company is engaging in earnings management practice and, after implementation of ERM, subsequent levels of earnings management may also be affected. For example, transaction-based earnings management entails the risks associated with entering sub-optimal actions, foregoing value-enhancing transactions, or mistiming transactions. ERM should view such opportunistic transactions as detrimental for the interests of the company and, therefore, TEM should decrease as a consequence of ERM. The impact of risk monitoring at the managerial level on AEM is not so obvious, though. On the one hand, ERM decision-makers might consider using accrual-based earnings management as a substitute for risk management practices when it comes to achieving the target levels of earnings or of earnings smoothing. On the other hand, reducing risks translates into a lower volatility of earnings and improving performance leads to a higher average level of earnings, thus crowding out the incentive for managers to engage in AEM practices devoted to the same purpose. Finally, since both ERM and EM will be used to affect earnings, the behavior of earnings before and after implementing ERM mechanisms should be a relevant factor in understanding the interaction between ERM implementation and EM. We, therefore, place special emphasis on using characteristics of the distribution of earnings (mean and volatility) in our analysis of the decision to implement and on the subsequent effects of ERM.

We take the implementation of an enterprise risk management committee (ERMC) as our proxy for ERM. This choice rests on our understanding that companies that constitute such a committee might be at a relatively similar stage of the ERM maturity process. Also, companies with an ERMC show stronger commitment to a comprehensive and firm-wide ERM than companies which generically describe ERM initiatives (e.g. Gordon, Loeb and

Tseng, 2009); Hoyt and Liebenberg, 2011) or appoint a CRO (Liebenberg and Hoyt, 2003). The decision to implement an ERMC may be a consequence of the company's particular characteristics and policies, including the distribution of earnings: earnings volatility and the level of mean earnings are both determinants and consequences of earnings management practices. Hence, the decision to initiate an ERMC is endogenous. We account for this endogeneity by looking at the relationship between ERM adoption and earnings management and the distribution of earnings in two stages. In a first stage, we examine the determinants of implementing an ERMC and try to infer whether earnings management practices and earnings distribution (earnings volatility and mean earnings) are a significant determinant of initiation. In a second stage, we devise matching estimators, which allow us to examine the effects of implementing ERM on subsequent earnings management practices and earnings distribution.

In particular, we attempt to analyze the following questions:

- Is the implementation of an ERMC related to the characteristics of the earnings distribution, such as mean earnings and the volatility of earnings?
- Is the implementation of an ERMC related to the extent to which the company engages in earnings management practices?
- Does implementation of an ERMC have an effect on *subsequent* levels of earnings management practices?
- Does implementation of an ERMC have an effect on the *subsequent* distribution of earnings?

We use data for a large set of US firms for which we collect both accounting information and information about whether they have implemented an ERM committee. This allows us to relate the behavior of earnings and proxies for EM with the decision to implement an ERMC and the effects of implementation. First, and contrary to our expectations, we find no robust evidence that previous levels of earnings volatility or mean earnings have an impact on the probability of implementing an ERM committee although we find strong evidence that firm systematic risk is a determinant for initiation of ERM practices. We find no evidence of an immediate effect of implementation of an ERMC on the mean and volatility of earnings, but we find that the continued presence of an ERMC reduces significantly the volatility of earnings, especially in firms with extremely high volatility. The effect of the ERMC on mean earnings is no clear-cut. We believe these results support previous research suggesting earnings smoothing as a main objective for risk management strategies. Secondly, we find no

evidence that past levels of earnings management have any effect on the implementation of ERM committees. However, we find strong evidence that both implementation of an ERM committee and continued ERM practices reduce subsequent transaction-based earnings management. Our results show a negative impact on TEM following the implementation of an ERM committee, an impact which stays over time. These results suggest that ERM views opportunistic transactions as a potential risk for the company, and restrain the extent to which the firm uses these practices. On the other hand, neither implementation of an ERM committee nor continued ERM have a clear impact on accrual-based earnings. We interpret these results as suggestive that ERM committees may not necessarily see the use of accounting operations as a way of reducing the perceived risk of the company, thus suggesting some opportunistic behavior of ERMCs.

Our results contribute to the emerging literature on the benefits and costs of ERM. First, we add to previous evidence on the determinants for implementing ERM mechanisms. Second, we show that indeed ERM succeeds in reducing volatility of earnings, but this effect seems to require a continued effort. Third, we document how ERM probably contributes to shareholder value by mitigating managerial sub-optimal transactions that could affect the firm's value but also that ERM may not necessarily increase financial transparency.

The remaining sections of this paper review the literature (Section a), develop the hypotheses (Section b), describe the sample selection, variable definitions and methodology (Section c), discuss the results (Section d), and present our conclusions and their implications for further research (Section e).

a) ENTERPRISE RISK MANAGEMENT AND EARNINGS MANAGEMENT

Enterprise risk management

The increased demand for risk management by investors, regulators and rating agencies has prompted companies to depart from a traditional managerial risk approach. Enterprise risk management (ERM) is defined as “*the discipline by which an organization assesses, controls, exploits, finances, and monitors risks from all sources*”. ERM has the overarching goal of managing corporate risks firm-wide and with a strategic perspective “*for the purpose of increasing the organization's short- and long term value to its stakeholders*” (Casualty Actuarial Society Committee on Enterprise Risk Management 2003, p. 8, as quoted in Gordon, Loeb and Tseng, 2009). ERM contributes toward the objective of maximizing firm value via, for example, a reduction in expected costs related to tax payments, financial

distress, underinvestment, asymmetric information, and risk mitigation for non-diversified stakeholders (Meulbroek, 2002). Additionally, Liebenberg and Hoyt (2003) find that higher leveraged firms are more likely to adopt ERM. The fact is that ERM has emerged as a popular corporate practice, with more and more firms preferring its “holistic” approach to the more traditional “silo-based” approach to risk management (Gates and Hexter, 2005).

Proponents of ERM claim that ERM enhances shareholder value. However, financial theory suggests that costly ERM implementation would be unwelcome if shareholders can use less costly diversification to eliminate idiosyncratic risk. Accordingly, previous research has focused on testing whether ERM indeed increases firm value (Hoyt and Liebenberg, 2011) and if so, through which mechanisms. While constrained by difficulties to identify and develop an adequate empirical measure for ERM, studies have documented evidence that ERM provides multiple benefits for fundamental business activities and financial outcomes. For example, ERM assists managerial decision-making by making risks more explicit and transparent and it fosters cooperation and integration across different functions and divisions (Kleffner, Lee, & McGannon, 2003). ERM has been found to generate synergies between risk management activities (Mivvolid and Shah, 2000; Cumming and Hirtle, 2001; Lam J., 2001; Meulbroek, 2002) and to safeguard the firm’s reputation as a driver of future performance (Fombrun, Gardberg, & Barnett, 2000). Beasley et al. (2008) found that the market reaction to a firm hiring a chief risk officer (CRO) was not significant overall, but they did find significant reactions for some firms. In contrast, Hoyt and Liebenberg (2011) documented a positive relation between firm value and the appointment of a CRO. Gordon et al. (2009) found that the relation between ERM and firm performance depends on how well ERM implementation matches firm-specific factors. McShane et al. (2011) found that S&P’s ERM rating is associated positively with firm value but the relation flattens out for firms receiving higher ERM ratings. The tenor of these findings complements that of other studies which provide evidence that individual practices to manage risk associate positively with firm value, for example hedging with derivatives (Bartram et al., 2009; Carter and Simkins, 2006; Graham and Rogers, 2002; Jason et al., 2005). If the individual, “silo-based” risk management practices associate positively with firm value, it appears reasonable to expect that integrating these practices and managing them “holistically” with a portfolio approach would also associate positively with firm value.

For the most part, the above studies have not emphasized the endogeneity of ERM, that is, the fact that firms do not randomly adopt ERM. A simple example of the problem of

endogeneity would occur if high performing firms adopted ERM more often than low performers. This would result in a positive association of ERM and performance even if ERM had no influence on performance. Endogeneity and the mixed results found in current research make it difficult to draw a general conclusion about the effectiveness of ERM. The extant research also has insufficiently addressed inter-firm differences in ERM. Mikes (2005, 2009) found heterogeneity in the understanding and implementation of ERM, with firms differing in their emphasis on formally quantifying risk versus using qualitative “measures” of risk. Mikes and Kaplan (2013) proposed a contingency framework and called for research that would lead to the development of a contingency theory of ERM.

Enterprise risk management and earnings management

There is by now some evidence that ERM is positively associated with value-relevant accounting performance outcomes such as earnings levels and volatility, confirming the prediction that ERM would allow firms to “*produce more consistent business results*” (Lam, 2003).²³ Indeed, ERM has been found to associate with higher return-on-assets (ROA) (Hoyt & Liebenberg, 2011, Baxter, Bedard, Hoitash, & Yezegel, 2012) and lower earnings volatility (Liebenberg and Hoyt, 2003). The evidence, however, is not consistently positive: for example, Pagach and Warr (2010) find little evidence of changes in the level of earnings or in their volatility after the appointment of a CRO, the proxy they use for a firm initiating ERM.

Note that the fact that most analyses of consequences of ERM focus on its effect on characteristics of accounting earnings – level and volatility – suggests that implementation of ERM mechanisms interacts with earnings management practices, whose main objective is to affect the behavior of earnings. Earnings management is the managerial practice of opportunistically modifying reported short-term accounting performance outcomes without positively affecting fundamental firm value. These practices occur when managers use their judgment and discretion “in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting practices” (Healy & Wahlen, 1999). Managers may use two different instruments to manage earnings. First, transaction-based earnings management (TEM) manipulates

²³The benefits of reducing earnings volatility include increasing managerial compensation and wealth, reducing corporate income tax, reducing the cost of debt, avoiding underinvestment and earnings surprises, and mitigating volatility caused by low diversification (Barton, 2001).

earnings through real business activities that achieve a reported economic performance that deviates from the performance that would be warranted by normal operational practices. Studies that directly examine TEM concentrate on price discounts, acceleration of sales, alterations in shipment schedules, scale-backs in research and development (R&D), and delays in maintenance (Fudenberg and Tirole, 1995; Healy and Wahlen, 1999; Roychowdhury, 2006). Second, accrual-based earnings management (AEM) manipulates earnings through the opportunistic usage of discretion in applying accounting policies. The immediate objectives of earnings management may be diverse: among others, the literature has found that earnings management is done in order to meet or beat certain benchmarks like earnings break-even (Burgstahler and Dichev, 1997) or analyst forecasts (Das and Zhang, 2003), to affect managers' compensation, to affect the conditions of debt or to reduce the firm's overall tax bill. Most of these "final" objectives are achieved through the "intermediate" objective of affecting the behavior of earnings by increasing their level (earnings aggressiveness: DeAngelo, 1988; Pourciau, 1993) or reducing their volatility (earnings smoothing: Kirschenheiter and Melumad, 2002; Goel and Thakor, 2003). These two effects of earnings management overlap with the earnings consequences of ERM, thus providing a motivation to link the two in this study. If ERM and earnings management pursue similar objectives for accounting earnings, then they might complement or substitute each other. Prior evidence on this interrelation is somewhat scant, fragmented and inconclusive. Barton (2001) finds that managing financial risks, proxied by derivatives' notional amounts, partially substitutes for AEM. He documents that the magnitude of discretionary accruals increase managerial compensation and wealth. Barton (2001) also associates accounting discretion to other risk-management-related benefits such as a reduction of financing costs, as well as underinvestment and earnings surprises. All these dimensions are arguably also within the objective set of ERM (Meulbroek 2002). Davidson et al. (2005) document that some governance mechanisms which primarily target compliance risks are significantly associated with a lower likelihood of AEM while some control mechanisms, such as the establishment of an internal audit function, are not. Also, the composition of the board and its audit committee, i.e. two governance institutions tasked with risk oversight, have been shown to deter earnings management by constraining the managerial propensity to engage in such practices (Xie et al., 2003; Bedard and Johnstone, 2004; Klein, 2006; Davidson et al., 2005).

b) HYPOTHESIS DEVELOPMENT

ERM is an institutionalized governance and control system that complements traditional governance and control structures and processes and which includes comprehensive risk accountabilities and reporting mechanisms. This “holistic” approach to risk management increases the information about and the scrutiny of the business at the board level, such as risk and audit committees (Lam, 2003), and at the management level, such as the internal audit function (Beasley et al., 2006). ERM hence may improve the detection and monitoring of managerial decisions as a potential factor of risk. For example, audit committees are traditionally monitoring quality and regulatory compliance of financial reporting; on the other hand, risk committees are able to expand the scope of monitoring to non-compliance risks of strategy and operations. Transaction-based accounting decisions, non-translucent for outside monitoring, might entail the risks associated with entering sub-optimal actions, foregoing value-enhancing transactions, or mistiming transactions. Opportunistic accrual decisions might entail the risks associated with their subsequent reversal, the loss of reputation, legal penalties, and negative stock price reactions when detected or corrected²⁴. Outside monitoring is inherently constrained by unobservable managerial intentions and information asymmetries about the optimality of business transactions or reasonableness of accruals. ERM mechanisms impose an element of self-monitoring that might be more effective in preventing sub-optimal transactions and/or opportunistic accounting decisions (reputational damages). On the other hand, opportunistic accounting decisions may be used to manage the behavior earnings without substantially altering the risk profile of the company, and therefore might be utilized by the ERM to achieve earnings objectives.

Among these earnings objectives, increasing mean earnings (earnings aggressiveness) or reducing the volatility of earnings (earnings smoothing) appear as objectives and motivation of both ERM and EM, making the two possible complements or substitutes: a company may use both ERM mechanisms and EM practices to achieve earnings goals, or may reduce one when the other is implemented. Also, since both TEM and AEM activities involve some kind of risk (bad transactions or costly restatements and reputation loss), ERM may have a direct objective of reducing such EM practices.

²⁴ Accounting restatements to reverse accrual-based earnings management results in both short- and long term adverse stock market consequences. For example, announcing accounting misstatements results in negative one-day stock market returns of around -10% (Feroz et al. 1991 and Dechow, Hutton and Sloan 1996) and improved stock market performance in the three-year post- detection period happens only for firms that improve their corporate governance (Farber 2005).

In order to disentangle the above effects, we frame our hypotheses in such a way that will give us a clean empirical strategy, which also will alleviate the concern of endogeneity of ERM adoption. We focus our analysis on the adoption of a specific ERM policy, namely the implementation of an ERM committee. This choice rests on our understanding that companies that constitute such a committee might be at a relatively similar stage of the ERM maturity process and show stronger commitment to a comprehensive and firm-wide ERM.

Since the decision to implement an ERMC may be a consequence of the company's earnings and practices, our first hypothesis relates the probability of adoption of an ERMC with these determinants.

Much of the ERM literature argues that the benefit of ERM is lowering earnings volatility due to reduced cross-sectional risks (Liebenberg and Hoyt, 2003). However, lowering earnings volatility is not *per se* the objective of ERM: the ultimate goal of ERM is first, to *optimize* the firm's overall risk-performance relationship and enhance firm value by means of better overall management, more coordinated management and loss avoidance (Pagach and Warr, 2010) and, second, to prevent risks from aggregating across different sources (Liebenberg and Hoyt, 2003). Such optimization can happen along two dimensions: managers can either, reduce risks for a given (target) level of performance, or improve performance for a given (target) level of risk, respectively. Reducing risks translates into a lower volatility of earnings while improving performance leads to higher mean earnings. Following this reasoning, we expect that firms with high earnings volatility or firms with low earnings will have greater likelihood of implementing an ERMC (Liebenberg and Hoyt, 2003 and 2011; Pagach and Warr, 2011). Given that EM activities share those same determinants, but also pose risks, we expect that the presence of EM will also affect the likelihood of implementing an ERMC. Our first hypothesis is, therefore:

H1a: High earnings volatility or low mean earnings will increase the probability of implementing an ERM committee.

H1b: High levels of earnings management (both AEM and TEM) will increase the probability of implementing an ERM committee.

After implementation of the ERM committee, it is to be expected that this committee will be effective in the management of the company's risks. Regarding the effect on earnings, the

ERMC should lead to a reduction in earnings volatility or to an increase in mean earnings. Our second hypothesis, therefore, is quite straightforward:

H2: Firms which establish an ERM committee in a given period will experience a higher reduction in earnings volatility and/or a higher increase in mean earnings in subsequent periods than do firms without such a committee.

Finally, we look at the effects of implementing the ERM committee on subsequent earnings management. The costs associated with obtaining the benefits made explicit in H2 possibly introduce some incentives for *more* earnings management (both AEM and TEM). However, EM practices are themselves risky, given that they involve potential costs for the company. In particular, ERM should increase the management's awareness of the legal or reputational risks of transaction-based earnings management but also of the direct impact of such opportunistic or sub-optimal decisions on firm value. Hence, we hypothesized that transaction-based EM will most likely be reduced after implementation of ERM mechanisms such as an ERMC.

H3a: Firms that establish an ERM committee in a given period will engage in less TEM in subsequent periods than do firms without such a committee.

On the other hand, the risks associated to accrual-based earnings management are less obvious, whereas the benefits –regarding earnings behavior- may be more immediate. We hypothesize that the ERM committee might not view these opportunistic behaviors as a risk itself, but rather as a strategy to reach earnings volatility or mean earnings targets. In this case, AEM could act as a complement of ERM. On the other hand, it is the case that if the ERM committee is effective in reducing risks, this should translate into a lower volatility of earnings. If the ERM committee is effective in improving the firm's performance, this should lead to a higher level of earnings. Both these effects would crowd out the incentive to engage in accrual-based earnings management devoted to the same purposes. Hence, it is also justifiable that ERM could be a substitute for AEM. Moreover, as discussed previously, accrual-based earnings management still have some risks associated with reversal, loss of reputation, legal penalties, and negative stock price reactions when detected or corrected. Thus, we do not have a clear prior on how implementation of an ERMC may affect the subsequent level of AEM. Consequently, we leave this effect unspecified.

H3b: Firms which establish an ERM committee in a given period will engage in more or less

AEM in subsequent periods depending on the relative weight of the costs and benefits of AEM.

As a corollary to our hypothesis H3, we expect the incentives to manage earnings to be more prevalent in firms that display extreme magnitudes of low earnings. The costs of implementing the ERMC would further depress earnings in these companies, thus introducing an incentive to engage in more earnings management to counteract this effect. In the case of firms with extremely high volatility, the required costs of an effective ERMC may also so high that there is an increased incentive to engage in more earnings management. For these two types of companies we hypothesize:

Corollary C3a: Firms which experienced very low earnings levels or very volatile earnings and which implement an ERM committee in a given period will engage in more AEM and TEM in subsequent periods than do firms without such a committee.

c) RESEARCH DESIGN AND DATA

Data sources, sample construction and empirical measures

We describe now the data sources, construction of the sample and the empirical measures we use to proxy for the variables we use in the empirical analyses of our hypotheses. A summary of this information is shown in Table 1.

Proxies for Enterprise Risk Management

ERM is a process, and different firms will have ERM processes at differing levels of maturity. Capturing these differences is not trivial, though, and we use in our empirical analyses a simple, practical approach. We assume that companies which decide to implement an ERM committee are at a relatively similar stage of the ERM process. Such companies show a similar commitment to a comprehensive and firm-wide ERM, which is probably stronger than that of companies which just generically describe ERM initiatives (e.g. Gordon, Loeb and Tseng, 2009; Hoyt and Liebenberg, 2011) or appoint a CRO (Liebenberg and Hoyt, 2003). We consider, therefore, that implementation of an ERM committee is an adequate proxy of ERM adoption given that this choice reflects a consistent and long-lasting commitment to ERM. This decision to implement ERM may be a consequence of the company's particular characteristics and policies, including the distribution of earnings and the extent to which the company engages in earnings management practices. Hence, the decision to implement an ERMC is endogenous and our first task will be to understand the

determinants of that decision. Following Hoyt and Liebenberg (2011), our information on the implementation of an ERMC sample is derived from a Lexis-Nexis word search on the existence of an ERM committee or similar in the company's 10-K filings.²⁵ Thus, we are restricting our attention to US companies which are required to file their annual reports with the SEC. Once the keywords (Footnote 3) had been located, we also examined the sentences which contained the key words to get a better sense of whether or not the ERM concept is actually being used. Based on our keywords search process, 531 firms were identified as having implemented an ERM committee between 1993 and 2010. We exclude observations of financial institutions (SIC codes 6000-6999) and those with missing accounting data. We call the remaining observations the "ERM sample". The no-ERM sample are the rest of the companies with available accounting information in Compustat that have no mention on their annual reports of the existence of an ERM committee. The main descriptive statistics of the two groups are summarized in Table 2.

Once we have established the existence of an ERM committee, we generate measures of initial implementation and of continued existence of the ERMC. In particular, we construct two variables:

FIRSTC_{it} (initial implementation year) is a dummy variable, which takes value 1 for the year t in which company i implements the ERM committee.

ERMC_{it} (continued ERM committee existence) is a dummy variable which takes value 1 if company i has an ERM committee in year t and 0 otherwise.

Measures of volatility of earnings and mean earnings

We compute two measures of earnings behavior which describe average earnings and the volatility of earnings over some time periods. In particular, we construct the following two variables.

E_VOL_{it} (earnings volatility) is the standard deviation of bottomline earnings of firm i from period $t-5$ to period t .

E_MEAN_{it} (mean earnings) is the average of bottomline earnings of firm i from period $t-5$ to period t .

²⁵ Specifically we performed a search of the following key terms: Strategic risk Management Committee, Enterprise Risk Management Committee, Compliance and Operational Risk Committee, Enterprise Risk Teams, Internal Risk Control Group, Corporate Financial Risk Management Committee, Corporate Risk Committee, Enterprise Risk Council, Risk Management Committee, Risk Committee of Management, Operational Risk Management Committee, Operational Risk Management Committee, or Risk Working Group

Measures of Accrual-based Earnings Management

Measurement of AEM is involved, and most proposed measures are noisy by construction and suffer from lack of power. Table A2 (Appendix) summarizes the most common measures used in the literature. We follow recent literature and construct composite measures which combine earnings smoothing, earnings aggressiveness (Leuz et al., 2003), and the size of discretionary accruals (Dechow et al., 1995). In order to compute these proxies, we first compute three intermediate measures:

Relative volatility (Leuz et al., 2003): this measure compares the volatility of operating income and of cash flows: $(\sigma(OPINC_{it}/TA_{it-1})/\sigma(CFO_{it}/TA_{it-1}))$. The volatilities of the two ratios are computed as a rolling standard deviation of the value of the ratio in the previous 8 years. We take the absolute value of the difference between the ratio and one as one measure for earnings quality; a ratio lower than one suggest smoothness, whereas a ratio higher than one suggests aggressiveness.²⁶ Note that the evidence is that the ratio of volatilities is lower than one, suggesting that most companies implement smoothing strategies.

Accrual aggressiveness (Leuz et al., 2003): this measure compares the size of the yearly accrual component relative to cash flow: $[|ACC_{it}/TA_{it-1}| / |CFO_{it}/TA_{it-1}|]$. A higher value indicates a relatively more intense use of accruals. Accruals ACC_{it} are defined as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets.²⁷

Discretionary accruals (residuals of the modified Jones Model, Dechow et al, 1995): the following regressions of accruals on "accrual determinants" are estimated (by industry: i.e. we use firm-year observations of firms in the same sector, using two-digit SIC codes):

$$ACC_{it}/TA_{it-1} = \beta_0 + \beta_1(1/TA_{it-1}) + \beta_2(\Delta SALE_{it}/TA_{it-1} - \Delta REC_{it}/TA_{it-1}) + \beta_3 PPE_{it}/TA_{it-1} + \varepsilon_{it},$$

where ACC_{it} is computed as above, TA_{it-1} is lagged total assets, $\Delta SALE_{it}$ is the change in sales, ΔREC_{it} is the change in accounts receivable and PPE_{it} is net property, plant, and equipment. We take the absolute value of the residuals as a measure of discretionary accruals.

We combine the above intermediate measures in two composite AEM measures following a strategy similar to that in Leuz et al. (2003). That is, we compute the inverse rank of each

²⁶ OPINC, operating income, is item 178 from Compustat; Operating cash-flow, CFO, is item 308 from Compustat. TA_{it-1} are lagged total assets, item 6 from Compustat. SALE is item 12. REC and PPE are items 2 and 8. All variables normalized by lagged total assets have been winsorized at the top and bottom 1%.

²⁷ $ACC/TA = (\Delta \text{total current assets}/TA - \Delta \text{cash}/TA) - (\Delta \text{total current liabilities}/TA - \Delta \text{short-term debt}/TA - \Delta \text{taxes payable}/TA) - \text{depreciation expense}/TA$.

firm's score in each year (so that a higher rank means a higher level of AEM). We construct three rank variables, **rank_em1rel1** (inverse yearly rank of the volatility ratio relative to one), **rank_em2** (inverse yearly rank of the ratio of accrual aggressiveness) and **rank_jones** (inverse yearly rank of the absolute value of the residual from the modified Jones model). From these three rank variables, we construct two proxies for AEM activity: **AEM1_{it}** is the average of the three ranks, whereas **AEM2_{it}** uses only **rank_jones**.

Measures of Transaction-based Earnings Management

We follow Roychowdhury (2006) and Cohen et al. (2008) and proxy real activities manipulation by abnormal levels of cash flow from operations (CFO), discretionary expenses and production costs.²⁸ Similarly to discretionary accruals, "normal" levels of CFO, discretionary expenses and production costs are generated via the regressions in Dechow et al. (1998) as implemented in Roychowdhury (2006). First, normal CFO is modeled as a function of sales:

$$CFO_{it}/TA_{it-1} = k_{1t}(1/TA_{it-1}) + k_2(SALE_{it}/TA_{it-1}) + k_3(\Delta SALE_{it}/TA_{it-1}) + \varepsilon_{it}$$

Abnormal CFO is computed as the residual from this (industry-by-industry) regression.

Next, production costs are defined as the sum of COGS and changes in inventory during the year. In turn, COGS is modeled in terms of yearly sales and changes in inventory are modeled as a function of change in sales and lagged change in sales. This leads to the following model:

$$PROD_{it}/TA_{it-1} = k_{1t}(1/TA_{it-1}) + k_2SALE_{it}/TA_{it-1} + k_3\Delta SALE_{it}/TA_{it-1} + k_4 \Delta SALE_{it-1}/TA_{it-1} + \varepsilon_{it}$$

Abnormal production costs are computed as the residual from this (industry-by-industry) regression.

Finally, discretionary expenses are modeled as a function of lagged sales:

$$DISCREX_{it}/TA_{it} = k_{1t}(1/TA_{it-1}) + k_2SALE_{it-1}/TA_{it-1} + \varepsilon_{it}$$

Abnormal discretionary expenses are the residuals from this (industry-by-industry) regression. Once the three abnormal residuals are obtained, we compute the (yearly) relative inverse rank of the absolute values and average them to generate a proxy for transaction

²⁸ CFO is defined above; PROD represents the production costs in period t, defined as the sum of COGS (annual Compustat data item 41) and the change in inventories (annual Compustat data item 3); DISCREX represents the discretionary expenditures in period t, defined as the sum of advertising expenses (annual Compustat data item 45), R&D expenses (annual Compustat data item 46) and SG&A (annual Compustat data item 189).

earnings management (**TEM1_{it}**). We also average the first two ranks (CFO and PROD) as an alternative proxy (**TEM2_{it}**) which is available for a much larger number of firm-year observations.

Control Variables

In our analyses we use a set of control variables which is determined by prior evidence of firm characteristics which have been shown to correlate with ERM mechanisms. Several studies have shown that fixed costs are associated with maintaining adequate internal control procedures, and hence there is a significant positive relation between firm size and internal control quality (Dechow, Ge, & Schrand, 2010). We therefore include a control for size (**SIZE**), which also helps to proxy for some other determinants of internal control mechanisms such as political costs, the information environment, capital market pressure, or the firm's financial resources (Watts & Zimmerman, 1986). We control for firm performance (**ROA**) since studies hypothesize that weak financial performance provides incentives for earnings management (Balsam et al., 1995 ; Keating and Zimmerman, 1999 ; Doyle et al., 2007). We control for leverage (**DEBT**) since several studies find evidence of a positive relationship between highly levered firms and EM (Kinney and McDaniel, 1989; Efendi et al., 2007; Dechow et al., 1996; and Beasley et al., 2008) find that firms with more leverage are likely to experience larger benefits from ERM. The financial literature has found that ERM is associated with firm value so we use Tobin's Q (**TQ**) to control for firm value effects (Hoyt and Liebenberg, 2011). We control for systematic risk of the firm's operations using Beta KMV (**BETA**) (Acharya et al., 2012). We include a control for sensitive industries, **LIT_{it}**, which is a dummy variable equal to one if a firm operates in a high-litigation industry (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961 and 7370), and zero otherwise (Francis et al., 1994; Skinner, 1997; Matsumoto, 2002). In some of the analyses we include a dummy (**BIG4**) for firms which use one of the Big 4 auditors, as a proxy for companies with stronger external audit procedures.

Finally we control for GDP growth (**GDP**) to capture the effect of "good" times and "bad" times. Table 1 provides detailed information on the measurement of the control variables.

Methodology and empirical models

Time-to-implement analysis

Our first hypotheses (H1a-H1b) postulates that the decision to implement an ERM is a function of earnings volatility and mean earnings (H1a) and the extent to which the company

is engaged in prior earnings management (H1b). In order to test this hypothesis, we set up a “time-to-implement” discrete-time duration model, where we specify the hazard rate (the probability of implementing an ERMC at time t conditional on not having implemented before time t) as a logit function of time-varying variables. We estimate the following model:

$$P(ERMC_{it} = 1 | ERMC_{it'} = 0, t' < t) = \frac{e^{\beta_0 + \beta_1 E_MEAN_{it-1} + \beta_2 E_VOL_{it-1} + \beta_3 EM_{it-1} + \sum \beta_j CONTROLS_{j,it}}}{1 + e^{\beta_0 + \beta_1 E_MEAN_{it-1} + \beta_2 E_VOL_{it-1} + \beta_3 EM_{it-1} + \sum \beta_j CONTROLS_{j,it}}} \quad (1)$$

where $ERMC_{it}$ is our measure of implementation of an ERMC (a 1 in the first year t in which we find information in the 10-K of company i about the existence of an ERM committee) E_MEAN_{it-1} and E_VOL_{it-1} measure prior earnings volatility and mean earnings. EM_{it-1} is a lagged value of one of the EM proxies (**AEM1**, **AEM2**, **TEM1**, **TEM2**). Note the conditioning in the probability. In order to estimate a correct “time to implement” model we need to setup the data so that for each ERM company the data for the dependent variable $ERMC_{it}$ are zeros for the periods before implementation, and a one for the implementation year. The periods after implementation are eliminated from the dataset (see Jenkins, 1995). For non-ERM companies, the full time series (of zeros) is included, representing a censored observation (i.e., an observation for which the event, implementation, is not observed in the sample period). Once the data have been conveniently structured, the above equation can be estimated as a traditional logit model.

Matching estimators

In our hypotheses H2 and H3a-H3b we postulate that implementation of an ERMC may have an immediate impact on the volatility of earnings, mean earnings and on earnings management practices. However, in the “time to implement” model (1) we have also made it explicit that the decision to implement an ERMC may be related to those three factors. In order to account for this endogeneity and measure, as much as possible, the “causal” impact of implementation of an ERMC we use nearest-neighbor matching estimators (Roberts and Whited, 2012). In particular, for every company which implements an ERM committee, we find, in the year of implementation, m ($m=1, 2, 3$) non-ERM companies in the same industry which are the most similar in terms of a set of matching variables.²⁹ For the “closest” match

²⁹ Note that the estimator we describe is really estimating the *average treatment effect on the treated*, since we only find matches for the treated observations. The specific set of matching variables is specified in the output tables (Tables 4, 5 and 7).

we use a Mahalanobis distance on the matching variables (Roberts and Whited, 2012). Once we have the two sets of matched companies, the ERM-companies and the non-ERM-companies, we run significance tests on the average difference in yearly changes and cumulative changes between the two groups for several horizons (1 to 4 years) in **E_VOL**, **E_MEAN** and the EM measures,. This procedure reduces the impact of the endogeneity of the decision to implement ERM committees, at least to the extent that our matching observables are related to the decision to initiate implementation of ERM.

Regression models for the impact of implementing ERMC

Given that initiation of ERM may have different implications from continued ERM, we test for the impact of ERM with traditional fixed-effects panel regressions. In order to test the impact of ERM on **E_VOL** and **E_MEAN** (H2), we estimate the following model:

$$\mathbf{E_VOL}_{it} = \beta_{0i} + \beta_1 \mathbf{ERMC}_{it-1} + \beta_2 \mathbf{E_VOL}_{it-1} + \beta_3 \mathbf{EM}_{it-1} + \sum \beta_j \mathbf{CONTROLS}_{j,it} + \varepsilon_{it} \quad (2a)$$

$$\mathbf{E_MEAN}_{it} = \beta_{0i} + \beta_1 \mathbf{ERMC}_{it-1} + \beta_2 \mathbf{E_MEAN}_{it-1} + \beta_3 \mathbf{EM}_{it-1} + \sum \beta_j \mathbf{CONTROLS}_{j,it} + \varepsilon_{it} \quad (2b)$$

where **Time** is a time trend and **EM**_{it-1} is a lagged value of one of the EM proxies (**AEM1**, **AEM2**, **TEM1**, **TEM2**).

Hypotheses 3a-3b relate ERMC implementation with subsequent EM practices. We test the impact of continued existence of an ERMC on EM with the following model:

$$\mathbf{EM}_{it} = \beta_{0i} + \beta_1 \mathbf{ERMC}_{it-1} + \beta_2 \mathbf{E_VOL}_{it-1} + \beta_3 \mathbf{E_MEAN}_{it-1} + \beta_4 \mathbf{EM}_{it-1} + \sum \beta_j \mathbf{CONTROLS}_{j,it} + \varepsilon_{it} \quad (3)$$

where **EM**_{it} the value of one of the EM proxies (**AEM1**, **AEM2**, **TEM1**, **TEM2**) for company *i* at time *t*. In Corollary C3a we qualify H3 and suggest that the effects of an ERMC may be different for companies with high values of earnings volatility or low values of mean earnings. We define four dummy variables which identify companies which in each year are in the highest and lowest quartile of **E_VOL** (**H_VOL** and **L_VOL**) and in the highest and lowest quartile of **E_MEAN** (**H_MEAN** and **L_MEAN**). We include these variables and their interactions with **ERMC**_{it} in Models 2a, 2b and 3 (see Tables 6b and 9).

d) RESULTS

Descriptive analysis

Table 2 reports some basic descriptive statistics of the main variables in our analyses. Columns (2)-(6) show the descriptives for ERM firms, that is, firms which have implemented an ERM committee according to the information available on their 10-K filings. Columns (7)-(11) show the descriptives for no-ERM firms. Note that the two groups differ along several dimensions: ERM companies are larger (**SIZE**) and more indebted (**DEBT**). They also show higher performance (**ROA**) and lower systematic risk (**BETA**). Earnings volatility (**E_VOL**) is lower for ERM-firms (.09 vs .26), whereas mean earnings (**E_MEAN**) are higher (.06 vs -.12). Overall, we observe significant differences between the two groups of firms. This justifies the structure of our analysis, especially the distinction between the determinants of implementation and the use of matching estimators to measure the effect of implementation.

Panel C of Table 2 shows the evolution over time of the number of firms for which we find evidence of implementation of an ERMC (and also for those which at each point in time have not yet implemented an ERMC). As it can be seen, the number of firms implementing ERM committees has increased steadily over time, especially after 1999. The table also includes the average value of the proxies of EM for the companies in each group, although we find no consistent evidence in those (unconditional) estimates.

We now review the results of the econometric specifications. For conciseness, we omit most of the discussion on the coefficients associated to control variables: when significant, results for the controls are consistent with our expectations and with previous findings.

The role of earnings volatility, mean earnings and EM in implementing ERM committee

Our first hypothesis postulates that high earnings volatility or low mean earnings (H1a) and high earnings management (H1b) are likely to be positively related to the probability of implementing an ERMC. Table 3 shows the results of the discrete-time duration model (1) of the probability of implementing an ERMC designed to test this hypothesis. We show several versions of the baseline model which differ on the proxy for EM used in the specification. Control variables such as debt (**DEBT**), size (**SIZE**) and firm performance (**ROA**) are significant and positively related to the probability of implementing an ERMC committee. Also, it seems that companies implement an ERMC with a higher probability during bad economic times (**GDP**). Interestingly, we find that systematic risk (**BETA**) is negatively

related with the probability of implementing an ERMC (note the t-stats ranging from -5.70 to -12.30). Regarding our hypothesis H1, previous mean earnings are indeed negatively related to the probability of implementing an ERMC: note the negative and significant coefficients of **E_MEAN** in all the specifications (except the one that uses **TEM1** as proxy for EM, which is the specification with significantly lower number of observations). The evidence for **E_VOL** is, however, not robust, since the only significant coefficient is the one in the specification with fewer observations. Finally, note that in none of the specifications the proxy of earnings management is a significant determinant of implementation of an ERM committee.

All in all, we find quite robust evidence that low earnings are a significant determinant of ERMC implementation whereas we do not find any significant evidence of high volatility or earnings management practices as factors which influence the decision to implement an ERMC.

The effect of implementing ERM on Earnings Volatility and Mean Earnings

In H2 we postulate that implementation of ERM will reduce subsequent earnings volatility (**E_VOL**) and increase mean earnings (**E_MEAN**). To test this hypothesis we use matching estimators to estimate the immediate effect of implementation and traditional regression models for the effect of continued existence of the ERMC.

Table 4 shows the results of the process of matching: each column contains the mean differences on the controls and matching variables in the year of implementation for the “treatment” (companies which implement an ERMC) and “control” groups (the group of close matches within no-ERM firms). The treatment group and the group of matches are quite similar: only one measure of earnings management (**AEM2**) differs significantly between the two groups. Thus, although the matching procedure is selecting matches that are similar enough in the main variables of interest of our analysis, we use the bias adjusted estimators of Abadie et al. (2003) to alleviate the impact of existing differences in firm characteristics between the treatment and control groups.

Table 5 shows the estimates of the period-by-period (columns labeled (1)-(3)) and cumulative (columns labeled (4)-(6)) effects of implementing ERM on our measures of earnings characteristics. Note that the results are quite simple: there is no evidence that immediately after ERM-implementation earnings volatility or mean earnings experience a significant change, compared to those of similar companies which do not implement an ERMC.

Table 6a shows the results of the regression models (2a) and (2b) for the analysis of the effects of continued presence of an ERMC on **E_VOL** (columns (1)-(4)) and **E_MEAN** (columns (5)-(8)). The column specifications differ on the proxy which controls for past earnings management. Regarding this last variable note that, interestingly, earnings management seems to be negatively related with **E_VOL** (suggesting earnings smoothing behavior) but also to **E_MEAN** (suggesting that smoothing leads to lower mean earnings). Regarding implementation of the ERMC, we find a significant and negative relation between existence of an ERMC and **E_VOL** (note the significant coefficients in the specifications with more observations). Conversely, we do not find a significant effect on **E_MEAN**. This result is consistent with the previous literature which suggests that a main objective of ERM is a reduction of earnings volatility (earnings smoothing).

Table 6b shows the results of an analysis which qualifies models (2a) and (2b) by including the interactions of the presence of the ERMC with extreme levels of earnings behavior. We construct four interaction variables. First, we interact **ERMC** with the dummy **H_VOL**, which identifies firms in the fourth quartile of earnings volatility (we call this interaction **ERMC*HV**) and with the dummy **L_VOL**, which identifies firms in the first quartile of earnings volatility (we call this interaction **ERMC*LV**). Second, we interact **ERMC** with the dummy **H_MEAN**, which identifies firms in the fourth quartile of mean earnings (we call this interaction **ERMC*HM**) and with the dummy **L_MEAN**, which identifies firms in the first quartile of mean earnings (we call this interaction **ERMC*LM**). We then include these interactions one-by-one in models (2a) and (2b) but omit the earnings management variable to keep homogeneous samples. Columns (1)-(4) of Table 6b show the results for **E_VOL** as dependent variable. Note that the coefficients of ERMC in all specifications are still negative and significant ($p < 0.01$). The interaction terms suggest that the effect of an ERMC on earnings volatility intensifies for companies which had high volatility (note that the coefficient of **ERMC*HV** is -4.3, significant at the 5% level). Also, the negative effect of an ERMC is larger for companies with high mean earnings (note the coefficient of -0.678, again significant at the 5% level). In the results for **E_MEAN**, shown in columns (5)-(8), all the

interactions are significant. The interaction terms attenuate the positive effect for low mean and low volatility firms, and attenuates the negative effect for high mean and high volatility firms. Taken together, the results in Tables 5 and 6 give support to the effectiveness of ERMCs to reduce earnings volatility (earnings smoothing), although this effect requires continued existence of the committee and it is more significant for high-volatility companies. On the other hand, we find no effect of ERM on mean earnings, suggesting that earnings targeting may not be a priority for ERMCs.

The effect of implementation of ERM on EM

H3a postulates that implementation of ERM would lead to subsequent lower levels of transaction-based earnings management whereas H3b leaves the effect of implementation of ERM on AEM unpredicted, since arguments in favor of both a positive and negative relationship can be constructed. As we did for earnings behavior, we perform our analysis in two stages. First, we examine the immediate impact of implementation of ERMC on EM through matching estimators and, second, we analyze the continuous effect of ERM.

Table 7 shows the estimates of the period-by-period (columns (1)-(3)) and cumulative (columns (4)-(6)) effects of implementing ERM on our measures of earnings management. The numbers estimate the average difference in the four proxies for earnings management between the firms that initiate disclosure (treatment group) and the matching sample of firms (control group). The results are not clear-cut: there is strong evidence that immediately after implementing an ERM committee **AEM1** decreases. However **AEM2** shows no significance for the first period and mixed results for the second (positively significant) and third (negatively significant) period. The effect of implementing ERM on **TEM1** and **TEM2** is not clear-cut on the period-by-period analysis, although cumulative in **TEM1** are significant and negative in all periods for $m=1$. Differences in **TEM2** are negatively significant for $m=2$ and $m=3$ in second period. Nearly all differences, although not always significant, are negative for both **TEM1** and **TEM2**. Our results, therefore, suggest that implementation of ERM committee entails a reduction of transaction-based earnings management in the periods after implementation, in line with H3a.

In Table 8, we show the results of model (3) which analyzes the effects of continued ERMC on subsequent earnings management. The coefficients for lagged ERMC (**L.ERMC**) in both

TEM1 and **TEM2** specifications are significantly negative and consistent with the matching results. Hence, we find evidence that continued ERM reduces the extent to which companies engage in opportunistic transactions. Note that coefficients of **L.ERMC** on **AEM1** and **AEM2** are negative but not significant, which again are relatively consistent with the matching results. Interestingly, note that the coefficient on **L.E_VOL** is always negative and significant, suggesting that high volatility tends to be associated with higher levels of earnings management.

In order to elaborate on the above results, we analyze the impact of **ERMC** on earnings management measures in companies with high and low levels of earnings volatility and mean earnings. Our priors were specified in corollary 3a. As in Table 6b, we include the quartile variables (**H_VOL**, **L_VOL**, **H_MEAN** and **L_MEAN**) and their interactions with **ERMC** in Model (3). The results presented in Table 9a, columns (5)-(8), where high volatility interacts with **ERMC**, are similar to those discussed above. In particular, the estimated coefficients on **L.H_VOL** are positive and significant on **AEM2** and **TEM2**, indicating that high levels of volatility is associated with higher levels of earnings management. The coefficients on **L.ERMC** are negative and significant in both **TEM1** and **TEM2**, while they are indistinguishable from zero in **AEM1** and **AEM2**. The **ERMC*HV** interactions terms are not significant for any model except for **AEM1** where the coefficient is significantly negative, but the effect is relatively too small. Consistent with Table 8, the results suggest that the existence of an ERM committee reduces transaction-based earnings management while there is no significant effect on accrual-based earnings management. Table 9a, columns (1) to (4) show the effect of **ERMC** interacting with low earnings volatility. Contrarily to the previous results, the estimated coefficients of **L_VOL** are significantly negative on **AEM1** and **TEM2**, suggesting that low levels of earnings volatility are associated to lower levels of earnings management. The **L.ERMC** and the interaction terms are not significant in any of the four models, showing no evidence that the existence of an ERM committee influences the levels of earnings manipulation in companies with low levels of volatility.

Table 9b, columns (4) to (8), show the results for companies with high mean earnings. **L.ERMC** coefficients are negative and significantly different from zero on **TEM1** and **TEM2** (consistent with results in Table 8 and Table 9a). **H_MEAN** coefficient is positive and significant in **TEM2**, but the interactions with **ERMC** are, again, not significant. Inclusion of the interactions now suggests that high mean earnings indeed leads to higher use of transaction-based earnings management. However, the presence of an ERM committee

cancels the effect. Table 9b, columns (1) to (4) show the results for companies with low mean earnings. Consistent with all previous results, the **L.ERMC** coefficients are negative and significant. The coefficients on the **L_MEAN** and on the interaction are not significantly different from zero. Suggesting that low levels of mean earnings or the existence of an ERM committee have no effect on earnings management (both accrual and transaction based).

To sum up, adoption of an ERM committee comes associated with an overall reduction of sub-optimal transactions (TEM) but no clear effect on accrual-based earnings management. These results suggest that probably ERM considers TEM activities as more costly than AEM activities, which are probably seen as possible complements with respect to the objective of reducing earnings volatility.

e) CONCLUSIONS

In this paper we have taken a first step in examining the role of enterprise risk management (ERM) in accounting practices that relate to risk. Traditionally, audit committees at the Board level have held oversight over accounting risks. Recently, though, companies have started to integrate risk management functions within the firms' operational mechanisms, providing them with resources and incentives to monitor corporate risks. Companies implementing such managerial based risk control systems might also have interest in reducing opportunistic accounting decisions as a source of potential risk for the company, or on the other hand, may use these practices as a mechanism to achieve targeted levels of earnings volatility (as reducing risk) or of mean earnings. Our results suggest that earnings management has no effect on the decision of adopting an ERMC, which seems to come mostly from low-earnings. In particular, we do not find support for previous results that earnings volatility is a significant determinant of this managerial risk monitoring system. On the other hand, we find strong evidence of the company's systemic risk to be a factor of influence in this decision. Second, we find that implementation of an ERM committee has, however, no direct effect on mean earnings or volatility, but continued existence of an ERMC has a significant negative relationship with subsequent levels of earnings volatility. This result suggests that one of the targets of ERM is the minimization of the volatility of earning and, therefore, ERM shares a common ground with the targets and consequences of earnings management practices. If smoother earnings are always desired, managers might continue to use earnings management in conjunction with ERM to achieve targeted levels of earnings smoothing compelling. In line with this reasoning we find that implementation of ERM committees is followed by a not

clear effect on accrual-based earnings management, but a clear evidence of a reduction of TEM. These results suggest that ERM views sub-optimal, mistimed or opportunistic transactions as a potential source of risk for the company but accounting operations as a potentially useful risk-reducing strategy. Supporting this idea, continuous presence of ERM committees relates negatively to TEM but not to AEM.

Our results are, admittedly, quite descriptive, but we believe they are successful in opening future lines of research in the area of risk management. We have shown that ERM does not necessarily lead to reductions of all EM practices, but rather only of TEM. Further analysis of this effect is definitely warranted. We have focused on one particular ERM mechanism, namely the implementation of an ERM committee. As more and more firms adopt an ERM approach via different mechanisms, replicating our analyses for those alternative mechanisms should lead to a better understanding of the relationship between an explicit approach to risk-reduction (ERM) and practices aimed at “disguising” risk (EM).

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Table 1. Description of variables

Variable Name	Description	Source
ERM variables		
ERMC_{it}	Dummy: 1 if company <i>i</i> has an Enterprise Risk Management Committee in year <i>t</i> , 0 otherwise	LEXIS-NEXIS
FIRSTC_{it}	Dummy: 1 if company <i>i</i> implements for the first time an Enterprise Risk Management Committee in year <i>t</i> , 0 otherwise	LEXIS-NEXIS
Earnings management variables		
AEM1_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_em1re1_{it} , rank_em3_{it} and rank_jones_{it}	Compustat - own
AEM2_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_jones_{it}	Compustat - own
TEM1_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_cfo_{it} , rank_prod_{it} and rank_discrex_{it}	Compustat - own
TEM2_{it}	Average for firm <i>i</i> of year <i>t</i> values of rank_cfo_{it} and rank_prod_{it}	Compustat - own
E_VOL_{it}	Firm <i>i</i> 's earnings volatility from period <i>t</i> -5 to <i>t</i> .	Compustat - own
E_MEAN_{it}	Firm <i>i</i> 's average earnings from period <i>t</i> -5 to <i>t</i> .	Compustat - own
Variables which identify groups of high and low volatility and mean		
H_VOL_{it}	Dummy: 1 if company <i>i</i> E_VOL is in the 4th quartile of its distribution at time <i>t</i>	Compustat - own
L_VOL_{it}	Dummy: 1 if company <i>i</i> E_VOL is in 1st quartile of its distribution at time <i>t</i>	Compustat - own
H_MEAN_{it}	Dummy: 1 if company <i>i</i> E_MEAN is in 4th quartile of its distribution at time <i>t</i>	Compustat - own
L_MEAN_{it}	Dummy: 1 if company <i>i</i> E_MEAN is in 1st quartile of its distribution at time <i>t</i>	Compustat - own
Control variables		
ROA_{it}	Income before extraordinary items _{it} / Total assets _{it}	Compustat
BETA_{it}	Unlevered Betas from Merton-KMV model	Moody's KMV
DEBT_{it}	Total debt _{it} / Total Assets _{it}	Compustat
LIT_i	Dummy: 1 if company <i>i</i> is in a high litigation industry, 0 otherwise (Francis et al. 1994, Skinner 1997, Matsumoto 2002)	See references
SIZE_{it}	Log (market value of equity) _{it}	Compustat
TQ_{it}	Equity Market V _{it} + Liabilities MarketV _{it} / Equity BookV _{it} + Liabilities BookV _{it}	Compustat
LIQ_{it}	Nr shares of firm <i>i</i> 's traded during period <i>t</i> / Total shares outstanding end of period <i>t</i>	Compustat
GDP_t	GDP growth rate in year <i>t</i>	Federal Reserve
BIG4_{it}	Dummy: 1 if firm <i>i</i> 's auditor in year <i>t</i> is a "Big Four", 0 otherwise	Compustat

Sources: *LEXIS-NEXIS*: search for information on disclosure of CSR activities in the 10-K filings; *Federal Reserve*: FRED database from the Federal Reserve Bank of St. Louis; *Compustat*: variables directly available in Compustat; *Compustat - own*: own calculations from Compustat variables. *Moody's KMV*: Moody's KMV database. Interaction variables and additional variables used in some of the analyses are described in the captions of each specific table.

Table 2. Descriptive Statistics

Panel A: Descriptive statistics of the main variables										
	ERM FIRMS					No-ERM FIRMS				
	Obs	Mean	St. dev.	Min	Max	Obs	Mean	St. dev.	Min	Max
FIRSTC	1061	0.09	0.29	0.00	1.00	--	--	--	--	--
ERMC	1061	0.50	0.50	0.00	1.00	--	--	--	--	--
AEM1	724	3932	997	1071	6855	40524	3501	1127	52	6894
AEM2	852	4897	1867	19	8027	55542	3650	2172	1	8138
TEM1	119	3139	1209	343	5354	10297	2663	1267	16	5984
TEM2	901	4867	1753	77	8304	51580	3758	1912	1	8540
E_VOL	967	0.09	0.18	0.00	1.64	49760	0.26	0.36	0.00	2.44
E_MEAN	967	0.06	0.22	-1.85	0.48	49760	-0.12	0.53	-3.63	0.59
BETA	848	0.60	0.95	-2.73	4.00	34846	1.17	1.38	-4.00	4.00
ROA	1061	-0.01	0.20	-1.51	0.26	62195	-0.29	0.71	-4.06	0.29
SIZE	1061	7.19	1.91	1.04	10.40	62195	4.44	2.32	-1.25	10.40
TQ	1061	2.77	3.82	-34.09	50.62	62195	3.05	6.83	-34.09	50.62
DEBT	1061	0.33	0.15	0.00	1.31	62195	0.28	0.32	0.00	2.16
LIT	1061	0.10	0.30	0.00	1.00	62195	0.22	0.41	0.00	1.00
BIG4	1061	0.79	0.41	0.00	1.00	62195	0.63	0.48	0.00	1.00

Panel B: Correlation matrix

	AEM1	AEM2	TEM1	TEM2	E_VOL	E_MEAN	BETA	ROA	SIZE	TQ
AEM2	0.592	--								
TEM1	0.200	0.390	--							
TEM2	0.199	0.386	0.994	--						
E_VOL	-0.126	-0.297	-0.423	-0.410	--					
E_MEAN	0.123	0.270	0.394	0.380	-0.860	--				
BETA	-0.107	-0.207	-0.163	-0.164	0.168	-0.137	--			
ROA	0.140	0.270	0.370	0.356	-0.635	0.812	-0.150	--		
SIZE	0.085	0.136	0.207	0.206	-0.156	0.248	0.068	0.258	--	
TQ	-0.022	-0.097	-0.160	-0.148	0.168	-0.127	0.102	-0.109	0.322	--
DEBT	0.103	0.208	0.146	0.144	-0.089	-0.027	-0.188	-0.106	-0.028	-0.098

Panel C: Number of firms implementing an ERM committee by year

Year	Implem. ERMC	AEM1	AEM2	TEM1	TEM2	No ERMC	AEM1	AEM2	TEM1	TEM2
1994	1	4508	4325		4346	9,134	3094	3431	2384	3387
1995	5	3065	4678		3554	9,751	3204	3600	2441	3588
1996	6	4914	7402	3907	5925	9,939	3466	4053	2785	3972
1997	12	4426	6109	3918	6002	9,879	3645	4095	2889	4088
1998	20	4252	5004	3818	5865	9,984	3591	3936	2797	4013
1999	26	4107	5343	2944	5403	9,890	3610	4112	2866	4192
2000	34	4022	5245	2665	4669	9,512	3785	4081	2840	4162
2001	48	3864	5083	3232	4933	9,174	3656	3916	2833	4060
2002	57	3987	5006	3594	5064	8,822	3534	3749	2767	3905
2003	57	4040	5442	3112	5053	8,548	3487	3636	2637	3764
2004	61	4051	5097	3291	5185	8,350	3477	3569	2711	3765
2005	70	4054	5064	4223	4925	8,192	3373	3471	2679	3662
2006	70	3551	4874	2782	4830	8,003	3294	3407	2573	3571
2007	73	3578	4750	3057	4748	7,584	3185	3280	2503	3458
2008	78	3384	4476	2668	4551	7,108	3220	3163	2382	3371
2009	85	3176	4057	2713	4313	6,606	3118	3097	2340	3285
2010	80	2575	3450	2738	4049	5,451	2667	2519	1962	2773
	783	3856.1	5023.8	3244.1	4906.8	145,927	3376.8	3595	2611.1	3706.8

Table 2 (continued):

Panel A: ERM firms: all firms that at some point have implemented an ERM committee according to the information available on the SEC files (automatic search through Lexis-Nexis). *Non-ERM firms:* firms that do not mention any ERMC on the SEC files database during the sample period. **ROA**, **SIZE**, **TQ** and **DEBT** have been winsorized at the top and bottom one percent of their distributions.

Panel B: Pearson correlation coefficients (for the maximum common sample between pairs of variables within the KLD sample) of the main variables of interest in the analysis (dummy variables excluded) are shown below the main diagonal.

Panel C: Implementation of ERM Committee by year. "Implem. ERMC": number of firms which implemented for the first time an ERM Committee in that year. "No ERMC": number of firms for which we have no evidence of an ERM Committee. The remaining columns contain the average yearly value of each of the EM measures for the two groups of companies.

Table 3. Determinants of Implementation of an ERM Committee

	Dependent variable: FIRSTC				
	(1) No EM	(2) AEM1	(3) AEM2	(4) TEM1	(5) TEM2
L.EM		0.00 (1.17)	0.00 (1.09)	-0.00 (-0.97)	-0.00 (-0.21)
E_VOL	-3.01 (-1.54)	-5.37 (-1.05)	-1.78 (-1.43)	2.05*** (3.34)	-2.72 (-1.34)
E_MEAN	-3.21*** (-3.33)	-4.02** (-2.16)	-2.51*** (-2.95)	0.79 (1.17)	-3.03*** (-3.31)
BETA	-0.70*** (-6.40)	-0.63*** (-5.70)	-0.63*** (-6.21)	-0.72*** (-12.30)	-0.71*** (-6.49)
TIME	-0.04** (-2.04)	0.03 (1.03)	0.03 (1.15)	0.61** (2.25)	-0.04* (-1.69)
ROA	2.74** (2.39)	3.16 (1.62)	2.16** (2.41)	-0.86*** (-2.72)	2.32** (2.44)
TQ	-0.04** (-2.52)	-0.04* (-1.94)	-0.04** (-2.17)	-0.00 (-0.00)	-0.04** (-2.54)
DEBT	1.87*** (4.35)	2.01*** (3.78)	1.79*** (3.52)	-0.20 (-0.21)	1.87*** (4.04)
SIZE	0.49*** (7.79)	0.37*** (4.98)	0.40*** (5.55)	0.30 (1.19)	0.56*** (8.32)
GDP	-29.25*** (-6.18)	-16.90*** (-2.94)	-19.66*** (-2.82)	143.8* (1.81)	-34.02*** (-5.68)
LIT	-0.65* (-1.71)	-0.42 (-1.12)	-0.39 (-1.11)	2.23*** (2.65)	-0.67* (-1.68)
Const.	-7.36*** (-23.19)	-8.70*** (-8.875)	-8.90*** (-10.94)	-22.16*** (-3.402)	-7.6*** (-13.92)
N	32,640	26,278	30,997	6,634	30,225
R2 (%)	0.147	0.129	0.117	0.234	0.165

Maximum likelihood estimation of the discrete-time logistic model (1) for the probability of implementing an ERM Committee (Dependent variable: **FIRSTC**). t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Column headings denote the regressor used as proxy for earnings management (no measure, **AEM1**, **AEM2**, **TEM1** and **TEM2**). Results of the main regressors of interest which are significant at the 5% level are shown in boldface. *L.* denotes one-period lagged values of the corresponding regressor.

Table 4. Descriptive statistics on the matching samples

Treatment variable: FIRSTC			
	(1)	(2)	(3)
	m=1	m=2	m=3
AEM1	-0.005 (-0.87)	-0.002 (-0.45)	-0.001 (-0.02)
AEM2	-0.057* (-1.87)	-0.043* (-1.75)	-0.042* (-1.69)
L.AEM1	0.016 (0.63)	0.021 (0.90)	0.007 (0.33)
L.AEM2	0.013 (0.38)	-0.005 (-0.20)	-0.017 (-0.68)
TEM1	0.045 (1.02)	0.010 (0.32)	-0.004 (-0.14)
TEM2	-0.001 (-0.07)	-0.003 (-0.57)	0.002 (0.25)
L.TEM1	-0.006 (-0.10)	-0.009 (-0.19)	-0.003 (-0.06)
L.TEM2	-0.046 (-1.40)	-0.030 (-1.09)	-0.021 (-0.77)
E_VOL	0.001 (0.13)	0.000 (0.02)	-0.001 (-0.28)
E_MEAN	-0.011 (-1.51)	-0.008 (-1.06)	-0.012* (-1.66)
L.E_VOL	-0.002 (-0.26)	0.001 (0.23)	-0.001 (-0.22)
L.E_MEAN	-0.014* (-1.79)	-0.011 (-1.07)	-0.016 (-1.42)
ROA	-0.013 (-1.41)	-0.008 (-1.078)	-0.012 (-1.606)
DEBT	0.006 (0.89)	0.005 (0.90)	0.009* (1.64)
SIZE	0.026 (0.36)	0.051 (1.01)	0.071 (1.41)
TQ	-0.227 (-0.42)	-0.251 (-0.52)	-0.147 (-0.35)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **AEM1**, **TEM2**, **E_VOL**, **E_MEAN**, **ROA**, **DEBT** and **SIZE**. The coefficients in the columns estimate the average difference of the corresponding row variable between each company which implements an ERM committee and the group of m (m=1,2,3) matching companies in the year of implementation; t-statistics are shown in brackets. **FIRSTC**: treatment is defined as a 1 for the company which implements an ERM committee in a specific year. *, ** and ***: average differences in the levels of the variables significant at the 10%, 5% and 1% level. Differences which are significant at the 10% level have been highlighted in boldface.

Table 5. The impact of implementing an ERMC on earnings volatility and mean earnings: matching estimators (period-by-period and cumulative effect)

		Treatment variable: FIRSTC						
		Period by Period			Cumulative			
		(1)	(2)	(3)	(4)	(5)	(6)	
		m=1	m=2	m=3	m=1	m=2	m=3	
E_VOL	t1-t0	0.001 (0.26)	0.001 (0.81)	0.001 (0.46)	t1-t0	0.001 (0.26)	0.001 (0.81)	0.001 (0.46)
	t2-t1	-0.001 (-1.11)	0.001 (0.22)	0.001 (1.24)	t2-t0	-0.001 (-0.80)	0.001 (0.42)	0.002 (1.17)
	t3-t2	-0.001 (-0.94)	-0.001 (-0.80)	-0.001 (-1.04)	t3-t0	-0.002 (-0.92)	0.001 (0.31)	0.002 (0.84)
	t4-t3	-0.001 (-0.67)	0.001 (0.34)	-0.001 (-0.25)	t4-t0	-0.001 (-0.43)	0.003 (1.43)	0.003 (1.28)
E_MEAN	t1-t0	0.005 (0.91)	0.003 (0.87)	0.002 (0.60)	t1-t0	0.004 (0.91)	0.003 (0.87)	0.002 (0.60)
	t2-t1	0.001 (0.08)	0.001 (0.51)	0.001 (0.53)	t2-t0	0.003 (-0.44)	0.004 (0.50)	0.002 (0.39)
	t3-t2	-0.001 (-0.61)	0.001 (0.08)	0.001 (0.35)	t3-t0	0.002 (-0.26)	0.004 (0.45)	0.004 (0.50)
	t4-t3	-0.001 (-0.09)	0.001 (0.89)	0.001 (0.80)	t4-t0	0.006 (0.60)	0.01 (0.90)	0.007 (0.80)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **AEM1**, **TEM2**, **E_VOL**, **E_MEAN**, **ROA**, **DEBT** and **SIZE**. The coefficients in the cells report the bias-adjusted *average treatment on the treated* (Abadie et al., 2003), that is, the mean difference in the corresponding outcome variable between the treatment group and the group of m (m=1,2,3) nearest-neighbor matches in the years after implementation; t-statistics are shown in brackets.

Columns (1)-(3): The row headings t_i-t_j denote that the estimator measures the differences in the changes in the dependent variables (**E_VOL**, **E_MEAN**) between time i and time $j=i-1$, where $t_i=0$ is the treatment period.

Columns (4)-(6): The row headings t_i-t_0 denote that the estimator measures the differences in the cumulative changes in the dependent variables (**E_VOL**, **E_MEAN**) between time i and the treatment period.

FIRSTC: treatment is defined as a 1 for the company which implement an ERM Committee in a specific year. *, ** and ***: Significant effect at the 10%, 5% and 1% level.

Table 6a. Relationship between the presence of an ERM, earnings volatility and mean earnings

	Dependent variable: E_VOL				Dependent variable: E_MEAN			
	(1) AEM1	(2) AEM2	(3) TEM1	(4) TEM2	(5) AEM1	(6) AEM2	(7) TEM1	(8) TEM2
L.ERM	-0.16* (-1.68)	-0.29*** (-2.84)	-0.001 (-0.00)	-0.31*** (-3.43)	-0.001 (-0.07)	0.08 (1.42)	-0.01 (-0.07)	0.09 (1.36)
L.E_VOL	66.0*** (17.80)	58.6*** (14.62)	59.1*** (19.19)	59.9*** (16.28)				
L.E_MEAN					69.2*** (40.69)	64.2*** (34.80)	64.5*** (66.59)	64.1*** (33.39)
L.EM	-0.001*** (-3.12)	-0.001*** (-9.80)	-0.001*** (-11.13)	-0.001*** (-22.37)	-0.001*** (-2.77)	0.001*** (8.32)	0.001*** (3.19)	0.001*** (5.19)
TIME	-0.02*** (-2.99)	-0.03*** (-2.79)	-0.11*** (-4.71)	-0.02** (-2.03)	0.01 (0.79)	0.02 (1.11)	0.02 (1.63)	0.01 (0.62)
ROA	-8.40*** (-20.57)	-9.26*** (-20.46)	-9.20*** (-10.47)	-8.88*** (-19.23)	9.54*** (27.25)	10.8*** (26.38)	10.1*** (11.23)	10.6*** (22.04)
TQ	-0.00 (-0.27)	-0.00 (-0.02)	-0.02 (-0.95)	0.02 (1.47)	-0.00 (-0.60)	-0.00 (-1.54)	0.03** (2.39)	-0.02** (-2.13)
DEBT	1.14*** (2.65)	1.66*** (3.64)	-0.56 (-0.86)	1.72*** (3.86)	0.57 (1.12)	0.72 (1.54)	1.84*** (2.74)	0.73 (1.55)
SIZE	0.93*** (5.62)	1.03*** (4.97)	0.87*** (4.01)	1.01*** (5.75)	-0.281*** (-3.29)	-0.283*** (-2.58)	-0.12 (-0.74)	-0.27*** (-3.21)
GDP	-4.14** (-2.43)	-9.69*** (-7.38)	-8.69*** (-3.34)	-11.3*** (-8.72)	5.51* (1.83)	9.76*** (3.14)	12.3*** (3.95)	9.65*** (3.13)
N	37,575	42,890	7,835	41,305	37,575	42,890	7,835	41,305
R2 (%)	58.9	54.0	58.5	55.3	77.3	76.4	85.8	76.1

Fixed effects estimates of models (2a) and (2b).

Columns (1)-(4): Model (2a) with dependent variable **E_VOL**.

Columns (5)-(8): Model (2b) with dependent variable **E_MEAN**.

The column headings denote the specific EM measure used as the regressor in each specification. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data. For expositional purposes, we multiply all coefficients by 100.

Table 6b. Effect of ERMC on E_VOL and E_MEAN: controlling for high/low earnings volatility and mean earnings

	Dependent variable: E_VOL				Dependent variable: E_MEAN			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
L.ERMC	-1.29*** (-3.659)	-0.353** (-1.970)	-0.744*** (-3.613)	-0.719*** (-3.923)	1.60* (1.64)	-0.212* (-1.68)	-0.148 (-1.01)	0.404 (1.17)
L.ERMC_LV	0.929*** (3.34)				-1.86* (-1.91)			
L.ERMC_HV		-4.39** (-2.13)				15.0** (2.25)		
L.ERMC_LM			-0.790 (-0.69)				8.98*** (3.02)	
L.ERMC_HM				-0.678** (-2.05)				-0.932*** (-2.59)
L.L_VOL/ L.H_VOL	-2.84*** (-9.77)	7.16*** (9.43)			1.55*** (14.94)	-3.19*** (-13.14)		
L.L_MEAN / L.H_MEAN			2.37*** (5.06)	-0.088 (-0.87)			-4.06*** (-10.13)	3.37*** (13.01)
TIME	0.029 (1.63)	0.010 (0.57)	0.054*** (2.84)	0.059*** (3.12)	0.075** (2.118)	0.081** (2.318)	0.069* (1.886)	0.103*** (2.785)
ROA	-14.9*** (-17.07)	-14.4*** (-17.78)	-14.8*** (-17.08)	-15.0*** (-17.15)	21.5*** (38.71)	21.3*** (37.94)	21.3*** (38.52)	21.4*** (38.63)
TQ	0.027* (1.77)	0.030** (2.06)	0.025 (1.63)	0.028* (1.81)	-0.153*** (-4.81)	-0.155*** (-4.68)	-0.149*** (-4.77)	-0.149*** (-4.67)
DEBT	3.43*** (3.943)	3.33*** (3.922)	3.43*** (3.938)	3.41*** (3.953)	0.905 (1.50)	0.943 (1.55)	0.875 (1.44)	0.853 (1.41)
SIZE	2.26*** (11.67)	2.29*** (11.21)	2.27*** (11.62)	2.22*** (11.23)	-0.977*** (-582.0)	-0.982*** (-562.4)	-1.04*** (-570.8)	-1.12*** (-623.4)
GDP	-16.6*** (-4.69)	-16.8*** (-5.24)	-16.6*** (-4.56)	-16.7*** (-4.59)	14.6*** (2.72)	14.8*** (2.85)	14.6*** (2.66)	15.4*** (2.74)
N	46,547	46,547	46,547	46,547	46,547	46,547	46,547	46,547
R2(%)	14.9	17.1	14.7	14.5	23.4	23.9	23.8	23.9

Fixed effects estimates of the interaction-augmented models (2a) and (2b).

Columns (1)-(4): Model (2a) with dependent variable **E_VOL**.

Columns (5)-(8): Model (2b) with dependent variable **E_MEAN**.

ERMC_LV: interaction between **ERMC** and **L_VOL**, a dummy variable taking value 1 if **E_VOL** is in the first quartile of its sample distribution. **ERMC_HV**, interaction between **ERMC** and **H_VOL**, a dummy variable taking value 1 if **E_VOL** is in the fourth quartile of its sample distribution. **ERMC_LM**, interaction between **ERMC** and **L_MEAN**, a dummy variable taking value 1 if **E_MEAN** is in the first quartile of its sample distribution. **ERMC_HM**, interaction between **ERMC** and **H_MEAN**, a dummy variable taking value 1 if **E_MEAN** is in the fourth quartile of its sample distribution.

t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data. For expositional purposes, we multiply all coefficients by 100.

Table 7. The impact of implementing an ERMC on EM measures: matching estimators (period-by-period and cumulative effect)

		FIRSTC						
		Period by Period			Cumulative			
		(1)	(2)	(3)	(4)	(5)	(6)	
		m=1	m=2	m=3	m=1	m=2	m=3	
AEM1	t1-t0	-0.048* (-1.69)	-0.051** (-2.34)	-0.047** (-2.17)	t1-t0	-0.048* (-1.69)	-0.051** (-2.34)	-0.047** (-2.17)
	t2-t1	0.056 -1.33	0.051 -1.54	0.036 -1.11	t2-t0	0.012 -0.47	0.003 -0.17	-0.009 (-0.47)
	t3-t2	-0.033 (-0.81)	-0.039 (-1.18)	-0.021 (-0.75)	t3-t0	-0.013 (-0.35)	-0.033 (-1.21)	-0.031 (-1.26)
	t4-t3	0.03 -0.57	0.027 -0.85	0.004 -0.18	t4-t0	0.002 -0.05	-0.013 (-0.59)	-0.022 (-1.08)
AEM2	t1-t0	-0.037 (-0.72)	-0.053 (-1.50)	-0.035 (-1.03)	t1-t0	-0.037 (-0.72)	-0.053 (-1.50)	-0.035 (-1.03)
	t2-t1	0.098** (2.00)	0.101** (2.46)	0.084** (2.25)	t2-t0	0.090* (1.94)	0.069** (2.05)	0.071** (2.30)
	t3-t2	-0.128** (-2.51)	-0.130*** (-2.76)	-0.112** (-2.44)	t3-t0	-0.026 (-0.50)	-0.037 (-0.88)	-0.031 (-0.77)
	t4-t3	0.035 (0.58)	0.034 (0.65)	0.053 (1.08)	t4-t0	-0.033 (-0.69)	-0.012 (-0.35)	-0.001 (-0.00)
TEM1	t1-t0	-0.256** (-2.52)	-0.031 (-0.46)	-0.057 (-0.90)	t1-t0	-0.256** (-2.52)	-0.031 (-0.46)	-0.057 (-0.90)
	t2-t1	-0.216 (-1.55)	0.050 (0.79)	0.112** (2.43)	t2-t0	-0.633** (-2.51)	-0.040 (-0.46)	-0.008 (-0.12)
	t3-t2	0.012 (0.12)	0.022 (0.61)	-0.045 (-1.01)	t3-t0	-0.186* (-1.74)	0.033 (0.55)	-0.078 (-0.87)
	t4-t3	-0.656 (-1.47)	-0.027 (-0.44)	0.061 (0.98)	t4-t0	-0.569* (-1.66)	0.012 (0.12)	0.022 (1.20)
TEM2	t1-t0	0.002 (0.04)	-0.013 (-0.50)	-0.018 (-0.75)	t1-t0	0.001 (0.04)	-0.013 (-0.50)	-0.018 (-0.75)
	t2-t1	-0.053 (-1.62)	-0.046* (-1.65)	-0.036 (-1.36)	t2-t0	-0.057 (-1.60)	-0.065** (-2.26)	-0.066** (-2.44)
	t3-t2	0.051 (1.44)	0.059* (1.69)	0.054* (1.73)	t3-t0	-0.024 (-0.70)	-0.022 (-0.74)	-0.027 (-0.94)
	t4-t3	0.009 (0.32)	0.002 (0.08)	0.007 (0.29)	t4-t0	-0.024 (-0.85)	-0.028 (-1.07)	-0.024 (-0.94)

Matching on observables using exact matching on the industry and year and nearest-neighbor matching (Mahalanobis distance) on **AEM1**, **TEM2**, **E_VOL**, **E_MEAN**, **ROA**, **DEBT** and **SIZE**. The coefficients in the cells report the bias-adjusted *average treatment on the treated* (Abadie et al., 2003), that is, the mean difference in the corresponding outcome variable between the treatment group and the group of m ($m=1,2,3$) nearest-neighbor matches in the years after implementation; t -statistics are shown in brackets.

Columns (1)-(3): The row headings t_i-t_j denote that the estimator measures the differences in the changes in the dependent variables (**AEM1**, **AEM2**, **TEM1**, **TEM2**) between time i and time $j=i-1$, where $t_i=0$ is the treatment period.

Columns (4)-(6): The row headings t_i-t_0 denote that the estimator measures the differences in the cumulative changes in the dependent variables (**AEM1**, **AEM2**, **TEM1**, **TEM2**) between time i and the treatment period.

FIRSTC: treatment is defined as a 1 for the company which implement an ERM Committee in a specific year. *, ** and ***: Significant effect at the 10%, 5% and 1% level.

Table 8. Relationship between the presence of an ERMC and subsequent earnings management

	Dependent variables: EM measures			
	(1) AEM1	(2) AEM2	(3) TEM1	(4) TEM2
L.ERMC	-44.59 (-0.48)	-81.88 (-0.66)	-340.5*** (-2.96)	-226.4*** (-2.89)
L.E_VOL	656.1*** (6.66)	813.5*** (6.35)	666.5*** (3.89)	738.9*** (6.17)
L.E_MEAN	138.0 (0.76)	-125.1 (-1.44)	-24.31 (-0.24)	5.410 (0.04)
L.EM	-0.076*** (-2.86)	-0.069*** (-2.98)	-0.015 (-0.52)	-0.004 (-0.14)
TIME	-43.16*** (-3.42)	-107.6*** (-5.15)	-54.16*** (-4.09)	-92.91*** (-4.61)
ROA	239.1*** (6.92)	791.3*** (15.16)	284.3*** (3.35)	329.0*** (6.75)
TQ	-1.077 (-0.64)	-5.480 (-1.40)	-8.867 (-1.49)	-13.09*** (-2.88)
DEBT	51.83 (0.91)	131.2** (1.96)	-168.2 (-1.51)	-117.8 (-1.54)
SIZE	91.41*** (4.83)	45.39** (2.19)	5.076 (0.12)	56.98*** (2.66)
BIG4	-11.87 (-0.69)	20.69 (1.01)	-108.8*** (-3.29)	10.65 (0.42)
GDP	-2,712 (-1.55)	804.5 (0.26)	-3,233* (-1.85)	-2,658 (-1.27)
N	36,981	45,999	7,978	44,131
R2(%)	1.8	3.4	2.1	2.8

Fixed effects estimates of model (3). The column headings denote the specific EM measure used as dependent variable in each specification. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data.

Table 9a. Relationship between ERM and EM: controlling for low and high earnings volatility

	Dependent variables: EM measures							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AEM1	AEM2	TEM1	TEM2	AEM1	AEM2	TEM1	TEM2
L.ERM	-98.07 (-0.51)	235.5 (0.86)	-247.0 (-1.39)	-156.1 (-0.98)	-22.46 (-0.23)	-95.36 (-0.72)	-440.8*** (-2.94)	-246.2*** (-3.39)
L.L_VOL	-112.8*** (-3.93)	-63.40 (-1.44)	20.42 (0.46)	-105.6*** (-3.38)				
L.ERM*LV	83.28 (0.33)	-473.5 (-1.21)	-229.3 (-0.559)	-92.14 (-0.42)				
L.H_VOL					-3.258 (-0.06)	153.3** (2.42)	-5.887 (-0.11)	157.0*** (5.30)
L.ERM*HV					-2,002*** (-10.12)	529.3 (1.28)	659.9 (1.08)	959.2 (1.13)
L.EM	-0.075*** (-2.86)	-0.069*** (-2.96)	-0.014 (-0.49)	-0.002 (-0.10)	-0.075*** (-2.83)	-0.069*** (-2.97)	-0.014 (-0.49)	-0.002 (-0.11)
TIME	-43.97*** (-3.51)	-108.1*** (-5.19)	-55.58*** (-4.29)	-93.86*** (-4.71)	-42.87*** (-3.40)	-108.5*** (-5.16)	-55.78*** (-4.23)	-93.72*** (-4.64)
ROA	194.6*** (4.71)	668.8*** (10.78)	208.7*** (2.90)	245.2*** (7.35)	193.0*** (4.66)	681.1*** (10.95)	205.9*** (2.95)	257.4*** (7.52)
TQ	-1.816 (-1.06)	-5.556 (-1.45)	-8.926 (-1.559)	-13.40*** (-3.01)	-1.747 (-1.01)	-5.504 (-1.45)	-8.950 (-1.57)	-13.32*** (-3.04)
DEBT	64.23 (1.13)	134.9** (2.00)	-192.3* (-1.73)	-109.4 (-1.44)	63.87 (1.13)	132.2** (1.97)	-195.0* (-1.74)	-112.7 (-1.51)
SIZE	101.5*** (5.40)	59.50*** (2.89)	12.98 (0.32)	70.00*** (3.15)	99.57*** (5.30)	60.44*** (2.88)	13.57 (0.33)	70.39*** (3.03)
BIG4	-14.33 (-0.83)	22.50 (1.07)	-100.7*** (-2.95)	10.11 (0.39)	-12.54 (-0.72)	24.43 (1.18)	-101.0*** (-2.95)	12.82 (0.50)
GDP	-2,773 (-1.59)	724.3 (0.24)	-3,409** (-1.97)	-2,717 (-1.30)	-2,760 (-1.58)	729.8 (0.24)	-3,392* (-1.94)	-2,721 (-1.30)
N	36,981	42,177	7,392	40,479	36,981	42,177	7,392	40,479
R2	0.017	0.033	0.022	0.030	0.016	0.033	0.022	0.031

Fixed effects estimates of the interaction-augmented model (3). The column headings denote the specific EM measure used as dependent variable in each specification. **ERM*LV**: interaction between **ERM** and **L_VOL**, a dummy variable taking value 1 if **E_VOL** is in the first quartile of its sample distribution. **ERM*HV**, interaction between **ERM** and **H_VOL**, a dummy variable taking value 1 if **E_VOL** is in the fourth quartile of its sample distribution. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data.

Table 9b. Relationship between ERMIC and EM: controlling for low and high mean earnings

	Dependent variable: EM measures							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	AEM1	AEM2	TEM1	TEM2	AEM1	AEM2	TEM1	TEM2
L.ERMIC	-62.36 (-0.62)	-93.17 (-0.70)	-449.0*** (-2.69)	-237.4*** (-3.17)	-16.28 (-0.15)	-149.7 (-0.94)	-395.5* (-1.83)	-208.6** (-2.16)
L.L_MEAN	-8.484 (-0.17)	44.90 (0.99)	99.59 (1.17)	68.85 (1.37)				
L.ERMIC*LM	536.7 (0.81)	92.31 (0.18)	439.5 (1.09)	201.5 (0.30)				
L.H_MEAN					12.93 (0.28)	27.49 (0.76)	28.93 (1.00)	104.2*** (2.61)
L.ERMIC*HM					-208.2 (-0.97)	445.2 (1.13)	196.5 (0.30)	-211.0 (-0.71)
L.EM	-0.075*** (-2.84)	-0.068*** (-2.95)	-0.014 (-0.48)	-0.003 (-0.10)	-0.075*** (-2.83)	-0.068*** (-2.96)	-0.014 (-0.50)	-0.003 (-0.10)
TIME	-42.84*** (-3.42)	-107.5*** (-5.13)	-55.79*** (-4.26)	-92.88*** (-4.63)	-42.70*** (-3.42)	-107.0*** (-5.12)	-55.51*** (-4.25)	-91.25*** (-4.51)
ROA	192.6*** (4.84)	671.1*** (10.75)	217.7*** (2.87)	247.9*** (6.88)	192.9*** (4.78)	666.9*** (10.88)	207.9*** (2.91)	238.7*** (7.49)
TQ	-1.747 (-1.03)	-5.598 (-1.46)	-8.990 (-1.56)	-13.43*** (-3.04)	-1.752 (-1.03)	-5.495 (-1.45)	-8.903 (-1.55)	-13.20*** (-2.98)
DEBT	63.32 (1.12)	134.0** (1.99)	-191.3* (-1.75)	-110.2 (-1.45)	63.56 (1.13)	133.4** (1.99)	-191.0* (-1.70)	-113.4 (-1.50)
SIZE	99.66*** (5.50)	59.94*** (2.86)	16.68 (0.42)	70.06*** (3.14)	99.27*** (5.20)	57.28*** (2.73)	11.55 (0.29)	63.36*** (2.73)
BIG4	-12.42 (-0.71)	24.18 (1.20)	-98.21*** (-2.75)	13.08 (0.51)	-12.32 (-0.72)	23.42 (1.13)	-100.7*** (-2.95)	12.28 (0.48)
GDP	-2,768 (-1.59)	733.0 (0.24)	-3,401** (-1.96)	-2,718 (-1.31)	-2,754 (-1.57)	732.1 (0.24)	-3,416** (-1.97)	-2,695 (-1.30)
N	36,981	42,177	7,392	40,479	36,981	42,177	7,392	40,479
R2	0.016	0.033	0.022	0.030	0.030	0.016	0.033	0.022

Fixed effects estimates of the interaction-augmented model (3). The column headings denote the specific EM measure used as dependent variable in each specification. **ERMIC*LM**, interaction between **ERMIC** and **L_MEAN**, a dummy variable taking value 1 if **E_MEAN** is in the first quartile of its sample distribution. **ERMIC*HM**, interaction between **ERMIC** and **H_MEAN**, a dummy variable taking value 1 if **E_MEAN** is in the fourth quartile of its sample distribution. t-stats (in parentheses) are based on standard errors clustered by firm and year; *, ** and *** denote significance at the 10%, 5%, and 1% level based on a two-sided test. Results of the main regressors of interest which are significant at the 5% level are shown in boldface. L. denotes one-period lagged values of the corresponding regressor. R² are *within* R², computed for the firm-demeaned data.

APPENDIX: SUPPORT TABLES

Table A1. Examples of disclosures concerning the implementation of ERM committee in 10-k

<<Alcoa's commodity and derivative activities are subject to the management, direction, and control of the Strategic Risk Management Committee (SRMC), which is composed of the chief executive officer, the chief financial officer, and other officers and employees that the chief executive officer selects. The SRMC meets on a periodic basis to review derivative positions and strategy and reports to Alcoa's Board of Directors on the scope of its activities>>

<<The GE Board of Directors oversees the risk management process through clearly established delegation of authority. Board and committee meeting agendas are jointly developed with management to cover risk topics presented to our Corporate Risk Committee, including environmental, compliance, liquidity, credit and market risks.>>

**Table A2. Models for the measurement of EM
Accrual-based Earnings Management**

Empirical proxy	Theory
<p>Accruals (Healy P. 1985 and DeAngelo L. E., 1986) Accruals= Earning_t – CF_t Accruals= Δ (noncash working capital) Accruals= Δ (net operating assets) Specific accrual components</p>	<p>Extreme accruals are low quality because they represent a less persistent component of earnings. Measurement on Earnings Quality</p>
<p>Residuals from accrual models Error term from regressing accruals on their economic drivers</p> <ul style="list-style-type: none"> • Jones Model (1991) $Accr_t = \alpha + \beta_1 \Delta Rev_t + \beta_2 PPET_t + \epsilon_t$ • Modified Jones model (Dechow, Sloan and Sweeney, 1995) $Accr_t = \alpha + \beta_1 (\Delta Rev_t - \Delta Rect_t) + \beta_2 PPET_t + \epsilon_t$ • Dechow and Dichev (2002) approach $\Delta WC_t = \alpha + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \epsilon_t$ • Discretionary estimation errors (Francis, LaFond, Olsson, Schipper, 2005) $TCA_t = \alpha + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + \beta_4 \Delta Rev_t + \beta_5 PPET_t + \epsilon_t$ $\sigma(\epsilon_t) = \alpha + \lambda_1 Size_t + \lambda_2 \sigma(CFO)_t + \lambda_3 \sigma(Rev)_t + \lambda_4 \log(OperCycle)_t + \lambda_5 Losst + \nu_t$ 	<p>Residuals from accrual models represent management discretion or estimation errors, both of which reduce the usefulness of accounting numbers for decision purposes.</p>
<p>Earnings Smoothness (Leuz et al. 2003) $\sigma(OpInc) / \sigma(CFO)$ $\rho(\Delta Acc, \Delta CFO)$</p>	<p>Captures the degree to which insiders reduce the variability of reported earnings altering accruals</p>
<p>Earnings Aggressiveness (Leuz et al. 2003) $[Accruals_{it} / TA_{it-1}] / [CFO_{it} / TA_{it-1}]$</p>	<p>Tendency to delay losses or accelerate gains</p>
<p>Earnings losses/decreases Avoidance (Burgsthaler and Dichev 1997) (Chih, Shen and Kang 2008) The statistic “z” (difference between the actual and expected number of observations for the interval to the right of zero earnings)= $(AQ_i - EQ_i) / SD_i$</p>	<p>Unusual clustering in earnings distributions indicates earnings management around targets.</p>
<p>Earnings response coefficients (ERCs) (Liu and Thomas 2000) $Rett+1 = \alpha + \beta(EarningsSurpriset) + \epsilon_t$ More informative components of earnings will have a higher β. More value relevant earnings will have a higher R2.</p>	<p>Investors respond to information that has value implications.</p>

External indicators of financial reporting quality

- * AAERs identified by SEC
- * Restatements
- * SOX reports of internal control deficiencies

Firms had errors or are likely to have had errors in their financial reporting systems, which imply low quality.

Transaction-based Earnings Management

Empirical proxy**Abnormal CFO** (Roychowdhury, 2006)

Ab_CFO = “normal” CFO – actual CFO, where “normal” CFO is

$$CFO_{it}/TA_{it-1} = k_{1t}(1/TA_{it-1}) + k_2(SALE_{it}/TA_{it-1}) + k_3(\Delta SALE_{it}/TA_{it-1})$$

Abnormal Production (Roychowdhury, 2006)

Ab_PROD = “normal” Production costs – actual Production costs where
 “normal” production costs are

$$PROD_{it}/TA_{it-1} = k_{1t}(1/TA_{it-1}) + k_2 SALES_{it}/TA_{it-1} + k_3 \Delta SALES_{it}/TA_{it-1} + k_4 \Delta SALES_{it-1}/TA_{it-1}$$
Abnormal Discretionary Expenses (Roychowdhury, 2006)

Ab_DISCREX = “normal” discretionary expenses – actual discretionary
 expenses, where “normal” discretionary expenses are

$$DISCREX_{it}/TA_{it} = k_{1t}(1/TA_{it-1}) + k_2 SALES_{it-1}/TA_{it-1}$$

Theory

Normal CFO is a linear function of current sales and change in sales.

Abnormal CFO is the difference with respect to actual CFO (Dechow et al., 1998).

Production costs are the sum of costs of goods sold (COGS) and change in inventory (ΔINV). “Normal” COGS are expressed as a linear function of contemporaneous sales and “normal” ΔINV as a linear function of change in sales in current and past period (Dechow et al., 1998)

“Normal” discretionary expenses are expressed as a linear function of current sales (Dechow et al., 1998).

