

Board monitoring and internal control system disclosure in different regulatory environments

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Structured Abstract:

Purpose: This paper investigates two research questions: Is ICS disclosure, as a monitoring mechanism, associated with the characteristics of the board of directors, particularly the audit committee as the main board committee devoted to the effectiveness of ICS? Does the regulatory environment, particularly the regulation on ICS disclosure as an external governance/monitoring mechanism play a role in shaping the relationship between board monitoring and ICS disclosure and, if so, how?

Design/methodology/approach: We study the ICS disclosure of 149 companies listed in four European financial markets (London, Paris, Frankfurt, and Milan), each with its own regulations about ICS disclosure, during a six-year period (2003–2008).

Findings: Our findings support an inverse association between the extent of ICS disclosure and our proxies for board monitoring. We also find a statistically significant negative relationship between board monitoring and substantial ICS disclosure but no relationship between board monitoring and formal ICS disclosure. Our evidence also shows that the regulatory environment moderates the relationship between board monitoring and ICS disclosure by introducing trade-offs among monitoring mechanisms.

Originality/value: We propose a framework for the analysis of ICS disclosure that considers the importance of the content of ICS disclosure, rather than its extent. Through this framework, researchers, practitioners, and standard-setters can separate merely formal, uninformative disclosure (boilerplate information) on the elements of the ICS from substantial disclosure regarding its functioning (monitoring function). We also provide evidence that the relationship between board monitoring and ICS disclosure varies with the content of the information communicated, thus offering guidance for future research not to focus on measuring the extent or quantity of disclosure but on the variety and complexity of the information communicated.

Keywords:

Internal control systems; Disclosure; Board of directors; Audit committee; Regulatory environment

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Board monitoring and internal control system disclosure in differing regulatory environments

1. Introduction

The internal control system (ICS) is a monitoring mechanism that can help reduce internal and external agency costs. According to the Committee of Sponsoring Organizations of the Treadway Commission (hereafter CoSO, 1992), an ICS is considered effective when all of its components are present and properly functioning. Investors cannot directly observe an ICS in order to appreciate its effectiveness because it is composed of internal managerial mechanisms, activities, and processes (Cavélius, 2011; Deumes and Knechel, 2008), so disclosure on ICS acts as a monitoring mechanism (Craighead et al., 2004) through which investors get specific information on the design and implementation of the ICS.

This paper investigates two research questions: Is ICS disclosure, as a monitoring mechanism, associated with the characteristics of the board of directors, particularly the audit committee as the main board committee devoted to the effectiveness of ICS? Does the regulatory environment, particularly the regulation on ICS disclosure as an external governance/monitoring mechanism play a role in shaping the relationship between board monitoring and ICS disclosure and, if so, how?

While the first research question has been investigated but without specific reference to ICS disclosure, the second research question remains almost unexplored. The first research question is motivated by previous literature (e.g., Williamson, 1983) that considers both board monitoring and ICS disclosures as mechanisms to control and reduce agency conflicts. Williamson (1983) argues that, when one mechanism is present, the other is less necessary, suggesting the presence of a substitution hypothesis. Moreover, through enforced disclosure, regulators monitor managerial decisions on the structure and the functioning of the ICS, thus introducing an additional monitoring

system (De Jong et al, 2005; Bianchi et al., 2010). Therefore, we propose that the regulatory environment moderates the relationship between board monitoring and ICS disclosure.

Additionally, we focus on the content of ICS disclosure, which can be either a substantial source of information that is useful in supporting investors' judgment or simply a formal task, depending on the information disclosed. Using an ad-hoc disclosure framework that allows us to disentangle the mere description of the elements of the ICS (formal disclosure) from the analysis of its effective functioning (substantial disclosure), we investigate whether the relationship between ICS disclosure and board monitoring in various regulatory settings depends on the content of ICS disclosure (*formal*, uninformative *disclosure* versus *substantial*, informative *disclosure*). Therefore, we investigate whether ICS disclosure is important in itself as a monitoring mechanism or whether the content determines its importance.

We study the ICS disclosure of 149 companies listed in four European stock markets (London, Paris, Frankfurt, and Milan), each with its own regulations about ICS disclosure, during a six-year period (2003–2008). Our findings support an inverse association between the extent of ICS disclosure and our proxies for board monitoring and are in line with the substitution hypothesis (Williamson, 1983), which argues that the marginal role of any control mechanism depends on its relative importance in the governance system of a firm. We also find a statistically significant negative relationship between board monitoring and substantial ICS disclosure but no relationship between board monitoring and formal ICS disclosure. Our evidence also shows that the regulatory environment moderates the relationship between board monitoring and ICS disclosure by introducing trade-offs among monitoring mechanisms. In a setting in which ICS disclosure is required by law, firms are likely to disclose more information than they are in a setting in which ICS disclosure is completely voluntary. In addition, the negative association between ICS disclosure and board monitoring is stronger in the former setting than in the latter. This finding is in line with

Booth et al. (2002), who find that regulation introduces trade-offs between alternative monitoring mechanisms.

Our paper provides several contributions. First, we propose a framework for the analysis of ICS disclosure that considers the informativeness of the content of ICS disclosure, rather than its extent. Through this framework, researchers and practitioners can separate boilerplate disclosure from substantial disclosure (monitoring function). Second, we provide evidence that the relationship between board monitoring and ICS disclosure varies with the content of the information communicated, thus offering guidance for future research not to focus on measuring the extent or quantity of disclosure but on the variety and complexity of the information communicated. Third, we provide evidence in support of the substitution hypothesis, as in Williamson (1983): substantial ICS disclosure about its functioning is associated with the strength of other internal monitoring mechanisms. Fourth, we provide evidence that the regulatory environment influences the relationship between board monitoring and ICS disclosure, so we shed light on how regulation interacts with other governance mechanisms (Adams and Ferreira, 2008). Thus, our study has policy implications, as we offer an indication for regulators on how and where to address management's discretion in ICS disclosure.

These features make our research relevant since previous studies have focused either on the US setting (the effects of the introduction of the Sarbanes-Oxley Act; see among others: Ashbaugh et al., 2007; Doyle et al., 2007; Leone, 2007; Zhang et al., 2007) or on a single European country (see among others: Deumes and Knechel, 2008; Van de Poel and Vanstraelen, 2011). Moreover, previous studies on voluntary disclosure of ICS consider only the quantity of information disclosed (Abraham and Cox, 2007) or just the presence of this information (Leng and Ding, 2011).

The paper is structured as follows. Section 2 provides a brief literature review of previous research and the development of our research hypotheses. We present the research design in section 3, and

discuss empirical findings in section 4. Section 5 contains additional analyses, and Section 6 presents some robustness checks. Section 7 concludes the paper.

3. Board monitoring, ICS disclosure, and the regulatory environment: hypotheses development

While the introduction of the SOX in the US stimulated a number of studies on the disclosure of internal control deficiencies or material weaknesses (among the pioneer works, see Ashbaugh et al., 2007; Doyle et al., 2007; Leone, 2007; Zhang et al., 2007), only a few studies examine disclosure on the characteristics of the ICS¹ in the non-SOX setting (Bronson et al., 2006; Abraham and Cox, 2007; Deumes and Knechel, 2008; Van de Poel and Vanstraelen, 2011; Leng and Ding, 2011).

These studies have not considered whether the regulatory environment affects the relationship between board monitoring and ICS disclosure. Although regulation might act as a substitute for board monitoring (Booth et al., 2002), regulators themselves view both disclosure and board oversight as important complements to supervision (Adams and Ferreira, 2008; Becher and Frye, 2011). Therefore, the whether there is any trade-off between alternative monitoring mechanisms and the intensity of such trade-offs are empirical questions.

Previous research grounded in agency theory demonstrates consistently over countries and across time that board composition (proportion of independent directors), board leadership (CEO duality), and board structure (the role and composition of the audit committee) are good proxies for board

¹ The disclosure on ICS can focus on the mere description of its elements or can provide information on the adequacy of the ICS. With reference to this point, there is a significant difference between the SOX context and the non-SOX context, as under the SOX regulation the reporting on ICS is enforced both for the declaration of adequacy and disclosure on the effective functioning of internal controls. Both the external auditors and the management undertake the declaration of adequacy. In the SOX regulatory environment, in order to be valuable, disclosure on ICS must go beyond the description of its characteristics, focusing on the effectiveness of the system in managing internal control deficiencies or material weaknesses. This type of disclosure provides investors with relevant information about possible shortfalls in the functioning of the ICS (Leone, 2007). The US is a unique context, as disclosure is required to be directly associated with the effectiveness of the ICS, whereas in other countries disclosure on ICS does not necessarily focus on the effectiveness of the ICS. This difference implies that the extent of disclosure is not necessarily associated with its ability to depict the effectiveness of ICS. Nonetheless, disclosure is the main way for external investors to gather information on the functioning and effectiveness of ICS.

monitoring (see among others: Beasley, 1996; Di Pietra et al., 2008; Bronson et al., 2009; Jaggi et al., 2009). This paper shows how these proxies of board monitoring relate to ICS disclosure and whether the regulatory environment (the enforcement of ICS disclosure versus the comply-or-explain approach) plays a role in shaping this relationship.

Board composition – proportion of independent directors

The composition of the board is an important factor in ensuring the ability of the board to monitor management's behavior effectively (Fama, 1980; Fama and Jensen, 1983). Independent directors increase the monitoring ability of the board, because they are less likely than internal directors to be aligned with management and more inclined to encourage firms to disclose information to stakeholders. Nevertheless, research provides mixed empirical results concerning this issue. Using indirect measures of disclosure based on analysts' perceptions, Ho and Wong (2001) find no significant relationship between the level of disclosure and board independence, while Eng and Mak (2003) and Gul and Leung (2004) show that board independence is negatively associated with disclosure, and Chen and Jaggi (2000), Leung and Horwitz (2004) and Cerbioni and Parbonetti (2007) find a positive association between the proportion of non-executive directors and firms' disclosure.

Following agency theory, independent directors should promote disclosure to investors in order to communicate that the board is monitoring management properly. Independent directors have incentives to provide more ICS disclosure, both to align their behavior to the recommendations of the codes of corporate governance and to benefit their reputations for providing sound disclosures to the market (Fama and Jensen, 1983). This argumentation leads us to the following hypothesis:

H1a: *ICS disclosure is positively associated with the proportion of independent directors.*

Board leadership – role of CEO duality

According to Fama and Jensen (1983: 314), CEO duality “signals the absence of separation between decision control and decision management.” Carver (1990) asserts that CEO duality makes it difficult to have a frank and honest discussion about the performance of the firm, and Jensen (1993) argues that it is important to separate the role of CEO and chairman if the board is to be an effective monitoring device. Forker (1992) states that combining the role of CEO and chairman compromises the system of checks and balances and represents a conflict of interest and a threat to the quality of monitoring, finding a significant negative relationship between a dominant CEO personality and the quality of stock-option disclosures. As CEO duality weakens the monitoring role of the board, the separation of CEO and chairman, in accordance with best practice, enhances the monitoring role of the board and by promoting higher levels of ICS disclosure to investors, reinforces it. Thus, we develop the following hypothesis:

H1b: ICS disclosure is negatively associated with CEO duality.

Board structure – role of audit committee

Board monitoring depends also on the structure and composition of subcommittees (Xie et al., 2003), as the most important board decisions are made at that level (Kesner, 1988). Pincus et al. (1989) assert that the audit committee enhances the capacity of the board to control management because it provides detailed knowledge and understanding of the financial reporting process. Beasley and Salterio (2001: 565) show that the audit committee “is embedded in the context of broader corporate governance concerns and alternative monitoring mechanisms.” Xie et al. (2003) show that audit committee members with financial backgrounds are associated with smaller discretionary current accruals, as these members are more able to constrain the propensity of managers to engage in earnings management than are those without financial backgrounds. Finally, Bronson et al. (2009) find that the benefits of audit committee independence are achieved only when the audit committee is completely independent.

The monitoring role played by board members is enhanced by the variety and depth of their competencies (Krishnan, 2005; Zhang et al., 2007). Accounting expertise is relevant for board members not only for evaluating management performance, but also for appreciating the impact of accounting procedures and accounting information systems on the reliability of financial reporting. Accounting experts on the board also promote the improvement of the ICS toward quality assurance of financial reporting. Therefore, we expect that the monitoring role of the audit committee is associated with the levels of ICS disclosure because it is so demanded by the codes of corporate governance. Thus, we formulate the following hypothesis:

H1c: ICS disclosure is positively associated with the monitoring activity of the audit committee.

The regulatory environment: enforcement vs. comply-or-explain

The role of disclosure is affected by what the market expects firms to disclose. When the law enforces disclosure, regulators limit managerial discretion and its effect on shareholders' wealth (Booth et al. 2002). While the board is responsible for the ICS, the ICS is also monitored by regulators through enforced disclosure of its structure and functioning. Thus, the regulation of ICS disclosure acts as an additional monitoring mechanism.

This additional monitoring mechanism could affect firms' disclosing behavior (Becher and Frye, 2011) and its relationship with other monitoring mechanisms (Booth et al., 2002). According to Becher and Frye (2011), if regulations pressure firms to adopt effective monitoring mechanisms, monitoring levels should be higher for regulated firms than for unregulated firms and regulated firms should offer more ICS disclosure than unregulated firms. According to Booth et al. (2002), since regulation reduces the impact of management discretion on shareholders wealth, ICS disclosure may be less essential in controlling potential agency conflicts in an enforced setting than in an unregulated setting, all other monitoring mechanisms being equal.

While tradeoffs between alternative monitoring mechanisms have been extensively documented (Leftwich et al., 1981; Booth et al., 2002; Eng and Mak, 2003; Fernandez and Arrondo, 2005; Ferreira et al., 2011), the monitoring role played by regulation of ICS disclosure and the possible consequences for corrective actions could shape the relationship between board monitoring and ICS disclosure by introducing tradeoffs between alternative monitoring mechanisms. Similar to board monitoring, ICS disclosure and regulation serve to control and reduce agency conflicts and, if one mechanism is present, the other might be less necessary (Williamson, 1983). Therefore, we expect that the regulatory environment has a moderating effect on the relationship between board monitoring and ICS disclosure. Accordingly, we formulate the following hypothesis:

H2: Regulation plays a moderating role in the relationship between board monitoring and ICS disclosure.

4. Research design

4.1 Sample

We study the ICS disclosures of firms listed in four stock markets (France, Germany, the UK, and Italy). French and German regulation requires ICS disclosure, whereas ICS disclosure in the UK and Italy is based on a comply-or-explain provision. Our initial sample consists of the forty largest firms in each country. Table 1 summarizes the sample selection process and the observations' distribution over the time period analyzed (years 2003–2008).

INSERT TABLE 1 ABOUT HERE

4.2 Measurement of ICS disclosure

Whereas most corporate governance codes of best practices require ICS disclosure, these codes do not define standards on the content of the disclosure, so the decision on what is disclosed relies on

management discretion (Appendix 1 presents the disclosure requirements in the four countries analyzed in this study).

Disclosure indices in the literature (Deumes and Knechel, 2008; Abraham and Cox, 2007; Van de Poel and Vanstraelen, 2011; Leng and Ding, 2011) are built mainly on checklists of items. We argue that these indices cannot capture the variety of content that management can disclose on the ICS. To overcome this limitation, we propose a framework that captures the variety and complexity of the content disclosed through the narratives on ICS. This framework allows the formal disclosure on the elements of the ICS and the substantial disclosure on its functioning to be defined separately so a sound judgment to be made.

Our framework is articulated along two dimensions (figure 1).

INSERT FIGURE 1 ABOUT HERE

The first dimension refers to the seven *ICS elements* defined by the CoSO framework (CoSO, 2004): (i) internal environment, (ii) objective-setting and definition of risk appetite/tolerance, (iii) risk identification, (iv) risk assessment, (v) action planning, (vi) implementation of action plans, (vii) communication and monitoring. The second dimension regards *ICS functioning*, where management provides investors with generic information concerning mainly the objectives of the ICS. The *type of firm's objectives* classification is taken from the CoSO Framework to include: efficiency of operations; reliability of financial reporting; compliance with the law; and safeguarding of assets. This type of disclosure tends to satisfy the need to meet formal disclosure requirements; it is usually undertaken with a “copy and paste” approach from domestic corporate governance standards and that is boilerplate information.

Management can also provide more insights on ICS functioning: which actors are directly involved in internal controls, their main roles and duties, the types of control procedures and mechanisms put

in place, and how risks are assessed and controls managed. We classify the *type of actors* as: members of the board of directors; members of the audit committee; the internal control supervisor; the internal auditor; members of senior management (e.g., CEO, CFO, controller); members of the risk committee/risk manager; and others. We classify the *type of control procedures and mechanisms* in: audit committee's working mechanisms; internal control guidelines and procedures; accountability definition; ethical codes/codes of conduct; planning and budgeting; risk reporting; information system tools; and other documented activities. This type of disclosure is likely to provide useful insights on the implementation of the ICS, that is, substantial information. We analyze the ICS disclosures contained in the corporate governance sections of the annual reports using content analysis, a methodology widely adopted in disclosure studies. Following Krippendorff (2004), we organize data collection in three phases. First, we define the recording unit, choosing single sentences as recording units because they are generally considered more reliable than pages or paragraphs. Second, we set a procedure to code ICS information, assigning a score of 0 if the sentence does not provide information on ICS and 1 if it contains some information on ICS. Third, any time a piece of information is identified, it is located into the ICS disclosure framework at the intersection of row and column in order to classify each sentence concerning ICS by both *ICS element* and *ICS functioning* (type of firm's objectives, type of actors and type of control procedures and mechanisms)².

² The coding was conducted in two time periods. In the first time period (January–May 2008), we coded the years 2003–2005, and in the second time period (September–December 2012), we coded the years 2006–2008. Each coding was conducted by two research assistants under the supervision of one of the authors. Because the coding activity was conducted at two times and with different research assistants, we checked for the robustness of the coding process in each period and between the two periods. As for the robustness in each period, on the basis of the evidence collected in a pilot test, a list of identification and classification rules was discussed and defined in order to supplement the disclosure scheme. After the pilot test, each coder independently classified the Corporate Governance section of the annual report into the ICS disclosure framework. To determine the robustness of the coding activity between time periods, we asked each research assistant who classified the years 2006–2008 to classify a sample of twenty annual reports from 2003–2005. Both research assistants and one of the authors reviewed the results, highlighting the differences with the previously conducted coding. Where there were differences between the two classifications, we identified the reason for the differences and adopted the criteria used in the first phase of coding. In order to ensure the reliability and validity of the data collected, we calculated the Cronbach's alpha for the coding procedure (Krippendorff, 2004): the value of 0.84 indicates internal consistency in the coding procedure. Appendix 2 provides an example of the

Each category of disclosure has its own disclosure score, based on the number of sentences that contain ICS information related to that category: objectives (O_score), actors (A_score), and control procedures and mechanisms (M_score). The Total ICS Disclosure Score (TICSD) is obtained by summing the disclosure scores for each category, so it counts the number of sentences containing ICS information. We also calculate a Standardized Disclosure Index (ICSD) by dividing TICSD by the maximum TICSD obtained in each year across all firms and countries. Table 2 describes the disclosure scores.

INSERT TABLE 2 ABOUT HERE

4.3 Measurement of independent variables

Following other studies on the relationship between board monitoring and disclosure (e.g., Cerbioni and Parbonetti, 2007; Michelon and Parbonetti, 2012), data on board monitoring is hand-collected from annual reports, which usually contain the name and title of each director (i.e., executive or independent director), a description of the director's role on the board (i.e., membership in a committee), and a brief biography. According to extant literature (among others see: Beasley, 1996; Bronson et al., 2009; Jaggi et al., 2009), board independence, board leadership, and board structure (the monitoring role of the audit committee) are good proxies for board monitoring. Board independence (*prind*) is measured as the proportion of independent directors sitting on the board (among others see: Beasley, 1996; Klein, 2002; Dechow et al., 1996; Peasnell et al., 2005)³. CEO duality, the proxy for board leadership, and is measured by a dummy variable (*duality*) that takes the value of 1 if the CEO is not the chairman of the board and 0 otherwise. We consider both the financial/accounting expertise and the independence of the audit committee in measuring the monitoring role of the audit committee (Abbott et al., 2004; Krishnan and Visvanathan, 2008;

output of the coding process, the disclosure scores obtained, and some examples of coding.

³ In Germany companies are required to have a two-tier board. Therefore, the percentage of independent directors is calculated over the total number of members of both the supervisory and the management boards.

Hoitash et al., 2009). Following Zhang et al. (2007), who find that the presence of such expertise indicates a high level of monitoring ability, we proxy the presence of the accounting expertise in the audit committee with the proportion of financial/accounting experts on the committee (*ac_expertise*). We also consider a dummy variable (*ac_expert chair*) that takes the value of 1 if the chair of the audit committee is an accounting expert and 0 otherwise⁴. We identify financial/accounting experts using the biographical notes for board members in the annual report⁵ and measure the audit committee's degree of independence with a dummy variable (*ac_independent chair*) that takes the value of 1 if the chair of the committee is independent and 0 otherwise. *Enforcement* is measured by a dummy variable (*enf*) that equals 1 if the firm is listed in a market where ICS disclosure is mandatory—an enforced setting, as in France and Germany—and 0 if the firm is listed in a market where ICS disclosure is voluntary—a comply-or-explain setting, as in Italy and the UK.

4.4 Measurement of control variables

We select control variables on the basis of prior studies on corporate disclosure. Data are collected using Datastream. Following Cerbioni and Parbonetti (2007) we control for firm's size, measured as the logarithm of total sales (*size*) and profitability, measured as return on equity (*prof*). We use market-to-book value of equity (*mtb*) as a control for the level of information asymmetry (Eng and Mak, 2003). Because of the strong enforcement provided by SOX, we also control for cross-listing on the New York Stock Exchange (NYSE) (Gul and Leung, 2004). We measure cross-listing with a dummy variable (*xlist*) that equals 1 if the firm is listed on the NYSE and 0 otherwise. We use the

⁴ Following previous literature (Abbot et al., 2004; Krishnan and Visvanathan, 2008; Hoitash et al., 2009), we originally planned to use the size of the audit committee as a proxy for its monitoring ability, but there was insufficient variability in the sample to do so since the vast majority of the firms has an audit committee of three members.

⁵ A board member is classified as an accounting expert when he/she has a professional (e.g., CPA) or academic certification, has professional experience in supervising the financial function (e.g., CEO, CFO), or is a user of financial information (e.g., financial analysts, venture capitalists, investment bankers).

number of analyst estimates (*analyst estimates*) to control for the level of scrutiny of and the attention of the capital market to the disclosing firm. We also control for other board characteristics that may affect the level of monitoring: we employ the square of board size (*bsize²*) and the frequency of board meetings (*board meetings*). Furthermore, we consider controls describing the ownership structure (García-Meca and Sánchez-Ballesta, 2010; Abraham and Cox, 2007): the proportion of shares held by the largest investor (*largest*). Finally, we control for the impact of financial industry regulation (*financial*) on disclosure (Booth et al., 2002). Table 3 lists all independent and control variables⁶.

INSERT TABLE 3 ABOUT HERE

5. Empirical results

5.1 Descriptive and univariate analyses

Table 4 Panel A presents descriptive statistics on ICS disclosure. On average, firms disclose 45 items of information on ICS (TICSD), most of which refers to control procedures and mechanisms (M_score), with a mean of 36.3 items. Relatively less information relates to objectives (O_score), which has a mean of 5.7 items, and actors (A_score), with a mean of 3.7 items. This first descriptive evidence suggests that the majority of the ICS disclosure regards the ICS functioning since most of the items refer to how procedures and mechanisms are put in place and how they work. Therefore, firms give priority to substantial information over formal, boilerplate, descriptive ICS disclosure. Table 4 Panel A contains descriptive statistics on ICS disclosure in enforced and in comply-or-explain settings. Firms in enforced settings are likely to disclose more ICS information than those in the comply-or-explain setting, with means (medians) of the total disclosure scores (TICSD) 62.4 (52) and 27.7 (23), respectively.

⁶ We do not control for type of auditor (Big 4) because of the limited variation in this variable across the sample.

Table 4 Panel B presents the distribution of disclosure across objectives, actors, and control procedures and mechanisms. Results confirm that disclosure focuses on control procedures and mechanisms (79.56% of the disclosure), while objectives (12.38%) and actors (8.06%) deserve marginal attention. The concentration of disclosure (Table 4, Panel B) on control procedures and mechanisms is higher in the enforced (84.57% for France and 80.87% for Germany) setting than in the comply-or-explain setting, where firms devote more attention to simply describing ICS objectives (23.34% and 18.28% of disclosure on control procedures and mechanisms in the UK and Italy, respectively).

INSERT TABLE 4 ABOUT HERE

The ICS disclosure differs in the two regulatory environments. Looking at the overall disclosure index (TICSD) and at its sub-indexes (O_score, A_score, M_score) we find differences both in the extent and in the content of information disclosed (Table 5). All differences for the disclosure indices are statistically significant at 1% (one-tailed). All disclosures but the ICS objectives (O_score) are significantly greater for firms in enforced settings than for those in comply-or-explain settings. Disclosures on ICS objectives are usually generic information on the overall design and aims of the ICS, often “copy and paste” quotations from well-known frameworks (like CoSO) or from domestic corporate governance codes. This evidence shows that firms in enforced settings are likely to have more ICS disclosures than those in comply-or-explain settings, which is in line with the regulation pressure argument, according to which regulated firms provide greater ICS disclosure and more substantial disclosure about ICS control procedures and mechanisms than unregulated firms do. We find opposite evidence in the comply-or-explain setting, where disclosure tends to be vague and less useful since it refers primarily to ICS objectives.

INSERT TABLE 5 ABOUT HERE

Table 6 contains the main descriptive statistics and the correlation matrix. The negative correlations (or lack of correlations) between ICS disclosure and our board monitoring measures indicate that management has fewer incentives for ICS disclosure when the level of monitoring is high. In line with univariate results, we find a significant and positive correlation between disclosure and the level of regulation (*enf*). Results of the correlation analysis between the ICS disclosure and control variables are consistent with previous research.

INSERT TABLE 6 ABOUT HERE

5.2 Multivariate analysis

We specify a panel-corrected standard error model, assuming within-unit homoskedasticity, because we find different error variances for the different cross-sections, and with such cross-section heteroskedasticity, the OLS standard errors are inconsistent.

In order to test our hypotheses, the following panel regression model (with industry fixed effects) is specified:

$$(1) \text{DISC}_{it} = \beta_0 + \beta_1 \text{prind}_{it} + \beta_2 \text{duality}_{it} + \beta_3 \text{ac_expertise}_{it} + \beta_4 \text{ac_independent_chair}_{it} + \beta_5 \text{ac_expert_chair}_{it} + \beta_6 \text{enf}_{it} + \beta_7 \text{enf}_{it} * \text{prind}_{it}$$

where:

DISC	TICSD: Total ICS disclosure index
<i>prind_{it}</i>	Proportion of independent directors on the Board of Directors
<i>duality_{it}</i>	Dummy equal to 1 if CEO is not the chairman and 0 otherwise
<i>ac_expertise_{it}</i>	Proportion of accounting experts on the Audit Committee (AC)
<i>ac_independent_chair_{it}</i>	Dummy equal to 1 if the chair of the AC is independent and 0 otherwise
<i>ac_expert_chair_{it}</i>	Dummy equal to 1 if the chair of the AC is an accounting expert and 0 otherwise
<i>enf_i</i>	Dummy equal to 1 if the firm is listed in France or in Germany and 0 otherwise

Controls:

<i>size_{it}</i>	Log of total sales
<i>prof_{it}</i>	Return on equity
<i>mtb_{it}</i>	Market-to-book value of equity
<i>xlist_{it}</i>	Dummy equal to 1 if the firm is cross-listed at the NYSE and 0 otherwise
<i>analyst estimates</i>	Number of analyst estimates
<i>bsizesq_{it}</i>	(Number of board members) ²
<i>board meetings</i>	Number of board meetings each year
<i>largest_{it}</i>	Percentage of shares held by the largest shareholders
<i>i</i>	The firm
<i>t</i>	The year

Table 7 contains the results of our regression models. In considering the full sample, Model (1) finds mixed results about the relationship between ICS disclosure and board monitoring (Hypotheses 1a, 1b, and 1c) but clear evidence about the moderating role of the regulatory environment on the relationship between board monitoring and ICS disclosure (Hypothesis 2). If we consider the base effect of our proxies of board monitoring, we find that only CEO non-duality (*duality*) has a strong negative association with the level of ICS disclosure (i.e., when the CEO is not also the chairman of the board, the firm discloses less information on the ICS). The independence of the audit committee (*ac_independent chair*) has a weak negative relationship with ICS disclosure. If we consider the financial/accounting expertise on the audit committee, only the professional characteristics of the chairperson (*ac_expert chair*) are associated with ICS disclosure: when the chair is a professional expert, the ICS disclosure is higher (although the relationship is weak, as it is statistically significant only at 10%), while the percentage of financial/accounting experts on the audit committee is not associated with ICS disclosure.

We find that firms in an enforced setting are likely to disclose more information than are firms in comply-or-explain settings, as the coefficient for *enf* is positive and strongly statistically significant. Second, we find that all of the interaction terms between enforcement and our proxies for monitoring (except CEO *duality*) are strongly negatively associated with ICS. Enforcement has the effect of increasing the extent of ICS information disclosed, although this effect is not the same for all firms. Our results show that, when firms have strong monitoring, the need to disclose information on the ICS is lower. In particular, in an enforced setting, the stronger the monitoring role played by independent directors, the lower is the need to disclose ICS information to the market. The coefficient of *duality* is negative and significant, while the coefficient for *enf*duality* is negative but not significant, indicating that CEO non-duality relates negatively to board monitoring

and that this relationship is not affected by the regulatory environment. The coefficient of *ac_expertise* is positive but statistically not significant, while the coefficient for *enf*ac_expertise* is negative and significant, suggesting that this relationship depends on the regulatory environment. We find a negative coefficient for *ac_independent chair* that is only marginally significant (10%) and a negative and highly significant coefficient for *enf*ac_independent chair*, suggesting that the relationship between ICS disclosure and the independence of the audit committee depends heavily on the regulatory environment. Finally, the coefficient of *ac_expert chair* is positive and marginally significant, while its interaction with the regulatory environment (*enf*ac_expert chair*) is negative, greater in absolute value, and highly significant, suggesting that the level of ICS disclosure is lower when an accounting expert chairs the audit committee in an enforced setting.

Overall, we do not find support for a positive association between board monitoring and ICS disclosure, although our evidence points to a substitution effect between alternative monitoring mechanisms (Williamson, 1983) and that the regulatory environment plays a moderating role between board monitoring and ICS disclosure.

In order to investigate in more detail the relationship between board monitoring and ICS disclosure, we run Model (1) separately in the enforced and the comply-or-explain settings (Models (2) and (3), respectively). Results of Model (2) support a clear, significant, and negative relationship between ICS disclosure and our proxies for board monitoring. The negative coefficient of *prind* suggests that the monitoring role played by independent directors is a substitute for ICS disclosure. The coefficient for *duality* is significant and negative, confirming that, firms with CEO duality in an enforced environment are more likely to disclose more information on the ICS than are firms with separation between CEO and Chairman. Our results also provide evidence of a substitution effect between ICS disclosure and the monitoring ability of the audit committee, as measured by the proportion of accounting experts (*ac_expertise*) and the independence (*ac_independent chair*) and

expertise (*ac_expert_chair*) of the chair of the audit committee. In the enforced setting, the substitution effect between board monitoring and ICS disclosure is clear: where the level of monitoring is high, the need to disclose ICS information is lower (or the demand coming from the market about this information is lower) than when the level of monitoring is low. Results from Model (3), which refers only to the comply-or-explain setting, support a weak association between board monitoring and ICS disclosure. In particular, three of our five proxies for board monitoring are related to ICS disclosure, although the signs of the coefficients vary. We find a negative and significant coefficient for CEO non-duality (*duality*) and independence of the chair of the audit committee (*ac_independent_chair*), suggesting that board monitoring substitutes for ICS disclosure even in a comply-or-explain setting. Nevertheless, we find that, when the chair of the audit committee is an accounting expert, the chair's monitoring expertise is greater and he or she is more likely to promote ICS disclosure than when the chair is not an accounting expert. In the comply-or-explain setting, we do not find empirical evidence of a relationship between ICS disclosure and the proportion of independent directors or the proportion of accounting experts on the audit committee.

INSERT TABLE 7 ABOUT HERE

Given this mixed evidence, we investigate next whether the relationship between ICS disclosure and board monitoring in differing regulatory settings is driven by the characteristics of ICS disclosure (formal, uninformative disclosure versus substantial, informative disclosure).

6. Additional analyses

We perform the model shown in equation (1), using as dependent variables the scores related to the content of ICS disclosure: objectives (*O_score*), actors (*A_score*), and control procedures and

mechanisms (*M_score*) (Table 8: Models (1), (4) and (7)). We also analyze these relationships separately in the enforced setting (Table 8: Models (2), (5) and (8)) and in the comply-or-explain setting (Table 8: Models (3), (6) and (9)).

INSERT TABLE 8 ABOUT HERE

We obtain results similar to the main analysis when we focus on the disclosure of control procedures and mechanisms (*M_score*). However, some relevant differences emerge related to the relationship between board monitoring and disclosure on the objectives and on the actors of the ICS. In a comply-or-explain setting, the proportion of independent directors (*prind*) is positively and significantly associated with disclosure on both objectives (*O_score*) and actors (*A_score*), while in an enforced setting the corresponding coefficients are negative and significant. This evidence points to a formal use of disclosure in a comply-or-explain setting. In such a setting, boards with a high proportion of independent directors appear to promote the disclosure of formal aspects of ICS (as captured by *O_score* and *A_score*) but not the more substantial aspects of ICS (as captured by the *M_score*). In some ways, disclosure seems to be aligned to the formal requirements of corporate governance codes, which are frequently reflected in the corporate governance section of the annual report. It is typical of corporate governance codes to avoid detailed descriptions concerning how the organization functions (e.g., control procedures and mechanisms and processes), as such functions are idiosyncratic to any company. However, special emphasis is typically given to the aims (i.e., objectives) and accountability (i.e., actors and responsibilities) aspects of corporate governance. Therefore, the disclosure behavior of independent board members may be seen as a consequence of the “comply” philosophy: ICS disclosure is shaped in accordance with the emphasis on objectives and actors set by corporate governance

codes. A consequence of this phenomenon is the poverty of the disclosure on the ICS functioning, which leads to widespread superficiality of disclosure that, while formally complying with corporate governance requirements, contains little “meaningful, high-level information” (Spira and Page, 2010). This point has policy implications that are discussed in the concluding paragraph. Taken together, our analyses suggest that there is a substitution relationship in enforced settings between board monitoring and ICS disclosure that is stronger when disclosure contains information on the types of control procedures implemented and on how risks and controls are assessed and managed than when disclosure is focused only on description of the elements of the ICS. In other words, strong monitoring by the board counterbalances the role of substantial ICS information, upon which investors can base their appreciation of how well the ICS is functioning. However, evidence is mixed in a comply-or-explain setting, where we find that board monitoring proxies do a better job of explaining the disclosure of formal elements of the ICS, rather than its substantial aspects, although alternative measures of board monitoring seem to have opposite effects on disclosure. The point has policy implications that are discussed in the concluding paragraph.

7. Robustness analyses⁷

Endogeneity issue

Our results may suffer from endogeneity problems as a result of omitted variables that can affect both the dependent and the independent variables. We thus perform a three-stage least square regression model using two simultaneous equations. The first equation (A) shows the effect of the proportion of independent directors on the total disclosure index (TICSD), while the second equation (B) tests the effect of the disclosure index on the proportion of independent directors (*prind*). The result of this analysis supports our main findings.

⁷ For sake of brevity we do not present tables on robustness analyses, but they are available from the authors upon request.

Country differences within the regulatory setting

Our results could be driven by the differences between the two countries we analyzed in each regulatory environment. To address this concern, we perform two robustness tests. The first test runs the model in equation (1) with country fixed effects. Untabulated results show similar results as our main analysis for firms in the enforced setting, while in the comply-or-explain setting the coefficients for CEO duality and the independence and expertise of the audit committee chair are not significantly different from zero.

Our second test runs the model in equation (1) and adds to the explanatory variables the Kauffman's rule of law measure and its interaction with board-monitoring proxies. This variable, which considers differences in the legal enforcement across countries, is measured at country level and represents the "perception of the extent to which agents have confidence in [...] the quality of contract enforcement, property rights, the police and the courts" (Kaufmann et al., 2009: 9). The evidence from this robustness test is similar to that obtained using country fixed effects.

Other proxies for control variables

We measure size as the logarithm of sales, market value, and total assets and employ ROA as an alternative measure of performance. We use the number of independent directors instead of the proportion of independent directors and the number, rather than the proportion, of accounting experts on the audit committee. In all cases results remain unchanged. Following Bronson et al. (2009), we use as a proxy for the monitoring ability of the audit committee the proportion of independent directors sitting on the audit committee and on a fully independent committee. We find similar results. Statistical associations hold when we use the standardized ICS disclosure index instead of the total score. We also control for cross listing other than on the NYSE, and results are

not affected.

8. Discussion and conclusion

This paper investigates the relationship between board monitoring and ICS disclosure. First, we find that firms in enforced settings are likely to disclose more information on internal controls than are firms in comply-or-explain settings. Moreover, the intensity of this effect is inversely related to the strength of board monitoring: firms where board monitoring is stronger are less likely to disclose information about their ICS than are firms where board monitoring is weak. In an enforced setting, results support a clear, significant substitution effect between board monitoring and ICS disclosure. On the other hand, our results do not support a strong association between board monitoring and ICS disclosure in a comply-or-explain environment. Furthermore, our findings support the moderating role of the regulatory environment between board monitoring and ICS disclosure. In order to clarify the disclosure strategies that firms in comply-or-explain settings adopt, we moved from our original disclosure score (measuring the extent of disclosure) to a new measurement system that distinguishes among the types of disclosure content provided about ICS, separating formal disclosure (offering only descriptions of ICS elements) from substantial disclosure (offering information on ICS functioning).

Our evidence has two major policy implications. The first addresses the role of disclosure in enforced settings. While it is commonly accepted that disclosure on governance mechanisms is positively associated with board monitoring, our empirical evidence suggests that this truism does not apply in all settings. In fact, when disclosure on the characteristics of the ICS is enforced, board monitoring is negatively associated with the level of disclosure, confirming the presence of a substitution effect between alternative monitoring mechanisms (Williamson, 1983; Booth et al., 2002). Since the purpose of both board monitoring and ICS disclosure is controlling and reducing

agency conflicts, our results suggest that the presence of an additional mechanism for controlling and reducing agency conflicts (regulation of ICS disclosure) renders the others (board monitoring) less essential.

The second implication concerns the role and principles of disclosure in comply-or-explain settings. Public consultations on the effectiveness of disclosures on ICS in comply-or-explain settings (FRC, 2005; FRC, 2009) have demonstrated that, while market participants repeatedly express strong preferences for retaining the current approach of “soft law” underpinned by some regulation, rather than moving to one more reliant on legislation and regulation, at the same time “both companies and investors have expressed reservations about the way in which comply-or-explain works in practice and it is clear that more needs to be done to encourage all parties to apply it in the intended manner” (FRC, 2009). Our analysis on the content of ICS disclosures in comply-or-explain settings explains the partial dissatisfaction of disclosers and validates on a larger scale the results of previous studies that have testified to the superficiality of disclosures that only formally comply with the recommendations of codes of corporate governance (and their companion guidance) but contain little “meaningful, high-level information” (Spira and Page, 2010). This poverty of disclosure can be explained by the drift toward the communication of formal elements induced by the comply approach. It can also be interpreted as opening the door to further discussions with investors outside the legal and literary constraints of narrative disclosure. Narrative disclosure included in public statements is subject to litigation risk, so it tends to use standard terms and conditions, as disclosers may consider any use of non-standard statements ambiguous and distracting (Ahdieh, 2006): it is a short step from standard wording to boilerplate disclosure. With regard to literary constraints, an additional detailed disclosure of ICS mechanisms in an annual report’s corporate governance section might conflict with investors’ (and regulators’) requests for limited amounts of information as a reaction to the uncontrolled growth of the (variously useful)

information in annual reports. Therefore, full disclosure of internal control mechanisms may be made outside the corporate governance section of the annual report. Nonetheless, in order to be effective, ICS disclosures in public documents must at least highlight the key aspects of their implementation and functioning and act at the same time as a checklist and an agenda for further discussion.

In conclusion, future regulations, as well as consultations preliminary to revising the guidance for implementation of an effective ICS, should consider carefully the issue of its disclosure, taking into account both the content of the disclosure (considering formal and substantial disclosure) and the interactions between ICS disclosure (both formal and substantial) and board monitoring mechanisms.

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Figure 1 – ICS Disclosure Framework

	OBJECTIVES (O)					ACTORS (A)							IMPLEMENTATION MECHANISMS (M)								TICSD
	1. contents not specified	2. Efficiency of operations	3. Reliability of Financial reporting	4. Compliance with the law	5. Safeguarding of assets	1. Board of Directors	2. Audit Committee	3. Internal Control Supervisor	4. Internal Auditor	5. Senior Management (CEO, CFO, Controller, ...)	6. Risk Committee - Risk Manager	7. Others	1. Audit Committee's Working Mechanisms	2. Internal Control Guidelines and Procedures	3. Accountability Definition	4. Ethical Codes - Codes of Conduct	5. Planning and budgeting	6. Risk Reporting	7. I.S.Tools	8. Other Activities Documented	
0. Internal environment																					
1. Objective Setting and Risk Appetite-Tolerance																					
2. Risk Identification																					
3. Risk Assessment																					
4. Action Planning																					
5. Implementation of action plans																					
6. Communication and Monitoring																					
Total	O score					A score							M-score								TICSD

Table 1. Sample Selection

TABLE 1			
Sample Selection and Distribution			
Initial sample		960	
	minus		
Missing observations on disclosure (reports not available)		48	
Missing observations on governance		22	
Missing observations on control variables		23	
Total firm-years		867	
Unique firms		149	
	Year	Freq.	Percent Cum.
	2003	148	17.07 17.07
	2004	148	17.07 34.14
	2005	148	17.07 51.21
	2006	143	16.49 67.70
	2007	141	16.26 83.97
	2008	139	16.03 100.00
	Total	867	100

Table 2. Definition of Disclosure variables

Variable	Description	Measure
O_score _{it}	Total disclosure score on ICS objectives	$\sum_{j=1}^k ICS_O_{ij}$ where ICS_O _{ij} = 1 if sentence contains information on ICS objectives K= n. of sentences
A_score _{it}	Total disclosure score on ICS actors	$\sum_{j=1}^k ICS_A_{ij}$ where ICS_A _{ij} = 1 if sentence contains information on ICS actors K= n. of sentences
M_score _{it}	Total disclosure score on ICS mechanisms	$\sum_{j=1}^k ICS_M_{ij}$ where ICS_M _{ij} = 1 if sentence contains information on ICS mechanisms K= n. of sentences
TICSD _{it}	Total ICS disclosure score	O_score _{it} + A_score _{it} + M_score _{it}
ICSD _{it}	Standardized ICS disclosure index	$TICSD_{it} / \max_i(TICSD_{it})$

Table 3. Definition of independent and control variables

	Variable	Description	Measure
<i>Board monitoring</i>	<i>prind_{it}</i>	Board independence	Proportion of independent directors on BoD
	<i>duality_{it}</i>	Ceo (<i>non</i>) duality	Dummy equal to 1 if CEO is not the chairman; 0 otherwise
	<i>ac_expertise</i>	Board expertise	Proportion of accounting experts in AC
	<i>ac_independent chair</i>	AC independence	Dummy equal to 1 if Chair of the AC is independent; 0 otherwise
	<i>ac_expert chair</i>	AC expertise	Dummy equal to 1 if Chair of the AC is an accounting expert; 0 otherwise
<i>Enforcement</i>	<i>enf_i</i>	Enforcement of ICS disclosure	Dummy equal to 1 if firm is listed in France or in Germany; 0 otherwise
<i>Controls</i>	<i>size_{it}</i>	Size	Log of total sales
	<i>prof_{it}</i>	Profitability	Return on Equity
	<i>mtb_{it}</i>	Information asymmetry	Market to book value of equity
	<i>xlist_{it}</i>	Cross listing	Dummy equal to 1 if firm is cross-listed at the NYSE; 0 otherwise
	<i>analyst estimates</i>	Level of scrutiny by the financial market	Number of earnings forecasts issued by financial analysts
	<i>bsizesq_{it}</i>	Board Size	(n. of board members) ²
	<i>board meetings</i>	Board processes	n. of board meetings each year
	<i>largest_{it}</i>	Ownership concentration	Percentage of shares held by largest shareholders

Table 4. Panel A. Descriptive statistics for disclosure measures

Disclosure measures		N	mean	sd	min	p25	p50	p75	max
All	TICSD	867	45.729	41.296	0	14	31	70	179
	O_score	867	5.661	4.691	0	2	5	8	26
	A_score	867	3.684	4.153	0	0	2	6	21
	M_score	867	36.384	35.913	0	10	23	55	154
Comply-or-explain	TICSD	415	27.627	25.324	0	10	23	39	128
	O_score	415	5.687	5.037	0	2	5	8	26
	A_score	415	2.586	3.182	0	0	2	4	17
	M_score	415	19.354	18.945	0	6	15	28	101
Enforcement	TICSD	452	62.350	45.907	0	21	52	102	179
	O_score	452	5.637	4.354	0	2	5	8	22
	A_score	452	4.692	4.658	0	1	3	7	21
	M_score	452	52.020	40.437	0	15	43	87	154

Table 4. Panel B. Concentration of disclosure

		Enforcement		Comply-or-explain	
	Panel	France	Germany	Italy	UK
Objectives	12.38%	8.10%	11.16%	18.28%	23.34%
Actors	8.06%	7.33%	7.97%	10.16%	8.41%
Mechanisms	79.56%	84.57%	80.87%	71.57%	68.25%

TICSD Total ICS disclosure score
O_score Total disclosure about ICS objectives
A_score Total disclosure about ICS actors
M_score Total disclosure about ICS mechanisms

Table 5. Univariate Analysis

Disclosure means	Enforcement (n=452)	Comply-or-explain (n=415)	t-test	p-value
TICSD	62.35	27.63	13.62	(<i>p</i> <0.000)
O_score	5.64	5.69	-0.16	(<i>p</i> >0.10)
A_score	4.69	2.59	7.71	(<i>p</i> <0.000)
M_score	52.02	19.35	15.01	(<i>p</i> <0.000)

TICSD Total ICS disclosure score
O_score Total disclosure about ICS objectives
A_score Total disclosure about ICS actors
M_score Total disclosure about ICS mechanisms

Table 6. Descriptive statistics and Correlations: Disclosure scores, Independent and Control variables[†]

	mean	sd	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
<i>1 TICSD</i>	45.729	41.296	1														
<i>2 prind</i>	0.603	0.170	-0.262***	1													
<i>3 duality</i>	0.618	0.486	-0.309***	0.193***	1												
<i>4 ac_expertise</i>	0.197	0.207	-0.033	0.079*	-0.113***	1											
<i>5 ac_independent chair</i>	0.866	0.341	-0.392***	0.302***	0.270***	-0.076*	1										
<i>6 ac_expert chair</i>	0.354	0.479	0.023	0.241***	-0.034	0.029	0.121***	1									
<i>7 enf</i>	0.521	0.500	0.420***	-0.052	-0.206***	0.101**	-0.146***	0.323***	1								
<i>8 size</i>	10.897	1.577	0.082*	0.097**	-0.022	0.091**	-0.028	0.035	0.03	1							
<i>9 prof</i>	0.006	3.280	0.021	0.001	0.021	-0.032	-0.012	-0.072*	-0.057	-0.028	1						
<i>10 mtb</i>	3.753	26.116	-0.011	-0.001	0.042	0.024	0.026	0.029	0.008	0.003	-0.766***	1					
<i>11 xlist</i>	0.220	0.415	0.042	0.124***	0.022	0.005	0.078*	-0.033	-0.087*	0.234***	0.04	0.018	1				
<i>12 analyst estimates</i>	116.183	54.834	0.150***	0.117***	0.001	0.124***	0.068*	0.132***	0.322***	0.302***	0.002	-0.022	0.391***	1			
<i>13 bsize_{sq}</i>	238.425	126.487	-0.064	-0.005	-0.209***	0.192***	-0.042	0.141***	0.206***	0.426***	0.045	-0.069*	-0.014	0.192***	1		
<i>14 board meetings</i>	2.953	0.387	0.013	0.159***	0.045	-0.061	0.032	-0.041	-0.416***	0.277***	-0.057	0.039	0.186***	0.023	-0.009	1	
<i>15 largest</i>	0.214	0.192	0.079*	-0.205***	-0.170***	-0.006	-0.104**	0.065	0.000	-0.148***	0.031	-0.03	-0.156***	-0.238***	0.034	-0.029	1

*** p<0.01, ** p<0.05, * p<0.1;

Variables are defined as follows: TICSD: Total ICS disclosure score; *prind_{it}*: Proportion of independent directors on BoD; *duality_{it}*: Dummy equal to 1 if CEO is not the chairman, 0 otherwise; *ac_expertise*: Proportion of accounting experts in AC; *ac_independent chair*: Dummy equal to 1 if Chair of the AC is independent, 0 otherwise; *ac_expert chair*: Dummy equal to 1 if Chair of the AC is an accounting expert, 0 otherwise; *enf_i*: Dummy equal to 1 if firm is listed in France or in Germany, 0 otherwise; *size_{it}*: Log of total sales; *prof_{it}*: Return on Equity; *mtb_{it}*: Market to book value of equity; *xlist_{it}*: Dummy equal to 1 if firm is cross-listed at the NYSE, 0 otherwise; *analyst estimates*: Number of earnings forecasts issued by financial analysts; *bsize_{sq, it}*: (n. of board members)²; *board meetings*: n. of board meetings each year; *largest_{it}*: Percentage of shares held by largest shareholders

Table 7. Panel Corrected Standard Error Models

TICSD	Model (1): Panel	Model (2) : Enforcement	Model (3): Comply or explain
<i>prind</i>	-10.279 [0.189]	-79.994*** [0.000]	6.183 [0.421]
<i>duality</i>	-10.998*** [0.002]	-14.628*** [0.000]	-9.623** [0.019]
<i>ac_expertise</i>	6.858 [0.295]	-15.272** [0.017]	-0.481 [0.946]
<i>ac_independent chair</i>	-9.965* [0.067]	-28.030*** [0.000]	-11.535* [0.100]
<i>ac_expert chair</i>	6.631* [0.057]	-7.063** [0.014]	8.289** [0.014]
<i>enf</i>	110.170*** [0.000]		
<i>enf*prind</i>	-70.699*** [0.000]		
<i>enf*duality</i>	-0.787 [0.871]		
<i>enf*ac_expertise</i>	-30.349*** [0.001]		
<i>enf*ac_independent chair</i>	-22.783*** [0.001]		
<i>enf*ac_expert chair</i>	-12.251*** [0.005]		
<i>size</i>	10.079*** [0.000]	14.675*** [0.000]	8.781*** [0.000]
<i>prof</i>	1.750*** [0.000]	1.934*** [0.000]	0.309 [0.954]
<i>mtb</i>	0.144*** [0.001]	0.154*** [0.000]	0.098 [0.740]
<i>xlist</i>	-3.235 [0.212]	-6.927 [0.117]	0.479 [0.881]
<i>analyst estimates</i>	-0.023 [0.379]	0.035 [0.362]	-0.015 [0.685]
<i>bsizesq</i>	-0.053*** [0.000]	-0.101*** [0.000]	-0.002 [0.899]
<i>board meetings</i>	19.942*** [0.000]	22.314*** [0.000]	10.413** [0.029]
<i>largest</i>	10.369* [0.083]	23.289*** [0.005]	13.769 [0.215]
<i>Constant</i>	-122.081*** [0.000]	-99.387*** [0.000]	-96.869*** [0.000]
<i>Industry effects</i>	YES	YES	YES
Observations	867	452	415
R-squared	0.637	0.724	0.238

*** p<0.01, ** p<0.05, * p<0.1; Variables are defined in Table 2 and Table 3

Variables are defined as follows: TICSD: Total ICS disclosure score; *prind_{it}*: Proportion of independent directors on BoD; *duality_{it}*: Dummy equal to 1 if CEO is not the chairman, 0 otherwise; *ac_expertise*: Proportion of accounting experts in AC; *ac_independent chair*: Dummy equal to 1 if Chair of the AC is independent, 0 otherwise; *ac_expert chair*: Dummy equal to 1 if Chair of the AC is an accounting expert, 0 otherwise; *enf_i*: Dummy equal to 1 if firm is listed in France or in Germany, 0 otherwise; *size_{it}*: Log of total sales; *prof_{it}*: Return on Equity; *mtb_{it}*: Market to book value of equity; *xlist_{it}*: Dummy equal to 1 if firm is cross-listed at the NYSE, 0 otherwise; *analyst estimates*: Number of earnings forecasts issued by financial analysts; *bsizesq_{it}*: (n. of board members)²; *board meetings*: n. of board meetings each year; *largest_{it}*: Percentage of shares held by largest shareholders

Table 8. Panel Corrected Standard Error Models

	Disclosure on ICS objectives (O_score)			Disclosure on ICS actors (A_score)			Disclosure on ICS mechanisms (M_score)		
	Panel (1)	Enforcement (2)	Comply-or-explain (3)	Panel (4)	Enforcement (5)	Comply-or-explain (6)	Panel (7)	Enforcement (8)	Comply-or-explain (9)
<i>prind</i>	0.535 [0.707]	-5.330*** [0.000]	3.037* [0.055]	-0.419 [0.662]	-3.454** [0.011]	1.611* [0.070]	-10.395* [0.093]	-71.210*** [0.000]	1.535 [0.792]
<i>duality</i>	-1.518** [0.018]	-0.438 [0.328]	-1.625** [0.040]	-1.791*** [0.000]	-0.961** [0.026]	-1.466*** [0.002]	-7.689*** [0.005]	-13.229*** [0.000]	-6.532** [0.035]
<i>ac_expertise</i>	-1.220 [0.298]	0.311 [0.722]	-1.966 [0.122]	-0.202 [0.792]	-1.748* [0.074]	-0.637 [0.416]	8.281 [0.110]	-13.836** [0.019]	2.122 [0.702]
<i>ac_independent chair</i>	-0.836 [0.378]	-2.195*** [0.000]	-1.574 [0.185]	-0.878 [0.107]	-0.597 [0.306]	-1.705*** [0.006]	-8.252* [0.066]	-25.237*** [0.000]	-8.256 [0.145]
<i>ac_expert chair</i>	1.119* [0.075]	-0.205 [0.603]	0.939 [0.144]	1.171*** [0.007]	-1.060** [0.011]	1.421*** [0.000]	4.341 [0.105]	-5.799** [0.026]	5.929** [0.021]
<i>enf</i>	3.592** [0.012]			5.177*** [0.000]			101.401*** [0.000]		
<i>enf*prind</i>	-5.224*** [0.009]			-4.212** [0.010]			-61.263*** [0.000]		
<i>enf*duality</i>	1.101 [0.171]			1.220* [0.051]			-3.108 [0.444]		
<i>enf*ac_expertise</i>	0.744 [0.625]			-2.648** [0.029]			-28.445*** [0.000]		
<i>enf*ac_independent chair</i>	-1.792 [0.112]			-0.060 [0.942]			-20.931*** [0.000]		
<i>enf*ac_expert chair</i>	-1.206* [0.093]			-1.647*** [0.005]			-9.398*** [0.009]		
<i>Controls</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Industry effects</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES
<i>Observations</i>	867	452	415	867	452	415	867	452	415
<i>R-squared</i>	0.253	0.423	0.230	0.378	0.437	0.341	0.659	0.712	0.215

*** p<0.01, ** p<0.05, * p<0.1

Variables are defined as follows: TICSD: Total ICS disclosure score; *prind_{it}*: Proportion of independent directors on BoD; *duality_{it}*: Dummy equal to 1 if CEO is not the

chairman, 0 otherwise; *ac_expertise*: Proportion of accounting experts in AC; *ac_independent chair*: Dummy equal to 1 if Chair of the AC is independent, 0 otherwise; *ac_expert chair*: Dummy equal to 1 if Chair of the AC is an accounting expert, 0 otherwise; *enf_i*: Dummy equal to 1 if firm is listed in France or in Germany, 0 otherwise; *size_{it}*: Log of total sales; *prof_{it}*: Return on Equity; *mtb_{it}*: Market to book value of equity; *xlist_{it}*: Dummy equal to 1 if firm is cross-listed at the NYSE, 0 otherwise; *analyst estimates*: Number of earnings forecasts issued by financial analysts; *b_{sizesq_{it}}*: (n. of board members)²; *board meetings*: n. of board meetings each year; *largest_{it}*: Percentage of shares held by largest shareholders

Appendix 1 - Regulatory settings in analyzed European countries

Disclosure on ICS is required by law in Germany and France, although in neither country regulation *per se* provide guidance on the content of disclosures describing the characteristics of the ICS, thus leaving management with some discretion in the choice of what shall be disclosed. The German Commercial Code requires the management board of medium and large firms to report on the risks faced by the firm and on the system of controls (risk management system) put in place (art. 289, 315, German Commercial code). The French Commercial Code states that the chairman of the board of directors or the supervisory board must present a report at the shareholders annual general meeting on how the board prepares and organizes its work and on the internal control procedures implemented by the firm. (Article L 225 – 37, French Commercial Code).

In Italy and in the UK, the disclosure on the ICS is recommended by the codes of corporate governance on the basis of the “comply-or-explain” principle. Provision C.2.1 of the Combined Code (Financial Reporting Council - FRC, 2003) states that “the directors should, at least annually, conduct a review of the effectiveness of the group's system of internal control and should report to shareholders that they have done so. The review should cover all material controls, including financial, operational and compliance controls and risk management systems”. In Italy, the Codice di Autodisciplina (Combined Code) of Borsa Italiana (Italian Stock Exchange, 2002) states that the board of directors is responsible for the internal control system: “it shall lay down the guidelines for the system, periodically check that it is adequate and working properly, and verify that the main risks facing the firm are identified and managed appropriately” (provision 9).

Regulatory settings in analyzed European countries (up to 2005)

Country	Code of Corporate Governance	Law	Frameworks
UK	Combined Code (FRC, 1999; 2000; 2003)*		Turnbull Guidance Smith Guidance
Italy	Codice di autodisciplina (Borsa Italiana, 2002) +		-----
Germany	Cromme Code (Deutsche Boerse, 2003)	Gesetz zur Kontrolle und Transparenz im Unternehmensbereich (KonTraG), 1998	-----
France	Bouton Report (MEDEF, 2002); Corporate governance of listed companies (MEDEF, 2003)	Commercial Code (art. 225-37 and 225-68) and Monetary and Financial code (art 621-18-3)#	AMF (<i>Autorité des marchés financiers</i>) IC framework

* FSA introduced Disclosure and Transparency Rules in 2008

+ Prescriptions to the CEO and CFO to declare the reliability of accounting procedures, inspired to the SOX regulation, were introduced through law n.262/2005 whose effects started from 2006

In 2005 the AMF (*Autorité des marchés financiers*) appointed a group of experts to provide firms with non-binding guidelines for the evaluation of their internal control and risk management procedures

Appendix 2 - Measurement of ICS disclosure

ICS Disclosure Scores (example)

	OBJECTIVES (O)					ACTORS (A)							IMPLEMENTATION MECHANISMS (M)							
	1. contents not specified	2. Efficiency of operations	3. Reliability of Financial reporting	4. Compliance with the law	5. Safeguarding of assets	1. Board of Directors	2. Audit Committee	3. Internal Control Supervisor	4. Internal Auditor	5. Senior Management (CEO, CFO, Controller,	6. Risk Committee - Risk Manager	7. Others	1. Audit Committee's Working Mechanisms	2. Internal Control Guidelines and	3. Accountability Definition	4. Ethical Codes - Codes of Conduct	5. Planning and budgeting	6. Risk Reporting	7. I.S.Tools	8. Other Activities Documented
Air liquid (2003)																				
0. Internal environment													5	7						
1. Objective Setting and Risk Appetite-Tolerance	1		1	1																
2. Risk Identification													13	2						
3. Risk Assessment													1							
4. Action Planning																				1
5. Implementation of action plans																				
6. Communication and Monitoring	1		1	1							3		18	5						2
Total			6						3						54					

Examples of coding

Firm	Source	Sentence	Coding
MMO2 (UK)	Annual Report, 2003	<i>The profile of the significant risks that form the registers is summarised and tracked using a consolidated risk map</i>	3; M8 (Risk assessment; mechanisms - other activities documented)
Enel (IT)	Annual Report, 2005	<i>The executive in charge of internal auditing (i.e. the head of the firm's internal auditing unit) does not report to any of the operating division heads, coordinates the units responsible for internal auditing in Group firms, and reports regularly on his actions to the CEO and the Chairman, as well as every six months (except when circumstances require a more timely report) to the Internal Audit Committee and the Board of Statutory Auditors</i>	0; A3 (Internal environment; Actors – internal control supervisor)
BASF (G)	Annual Report, 2004	<i>We are currently establishing a system to document the information and control systems for financial reporting within the BASF Group</i>	6; M7 (Communication and monitoring; Mechanisms - I.S. tools)
CapGemini (F)	Annual Report, 2003	<i>The internal control procedures applied by the group comprises a set of rules, directives and working practice designed to ensure that the activities of the group and its staff comply with relevant laws, regulations, standards and internal rules.</i>	0; O4 (Internal environment; Objectives – Compliance with the law)