

Determinants of Conflict Minerals Disclosure Under the Dodd–Frank Act

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ABSTRACT

This paper examines conflict minerals disclosure (CMD) as mandated by the Dodd–Frank Act. We rely on a thorough content analysis conducted by the Responsible Sourcing Network on a sample of 122 firms that filed CMDs with the US Securities and Exchange Commission in 2015. We document that firms with long-term oriented incentives, a greater number of board meetings, strong corporate governance systems and inclusion in a sustainability index are associated with higher levels of CMD. Our results suggest that in the presence of enforcement leniency, both internal and external firm-specific factors affect strategic (non-)compliance with a mandatory social disclosure regime. We provide implications for supply chain managers, corporate reporters and policy-makers involved in the adoption of responsible sourcing strategies. © 2018 The Authors. *Business Strategy and The Environment* published by ERP Environment and John Wiley & Sons Ltd

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Introduction

THE TERM ‘CONFLICT MINERALS’ REFERS TO COLTAN (THE METAL ORE FROM WHICH TANTALUM IS EXTRACTED), CASSITERITE (TIN), WOLFRAMITE (tungsten) and gold, also known together as the 3TG minerals. The mining of these minerals occurs under hideous working conditions in the Democratic Republic of the Congo (DRC) and adjacent war-torn regions, resulting in human rights violations, forced labor or trafficked workers, and even the use of child soldiers (Central Intelligence Agency, 2016). Since 2014, companies publicly listed in the United States for which 3TG minerals are ‘necessary for the functionality or production’ of their products must disclose to the US Securities and Exchange Commission (SEC) their practices related to conflict minerals. This mandatory reporting regime, ratified in Section 1502 of the *Dodd–Frank Wall Street Reform and Consumer Protection Act of 2010* (Dodd–Frank Act), is the first attempt to legislate human rights disclosures (Arikan *et al.*, 2017; Sankara *et al.*, 2016; Christensen *et al.*, 2017). The Dodd–Frank Act illustrates the emerging need to regulate social conflicts and human rights abuses by demanding an increase in the disclosure of management practices regarding conflict minerals issues as part of a firm’s business strategy.

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Rather than simply prohibiting the sourcing of conflict minerals from countries involved in civil wars, Section 1502 is conceived as a 'name and shame' mechanism that relies on increased public scrutiny by key stakeholders to induce due-diligence compliance and 3TG sourcing changes in firms' supply chains (cf. Prakash and Rappaport, 1977). The US legislator thus expects listed firms to proactively manage their global supply chains as part of their value proposition and inherent disclosure strategy without the enforcement of sanctions or fines for non-compliance. Whereas the demand for 3TG 'conflict-free' business practices seems to be growing, simply creating additional reporting requirements may not always lead to real changes in firms' supply chain strategies or in the disclosure environment (Amnesty International, 2015; Browning, 2015). In fact, only 1280 firms filed a conflict minerals disclosure (hereafter CMD) in 2015, compared to the initial SEC estimate of approximately 6000 firms potentially involved (GAO, 2015).

In this paper, we examine for the first time – to the best of our knowledge – the effectiveness of the Dodd–Frank Act in enhancing reporting transparency and accountability about conflict minerals supply chains. Our research objective is to provide evidence of firm-level characteristics associated with voluntary (non-)compliance with CMD requirements, in a regulatory setting in which strategic (non-)disclosure in the presence of enforcement leniency might prevail. For our empirical analysis, we rely on a thorough content analysis from a representative sample of 122 firms with high exposure to conflict minerals in their supply chains, conducted by the Responsible Sourcing Network (RSN) using the second round of CMDs filed with the SEC in 2015.

Our exploratory findings suggest that the reporting compliance regime introduced by the Dodd–Frank Act has been partially effective in ensuring increased levels of social disclosure. There remains significant variation in adhering to Section 1502, explained by different predispositions to withholding information (i.e. not fully complying) about conflict mineral practices that depend on specific firm characteristics. More specifically, we find that firms with long-term oriented managerial incentive schemes, a greater number of board meetings, strong corporate governance systems and inclusion in a sustainability index are associated with higher levels of CMD.

Our study contributes to the literature that has increasingly considered environmental, social and governance (ESG) issues to be critical aspects of business strategy, with ESG reporting as a publicly available outcome of managerial decision-making processes (cf. Brammer and Pavelin, 2008; Cormier and Magnan, 2015; Pérez-López *et al.*, 2015). We provide a post-implementation assessment of a novel mandatory disclosure rule that aims to incorporate human rights and social performance into firms' business strategies and disclosure practices, with relevant implications for corporate report preparers and users (Arıkan *et al.*, 2017; Hofmann *et al.*, 2015). CMD offers a suitable setting to draw upon disclosure theory and examine the *internal* factors that enable managers' discretion in *external* reporting decisions for emergent forms of mandatory (non-)financial information with prevailing enforcement leniency (e.g. Ettredge *et al.*, 2011; Peters and Romi, 2013). Our findings also relate to the long-standing concerns of policy-makers and securities regulators regarding the effectiveness of mandatory norms designed to enhance due diligence practices via disclosure requirements (Prakash and Rappaport, 1977; Heitzman *et al.*, 2010; Christensen *et al.*, 2017). The interest around CMD is reinforced by regulatory initiatives similar to the Dodd–Frank Act currently unfolding in the European Union (Thomas and Economides, 2016; European Commission, 2017), China (China Chamber of Commerce, 2015), Canada and Australia (PricewaterhouseCoopers, 2015), thereby calling for more empirical evidence in this area.

Literature Review and Hypothesis Development

Institutional Background of CMD

The mining of so-called 3TG minerals occurs under hideous working conditions in the DRC. In 2011, it was estimated that approximately 98% of all mines in the DRC have some type of involvement with militias (Taylor, 2011). The profits from mining conflict minerals thereby fund militias and enable them to terrorize, enslave and sexually assault local workers (Free the Slaves, 2011). Death tolls since 1997, when the country was renamed the DRC following military conflict with Rwanda and Uganda, are estimated to range between 5.4 and six million people (International Rescue Committee, 2007; BBC, 2015). Today, the DRC is among the least developed countries in the world (Human Development Report, 2015), although the country's mineral resources are estimated to be worth

approximately \$24 trillion, which is equivalent to the combined yearly gross domestic product of the United States and Europe (United Nations Environment Programme, 2011). Unlike agricultural products, conflict minerals have no intrinsic value to Congolese militias. Instead, the militias are dependent on partners to transform these minerals into products, ultimately generating profit streams (Ochoa and Keenan, 2011). These trading partners include multinational companies that use 3TG minerals for the production of a variety of consumer products, such as mobile phones, computers and cans (tin and coltan), light bulbs and machine tools (tungsten), and jewelry (gold) (Amnesty International, 2015; Sankara *et al.*, 2016).

The Dodd–Frank Act represents a massive piece of financial legislation passed by the Obama administration in July 2010, broadly aiming at significant reform of the financial system. Among the 387 rules that address regulatory failures to restrain excessive risk taking and questionable practices in the financial markets, Section 1502 specifically adds Section 13(p) to the Securities Exchange Act of 1934. The new rule mandates disclosure related to the use of conflict minerals sourced from the DRC or adjacent countries to all US publicly listed companies, with the SEC's final rule on disclosure taking effect in November 2012 (Sankara *et al.*, 2016). The main objective by the Congress for passing the disclosure regime was to reduce violence in the DRC by enhancing transparency and inducing ('shaming') companies to reduce conflict minerals trade (Ayogu and Lewis, 2011). The Dodd–Frank Act thus aims to increase the disclosure of corporate information about supply chain practices regarding conflict minerals (in agreement with the 'information inductance' principle in Prakash and Rappaport, 1977), rather than simply prohibiting companies from sourcing 3TG minerals from the DRC (Ochoa and Keenan, 2011).

In accordance with Section 1502 of the Dodd–Frank Act, the SEC outlined a three-step process for CMD (Sankara *et al.*, 2016). As a first step, companies must determine whether they are subject to conflict minerals legislation. Section 1502 of the Dodd–Frank Act states that all companies for which 3TG minerals are necessary for the 'functionality or production of their products' fall within the scope of the disclosure regime. As a second step, companies included in Section 1502 are required to determine whether they have sourced conflict minerals from the DRC or its neighboring countries. Disclosures must be produced in the form of a Specialized Disclosure Report (Form SD) and must include a description of the Reasonable Country of Origin Inquiry (RCOI) process. If, after the RCOI, a company has reason to believe that used minerals might have originated from the covered area, it must further conduct a due diligence process of the supply chain (Society for Corporate Compliance and Ethics, 2015). In this third and final step, a firm must also provide information about its business partners, namely smelters and refiners of 3TG minerals.

Starting in 2014, companies must file CMDs to the SEC by 1 June of every year for the previous calendar year (GAO, 2015). The SEC granted companies a transitional period of 2 years (4 years for small companies with market capitalization < \$250 million), in which companies can classify 3TG minerals as 'DRC conflict undeterminable' and audits of CMDs by external parties are not required. Before the first round of CMDs, the SEC expected that approximately 6000 companies would be within the scope of the disclosure requirements. However, the number of actual disclosures in 2014 and 2015 was significantly lower. Form SD disclosures amounted to 1336 companies in 2014 and 1280 in 2015 (GAO, 2015).

In summary, Section 1502 of the Dodd–Frank Act provides the first legislation for mandatory human rights reporting in the US. Prior research on conflict minerals has examined the conceptual or legal aspects that led to the developments of this innovative regime (Arikan *et al.*, 2017; Sankara *et al.*, 2016; Schwartz and Nelson, 2016). After the first two rounds of mandatory reports under the Dodd–Frank Act, there was in fact a prominent variation in the occurrence of CMDs and, for filing firms, regarding their compliance. Hofmann *et al.* (2015) provided qualitative insights into how a selected number of European firms have implemented conflict mineral management practices. Christensen *et al.* (2017) investigated capital markets and real effects associated with US firms filing CMDs yet without examining their adherence to Section 1502. Thus, it remains a relevant and timely empirical question to examine: (1) the level of CMD and (2) the enabling firm-level characteristics associated with CMD levels. We rely on accounting disclosure theory to develop hypotheses on the internal and external factors probably associated with CMD adherence to the requirements of the Dodd–Frank Act.

Internal Determinants of CMDs

As long as reporting standards allow managers substantial discretion in reporting practices (as in Section 1502 of the Dodd–Frank Act), the accounting literature has contended that compensation incentives and corporate governance

mechanisms exercise powerful influences on management's reporting behavior (Leuz and Wysocki, 2016). In choosing a disclosure strategy, agency theory posits that managers must trade off the benefits from expanded and credible disclosure against the costs of reporting potentially damaging information to outside parties. A number of studies have examined compensation and incentive schemes for chief executive officers/senior executives tied to social and environmental performance and related disclosures (Stanwick and Stanwick, 2001; Mahoney and Thorne, 2005; Berrone and Gomez-Mejia, 2009; Maas and Rosendaal, 2016). Of particular relevance for our study, Deckop *et al.* (2006) investigated the influence of short- and long-term compensation on social performance. Their findings suggested that long-term compensation is positively associated with social performance. This evidence is aligned with accounting studies showing that long-term incentives can induce managers to be more concerned with long-term profitability and reputation building than with myopic, potentially harmful decisions induced by short-term (bonus) incentives (e.g. Hirshleifer and Teoh, 2003; Black *et al.*, 2017).

In the conflict minerals setting, which has been subject to high public scrutiny since the passage of the Dodd-Frank Act, we argue that a firm's compensation system probably influences managers' decisions to potentially withhold proprietary information and ultimately affects a firm's compliance with external reporting requirements (Peters and Romi, 2013). Compensation systems that include long-term incentives deter managers from poor social and environmental practices and lead them towards increased levels of corporate reporting as 'quality disclosers' (Deckop *et al.*, 2006). Hence, we contend that firms with long-term managerial incentives are positively associated with higher levels of CMD. In a similar vein, we draw on prior research showing that firms with compensation schemes linked to corporate social responsibility (CSR) and sustainability targets are positively associated with enhanced levels of these performance dimensions (Berrone and Gomez-Mejia, 2009; Maas and Rosendaal, 2016). We therefore posit that managers with explicit social and environmental performance measures in their compensation contracts are more likely to comply with mandatory reporting requirements. Such a line of reasoning in our setting leads to the following hypotheses:

H1a: *Companies with a system of long-term managerial incentives for executives are associated with higher CMD levels.*

H1b: *Companies with targets linked to CSR/sustainability in their managerial compensation systems are associated with higher CMD levels.*

The relationship between corporate governance and the social dimensions of a business strategy has received increasing attention among scholars, motivated by the potentially important role of governance in influencing socially responsible firm behavior (Hong *et al.*, 2016). For instance, Rupley *et al.* (2012) posited and found that the corporate board attributes of independence, diversity and expertise positively influence disclosure practices. Similarly, Jizi *et al.* (2014) documented that board independence and board size are positively related to ESG disclosures.

Specifically regarding the role of boards' activity levels on information disclosure, previous research has suggested that the frequency of board meetings is a relatively good proxy for board diligence. This stream of research has shown that companies with high frequencies of board meetings are associated with a high quality of financial reporting, captured by less earnings management and fewer cases of asymmetric information regarding quarterly corporate earnings announcements (e.g. Kanagaretnam *et al.*, 2007). In the setting of ESG disclosures, Giannarakis (2014) found that the number of annual board meetings is positively correlated with firms' social disclosures. We therefore argue that active corporate boards are more effective because the frequency of their meetings leads to enhanced levels of control. In turn, they are expected to signal greater commitment to the disclosure of information, which allows shareholders and stakeholders to perceive their efforts in a more transparent and accountable manner.

We further posit that firms with less emphasis on internal corporate governance structures and activities are more likely to decouple societally relevant topics, such as conflict minerals, from business strategy and management decisions. In contrast, reliance on stronger corporate governance systems should lead to improved reporting transparency and compliance with CMD requirements. This line of reasoning was confirmed by Chan *et al.* (2014) with an analysis of 2004 annual report data for 222 listed Australian companies, showing that ESG disclosure was significantly positively associated with better corporate governance practices. Hence, we propose the following two hypotheses:

H2a: *Companies with a greater number of annual board meetings are associated with higher CMD levels.*

H2b: *Companies with better corporate governance systems are associated with higher CMD levels.*

External Determinants of CMDs

Legitimacy theory posits that a firm's disclosure is a product of the firm's exposure to public pressure from stakeholder groups in the socio-political and regulatory environment (Patten, 2002; Lai *et al.*, 2016). Legitimacy theory rests on the concept that organizations have implicit 'license to operate' contracts with society, and fulfilling these contracts legitimates the organizations and their operations (Cormier *et al.*, 2004; Cormier and Magnan, 2015). The rationale behind mandatory schemes of ESG information is to influence managers in their disclosure decisions, which is a phenomenon well known in accounting as the 'information inductance' principle (Prakash and Rappaport, 1977; Merkl-Davies and Brennan, 2017). Previous studies have shown that managers tend to adjust the quality and quantity of ESG disclosures as an anticipated reaction to stakeholder groups, and they actively shape the perceived legitimacy of the company (Sinclair-Desgagné and Gozlan, 2003; Brammer and Pavelin, 2008; Chan *et al.*, 2014).

The case of conflict minerals has received considerable public scrutiny in recent years (e.g. Chasan, 2016). Companies with great reputational capital and high customer visibility might thus be more concerned about the potential negative consequences of CMDs resulting from a combination of questionable conflict minerals practices, strategic non-compliance and high social monitoring. In agreement with the 'information inductance' mechanism (Prakash and Rappaport, 1977), managers have an incentive to increase the extent of a firm's CMD to enhance the credibility of the information released, to increase support among various stakeholders and hence to improve a firm's reputation for being a 'quality discloser'.

In this study, we posit that companies that face higher legitimacy pressures and that are exposed to reputational risks are more predisposed to comply with CMD requirements. We focus on two proxies to capture reputational factors and inherent legitimacy concerns as antecedents of CMD. The first refers to a firm's inclusion in one of the 'best-in-class' sustainability indices, which serve to identify CSR/sustainability-leading firms in comparison with their industry peers. Among the available indices, the Dow Jones Sustainability Index (DJSI) is probably the most established because of its global reach, brand visibility and continuous monitoring of companies. The DJSI and similar indices seek to verify that a firm's goals and actions align with societal values, such as environmental sustainability, labor and human rights, anti-corruption practices and community engagement. In doing so, it provides meaningful signals of social legitimacy. The second proxy is the *Fortune* magazine ranking of most admired companies, which is a commonly used measurement of corporate reputational capital in several studies. We aim to test the following two hypotheses:

H3a: *Companies included in a sustainability index are associated with higher CMD levels.*

H3b: *Companies included in the Fortune magazine ranking of most admired companies are associated with higher CMD levels.*

Methods

Sample

We examine all companies that have been assigned disclosure scores by the RSN in 2015.¹ The RSN is a project of the non-profit organization As You Sow. It aims to connect different stakeholders and to achieve more sustainable supply chains of companies (Responsible Sourcing Network, 2014). The sample includes mainly companies that submitted Conflict Mineral Reports (approximately 91% of the sample) but also companies that submitted only

¹RSN conducted a pilot study in 2014 with a limited sample (51 companies) and a different methodology. Thus, we decided to limit our analysis to 2015.

All companies included in the RSN assessment	155
Less: Insufficient information provided on Compustat	3
Less: Insufficient information provided on ASSET4	30
Final sample	122

Table 1. Sample selection

Specialized Disclosure Reports (Form SD-only filers, approximately 9% of the sample). In 2015, RSN assessed 155 companies based on 2015 filings. Companies have been included based on their industry membership and market capitalization. Specifically, RSN identified 17 industries with high exposure to conflict minerals and then selected in its assessment the eight companies with the highest market capitalization for each industry. These industries represent roughly 69% of all filings. From the remaining 31% of filings that have not been examined based on industry membership, the 20 largest filers are included in the sample. This selection approach leads to a representative sample consisting of well-known industry-leading multinationals, typically having higher market capitalization than economy-wide averages. The sample includes the larger companies that are the most affected by the regulation because they have the greatest impact on the supply chain of materials, on the environment and on society. Thus, even if the sampling choice were skewed towards larger companies, this bias would work against our results. We exclude companies with missing variables, resulting in a final sample of 122 observations for the analysis of the determinants of CMDs (Table 1).

Model and Variables

We conduct an ordinary least square regression analysis with the following model:

$$\begin{aligned}
 \text{CMD} = & \alpha + \beta_1 * \text{COMP} + \beta_2 * \text{INCENT} + \beta_3 * \text{BMEET} + \beta_4 * \text{CGV} + \beta_5 * \text{SUSTIND} + \beta_6 * \text{REPUT} + \beta_7 * \text{ECN} \\
 & + \beta_8 * \text{ENV} + \beta_9 * \text{SOC} + \beta_{10} * \text{SIZE} + \beta_{11} * \text{LEVER} + \beta_{12} * \text{ROS} + \sum_{i=13}^{18} \beta_i * \text{Industry}_i + \varepsilon
 \end{aligned} \quad (1)$$

Table 2 provides a complete description of the variables. CMD is measured by means of a content analysis of SEC filings and other publicly available information, performed by RSN. As previously described, using RSN as the data source has several strengths: it is the only initiative attempting an assessment of the content of conflict minerals reports; it is a reputable project; and it conducts analyses by following a detailed research protocol. The indicators adopted for the coding of the CMD reports have been developed and validated in collaboration with a variety of stakeholders. In detail, disclosure scores range between 0 (weak) and 100 (strong) and are computed based on five measurement areas: Commit, Assess, Respond, Report and Impact.² The Dodd–Frank Act Section 1502 requires that an issuer’s due diligence follow a nationally or internationally recognized due diligence framework. The ‘Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas’, issued by the Organisation for Economic Co-operation and Development (OECD), satisfies this criterion, and it is currently the only recognized framework (OECD, 2013).³ The reliability of the RSN data source seems ensured by a thorough match between the assessed indicators and the steps listed in the OECD framework.

Table 3 presents a more detailed description of the five areas. The first measurement area, Commit (CMD_1), refers to step one of the OECD due diligence framework. According to this step, companies must adopt a company policy for the supply chain of minerals originating from conflict-affected and high-risk areas, communicate this policy to suppliers and the public, and structure an internal management system to monitor the policy. For instance, Tiffany & Co. adopted a detailed conflict minerals policy with clear expectations for suppliers, committed to

²Conflict Mineral Report filers receive a total score that is weighted equally among all five measurement areas, whereas for Form SD-only filers, the weight of the Assess area is doubled, and the weights of Respond and Impact are halved.

³The OECD due diligence guidance is endorsed by the US State Department and the United Nations, and it has been implemented in the recent European Union Regulation 2017/821 on conflict minerals.

Variable	Definition and data source (in parentheses)
CMD	A measure of conflict minerals disclosure ranging from 0 to 100 (Responsible Sourcing Network)
COMP	An indicator variable that equals 1 if the maximum time horizon of executives' compensation targets measured in years is above the median value, and 0 otherwise (ASSET4)
INCENT	An indicator variable that equals 1 if the senior executive's compensation is linked to CSR/sustainability targets, and 0 otherwise (ASSET4)
BMEET	Number of board meetings (ASSET4)
CGV	Corporate governance pillar score (ASSET4)
SUSTIND	An indicator variable that equals 1 if the concerned firm belongs to a specific sustainability index, and 0 otherwise (ASSET4)
REPUT	An indicator variable that equals 1 if the company is included in the <i>Fortune</i> Magazine Ranking, and 0 otherwise (<i>Fortune</i> Magazine Ranking)
ECN	Economic pillar score (ASSET4)
ENV	Environmental pillar score (ASSET4)
SOC	Social pillar score (ASSET4)
SIZE	Natural logarithm of total assets expressed in million US\$ (Compustat)
LEVER	Financial leverage measured as total liabilities scaled by total assets (Compustat)
ROS	Return on sales computes as Net Income (Loss)/Sales revenue (Compustat)

Table 2. Variable descriptions

Measurement area	Description	Content	Mean (SD) Min/max
CMD_1 (Commit)	= Adoption of a strong policy and an effective system to implement it	Implementation of a clear policy Accessibility of the policy Internal management systems to monitor the policy	14.33 (4.65) 0.00–20.00
CMD_2 (Assess)	= Identification and assessment of risk in the chain of custody	Qualitative and quantitative assessment of conflict minerals use Implementation of supplier surveys Response verification of supplier surveys Determination of country of origin	14.63 (3.62) 0.00–21.50
CMD_3 (Respond)	= Description of the steps taken to manage risk	Steps taken to mitigate conflict minerals risk Provision of third-party assurance Membership in related interest groups Assessment of suppliers' strategies	7.41 (4.64) 0.00–20.00
CMD_4 (Report)	= Compliance with reporting requirements and generation of public confidence	Final assessment of whether 3TG minerals are conflict-free or not Accessibility of conflict minerals information Description of steps for continuous improvement Application of the internationally accepted OECD reporting framework	11.36 (4.09) 2.00–19.00
CMD_5 (Impact)	= Promotion of conflict-free minerals trade in the DRC	Active cooperation with suppliers to source conflict-free Prevention of a general sourcing boycott of the DRC Application of multi-stakeholder approach	3.81 (4.27) 0.00–20.00

Table 3. Responsible Sourcing Network (RSN) measurement areas and conflict minerals disclosure (CMD) by measurement area

sourcing from conflict-free smelters and refiners, it identified the senior management responsible to oversee and implement the compliance process, and it introduced a grievance mechanism (Tiffany & Co., 2015). Assess (CMD_2) links to the second step of the OECD framework. Companies must identify and assess risks in their

supply chains by describing products and product categories in detail, sending surveys to suppliers, verifying their responses and determining the countries of origin. Intel identified the products that could contain conflict minerals and conducted a supply chain survey. In addition, the company compared the smelters and refiners identified by the survey to the list of facilities that received a conflict-free designation from specialized associations, and it documented country of origin information for the relevant suppliers (Intel Corporation, 2015). Respond (CMD_3) covers steps three and four of the OECD framework. Companies must design and implement strategies to respond to the identified risks and to perform independent audits of the due diligence practices of their suppliers. For instance, Apple, instead of avoiding smelter and refiner sourcing in the DRC and adjoining countries, is cooperating with non-governmental organizations (NGOs), trade groups and government agencies, and it is expanding the base of suppliers verified as conflict-free. Furthermore, Apple has implemented several due diligence measures, such as company visits to smelters, refiners and traders (Apple Inc., 2015). Report (CMD_4) refers to the fifth step of the OECD framework. Companies must report on their supply chain due diligence policies and practices, provide accessible information, indicate continuous improvement initiatives and describe the extent of application of the OECD framework. For example, Alcatel-Lucent reports annually on its supply chain due diligence through a Conflict Minerals Report, a Sustainability Report and an additional information report. It also exhibits plans to improve due diligence for the subsequent period and the intention to request auditing by an independent third party (Alcatel-Lucent, 2015). The last measurement area, Impact (CMD_5), goes beyond the mere letter of the law and focuses on the promotion of a conflict-free trade with suppliers in the DRC region, rather than a simple embargo. For example, Alcatel-Lucent does not want to prevent its suppliers from sourcing from legitimate mines located in the DRC and adjoining countries because it could be detrimental to the legitimate economies and populations of these countries (Alcatel-Lucent, 2015). An opposite approach (i.e. embargo effect) has been taken by other companies, such as Ralph Lauren, by introducing a contractual clause requiring suppliers to declare that they do not source 3TG minerals from high-risk countries (Ralph Lauren Corporation, 2015).

We distinguish between the internal and external determinants of disclosure levels. Internal determinants include both compensation variables and governance variables. COMP measures the maximum time horizon of senior executives' compensation targets, and INCENT identifies whether a firm's senior executive's compensation is linked to CSR/sustainability targets. Board diligence is proxied by the number of board meetings (BMEET), while the governance pillar score (CGV) denotes a comprehensive indicator of governance quality. It reflects a company's capacity, through its use of best governance mechanisms, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances to generate long-term value. The source of these variables is ASSET₄, a division of Thomson Reuters that specializes in providing objective, relevant, auditable and systematic sustainability information used extensively in previous studies.

In addition to the internal determinants, we examine two external antecedents of CMD levels. If the firm is included in a sustainability index, SUSTIND assumes the value of 1 and 0 otherwise. Furthermore, to measure the reputational capital of the firm, we use REPUT as an indicator variable that assumes the value of 1 if a company is included in *Fortune* magazine's ranking of the most admired companies and 0 otherwise.

As control variables, we include three performance pillars other than governance available from ASSET₄, capturing economic (ECN), environmental (ENV) and social (SOC) dimensions. The environmental score (ENV) measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalizes on environmental opportunities to generate value. The social score (SOC) captures a company's capacity to generate trust and loyalty with its workforce, customers and society through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate value in the long term. We also use company size (SIZE), measured as total assets, financial leverage (LEVER), measured as total liabilities scaled by total assets, and return on sales (ROS).

Finally, we acknowledge that the environmental sensitivity of the industry is possibly another determinant of CMD level. Therefore, consistent with the RSN classification, we use a set of industry indicators (Industry) to control for the sensitivity of an industry to CMD requirements: Information Technology, Industrials, Healthcare, Consumer Discretionary, Energy, Materials and Other.

Panel A – Descriptive statistics

	<i>n</i>	Mean	SD	Min.	Max.
CMD	122	49.56	17.98	10.00	94.20
COMP	122	0.47	0.50	0	1
INCENT	122	0.27	0.45	0	1
BMEET	122	7.72	3.66	0	20
CGV	122	75.20	18.80	9.10	96.76
SUSTIND	122	0.41	0.49	0	1
REPUT	122	0.48	0.50	0	1
ECN	122	69.87	24.56	2.88	98.02
ENV	122	74.09	25.46	9.59	94.91
SOC	122	68.52	25.31	5.15	96.88
SIZE	122	9.96	1.33	7.32	13.11
LEVER	122	0.58	0.18	0.17	1.32
ROS	122	0.15	0.08	-0.12	0.41

Panel B Conflict minerals disclosure (CMD) by industry

	<i>n</i>	%	Mean	SD	Min.	Max.
Information Technology	28	23.0	63.11	16.50	16.90	94.20
Industrials	26	21.3	47.11	16.74	18.80	84.60
Healthcare	10	8.2	47.31	15.30	16.00	68.00
Consumer discretionary	35	28.6	45.20	15.52	10.00	77.90
Energy	9	7.4	44.44	20.02	14.00	75.00
Materials	5	4.1	36.44	11.41	21.20	50.50
Other	9	7.4	46.39	21.05	19.70	85.20

Table 4. Summary statistics

Variables are listed and defined in Table 2.

Results

Descriptive Statistics

We examined the disclosure reports of 122 companies. Most are headquartered in the United States (approximately 75%). Panel A of Table 4 provides descriptive statistics. CMD scores appear to be widely dispersed (mean 49.56, SD = 17.98), with Intel achieving the highest score (94.2) and Mohawk Industries with lowest disclosure score (10.0).⁴ The dispersion in the scores, reflected by a relatively high standard deviation, is noteworthy and confirms assessments by Amnesty International (2015) and the Responsible Sourcing Network (2015) that significant differences exist across the levels of effort that companies dedicate to CMD. The high dispersion might also result from the relatively recent nature of conflict minerals legislation.

Approximately 47% (SD = 0.50) of the companies have relatively long time horizons for compensation targets, and approximately 27% (SD = 0.45) have compensation schemes linked to sustainability targets. Regarding governance-related variables, the number of board meetings (mean 7.72, SD = 3.66) agrees with Giannarakis (2014), and the governance pillar score extracted from ASSET4 is on average 75.20. Approximately half of the companies belong to *Fortune* magazine's ranking of most admired companies (mean = 0.48, SD = 0.50), and approximately 41% (SD = 0.49) are included in a specific sustainability index.

⁴The length of the CMD reports ranges from 186 to 5976 words. However, given the high correlation with our dependent variable CMD (approximately 0.65), we do not include the length of the report in the regression models.

	1	2	3	4	5	6	7	8	9	10	11	12	13
1-CMD	1												
2-COMP	0.13	1											
3-INCENT	0.14	-0.05	1										
4-BMEET	0.32	-0.13	0.10	1									
5-CGV	0.22	0.20	0.19	-0.13	1								
6-SUSTIND	0.44	-0.01	0.09	0.29	0.15	1							
7-REPUT	0.21	0.08	0.22	0.10	0.21	0.23	1						
8-ECN	0.24	0.32	0.15	-0.07	0.11	0.17	0.11	1					
9-ENV	0.42	0.52	0.38	-0.13	0.19	0.28	0.27	0.41	1				
10-SOC	0.37	0.62	0.32	-0.05	0.24	0.24	0.20	0.56	0.78	1			
11-SIZE	0.27	0.37	0.49	-0.01	0.21	0.25	0.19	0.25	0.59	0.48	1		
12-LEVER	-0.01	-0.07	0.06	-0.13	-0.00	-0.10	0.14	-0.13	0.11	0.00	0.10	1	
13-ROS	0.19	0.18	0.05	0.19	0.07	-0.07	0.17	0.10	0.08	0.15	0.09	-0.31	1

Table 5. Correlation matrix

Variables are listed and defined in Table 2. Significant correlations are indicated in bold ($p < 0.10$, two-tailed test).

Companies are classified by RSN within seven industries. As exhibited in Panel B of Table 4, the largest group (28.6%) belongs to the Consumer Discretionary industry, including companies in the automotive, retail, leisure and household products sectors. The second and third largest industries are, respectively, Information Technology (23.0%) and Industrials (21.3%). As shown, companies belonging to the Information Technology industry appear to have significantly higher CMD scores (mean 63.11, SD = 16.50), which intuitively aligns with expectations as several companies in this industry, such as Apple, have been subject to public scrutiny related to 3TG minerals in recent years (e.g. Amnesty International, 2016b). In contrast, companies in the Materials industry appear to have significantly lower disclosure scores (mean = 36.44, SD = 11.41). However, these scores could also result from the small number of companies included in the industry.

As described in the previous section, the disclosure score elaborated by RSN is based on five measurement areas. The last column of Table 3 provides the descriptive statistics for each of the five categories. On average, scores are higher in the CMD_1 (Commit, mean = 14.33, SD = 4.65) and CMD_2 (Assess, mean = 14.63, SD = 3.62) areas. These scores are based on the implementation and monitoring of a clear policy regarding conflict minerals and the thoroughness of determination of the country of origin. It is worth noting that most of the companies focused on risk assessment rather than risk management. The average score on CMD_3 (Respond, mean = 7.41, SD = 4.64) is significantly lower than the score for the Assess area ($p < 0.01$). Scores are the lowest in the CMD_5 (Impact) area (mean 3.81, SD = 4.27). This category goes beyond the pure letter of the law. It assesses a company's multistakeholder approach to the topic and whether companies actively cooperate with their suppliers to become conflict-free, instead of simply stopping procurement from the DRC.

Table 5 exhibits the correlation matrix. CMD is positively and significantly correlated with the number of board meetings and the governance pillar score (0.32 and 0.22, respectively), in agreement with H2a and H2b. Furthermore, as predicted by H3a and H3b, CMD is also correlated with inclusion in a sustainability index (0.44) and in *Fortune* magazine's ranking of most admired companies (0.21).

Multivariate Analysis

Table 6 presents the results of the regression model to test determinants of CMD.⁵ Model 1 includes only the control variables and is applied to the full sample, whereas Model 2 is the complete model applied to the full sample. Similarly, Models 3 and 4 are applied to the restricted sample of companies headquartered in the US (US-only). H1 is partially confirmed, with COMP positively and statistically significant at the 0.10 level in both model specifications. The coefficient of INCENT is instead statistically significant only at the 0.05 level in Model 4, thereby suggesting that explicit linkages in the incentive schemes of US firms are positively and significantly associated with CMD levels.

⁵We checked the variance inflation factors (VIFs) and confirmed that multicollinearity is not a concern.

	Pred.	Model 1	Model 2	Model 3 (US only)	Model 4 (US only)
Constant		-7.291 (-0.43)	5.733 (0.39)	-13.809 (-0.71)	-15.403 (-0.80)
COMP	H1a (+)		5.109* (1.80)		5.775* (1.94)
INCENT	H1b (+)		3.298 (1.05)		7.273** (2.15)
BMEET	H2a (+)		0.748* (1.91)		0.764 (1.52)
CGV	H2b (+)		0.134* (1.73)		0.036 (0.29)
SUSTIND	H3a (+)		12.382*** (3.43)		15.688*** (3.76)
REPUT	H3b (+)		-1.235 (-0.40)		-1.612 (-0.44)
ECN		0.036 (0.50)	0.021 (0.33)	0.047 (0.62)	0.082 (1.18)
ENV		0.218** (2.24)	0.175* (1.84)	0.165 (1.55)	0.178* (1.77)
SOC		0.006 (0.06)	-0.091 (-0.91)	0.078 (0.72)	-0.134 (-1.25)
SIZE		1.310 (0.87)	0.639 (0.42)	2.782 (1.58)	1.147 (0.65)
LEVER		13.657 (1.55)	16.894** (2.01)	2.690 (0.28)	12.188 (1.36)
ROS		44.292** (2.39)	42.003** (2.41)	47.118** (2.24)	52.952*** (2.74)
Information Technology		23.194*** (3.62)	24.406*** (4.02)	19.392*** (2.65)	21.143*** (3.17)
Industrials		7.224 (1.16)	12.595** (2.11)	2.662 (0.39)	9.092 (1.44)
Healthcare		2.561 (0.35)	0.762 (0.11)	6.319 (0.73)	7.121 (0.92)
Consumer discretionary		10.374 (1.61)	16.866*** (2.74)	7.872 (1.06)	13.258** (1.99)
Energy		5.165 (0.69)	11.604 (1.57)	6.282 (0.75)	10.870 (1.37)
Materials		-2.291 (-0.24)	0.072 (0.01)	-1.629 (-0.16)	-0.695 (-0.07)
R ²		0.312	0.414	0.377	0.512
n		122	122	92	92

Table 6. Determinants of conflict minerals disclosure (dependent variable = CMD)

Asterisks indicate significance at the

***0.01,

**0.05 and

*0.1 levels for two-tailed tests. *t*-statistics are given in parentheses. Variables are listed and defined in Table 2

Our analysis also suggests that the two proxies of corporate governance mechanisms (BMEET and CGV) are both statistically significant in Model 2, although at the 0.10 level. When including US firms only, these two variables are not significantly associated with CMD levels. The findings seem to provide support for the conjecture under H2 that the adoption of ‘good’ internal corporate governance mechanisms exerts a beneficial effect on management decisions to disclose better information. The regression results further indicate that inclusion in a sustainability index such as the DJSI (SUSTIND) has a positive relationship with CMD, both in Model 2 and in Model 4. In contrast, the reputation of a firm (REPUT) has no discernible effects on its predisposition to conform to external pressures for a higher level of disclosure. The data provide partial support for H3.

Among the industry dummies tested, our results indicate that Information Technology and Consumer Discretionary are the two industries most prominently linked to higher levels of CMD. This is overall consistent with the expectation that these two industries are particularly sensitive to conflict minerals and therefore have more prominent stances towards compliance with Section 1502 of the Dodd–Frank Act. With regard to control variables, ROS and LEVER are highly significant in Model 2.

In a supplemental analysis presented in Table 7, we run the same regression model for the whole sample with the five CMD measurement areas as dependent variables. After the disaggregation of the CMD dependent variable into several component scores, the coefficient of COMP becomes insignificant, while INCENT maintains its significance for measurement area CMD_1 (Commit) only. A plausible rationale is that including sustainability targets in incentive schemes exerts an influence on managers by linking information disclosed externally with internal management systems. BMEET and CGV maintain a significant coefficient if compared to the aggregate analysis for CMD_5 (Impact). We interpret these results to imply that corporate governance mechanisms are significantly related to how firms actively cooperate with suppliers to source in a conflict-free manner. Moreover, the supplemental analysis overall confirms the prominent industry effect obtained in the main analysis, with firms in Information Technology and the Consumer Discretionary industries undoubtedly positively linked to all measurement areas, except for CMD_2 (Assess).

	Model 1 CMD_1 (Commit)	Model 2 CMD_2 (Assess)	Model 3 CMD_3 (Respond)	Model 4 CMD_4 (Report)	Model 5 CMD_5 (Impact)
Constant	-1.339 (-0.26)	12.977*** (2.94)	-17.453*** (-3.71)	-1.957 (-0.48)	-21.105*** (-5.64)
COMP	0.717 (0.83)	1.190 (1.61)	0.764 (0.97)	0.614 (0.90)	0.180 (0.29)
INCENT	2.095** (2.15)	-0.034 (-0.04)	1.112 (1.26)	0.344 (0.45)	1.076 (1.53)
BMEET	0.053 (0.45)	0.098 (0.99)	0.154 (1.46)	0.114 (1.24)	0.262*** (3.12)
CGV	0.016 (0.67)	0.022 (1.09)	0.028 (1.34)	0.041** (2.20)	0.054*** (3.17)
SUSTIND	0.980 (0.89)	0.824 (0.88)	1.786* (1.78)	2.068** (2.38)	2.382*** (2.99)
REPUT	-1.085 (-1.15)	-0.545 (-0.68)	-0.645 (-0.75)	0.273 (0.37)	-0.710 (-1.04)
ECN	0.038* (1.91)	-0.007 (-0.39)	-0.019 (-1.06)	0.019 (1.22)	-0.022 (-1.53)
ENV	0.067** (2.36)	0.037 (1.52)	0.037 (1.41)	0.039* (1.72)	-0.013 (-0.65)
SOC	-0.011 (-0.35)	0.004 (0.14)	-0.005 (-0.19)	-0.020 (-0.81)	0.006 (0.25)
SIZE	0.044 (0.09)	-0.545 (-1.37)	1.311*** (3.09)	0.093 (0.25)	1.200*** (3.55)
LEVER	2.837 (1.11)	1.533 (0.70)	1.040 (0.45)	0.088 (0.04)	3.033 (1.64)
ROS	6.114 (1.12)	5.677 (1.22)	7.522 (1.52)	6.405 (1.49)	8.668** (2.19)
Information Technology	4.049** (2.20)	0.716 (0.46)	6.498*** (3.90)	5.496*** (3.80)	8.123*** (6.12)
Industrials	3.084* (1.70)	-1.465 (-0.95)	4.596*** (2.79)	1.885 (1.32)	4.397*** (3.35)
Healthcare	2.799 (1.33)	0.251 (0.14)	1.725 (0.90)	2.076 (1.25)	0.730 (0.48)
Consumer discretionary	5.089*** (2.71)	-0.482 (-0.30)	5.444*** (3.20)	3.862*** (2.62)	5.529*** (4.09)
Energy	2.840 (1.17)	2.250 (1.09)	5.080** (2.31)	3.686* (1.93)	4.051** (2.31)
Materials	-1.759 (-0.56)	-1.872 (-0.70)	1.860 (0.65)	0.072 (0.03)	2.363 (1.04)
R ²	0.258	0.114	0.388	0.404	0.541
n	112	112	112	112	112

Table 7. Determinants of conflict minerals disclosure by measurement area (dependent variable = from CMD_1 to CMD_5)

Asterisks indicate significance at the

***0.01,

**0.05 and

*0.1 levels for two-tailed tests. *t*-statistics are given in parentheses. Variables are listed and defined in Tables 2 and 3

Discussion

Our findings document a variation in CMD adherence to Section 1502 of the Dodd–Frank Act among the 2015 filers examined by RSN. In such a novel regulatory setting that relies on a ‘name and shame’ mechanism to enhance disclosure levels, we show that managers have the discretion to differentiate the CMD without having to incur fines or sanctions associated with lack of compliance. These results are consistent with previous studies documenting strategic (non-)compliance in mandatory disclosure regimes with constrained or lenient enforcement policies (e.g. Peters and Romi, 2013). We extend these studies by considering underlying firm-level characteristics associated with CMD levels.

First, we confirm the role of managerial compensation and governance systems embedded in agency theory as enabling internal factors associated with greater adherence to conflict minerals regulation. Second, we show that societal scrutiny and reputational threats from legitimacy theory also affect the predisposition of firms to adhere to the new SEC rules. In other words, these firm characteristics appear to decrease the tolerance for non-disclosure by making managers more sensitive to (reporting) actions interpretable as attempts to withhold information. In combination, these internally and externally driven forces create pre-emptive disclosure strategies, even in the absence of strict enforcement regimes based on fines and sanctions. Overall, these results are consistent with previous evidence on financial reporting, in which corporate governance features, mainly devised to protect shareholders’ interests, appeared to be associated with higher financial disclosure quality (e.g. Karamanou and Vafeas, 2005). Our study thus extends this line of reasoning in a non-financial disclosure setting that embraces various stakeholders and public opinion groups as users of publicly reported CMDs.

Our findings additionally attest to the importance of industry sensitivity to conflict minerals to explain variation in CMD levels. Firms in Information Technology and Consumer Discretionary industries, such as Apple, Sony and Samsung, have become subject to public scrutiny of their 3TG sourcing practices (Amnesty International, 2016a). These firms appear to distinguish themselves from competitors and other industries by more proactively managing the sourcing of conflict minerals in response to social monitoring within the public policy arena. Our analysis lends further support to the intuition that companies with low profit margins, and thus high cost-efficiency pressures, choose lower levels of disclosure presumably because they would find it more difficult to restructure their value chain to accommodate their use of 3TG minerals through more sustainable sources.

Conclusions

Since 2014, the Dodd–Frank Act has required US publicly listed companies to disclose their conflict mineral-related practices to the SEC yearly. This novel disclosure regime aims to attain an improved information environment and consequently a reduction of conflict minerals trade with armed militias in the DRC. This paper is among the first to explore the pervasiveness of CMD as mandated by the Dodd–Frank Act. It appears that the reporting compliance regime introduced by the Dodd–Frank Act has been partially effective in ensuring increased levels of social disclosure. Managers' predispositions to withhold information and adopt non-compliance strategies seem to be the consequence of the 'name and shame' enforcement rationale that motivated the Dodd–Frank Act. The ability of this novel mandatory reporting regime to alter managers' tendency to comply would have been different in the presence of more tangible sanctions and fines for non-compliance. Our findings have implications for regulators and policy-makers because the issue of conflict minerals has become more ingrained into the public ethos, and interest in responsible sourcing practices in supply chains will only continue to grow. For instance, NGOs have already started to demand that more minerals, such as cobalt, be included in the Dodd–Frank Act's requirements (Amnesty International, 2016b; Mont, 2016). Large industry-leading multinationals, such as Intel and Apple, have led the way in publishing separate conflict minerals reports and ensuring audits of all their suppliers of 3TG minerals. Despite these initiatives showing the commitment of companies to enhanced levels of conflict minerals reporting, the current president of the United States, Donald Trump, has made claims of possible radical changes in the requirements of the Dodd–Frank Act. Such a decision of relaxed enforcement of CMD requirements would conflict with concurrent initiatives by the European Union, China, Australia and Canada. For instance, the European Parliament recently approved a regulation for Union importers of 3TG minerals from conflict-affected and high-risk areas (Regulation 2017/821; European Commission, 2017). Conflict minerals hence remain a highly controversial and sensitive topic that warrants further investigation in jurisdictions other than the US.

Our study also has implications for managers and report preparers. We show that differentiation in CMD levels can be attributed to a combination of firm-level enabling factors. In particular, strategic decisions about the performance indicators adopted in a managerial incentive scheme, the strength of the corporate governance system and the fulfillment of the requirements imposed by ESG indices are associated with different CMD levels of compliance. Even in the absence of strict enforcement of the CMD, our results indicate that firms are willing to proactively devise supply chain strategies and to implement practices that are 'conflict-free'. For instance, Intel and Apple demonstrate their strategic commitment to monitor their suppliers of 3TG minerals by adapting their internal auditing system (Apple Inc., 2015; Intel Corporation, 2015). Companies should also consider increasing the transparency of their global supply chains by purchasing an external, independent audit opinion on CMD (Kortelainen, 2008). Whereas Sankara *et al.* (2016) and RSN (2015) reported that only six (four) companies voluntarily opted to have their CMDs audited in 2015 (2014), major auditing companies, such as KPMG (2014) and Deloitte (2015), anticipate the number of CMD-related audits to increase significantly after the first two rounds of disclosures. They cite peer benchmarking, a reduction in reputational risk and companies' need to differentiate themselves from competition as key reasons for their expectations, in line with the interpretation of our results.

Our analysis suffers from limitations but paves the way for fruitful research directions on conflict minerals. First, because the RSN assigned disclosure scores to only 155 companies, the sample examined in our study covers a representative, yet small, sub-sample (<10%) of all disclosing companies. We also acknowledge a potential endogeneity

problem in our cross-sectional analysis of CMD determinants for one year only. Future research including a greater number of company-year observations is warranted to obtain more robust evidence about the antecedents of CMD levels. Second, we cannot exclude the possibility that the sample examined suffers from selection bias. Because the RSN ranked companies based on market capitalization and industry membership, virtually all companies included in our analysis are well-known multinationals. Smaller firms might suffer from financial constraints or lack critical organizational capabilities to adopt best practices of responsible sourcing. In fact, Littenberg *et al.* (2014) found that small companies might be more prone to strategically non-disclose conflict minerals practices and deliberately remain outside the regulatory CMD requirements. Whereas approximately 56% of expected filers in 2014 were small companies, actually only 25% issued CMDs. More insight into the role of firm size in CMD adoption would be a fruitful research goal. Third, future research should focus on the validity of the CMD variable measured for the purposes of this paper. The disclosure scores prepared by the RSN provide – to the best of our knowledge – a comprehensive and thorough assessment of actual CMD levels available, but we cannot exclude the potential presence of errors or the influence of discretionary judgements. Future studies should thus validate these findings by applying an alternative approach to measuring CMD levels, to examine whether additional information items are disclosed, and whether/how they capture the impact of conflict minerals practices on various stakeholders' groups, such as employees, customers and supply-chain partners.

While our study examined the extent and antecedents of CMDs, we believe substantial research opportunities exist concerning theory-based insights into the supply chain strategies and management practices that firms implement to govern conflict minerals issues (cf. Gold and Schleper, 2017). Hofmann *et al.* (2015) documented with qualitative data that the implementation of best practices depends on critical organizational capabilities within the firm and across the whole supply chain. Downstream companies are in especially powerful positions, and they are more directly affected by the Dodd–Frank Act regulation. Hofmann *et al.* (2015) therefore recommended adapting compliance practices in downstream firms by aligning their business strategies with 'conflict-free' chains in strict collaboration with upstream companies. Ultimately, compliance with mandatory regulation should be managed as an output of core product development processes, including supplier qualification and monitoring. We encourage scholarly research across industries with different supply chains to ascertain the enabling factors or the organizational barriers affecting supply chain strategies and the implementation of conflict minerals practices.

A final, related avenue of research could explore the consequences of CMD levels by identifying the beneficial effects that CMD 'quality disclosers' could exploit in terms of improved relational assets with suppliers, customers and stakeholders. It would also be insightful to assess the impact of CMD adherence on the capital markets once the number of filing firms increases in the future, allowing for longitudinal analyses with more robust statistical conclusions. For example, future studies could investigate the channels through which CMDs impact a firm's cost of capital. Two potential channels emerge from the extant literature (e.g. Christensen *et al.*, 2017). On the one hand, it is possible that investors believe that improved practices will ultimately result in economic benefits, such as efficiency gains. By contrast, it could be the case that investors demand return premiums for companies perceived to violate social or environmental norms. Further insights in this direction could shed light on why investors perceive mandatory (non-financial) disclosures as value-relevant and could provide useful information for strategic decision-making.

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