

**SPECIAL ISSUE ARTICLE**

# The impact of assurance on compliance management systems on bank directors' decisions

Reiner Quick  | Sanjar Sayar 

Department of Accounting and Auditing,  
Darmstadt University of Technology,  
Darmstadt, Germany

**Correspondence**

Prof. Dr. Reiner Quick, Darmstadt University  
of Technology, Department of Accounting and  
Auditing, Hochschulstraße 1, 64289.  
Darmstadt, Germany.  
Email: quick@bwl.tu-darmstadt.de

Numerous corporate scandals, in conjunction with managerial misbehavior, demonstrate the need for compliance management systems (CMS) and the relevance of CMS assurance. This study investigates the impact of CMS assurance on German bank directors' perceptions and decisions, and analyzes whether the type of assurer and the level of provided assurance are relevant. For this purpose, we conducted an experiment with 105 bank directors and used ANOVA to analyze their reliance on the hypothetical company's CMS, and their decisions regarding credit granting, purchase, and recommendation of shares. We chose a  $2 \times 2 + 1$  between-subjects design, manipulating the assurance provider (audit firm vs. third party) and the level of assurance (limited vs. reasonable), and adding a control condition without any assurance. Our results suggest that assured CMS positively affect bank directors' perceptions and decisions, compared to CMS without assurance. Furthermore, we find that our perception measure and all three of our decision measures are strongly associated with the choice of assurance provider, but only two decision measures are associated with the assurance level. Bank directors prefer assurance provision by an audit firm, whereas the findings regarding the impact of the assurance level are inconclusive. The study's results, which confirm the decision-usefulness of CMS assurance, are of interest for managers, in particular compliance officers, auditors, creditors, regulators, and academics.

**KEYWORDS**

Assurance level, assurance services, bank directors, Compliance Management System, compliance-assurance

## 1 | INTRODUCTION

In the aftermath of recent scandals relating to global industrial players, and high-profile governance failures, there has been an increased awareness of a need for compliance management systems (CMS) (Berings & Adriaenssens, 2012) followed by major investments in implementing and improving CMS (Andreisová, 2016). Although the relevance of CMS has been growing continuously, there is no legally binding definition of CMS (von Busekist, 2016). In general, compliance

covers the adherence to relevant laws, policies, and regulations. CMS encompasses a set of processes and measures to protect enterprises from possible violations of regulatory compliance (Abdullah, Indulska, & Sadiq, 2009; Gammisch & Balina, 2014; Ramezani, Fahland, van der Werf, & Mattheis, 2011). The increasing relevance of compliance management implies that perceptions of a company's integrity, ethics, and corporate governance values are crucial, and that management has incentives to signal to its external stakeholders its managerial commitment to ethical principles and the law (Ferrell,

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Fraedrich, & Ferrell, 2017; Foorthus, 2012). Furthermore, corporate efforts at CMS are continuously increasing to meet investor expectations and to remain competitive in the international market (Stöber, Kotzian, & Weißenberger, 2019). Investments in CMS can keep companies proactive regarding continuous improvement processes, and flexible regarding regulatory changes (Abdullah et al., 2009; Anon, Filowitz, & Kovatch, 2007; Perskow, 2003). Noncompliance cases are complex and have multiple implications such as monetary (penalties, sales declines, or failure to conclude contracts) and nonmonetary costs (reputational damage, loss of trust and credibility) (Abdullah, Indulska, & Sadiq, 2016; Amiram et al., 2018; Armantier & Boly, 2008; Étienne, 2010).

An entity's CMS is largely unobservable to its stakeholders. As a consequence, they bare an information risk regarding the existence and effectiveness of such a CMS. Thus, in addition to the increasing relevance of the CMS, the importance of assurance in this context as a specific type of investment becomes evident (Jennings, 2012). The American Institute of Certified Public Accountants (AICPA) defines assurance services as independent professional services that improve the quality of information, or its context, for decision-makers (AICPA, 1997). Assurance services for CMS, such as audits, certification, and recertifications are widespread in organizations (Healy & Iles, 2002; Meyer & Rowan, 1977; Tyler & Blader, 2005). They may alleviate the concerns of the addressees (Mousavizadeh, Kim, & Chen, 2016; Quazi & Padibjo, 1997) and increase the trustworthiness of the person responsible for CMS (Aiken & Boush, 2006). Additionally, there may be a long-term effect of such assurance on entrepreneurial value creation and the overall financial position (Corbett & Montes-Sancho, 2005) due to competitive advantages in different situations (Andreisová, 2016). This includes a stronger negotiation position in merger and acquisitions (M&A) transactions or increased potential possibility for financial investor support due to greater reliance within more compliant business processes (Currie, 2008; El Kharbili, 2012; Meyer & Rowan, 1977). Regarding assurance providers, the AICPA has stated that "assurance services are expected to form a platform for the future evolution of the profession." With respect to this evolution, alternative providers of assurance services, for example, third-party assurers, may play an important role in the provision of assurance services. Additionally, the AICPA differentiates between the form and content of the provided services, which considers the scope of conducted assurance services (AICPA, 1997). Such differentiation may be reflected in the assurance level. Furthermore, CMS problems regarding implementation and functionality issues may be identified.

Due to the potential importance of CMS assurance for external stakeholders, we examine the effect of CMS assurance on capital provider perceptions and decisions. We hence aim to answer three central questions: First, does assurance on CMS affect capital provider perceptions and decisions? Second, does the type of assurance provider affect the capital provider perceptions and decisions? Third, does the assurance level have an impact on capital provider perceptions and decisions? Bank directors were chosen as participants in the experiment because bankers constitute different interest groups in

the course of their day-to-day operations, for example, creditors, investment consultants, private and professional investors. We analyze the impact of CMS assurance on reliance on the CMS report, the credit-granting likelihood, the likelihood of investment recommendation and the likelihood of personal investment by bank directors. By using a  $2 \times 2 + 1$  between-subject design, we provided five experimental cases in which assurance provider and assurance level constituted the factorial design and a control condition without any specified assurance. We hypothesize and find that CMS assurance positively affects bank officers' perceptions and decisions. Regarding the second question, we hypothesize that the assurance provider plays an important role in bank board member perceptions and decision behavior. Differentiating between an audit firm and the Technical Control Board as an alternative assurance provider, the results indicate that audit firms have a stronger influence on the perceptions and decisions of bank board members. Furthermore, the assurance level is differentiated into reasonable assurance and limited assurance. While reasonable assurance reduces engagement risk to an acceptably low level, limited assurance only reduces engagement risk to an acceptable level, which is less than that for reasonable assurance. Some, but not all, findings indicate that reasonable assurance may exert a stronger effect than limited assurance, overall, however, our results concerning the impact of the assurance level on bank directors' decisions are inconclusive.

Our study makes several useful contributions. For a start, this study is, to the best of our knowledge, the first to analyze the decision-usefulness of CMS assurance. Thereby, we follow a suggestion from Hay (2020), who views research on such new forms of assurance as highly valuable. Other studies have investigated and discussed CMS assurance only as a marginal issue, for example, Michalak and Schucht (2005) and Stahl (2004). As a consequence, direct empirical evidence on the effects of CMS assurance is scarce. There is prior research evidence on the impact of assurance on nonfinancial reporting, mainly corporate social responsibility (CSR) reporting (e.g., Quick & Inwinkl, 2020). However, CMS assurance is different by nature and, thus, prior research findings are not directly transferable to CMS assurance. The objective of a CMS assurance engagement is to form a conclusion as to whether an entity's policies and procedures that are intended to ensure compliant conduct by the entity's officers, employees, and, where appropriate, third parties, are suitable for both identifying risks of material noncompliance in due time and for preventing such noncompliance, and were effective during a given period. In contrast, the objective of CSR report assurance objective is to form an opinion as to whether such a report is faithfully presented, complete, and understandable. While CSR assurance is related to reports, CMS assurance is related to systems.

Moreover, experimental research on the impact of assurance services on users in general is also not widespread, and there is a particular lack of research from continental European countries. Thus, this article contributes to related research. Second, this study contributes to the debate on the relevance of both the assurance provider (audit firm versus nonaccounting assurance provider) and the assurance level (reasonable assurance versus limited assurance) and

provides an examination of the extent to which capital providers consider assurer type and assurance level as part of their reliance and in their decision behavior. Third, bank directors as subjects represent an important and highly knowledgeable group of financial experts, which is rarely considered for experimental studies, because it is extremely difficult to attract them for participation. Bank directors are of particular relevance as creditors, investors, and financial intermediaries. Furthermore, banks are one of the major industries that are strongly regulated with regard to compliance. Therefore, it can be assumed that our participants have a good understanding of CMS. Fourth, this research contributes to the literature on the theory of professions and the theory of source credibility by employing both in a novel context. The findings of the study enable wider interpretative use of both theories regarding assurer choice, for example, that assurance providers should consider their impact on external stakeholder perceptions and decisions and also ensure that there is no abuse of the implicit social bond. Regarding both theories as an aspect of the study's contribution, the theory of profession may explain the higher attribution of reliability toward audit firms, and source credibility theory may explain stakeholder higher perception and greater decision-usefulness of an assured CMS. The findings of this study should be of interest to national and supranational regulators and standard setters, and in particular to their deliberations on whether or not to make CMS assurance mandatory, and if so, on their required qualification for the assurer and the minimum assurance level.

The remainder of this article is structured as follows. Section 2 presents theories, provides an overview of prior research, and develops the hypotheses. Section 3 presents the research methodology, describing the experimental case, including its dependent and independent variables, and informs about the participants. The subsequent section presents and discusses the empirical results. A final section summarizes the main findings, discusses their implications, and lists the study's limitations.

## 2 | BACKGROUND, PRIOR RESEARCH, AND HYPOTHESES DEVELOPMENT

Given the lack of empirical evidence on CMS assurance and based on Jones (2008) and Sugden (2005), we apply a more theory-driven hypotheses development. Supplementing this, we also consider empirical evidence on assurance services regarding CSR reports, environmental management systems (EMS), and e-commerce for our hypotheses development.

### 2.1 | Environmental setting

Directors of corporations have to act with the care that a reasonably prudent person would use and are liable for damages caused by a violation of this duty. If directors act with the reasonable belief that the director is acting in the best interests of the corporation, an infringement of duties will not be present (section 93 AktG = Deutsches

Aktiengesetz = German Stock Corporation Act). According to court decisions (Landgericht München, 2015), directors will violate their duties if they do not establish an efficient CMS. Therefore, it is possible that stakeholders already trust sufficiently in a nonassured CMS.

Within the European Union (EU), a comprehensive CMS reporting is not mandatory. However, the EU has recognized the need for managing change toward a sustainable global economy by combining long-term profitability with social justice and environmental protection (European Parliament & Council of the European Union, 2014). Against this backdrop, the EU has established minimum legal requirements for nonfinancial reporting. EU Directive 2014/95 requires public-interest entities with more than 500 employees during a given financial year to disclose a nonfinancial statement. This statement must also provide some compliance-related information, for example, regarding employee rights, human rights, anticorruption, and bribery matters. Like most Member States, Germany implemented EU Directive 2014/95 on April 11, 2017, via the CSR-Richtlinie-Umsetzungsgesetz (Law on the Implementation of the EU Directive 2014/95) (Deutscher Bundestag, 2017). Thus, stakeholders do not have substantial experience with CMS information.

In Germany, CMS assurance engagements are voluntary. In 2011, the German Institut der Wirtschaftsprüfer (Institute of Auditors) published IDW PS 980 (IDW, 2011), a standard on principles for the proper performance of reasonable assurance engagements relating to CMS. The standard is consistent with the ISAE 3000. The objective of a comprehensive CMS assurance engagement is to enable the assurance provider to form a conclusion with reasonable assurance as to whether the assertions contained in the CMS description about the CMS's policies and procedures are appropriately presented in all material respects, are suitable for both identifying in due time and with reasonable assurance risks of material noncompliance and for preventing such noncompliance, and that the policies and procedures had been implemented at a given point in time, and were effective during a given period (IDW PS 980.14). However, assurance scopes are flexible and it is permissible to perform assurance services that relate solely to the approach to the overall design of the CMS or solely to the design and implementation of a CMS (IDW PS 980.15).

The objective of an assurance engagement relating to the overall design approach is to enable the assurance provider to form a conclusion with reasonable assurance as to whether the assertions about the design of the CMS included in the CMS description are appropriately presented in all material respects (IDW PS 980.16). The objective of an assurance engagement relating to design and implementation is the assessment as to whether the assertions made in the CMS description about the CMS policies and procedures are appropriately presented in all material respects, that the described policies and procedures, in compliance with the applied CMS principles are suitable for both identifying risks of material noncompliance in due time and for preventing such noncompliance with reasonable assurance and that the policies and procedures had been implemented at a given point in time (IDW PS 980.17). As a consequence of such potential scope constraints, stakeholders may be confused concerning the value provided by CMS assurance.

CMS assurance is not exclusively provided by audit firms. The Technical Control Board is a frequently engaged alternative assurance provider in Germany (e.g., TÜVRheinland, 2011). In Germany, there are six main Technical Control Boards (TÜV = Technischer Überwachungsverein) that are technical monitoring agencies in the legal form of stock corporations. They offer a broad range of services, such as product inspection, cybersecurity, and data security, or functional safety engineering. An important service line is related to audits and certifications, for example, related to internal audits, audits of suppliers, the EU eco-management and audit scheme (EMAS), quality management systems based on ISO 9001, risk management systems based on ISO 31000 and ONR 49001, environmental management systems based on ISO 14001, CSR reports, integrated management systems, or CMS certifications based on ISO 19600 or IDW PS 980. Thus, the Technical Control Board is an external nonaccounting assurance provider. Employees of the Technical Control Board frequently have an engineering background, but not a professional qualification comparable to that of a public accountant.

To gain further insights, we analyzed the most recent annual reports of the stock corporations belonging to the two stock market indices DAX30 and MDAX, which cover the 90 largest German companies (as measured by market capitalization and trading volume) listed on the Frankfurt Stock Exchange. Anecdotal evidence suggests that the majority of these companies engage an audit firm to provide CMS assurance. However, only 12 companies report on CMS assurance engagements. Assured compliance areas, scope, and the IDW PS 980 are normally mentioned. In contrast, the reports say that the assurance service was provided by an audit firm, but rarely mention the name of the audit firm. The assurance provider could be the statutory auditor of the financial statements, but also another audit firm. All reports indicate a positive outcome of the assurance service, however, they do not explicitly refer to an assurance level. A representative example can be found in the annual report of Daimler (Daimler, 2020):

Antitrust and Anti-Corruption Compliance Program, KPMG AG Wirtschaftsprüfungsgesellschaft audited the Compliance Management System for antitrust law and anti-corruption in accordance with Audit Standard 980 of the Institute of Public Auditors in Germany. This audit, which was based on the principles of appropriateness, implementation and effectiveness, was already successfully completed at the end of 2016 (antitrust) and at the end of 2019 (anti-corruption).

In summary, it can be concluded that annual reports rarely inform providers of capital on CMS assurance services. As a consequence, investors and lenders have little experience with this assurance service in general and with different assurance levels in particular. Such a lack of experience could reduce the impact of assurance provision, the type of assurance provider, and the level of assurance on their decisions.

We also performed a series of interviews with auditors and compliance officers. A major result of these interviews is that providers

of assurance services are normally engaged to reduce risks for companies, its directors, the supervisory board, and the audit committee. In some cases, the compliance unit demands such services to get feedback on the current quality of the CMS and suggestions for improvements. Assurance providers are only exceptionally engaged to communicate an appropriate CMS to third parties. This also explains why CMS audits are rarely mentioned in the annual reports. There is always a separate public tendering process for CMS audits and some companies prefer to have a fresh look and, thus, do not engage their financial statements auditor. Listed clients normally engage a Big 4 audit firm and alternative assurance providers currently do not play a role in this market. Auditors benefit from their experience gained via financial statements audits, for examples, regarding a risk-based audit approach, but require additional expertise, in particular regarding different legal fields. Our interviewees assume that stakeholders have severe problems to differentiate between reasonable and limited assurance and to understand these concepts. These interview findings suggest that stakeholders, like bankers, have little experience and expertise regarding CMS assurance. Accordingly, their reactions to assurance provision, the type of assurance providers, and the assurance levels are less clear than in case of financial audits.

Banks are highly relevant to the German economy. The German model is described as a decentralized universal bank-based financial system (Elsas & Krahn, 2004; Hardie & Howarth, 2009) with three pillars, privately owned banks, banks with government involvement including the regionally focused savings banks, and small credit cooperatives (Hackethal, 2004). Universal banks offer a wide range of financial services and provide a significant share of finance through both debt and equity holding. In Germany, bank borrowing is the largest single external source of finance, especially via long-term loans (Hackethal, Schmidt, & Tyrell, 2005; Deutsche Bundesbank, 2012). In this so-called house-bank model, the relationships between banks and their corporate clients are very close (Behr & Schmidt, 2015). For instance, banks are widely represented on the supervisory boards of companies, and often control very large blocks of shareholder voting rights. These voting rights derive from either direct ownership of the shares, but also from proxy powers as many banks operate a stock-broking service that includes an option for proxy rights management to passive investors as part of the share purchasing service (Becht & Boehmer, 2003; Franks & Mayer, 2001). Consequently, banks can often: elect their own managers to corporate boards (Dittmann, Maug, & Schneider, 2010); handle the majority of new issues of marketable securities, frequently placing them with their own customers; and/or serve as financial intermediaries or investment advisory services to and on behalf of a firm. For all these reasons, banks play a major role in the structure of German corporate governance (Cable, 1985; Chirinko & Elston, 2006; Goergen, Manjon, & Renneboog, 2008; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000). Due to the German universal bank system, bankers are inherently assuming various roles, that is, they make credit granting decisions, provide equity capital, and serve as financial intermediaries by offering investment consulting services to private customers.

## 2.2 | Assurance provision

Both legitimacy and signaling theory may be appropriate theoretical approaches for explaining the impact of CMS assurance on stakeholder perceptions and their decisions. Legitimacy theory explains a company's voluntary measures within the bounds and norms of society, for example, social and environmental disclosures, in favor of desirable positive perceptions by society at large (Burlea Şchiopoiu & Popa, 2013; Deegan, 2002). Based on this implicit social contract between the company and society, the company pursues complying with certain unwritten rules, norms, and values set by the society (Dowling & Pfeffer, 1975). Implementing and strengthening compliance-related measures through CMS, for example, compliance with regulations, industry best practices, and ethical norms, can yield such legitimacy (Mendoza, Dekker, & Wielhouwer, 2016; Foorthuis, 2012; MacLean & Behnam, 2010). Additionally, assurance services in general may affect a company's legitimacy (O'Dwyer, Owen, & Unerman, 2011). The establishment of CMS and the demand for related assurance services contribute to achieving this objective. Therefore, CMS assurance and the existence of certifying bodies for CMS (Usnick & Ustick, 2013) may improve companies' reputation and substantiate their legitimacy (Arora & Gangopadhyay, 1995; Deegan, 2002).

Signaling theory explains the intentional reduction of information asymmetry. A signal is a costly behavior that can provide information about the sender when the receiver knows that only senders with particular characteristics can afford or are willing to send the signal (Moore, 2003). Management, as the party with greater involvement in CMS assurance, has access to information of a certain quality and depth, which may not be available to the stakeholder (Moore, 2003). The engagement of a CMS assurer and the disclosure of the outcome of the audit or the review can be considered as a mechanism for dialogue between managers and stakeholders (Alon & Vidovic, 2015), which enhances confidence in the reliability of the assured CMS (regarding assured CSR reports, see Faisal, Tower, & Rusmin, 2012; Velte & Stawinoga, 2017). Therefore, CMS assurance may signal a company's transparency regarding compliance to required policies, legal obligations, or contract terms (Governance Institute of Australia, 2017), and a high-level of management self-commitment concerning compliance (Grüniger & Schöttl, 2007).

Prior research on CSR assurance has investigated the effects of assurance services concerning different aspects, for example, quality, reputation, firm value or performance, reliability, credibility, and believability. Regarding quality, Moroney, Windsor, and Aw (2012), using data from Australian listed public companies, showed that the quality of voluntary environmental disclosure is significantly higher for assured than for unassured companies. For CSR reports and their underlying CSR restatements as a proxy, Ballou, Chen, Grenier, and Heitger (2018) showed with a worldwide sample a significantly higher quality when the report is assured. In terms of reputation, Alon and Vidovic (2015) used, in their archival study, an international sample of 100 listed companies and applied covariance-based structural equation modeling (SEM) path analysis. They did not find a statistically

significant association between third-party assurance on corporate sustainability reports and their reputation for sustainability. Birkey, Michelin, Patten, and Sankara (2016) showed that assurance from American firms' CSR reports has a positive impact on the company's reputation. In an experimental study conducted in New Zealand, Kuruppu and Milne (2010) found that assurance on sustainability disclosure did not impact employee perceptions of the company's reputation. Several other studies analyzed the effect of assured CSR reports on firms' value or performance. Overall, there is no clear effect of CSR assurance. Fazzini and Dal Maso (2016) found that assurance on voluntary environmental disclosure did not impact on the market value of equity of listed Italian companies. Likewise, García-Benau, Sierra-Garcia, and Zorio (2013) did not identify a significant impact of assured CSR reports on Spanish listed companies' performance (return on assets, return on equity, market to book ratio, and Tobin's Q). For the United States, Cho, Michelin, Patten, and Roberts (2014) failed to identify a significant association between CSR assurance and firm value. Findings from Gietl, Göttsche, Habisch, Roloff, and Schauer (2013) for STOXX Europe 600 firms indicate that issuing of external assured CSR reports could even be negatively related to firm value estimated by the Tobin's Q ratio. In the United States, Casey and Grenier (2015) revealed that CSR assurance is associated with a lower cost of capital along with lower forecast errors and dispersion. For the world's largest listed firms, assured sustainability reporting improves analysts' forecast accuracy to a greater extent than non-assured reporting (Cuadrado-Ballesteros, Martínez-Ferrero, & García-Sánchez, 2017). Experimental studies complement these archival findings. Evidence from Hodge, Subramaniam, and Stewart (2009) reveals that the provision of sustainability report assurance improves the perceived reliability and credibility of environmental and social information. The participants were MBA students enrolled at Australian universities who served as a proxy for sustainability report users. Pflugrath, Roebuck, and Simnett (2011) carried out a behavioral experiment. The authors examined whether financial analysts from Australia, the United States, and the United Kingdom perceive a difference in the credibility of CSR reports, depending on whether they are assured or not. Results show that the credibility of a CSR report is greater when it is assured. Experimental findings from Shen, Wu, and Chand (2017) indicate that CSR assurance impacts on nonprofessional investor decision-making and increases investor willingness to invest in China, and that this effect is greater when CSR disclosures are positive than when they are negative. Postgraduate students enrolled in a Master's of Finance program served as proxies for nonprofessional investors. Reimsbach, Hahn, and Gürtürk (2018) revealed in their experimental study that assurance on sustainability information positively affects professional investors' evaluation of a firm's sustainability performance and increases investment attractiveness in Germany. In this study, professional analysts and fund managers served as proxies for professional investors. In a further experimental study from the United States, Brown-Liburd and Zamora (2015) found that CSR information is only value-relevant if CSR assurance is present. Assurance has a positive impact on investors' stock price assessments. Experimental results from Australia by Cheng, Green, and Ko (2015) point

out that assurance increases investor willingness to invest to a greater extent when environmental, social, and governance indicators have high relevance to the company strategy. In contrast, Sheldon and Jenkins (2020), who experimentally examined the impact of assurance on greenhouse gas emission reporting on related believability perceptions by U.S. nonexpert users, failed to reveal a significant effect. These authors also showed that negative performance reports are even perceived as significantly more believable when no assurance is present. Moreover, their results also indicate that users might believe environmental reports are assured, even when no assurance has been provided.

Additionally, prior studies on related research fields have observed the impact of assurance both regarding the management system and nonfinancial reporting. Regarding EMS, previous studies have raised serious concerns about the credibility of EMS assurance (Ball, Owen, & Gray, 2000). Roebuck, Simnett, and Ho (2000) conducted experimental research on the understandability of assurance service reports with expressed assurance statements. Using shareholders as the major addressees from a mailing list of the Australian Shareholder's Association (ASA), the authors found that assurance services with subject matters considering internal control or prospective information are not perceived as useful for decision-making. The emergence of e-commerce assurance services has encouraged various researchers to investigate the impact of related assurance services (Runyan, Smith, & Smith, 2008). For example, Houston and Taylor (1999) conducted an experiment, which dealt with e-commerce assurance such as WebTrust. By asking 106 undergraduate accounting majors from the United States, the authors found that the provision of assurance services led to a significantly higher perception of product quality. Additionally, results from an experimental study of Taiwanese students by Chang, Fang, and Tseng (2012) indicate that WebTrust assurance has a significant effect on consumer willingness to web purchase by reducing their perceived risk. Furthermore, this study revealed an order effect, that is, removing the assurance seal has more impact on participant willingness to purchase than obtaining the seal.

As discussed above, legitimacy theory leads to the expectation of a positive influence of voluntary CMS assurance on stakeholder perceptions of firms and their compliance efforts. Additionally, signaling theory stresses the importance of company signals, like CMS assurance, to stakeholders who are exposed to company signals as a measure aimed at reducing information asymmetry. This measure provides insights into managers' actions and therefore signals the credibility of reported information. Furthermore, most, but not all, of the empirical research findings showed that the presence of assurance services is associated with a positive impact of assurance services. In particular, prior research has frequently demonstrated that assurance services positively impact capital providers' perceptions. In summary, both the theory and the outcome of previous empirical research suggest a positive effect of CMS assurance on bank director decisions. Therefore, we hypothesize as follows:

**H1.** Assurance on CMS positively impacts bank directors' decisions.

## 2.3 | Type of assurance provider

The theory of profession may explain the impact of the type of assurance provider on capital provider perceptions and decisions. This theoretical construct focuses on the relationship between occupational groups, the knowledge they are associated with by society, and the resulting differentiation from other professions (Evetts, 2003; MacDonald, 1995). Since there is no common definition of a profession (Sanni, 2017), its core characteristics adhere to specific attributes, such as high ethical standards based on socioeconomic interplays (Brock, Leblebici, & Muzio, 2014) and skills, which are acquired through a widely recognized formal education, and trained, controlled, and certified by a professional body. Additionally, a profession aspires to exercise its knowledge and skills in the interest of others, rather than in the interest of the client or one's own interest (Pollock & Amernic, 1981), especially when the profession intends to achieve public recognition and trust (Maurice, 1996). Although the theory of professions refers to the previously described altruistic and ethical behavior, it is also described as a theoretical construct for groups of elites, who seek to create a monopoly for their services so as to achieve corporate exclusiveness (Larson, 2017; O'Dwyer, 2011). With respect to all these criteria (e.g., formal education and training controlled by a professional body, certification, work in accordance with ethical codes, fulfillment of a societal function), auditors belong to a profession. Considering auditor responsibilities, an auditor requires a highly developed sense of dedication to a professional ideal and responsibility to corporate internal and external users of financial and nonfinancial information. Taking into account the distinct characteristics of a profession, it is likely that third parties trust more in judgments from members of a profession, that is, in assurance services provided by an audit firm. With respect to an audit firm, the provision of assurance services to clients may be perceived as more consistent with their skills and expertise than a third party, for example, due to their multidisciplinary nature (Brierley & Gwilliam, 2003).

Source credibility theory has been leveraged for different kinds of research fields (Lowry, Wilson, & Haig, 2014; Sternthal, Philipps, & Dholokia, 1978) to explain how communication persuasiveness is determined in part by perceived source credibility. Specifically, the source credibility is affected by the competencies and the expertise of the source, which lead to greater trustworthiness (Birnbaum & Stegner, 1979; DeZoort, Hermanson, & Houston, 2003; McGinnies & Ward, 1980). Source credibility theory can also be used to understand why addressees of assurance services regard one type of assurance provider as more credible than others. Regarding CMS assurance, it is likely that the individually perceived credibility of an assurer by company stakeholders, for example, capital providers, is influenced by the group-related perceived credibility of the class of assurance provider, for example, audit firms. Consequentially, investigating the class of CMS assurance providers and its credibility seems reasonable (Schwarzkopf, 2007). Possibly, information stemming from audit firms is perceived as more credible. That said, the financial crisis in conjunction with numerous accounting scandals, like currently Wirecard in Germany, Carillion and BHS in the United Kingdom, Toshiba in Japan,

and Linkway Trading owned by the Gupta family in South Africa, has tarnished the reputation of the profession. Furthermore, CMS assurance differs from traditional financial audits, for example, in that respect that it is less a verification of quantifiable data. As a consequence, it might be questioned whether accountants have greater knowledge than, for example, engineers over the subject matter of CMS assurance (Farooq & de Villiers, 2019). Therefore, alternative assurance providers may now be deemed even more trustworthy and competent (Wong & Millington, 2014).

Prior studies on CSR assurance have investigated the relevance of the type of assurance provider. Perego and Kolk (2012) showed that assurance quality is indeed highly dependent on the type of assurance provider. Ballou et al. (2018) also state that the provision of CSR assurance by an audit firm has a stronger positive effect on CSR restatements and on reporting quality than CSR assurance provided by another party. Contrarily, Moroney et al. (2012) found that the quality of voluntary environmental disclosures does not significantly differ according to the type of assurer. Using an international sample covering the period 2007–2014, the results of Martínez-Ferrero and García-Sánchez (2018) showed that the probability of detecting material errors and omissions in a sustainability report is higher if it is verified by a Big 4 audit firm and by an industry expert as an assurance practitioner. The authors also indicate that the decrease in cost of equity capital is greater when assurance is provided by a Big 4 audit firm as opposed to engineering or consultancy firms. Likewise, Casey and Grenier (2015) showed that reductions in the cost of equity capital and analyst forecast dispersion are significantly higher when CSR assurance is provided by an audit firm. While Birkey et al. (2016) revealed that external assurance positively influences perceptions of the environmental reputation of U.S. firms regardless of assurer type, Peters and Romi (2015) showed that the value-relevance of sustainability assurance increases over time when provided by professional accountants. Additionally, Cuadrado-Ballesteros et al. (2017) found that sustainability assurance provided by a Big 4 audit firm improves analyst forecasting accuracy to a greater extent than assurance provided by an alternative provider. In terms of credibility, the results from Hodge et al. (2009) did not reveal an impact of the assurance provider on the reliability and credibility of environmental and social information. Likewise, Shen et al. (2017) did not find a significant impact of the assurance provider on nonprofessional investor willingness to invest. Contrarily, Pflugrath et al. (2011) found that the credibility of CSR reports is perceived as higher when the assurer is a professional accountant instead of a sustainability consultant.

Based on the theory of profession and the affiliation of public accountants to a profession, audit firms may have a competitive advantage in comparison to other assurance providers. Due to the specific attributes of the profession, third parties may rely more on judgements from audit firms than on those from alternative assurance providers who do not belong to the profession. According to source credibility theory, it is hence likely that assurance from audit firms is perceived as more credible. Given that there is also some empirical evidence supporting this theoretical mechanism, we propose the following directional hypothesis.

**H2.** Assurance provision by an audit firm has a greater positive impact on bank directors' decisions than by a technical control board.

## 2.4 | Level of assurance

In general, assurance services, like those for CMS, aim to provide confidence about its appropriateness. Consequently, a report on the outcome of a related audit or review intends to raise shareholder reliance on compliant behavior of the entity. ISAE 3000, as well as IFAC Framework.11, differentiate between reasonable and limited assurance engagements. Thus, a key feature of technical-driven limited level of assurance is the substantially lower level of assurance in comparison to a context-driven reasonable assurance level (ISAE 3000.69), whereby the latter is suitable for precise subject matters with a narrow scope and well-defined criteria (Hasan, Roebuck, & Simnett, 2003; Ruhnke & Lubitzsch, 2010). Therefore, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance level that would have been obtained, had a reasonable assurance engagement been performed (ISAE 3000.69).

The nature, timing, and extent of procedures performed in a limited assurance engagement are less than those necessary in a reasonable assurance engagement but are intended to obtain a meaningful level of assurance (ISAE 3000.A4). Consequently, a limited level of obtained assurance is likely also to enhance the intended user confidence in a CMS report. In the event of a reasonable assurance engagement, an unmodified conclusion is expressed in a positive form, that the subject matter information has been prepared, in all material respects, in accordance with the applicable criteria and conveys the practitioner's opinion on the outcome of the measurement or evaluation of the underlying subject matter (ISAE 3000.12,69,72; Framework.84). However, in cases of a limited assurance engagement, an unmodified conclusion is expressed in a negative form, specifically that, based on the performed and evidence obtained, no matter(s) has come to the attention of the practitioner that causes the practitioner to believe that the subject matter information has not been prepared, in all material respects, in accordance with the applicable criteria (ISAE 3000.12,69,72; Framework.86). Consistent with ISAE 3000 there is a German standard (IDW PS 980) on principles for the performance of CMS assurance engagements.

The theoretical construct of an omission bias generally describes the preference for harm caused by omissions over equal or lesser harm caused by acts. Therefore, the construct of omission bias implies a greater willingness to accept harm from omission, based on a default position, than harm from action. With regard to the assurance level, omission bias theory suggests that the addressees of CMS assurance perceive the differences between reasonable and limited assurance as smaller than they really are.

Prior research on the effects of assurance levels has mostly been performed in the context of CSR assurance. Based on a sample consisting of the world's largest firms, Cuadrado-Ballesteros et al. (2017)

found that a sustainability report with a reasonable assurance level has a greater positive impact on analyst forecasting accuracy than reports with a limited assurance level. Fuhrmann, Ott, Looks, and Guenther (2017) used a European sample and revealed a significantly negative effect on the bid-ask spread for sustainability reports assurance processes, which replace a high assurance level. The interaction between reasonable assurance and a top-tier audit firm leads to significantly more reliance on the sustainability reports. In an experimental case performed with MBA students, Hodge et al. (2009) failed to find significant main effects on sustainability report reliability regarding both the assurance level and the assurance provider but found a significant interaction between these two experimental factors. That is, report user confidence in sustainability reports is higher when there is reasonable assurance and when such assurance is provided by a top-tier accountancy firm. Likewise, Sheldon and Jenkins (2020) who investigated the effect of the obtained assurance level on the believability of greenhouse gas emission reporting as perceived by U.S. nonexpert users, did not find a significant main effect. They even showed that positive performance environmental reports are perceived to be more believable with limited assurance rather than no assurance, whereas there is no difference in believability between reasonable assurance and no assurance. In the light of these findings, it cannot be excluded that users may have difficulties to differentiate between limited and reasonable assurance, which, in turn, indicates a need for clear communication regarding assurance. A French experimental study by Rivière-Giordano, Giordano-Spring, and Cho (2018) demonstrated that financial analysts are less likely to recommend the shares of a company that discloses environmental information with low-level assurance in comparison to a company with no assurance statement at all. On the other hand, Hasan et al. (2003) figured out experimentally that Australian shareholders perceive that moderate assurance on environmental and sustainability reports provide a lower level of assurance than high-assurance reports.

There is little prior research on the impact of different assurance levels regarding assurance services other than CSR assurance. In an experiment with U.S. subjects, Low and Boo (2012) proved that users have difficulties in distinguishing between limited and reasonable assurance related to WebTrust services without contrasting statements in particular when they are less informed. Similarly, a survey by Schelluch & Gay (2006) demonstrated that there is some confusion in the minds of Australian shareholders about the relative level of communicated assurance.

Despite these inconclusive research findings, but based on the intention of standard-setters and the omission bias theory, and assuming that bank directors understand the differences in assurance levels, we suppose that the impact on bank director decisions varies with the assurance level and that bankers rely more on CMS for which a reasonable assurance level is provided. Therefore, we propose the following hypothesis:

**H3.** Reasonable assurance has a greater positive impact on bank directors' decisions than limited assurance.

## 3 | RESEARCH METHOD

### 3.1 | Experimental design

#### 3.1.1 | Case materials and procedures

We utilized a  $2 \times 2 + 1$  between-subjects experimental design to test the hypotheses. Our two treatment variables are the type of assurance provider and the assurance level, both manipulated at two levels. In addition, we include a control condition where no CMS assurance is provided. The experimental case was developed and administered in German and English.<sup>1</sup> We ensured a high grade of transparency and compliance with the ethics of science. Participants could read potentially relevant information, that is, the guidelines of the DFG (Deutsche Forschungsgemeinschaft = German Research Foundation), the data protection policy, and participant rights.<sup>2</sup>

The case informed about a fictitious company for special lubricants, Lube and Grease AG. Participants were presented with an introductory description of the fictitious company, which provides information on the products, the number of subsidiaries, and the number of employees. Information on the business situation of Lube and Grease AG then follows. The financial data contains information from the consolidated income statement (i.e., sales, net income), the consolidated balance sheet (i.e., total asset, equity ratio, return on equity) and stock market indicators (i.e., dividend yield, price-earnings-ratio). After that, non-financial information was provided, containing the auditors' report, information on the implemented CMS, and the declaration of compliance with the DCGK (Deutscher Corporate Governance Kodex = German Corporate Governance Code).

To ensure a realistic setting, we extracted financial data from an actual company of the same industry and upscaled its data by multiplying it by the factor 1.3. To provide representative nonfinancial sections, we conducted a content analysis of annual reports of German HDAX<sup>3</sup> companies that were listed in 2017.

We asked the participants to assume the roles of a creditor, an investment consultant, and an investor and to rely on their experiences as a bank board member based on their experiences as a banker. They had to answer some case-related questions, to complete a manipulation check survey and to provide demographic information in a postexperiment questionnaire.

#### 3.1.2 | Dependent variable

The dependent variables are participant reliance on the company's CMS (*RELY*), the probability of granting a credit to the company (*CREDIT*), the possibility of recommending nonprofessional investors to buy shares of Lube and Grease AG (*ADVICE*), and the likelihood of personally investing in the company's shares (*INVEST*). While the variable *RELY* was measured by a 7-point Likert scale, the remaining three dependent variables *CREDIT*, *ADVICE*, and *INVEST* were measured on a scale from 0% to 100%.<sup>4</sup>



The background for using several dependent variables is rooted in variations of risks. Debt investments are more secure and bear a lower risk and lower long-term returns which, however, are more consistent, because they are not directly based on the profitability of the borrower. Frequently, loans require a company borrowing funds to offer some collaterals that they will repay the debt. Even if the borrower will file bankruptcy, providers of debt capital will be first in the queue to be paid back. Equity investments are seen as riskier, but generate higher returns in the long run. In an extreme case, shareholders can lose the complete investment, because they are only second in the line for payback. As an investment advisor, bankers face a considerable liability risk. In addition, the bank's reputation is at stake. Therefore, information that might reduce perceived risks, like CMS assurance, could be perceived differently by bankers, depending on the concrete role for which they use such information.

### 3.1.3 | Independent variables

Besides the control group for which no assurance on the CMS was provided, two different manipulations were applied. The first independent variable relates to the type of assurance provider (*APROVIDER*) and is manipulated at two levels: audit firm and Technical Control Board (TCB). Employees of the Technical Control Board do not belong to a profession and therefore, stakeholders may trust less in their judgments.

The second independent variable is the assurance level (*ALEVEL*) and is also manipulated at two levels: reasonable assurance and limited assurance. In the case versions that include a reasonable assurance level, the opinion of the assurance provider was formulated as follows: In the financial year 2017, (*APROVIDER*) audited the compliance management system of Lube & Grease AG risk-based. During the examination of the CMS, the processes were confirmed as effective. For the limited assurance level, the following wording was used: In the financial year 2017, (*APROVIDER*) audited the compliance management system of Lube & Grease AG risk-based. During the examination of the CMS, significant process errors were not detected.

Thus, the experiment resulted in five experimental conditions. Table 1 shows the experimental design with the number of participants per cell.

We conducted nine pilot tests with participants from three major groups to ensure comprehensibility, plausibility, and the correct use of

terminology. The first group included employees from the accounting industry with professional affinity to compliance issues (three participants). Researchers in auditing formed the second group (two participants). The final group consisted of bankers with retail or corporate banking background (four participants). The pilot tests led to marginal verbal and technical changes.

## 3.2 | Participants

Although prior research often used business students as participants, the external validity of the related results remains controversial in experimental research in general (Elliott, Hodge, Kennedy, & Pronk, 2007), as well as in studies related to assurance provision (Hodge et al., 2009; Low & Boo, 2012; Pinsker & Wheeler, 2009).

Since, to the best of our knowledge, there is no prior research on the impact of CMS assurance, we embedded this research in a real-world setting. Accordingly, bank directors are chosen as participants. They are ultimately responsible for developing and administrating a CMS for their bank, not only according to international scholarly literature (Adams, 1994; Burdon & Sorour, 2018) but especially according to section 91 clause 1 AktG. In addition, banks are of high economic relevance and play a major role in the German corporate governance system, and bank directors simultaneously represent the views of creditors, investment consultants, and shareholders.

We used the public database of German banks offered by the Federal Financial Supervisory Authority (BaFin = Bundesanstalt für Finanzdienstleistungsaufsicht) to identify all German banks registered there (1,384).<sup>5</sup> We then identified the board members of the banks extracted from the BaFin database by visiting each bank's website (in total: 3,827 bank directors). Our data was collected in spring 2019. We randomly selected one director from each bank. The case was delivered via email with an introductory part describing the researchers, an explanatory part with relevant information about the study, and a web link for participation. In order to increase participant motivation, an exclusive executive summary of the outcome of the research project was offered. This resulted in 160 usable responses before manipulation checks and a response rate of 11.6%.<sup>6</sup> To test for nonresponse bias, *t* tests for all dependent variables were performed, comparing early to late respondents (Oppenheim, 2000). As suggested by Wallace and Mellor (1988) and Graham and Harvey (2001), participants who conducted the survey before a first reminder are classified

**TABLE 1** Number of participants per experimental condition before manipulation checks

Experimental Condition	<b>APROVIDER</b> AF = audit firm TCB = Technical Control Board	<b>ALEVEL</b> RA = reasonable assurance LA = limited assurance	Number of Participants
1	–	–	37
2	AF	RA	36
3	AF	LA	26
4	TCB	RA	33
5	TCB	LA	28

as early respondents. We did not find any significant differences.<sup>7</sup> This indicates that there is no nonresponse bias. Table 2 provides demographic information on the participants.

The average of practical experience in banking exceeds 23 years (YEARS; mean = 23.91; median 23; range = 1–58). The average age of the participants is over 48 years (AGE; mean = 48.65; median 49; range = 21–73). Regarding gender, most of the participants are male (GENDER; mean = 1.76). Moreover, the majority of the participants are bank board members (POSITION; mean = 1.36). Both the self-assessed general trust in CMS (TRUST\_CMS; mean = 4.64) and the trust in auditors are at a moderate level (TRUST\_AUD; mean = 4.81). Concerning the latter, it is remarkable that the self-assessed trust in Technical Control Boards is much lower (TRUST\_TCB; mean = 3.19). On average, participant self-assessed knowledge of CMS exceeds 4 (KNOW\_CMS; mean = 4.38) and in general assurance services 3 (TRUST\_ASS; mean = 3.50).

Our experimental materials also included manipulation checks conducted through three questions to test whether the participants correctly understood the experimental case and the underlying description of the CMS, the assurance provider, and the reported assurance level. Therefore, the first question (“Did Lube & Grease AG demand an audit/review of the ‘compliance management system?’”) was used to identify whether participants correctly observed whether or not an assurance service was provided. The possible answers to this question were “yes” or “no.” Thirty-three participants did not pass this manipulation check. The second manipulation check asked for the type of assurance provider (“Who performed the audit/review of the ‘compliance management system?’”). The subjects had to answer this question with “Big-4” or “The Technical Control Board.” Nine bank directors failed to pass this second manipulation check. The third manipulation check was designed to test whether the participants

observed the assurance level correctly (“The audit/review led to the achievement of a (ALEVEL)”). The subject had to answer with “reasonable assurance” or “limited assurance”. Regarding the third manipulation check, 13 participants failed.

## 4 | RESULTS

Table 3 shows the means and standard deviations for the dependent variables, which reflect the perceptions and decisions of bank directors concerning the assurance provider and the assurance level. Regarding the type of assurance provider, the means for all dependent variables are higher when the provider is an audit firm. Concerning the assurance level, the means for all dependent variables are higher for a reasonable assurance level.

Table 4 informs about the means and standard deviation for all five experimental conditions, which are reflected by the combined factors of assurance provider and assurance level. Moreover, the control group is considered. There are three observations that describe the effect of an assured CMS report. First, Condition 1, which relates to the control group, has the lowest means, compared to the other four conditions. Second, Conditions 2 and 3, which are the conditions with an audit firm, have higher means than the remaining Conditions 4 and 5 are the case versions characterized by the presence of the Technical Control Board. Third, for audit firms, the mean for the limited assurance setting is lower than that for the reasonable assurance setting, which is in line with our expectations. However, the means regarding the Technical Control Board indicate the opposite with regard to the two dependent variables *RELY* and *INVEST*.

Table 5 provides the results regarding the first hypothesis. H1 implies an impact of CMS assurance on the decisions of the bank directors. To test H1, we performed *t* tests for all four dependent variables comparing the control group, where no CMS assurance was provided, to the pooled sample of all other experimental groups. We find highly significant differences between both groups. This indicates that assurance on CMS positively affects bank directors' decisions. Hence, H1 is confirmed.

These means partially confirm our thoughts on risk differences. In case of CMS assurance provision, the likelihood of debt provision is higher than the likelihood of equity provision, underpinning the lower risk of credit granting. Likewise, in the control condition, the mean for *CREDIT* is higher than the mean for *ADVICE*. However, the mean for *INVEST* is higher. *INVEST* relates to a private investment decision of bank directors, whereas the credit granting decision is made on behalf of the bank. Thus, the difference might reflect bank directors' willingness to take private risk. The means for the CMS assurance provision are all significantly higher than the means for the control condition. Thus, we cannot identify a different impact of CMS assurance on these different decisions.

For our first dependent variable, *RELY*, Table 6 presents the results of an ANOVA (Panel A), the means of the experimental conditions (Panel B), and the post hoc tests results (Tukey's HSD) of pairwise comparison for each cell (Panel C). The ANOVA results

**TABLE 2** Demographic information

Variable	N	M	SD	Min	Max	Mdn
YEARS	151	23.91	10.49	1	58	23
AGE	152	48.65	9.44	21	73	49
GENDER	153	1.76	.4296	1	2	2
POSITION	153	1.36	.5691	1	3	1
TRUST_CMS	151	4.64	1.2026	1	7	5
TRUST_AUD	111	4.81	1.2542	1	7	5
TRUST_TCB	96	3.19	1.3712	1	6	3
KNOW_CMS	154	4.38	1.2940	1	7	4
KNOW_ASS	153	3.50	1.3771	1	6	3

Note. YEARS is the number of years the participant has worked in banking; AGE is the age of the participant in years; GENDER is the gender of the participant (1 = female, 2 = male); POSITION is the position of the participant within the bank (1 = board member, 2 = other); TRUST\_CMS is the self-assessed trust in compliance management systems (CMS) on a 7-point Likert scale; TRUST\_AUD is the self-assessed trust in auditors on a 7-point Likert scale; TRUST\_TCB is the self-assessed trust in the Technical Control Board on a 7-point Likert scale; KNOW\_CMS is the self-assessed knowledge of CMS on a 7-point Likert scale, KNOW\_ASS is the self-assessed knowledge of assurance on a 7-point Likert scale.

**TABLE 3** Means and standard deviations of dependent variables by factor levels

Variable		RELY [-]		CREDIT [%]		ADVICE [%]		INVEST [%]	
Factor	Level	M	SD	M	SD	M	SD	M	SD
APROVIDER	AF	5.26	1.083	70.18	17.28	59.61	22.77	67.84	22.31
	TCB	3.77	1.239	50.14	25.91	39.11	22.15	48.83	26.98
ALEVEL	RA	4.70	1.506	65.45	23.60	61.35	28.53	54.38	26.02
	LA	4.36	1.194	54.67	23.29	55.55	23.32	44.21	21.83

**TABLE 4** Means and standard deviations of dependent variables by experimental condition (cell)

Variable Cell	RELY [-]		CREDIT [%]		ADVICE [%]		INVEST [%]	
	M	SD	M	SD	M	SD	M	SD
1 (N = 32)	3.28	1.782	37.97	29.73	29.13	26.90	45.31	26.88
2 (N = 21)	5.57	1.028	74.43	15.93	66.52	22.51	75.33	21.05
3 (N = 17)	4.88	1.054	64.94	17.91	51.06	20.62	58.59	20.79
4 (N = 19)	3.74	1.368	55.53	26.97	40.95	23.26	45.89	28.12
5 (N = 16)	3.81	1.109	43.75	23.85	36.94	21.30	52.31	26.04

**TABLE 5** Differences in means of the dependent variable of control vs. other experimental conditions

Variable	Mean control	Mean all other	t value	p value
RELY	3.28	4.55	-3.959	<.001
CREDIT	37.97%	60.58%	-4.132	<.001
ADVICE	29.13%	49.78%	-2.390	<.001
INVEST	45.31%	58.73%	-3.850	<.001

**TABLE 6** Results for the dependent variable RELY

Panel A	ANOVA results			
	Sum of Squares	df.	F value	p value
Intercept	1,462.772	1	1,108.778	<.001
APROVIDER	38.072	1	28.858	<.001
ALEVEL	1.698	1	1.287	.260
APROVIDER x ALEVEL	2.639	1	2.001	.162
Residuals	91.029	69		
N	73			
Adjusted $R^2 = .302$				
Panel B	Means			
Cell	M			
TCB LA	3.81			
TCB RA	3.74			
AF LA	4.88			
AF RA	5.57			
Panel C	Post hoc tests (Tukey HSD)			
Comparison	p value (two-tailed)			
TCB RA vs. TCB LA	.997			
AF RA vs. AF LA	.264			
AF RA vs. TCB RA	<.001			
AF LA vs. TCB LA	.045			

confirm the second, but not the third hypothesis. With regard to H2, the ANOVA shows that the provision of assurance by an audit firm significantly increases bank director reliance on a CMS in comparison to the provision by the TCB ( $F = 28.86$ ;  $p < .001$ ). Therefore, H2 is confirmed. Additionally, H3 is not supported due to the insignificant main effect ( $F = 1.29$ ;  $p = .260$ ). Furthermore, there is no significant interaction effect between the two treatment variables ( $F = 2.00$ ;  $p = .162$ ).

Moreover, Table 6, Panel C, shows the post hoc tests results. For a reasonable assurance engagement, the mean is 5.57 when an audit firm provided the assurance, and 3.74 in the case of assurance provision by the TCB. The provision of reasonable assurance by an audit firm in comparison to the TCB significantly increases the reliance on the CMS ( $p < .001$ ), which underlines the importance of the assurance provider within the same assurance level. The same pattern applies to limited assurance engagements, for which the mean is 4.88 if an audit firm is the provider and 3.81 otherwise. Again, this difference is significant ( $p = .045$ ). For both assurance providers, the means for the two assurance levels do not differ significantly (AF  $p = .264$ ; TCB  $p = .997$ ).

Table 7, Panel A, provides the ANOVA results for the dependent variable *CREDIT*. Regarding H2, the type of assurance provider is significantly associated with the credit-granting probability, and bank directors are more willing to grant a credit when the assurance is provided by an audit firm in comparison to assurance provision by the TCB ( $F = 15.73$ ;  $p < .001$ ). Again, H2 is confirmed. Furthermore,

bank directors are more willing to grant a credit when a reasonable assurance level instead of a limited assurance level is provided ( $F = 4.42$ ;  $p = .039$ ). Therefore, H3 is confirmed. Finally, there is no significant interaction effect between the two treatment variables ( $F = .051$ ;  $p = .822$ ).

The post hoc test results with regard to credit-granting decisions are presented in Table 7, Panel C. All means (Panel B) are in line with our expectations, but not all tests reveal significant differences. For both assurance levels, there are significant differences between the assurance providers (RA  $p = .035$ ; LA  $p = .030$ ), which again confirms H2. The differences between the assurance levels are in line with our expectations, but neither for the TCB ( $M = 43.75\%$  for limited assurance and  $55.53\%$  for reasonable assurance), nor for the audit firm ( $M = 64.94\%$  for limited assurance and mean =  $74.43\%$  for reasonable assurance) are these differences significant ( $p = .377$  and  $.532$ ). As a consequence, an impact of the assurance level on credit-granting decisions is not clearly evident.

Table 8, Panel A, informs about the ANOVA results concerning bank director likelihood of recommending the purchase of shares from the hypothetical company to nonprofessional investors, which is presented by the dependent variable *ADVICE*. With respect to this variable, the ANOVA shows that the provision of assurance by an audit firm has a significant positive impact on the probability of a recommendation in comparison to assurance provision by the TCB ( $F = 14.66$ ;  $p < .001$ ). Therefore, H2 is confirmed. In addition, there is a marginally significant main effect for the assurance level ( $F = 3.53$ ;

**TABLE 7** Results for the dependent variable *CREDIT*

Panel A	ANOVA results			
	Sum of Squares	df.	F value	p value
Intercept	257033.333	1	557.226	<.001
APROVIDER	7254.832	1	15.728	<.001
ALEVEL	2040.605	1	4.424	.039
APROVIDER x ALEVEL	23.645	1	.051	.822
Residuals	31827.821	69		
N	73			
Adjusted $R^2 = .194$				
Panel B	Means			
Cell	M			
TCB LA	43.75%			
TCB RA	55.53%			
AF LA	64.94%			
AF RA	74.43%			
Panel C	Post hoc tests (Tukey HSD)			
Comparison	p value (two-tailed)			
TCB RA vs. TCB LA	.377			
AF RA vs. AF LA	.532			
AF RA vs. TCB RA	.035			
AF LA vs. TCB LA	.030			

**TABLE 8** Results for the dependent variable *ADVICE*

Panel A	ANOVA results			
	Sum of Squares	df.	F value	p value
Intercept	172436.826	1	355.337	<.001
APROVIDER	7112.348	1	14.656	<.001
ALEVEL	1711.707	1	3.527	.065
APROVIDER x ALEVEL	592.216	1	1.220	.273
Residuals	33484.064	69		
N	73			
Adjusted $R^2 = .197$				
Panel B	Means			
Cell	M			
TCB LA	36.94%			
TCB RA	40.95%			
AF LA	51.06%			
AF RA	66.52%			
Panel C	Post hoc tests (Tukey HSD)			
Comparison	p value (two-tailed)			
TCB RA vs. TCB LA	.950			
AF RA vs. AF LA	.147			
AF RA vs. TCB RA	.003			
AF LA vs. TCB LA	.264			

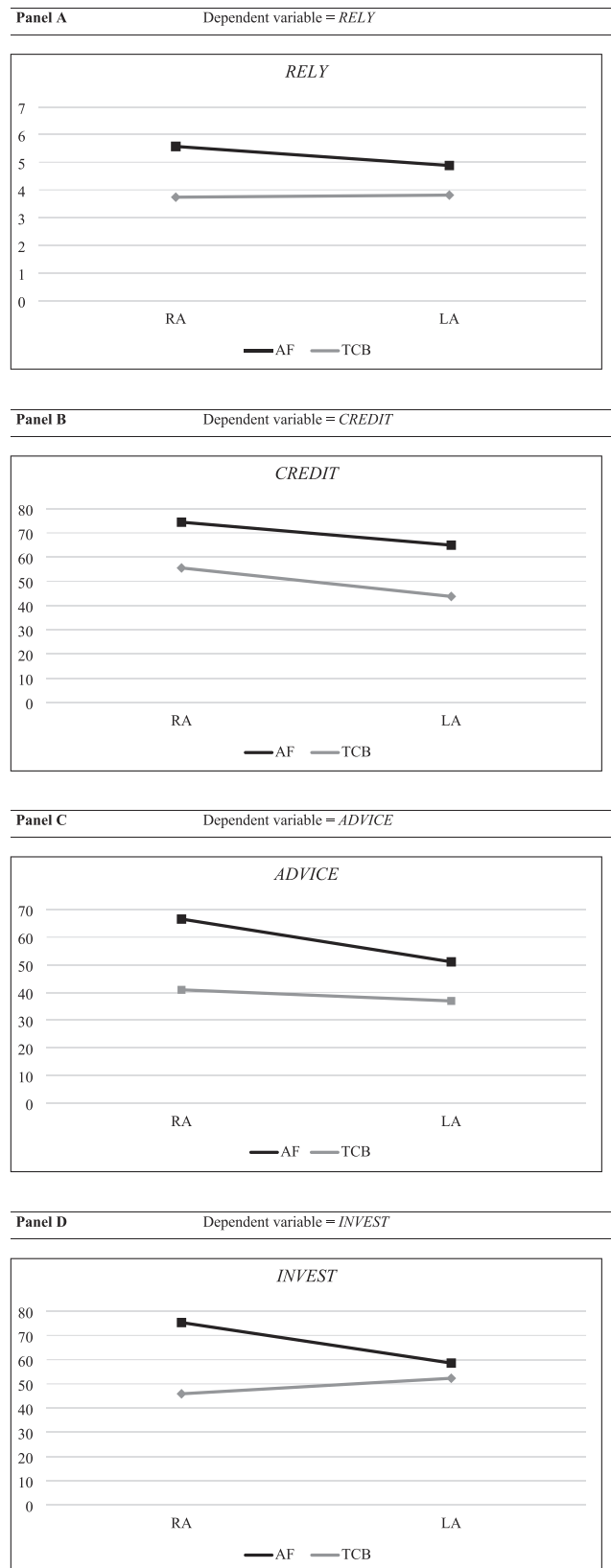
$p = .065$ ). Hence, H3 is also confirmed. Additionally, there is no significant interaction effect between the two treatment variables ( $F = 1.22$ ;  $p = .273$ ).

Table 8, Panel C, shows the post hoc tests results. Although the means meet our expectations, not all tests indicate significant differences. Bank directors are more likely to recommend the purchase of shares when a reasonable assurance level is provided by an audit firm ( $M = 66.52\%$ ) instead of provision by the TCB ( $M = 40.95\%$ ), and the difference is significant ( $p = .003$ ). In contrast, with regard to a limited assurance level, the difference between the provision by an audit firm and by the TCB is insignificant ( $p = .264$ ). The positive impact of assurance provision by an audit firm is driven by the reasonable assurance treatment. Furthermore, the post hoc results provide additional information about the impact of the assurance level. There is no significant difference between a reasonable assurance level and a limited assurance for TCB and for AF ( $p = .950$  and  $.147$ ). Thus, an effect of the assurance level is questionable.

Table 9, Panel A, presents the ANOVA results for the dependent variable *INVEST*, the likelihood that bank directors themselves invest in shares of the fictitious company. Again, the type of assurance provider significantly impacts the bank directors' decision ( $F = 9.89$ ;  $p = .002$ ), that is, they are more likely to invest when assurance is provided by an audit firm in comparison to assurance provision by the TCB. Hence, H2 is confirmed. Regarding the assurance level, there is no significant main effect on the dependent variable ( $F = .83$ ;  $p = .366$ ). Consequently, H3 cannot be confirmed. Contrarily, there is

**TABLE 9** Results for the dependent variable *INVEST*

Panel A	ANOVA results			
	Sum of Squares	df.	F value	p value
Intercept	243186.224	1	417.679	<.001
APROVIDER	5756.599	1	9.887	.002
ALEVEL	481.346	1	.827	.366
APROVIDER x ALEVEL	2421.393	1	4.159	.045
Residuals	40174.011	69		
N	73			
Adjusted $R^2 = .157$				
Panel B	Means			
Cell	M			
TCB LA	52.31%			
TCB RA	45.89%			
AF LA	58.59%			
AF RA	75.33%			
Panel C	Post hoc tests (Tukey HSD)			
Comparison	p value (two-tailed)			
TCB RA vs. TCB LA	.862			
AF RA vs. AF LA	.155			
AF RA vs. TCB RA	.001			
AF LA vs. TCB LA	.878			



**FIGURE 1** Results of ANOVAs

a significant effect for the assurance provider–assurance level interaction ( $F = 4.16$ ;  $p = .045$ ). This means that the impact of the assurance provider depends on the assurance level.

As shown in Table 9, Panel C, the post hoc test results with regard to the likelihood that bank directors themselves invest in shares of the fictitious company are similar to those for the dependent variable *ADVICE*. Reasonable assurance provided by an audit firm ( $M = 75.33\%$ ) increases the probability of investing in comparison to the TCB as assurance provider ( $M = 45.89\%$ ), and the difference is significant ( $p = .001$ ). In contrast, the type of assurance provider has no significant effect in cases of limited assurance ( $p = .878$ ). Again, the post hoc tests indicate that the assurance level is not relevant for the investment decisions of bank directors ( $p = .862$  for the TCB and .155 for audit firms).

Figure 1 provides the graphs related to the previous considerations of bank director reliance and decisions based on the dependent variables *RELY*, *CREDIT*, *ADVICE*, and *INVEST*.

Table 10 presents the results of ANCOVA conducted to ensure that our ANOVA results were not driven by participant characteristics that vary systematically between our cells, despite random selection. For this purpose, we calculated correlations between the dependent variables and participants' characteristics and added significantly correlated variables as covariates.

Regarding the dependent variable *RELY*, there is no significant correlation. Therefore, we did not conduct an ANCOVA in this context.

For the dependent variable *CREDIT*, the demographic variable *TRUST\_CMS* significantly correlates with *CREDIT* (coefficient = .258,

**TABLE 10** ANCOVA results for dependent variables *CREDIT*, *ADVICE*, and *INVEST*

Dependent variable = <i>CREDIT</i>				
Panel A	Sum of Squares	df.	F value	p value
Intercept	27489.348	1	46.751	<.001
APROVIDER	6733.015	1	11.451	.001
ALEVEL	1969.098	1	3.349	.070
APROVIDER x ALEVEL	6.770	1	.012	.915
TRUST_CMS	1009.395	1	1.717	.193
Residuals	58211.394	99		
N	73			
Adjusted $R^2 = .235$				
Dependent variable = <i>ADVICE</i>				
Panel B	Sum of Squares	df.	F value	p value
Intercept	38.120	1	0.075	.784
APROVIDER	8164.896	1	16.158	<.001
ALEVEL	1579.779	1	3.126	.080
APROVIDER x ALEVEL	162.782	1	.322	.572
TRUST_CMS	2065.114	1	4.087	.046
KNOW_CMS	785.090	1	1.554	.216
KNOW_ASS	91.831	1	.182	.671
Residuals	49016.128	97		
N	73			
Adjusted $R^2 = .303$				
Dependent variable = <i>INVEST</i>				
Panel C	Sum of Squares	df.	F value	p value
Intercept	3797.906	1	6.471	<.013
APROVIDER	6546.207	1	11.154	.001
ALEVEL	475.423	1	.810	.370
APROVIDER x ALEVEL	1273.922	1	2.171	.144
TRUST_CMS	2062.780	1	3.515	.064
KNOW_ASS	1096.707	1	1.869	.175
Residuals	57516.211	98		
N	73			
Adjusted $R^2 = .198$				

$p = .044$ ). Adding this covariate leads to similar results and therefore confirms our previous interpretation (Table 10, Panel A). The main effect of *APROVIDER* on the likelihood of credit-granting is still significant ( $F = 11.45$ ,  $p = <.001$ ) and the assurance level has a weakly significant impact ( $F = 3.349$ ,  $p = .070$ ). The variable *TRUST\_CMS* is not significant. However, the adjusted R-squared is higher (Adj.  $R^2 = .235$ ), which implies that the integration of the covariate increases the explanatory power of the model.

Relating to the dependent variable *ADVICE*, there are three demographic variables with a significant correlation. *TRUST\_CMS* (coefficient =  $.186$ ,  $p = .029$ ), *KNOW\_CMS* (coefficient =  $.358$ ,  $p = <.001$ ), and *KNOW\_ASS* (coefficient =  $.232$ ,  $p = <.001$ ). In general, the ANCOVA results (Table 10, Panel B) are similar to the previous ANOVA results. Specifically, the impact of *APROVIDER* is still significant ( $F = 16.16$ ,  $p = <.001$ ). Moreover, there are similar results for *ALEVEL* and the interaction between *APROVIDER* - *ALEVEL*. With respect to the covariates, higher general trust in CMS has a positive impact on the likelihood of recommending the purchase of shares from the hypothetical company ( $F = 4.087$ ,  $p = .046$ ). *KNOW\_CMS*, and *KNOW\_ASS* do not have a significant impact on the bank director's likelihood to make advice. Again, the adjusted R-squared is higher (Adj.  $R^2 = .303$ ).

For the last dependent variable, *INVEST*, two significantly correlated demographic variables can be identified. The covariates are *TRUST\_CMS* (coefficient =  $.219$ ,  $p = <.012$ ) and *KNOW\_ASS* (coefficient =  $.191$ ,  $p = .025$ ). Again, the ANCOVA results (Table 10, Panel C) go in line with the ANOVA results. Both covariates are not significant, whereas the adjusted R-squared is higher (Adj.  $R^2 = .198$ ).

In summary, the relevance of an assurance provision (H1) and the choice of the assurance provider (H2) are both confirmed, while an impact of the assurance level (H3) is not found in full. That is, the assurance provision has a positive effect on bank director reliance on the CMS, their credit-granting decisions, their advice to purchase shares from the hypothetical company, and their own investment decisions. The clear confirmation of H1 is in line with the theoretically driven expectations from legitimacy and signaling theory. Furthermore, the results regarding the effect of the type of assurance provider confirm our expectations derived from the theory of profession and credibility theory. It is apparent that bank directors rely more on assurance provided by audit firms than on assurance provided by the TCB. Regarding H3, the findings are unclear and meet our expectations only partly. The ANOVA results for *CREDIT* and *ADVICE*, but not for *RELY* and *INVEST*, confirm H3. However, the post hoc tests do not confirm the ANOVA results. Disregarding of the dependent variable, the Tukey-HSD tests fail to show significant differences between reasonable and limited assurance. This applies to both types of assurance providers.<sup>8</sup> It may indicate that even informed financial statement users do not understand the different assurance levels, a presumption already expressed by our interviewed auditors, which in turn may be caused by a lack of familiarity with assurance levels below reasonable assurance in general as well as in conjunction with CMS assurance. Thus, it remains unclear whether bank directors are able to identify the difference between the two

assurance levels, or whether differences in the assurance levels impact on their decisions.

## 5 | CONCLUSION

CMS have gained much attention in recent years due to serious noncompliance scandals of major industrial players, for example, Carillion and BHS in the United Kingdom and the Gupta family in South Africa, both in 2018, "Dieselgate" with Volkswagen AG in 2015 and currently Wirecard, both in Germany, the vendor transaction in 2002 of AOL Time Warner and the accounting fraud in 2001 from Enron, both in the United States. However, the increased relevance of CMS and the higher commitment to efficient CMS structures conflicts with a lack of related assurance standards and mandatory assurance provision. Potentially, CMS assurance is influenced by the fact that there is no universal approach to an efficient CMS, due to continuous changes by the regulator on the one hand and different interpretation by practitioners on the other hand. Additionally, a growing market for CMS assurance for the German setting (Baker, 2011) leads to problems in the identification of appropriate assurance providers, and problems regarding the credibility of related assurance reports, for instance, due to varying assurance levels. Consequently, we focused our study on three focal issues. First, we investigate the decision-usefulness of CMS assurance. Second, we analyze the impact of the type of assurance provider, and third, we test whether the assurance level is relevant to external stakeholder perceptions and decisions.

Based on these considerations, our experimental study investigates the effects of voluntary CMS assurance reports on the perceptions and decisions of the addressees. We utilized a  $2 \times 2 + 1$  between-subjects experimental design with bank directors as participants. The treatment variables were the type of assurance provider and the level of assurance. Additionally, a control group was included, without any CMS assurance service in the experimental case. Based on the different assurance providers and assurance levels, the bank directors were asked about their reliance on a CMS, their likelihood of credit-granting, the probability of recommending the purchase of shares from a hypothetical company to nonprofessional investors, and the likelihood of personal investment in shares of the fictitious company.

In general, assurance on CMS has a positive effect on bank director perceptions and decisions. Furthermore, assurance services are differentiated between the assurance provider and the reported assurance level. This differentiation reveals significantly higher reliance on a firm's CMS, a higher likelihood for granting credit, and positive investment decisions in favor of the hypothetical company when the assurance provider is an audit firm in comparison to assurance provision by the Technical Control Board. With regard to investment recommendations and decisions, this preference for audit-firm provided assurance is driven by the provision of reasonable assurance. Moreover, bank directors are more willing to grant credit and to advise purchasing company shares when the CMS report has a reasonable assurance level. However, the results regarding the assurance level are less stable and it remains unclear whether bank directors

perceive a difference between reasonable and limited assurance, and if so, whether this difference impacts their decisions.

The results of our study are of interest to regulators, company directors, and stakeholders. Overall, the study suggests that CMS assurance is decision-useful. Therefore, regulators may consider requiring a mandatory verification of CMS. Furthermore, our study shows that companies potentially benefit if they demand CMS assurance on a voluntary basis. Moreover, our study may help company directors concerning related decisions on the assurance provider and the requested assurance level. Stakeholders may benefit from CMS assurance with regard to their confidence in the effectiveness of a company's CMS. However, third-party assurance is a costly process. It is thus not surprising that according to the economics-based theory, companies will only employ third parties if the expected benefits of external assurance exceed the costs (Jones & Solomon, 2010; Lys, Naughton, & Wang, 2015). These implications reveal avenues for future research that could deal with the impact of CMS assurance on other subject groups or investigate the cost constraint. Beyond that, it may be worth analyzing the effects of related assurance services, such as those for risk management systems. In addition, deeper insight into the production of CMS assurance services could be gained, for example, by interviewing staff of related assurance providers.

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## ORCID

Reiner Quick  <https://orcid.org/0000-0002-5685-6583>

Sanjar Sayar  <https://orcid.org/0000-0003-4345-4224>

## ENDNOTES

<sup>1</sup> See the Appendix for the English version of the experimental case (independent variables in bold).

<sup>2</sup> The case materials and procedures were approved by an institutional review board.

<sup>3</sup> In 2018, HDAX consisted of three German indices calculated by Deutsche Börse AG (2018): DAX comprised the segment of blue chips traded on the Prime Standard and comprised the 30 largest and most actively traded companies listed on the Frankfurt Stock Exchange. MDAX tracked 50 midcap companies from traditional and classic sectors that are ranked below the DAX in terms of size and turnover. TecDAX comprised the 30 largest and most liquid issues from technology sectors of the Prime Standard.

<sup>4</sup> With regard to the dependent variables, the experimental design is similar to that one from Quick & Inwinkel (2020). We refer the reader to the Appendix regarding the experimental case for details on the questions.

<sup>5</sup> The banks from the database of companies provided by BaFin were extracted through a drag and drop function, by which it was possible to choose companies from a wide range of 24 categories (Version: 13/07/2019). The extracted data for the category "credit institutions BA" consisted of a BaFin-related reference number, the bank's name, its address (ZIP-Code, city, street), the type of company, and the corresponding website. The BaFin website address is: [https://portal.mvp.bafin.de/database/InstInfo/?locale=en\\_GB](https://portal.mvp.bafin.de/database/InstInfo/?locale=en_GB)

<sup>6</sup> The responses from another 21 participants could not be used, for example, because they did not provide information with regard to all

dependent variables. Furthermore, we received many responses from participants explaining why they were not willing to participate in our study, for example, due to a lack of time, the fact that the bank is very specific and does not grant credits to companies, or the argument that the bank does not have listed clients. Thus, the response rate is much higher than the participation rate. For much of the analysis, *N* is smaller than 160, since the questionnaire was not completed in full by all participants.

<sup>7</sup> RELY: mean early respondents = 4.16, mean late respondents = 4.17;  $T = -.043$ ,  $p = .966$ ; CREDIT: mean early respondents = 54.77%, mean late respondents = 51.51%;  $T = .566$ ,  $p = .573$ ; ADVICE: mean early respondents = 57.76%, mean late respondents = 48.40%;  $T = 1.685$ ,  $p = .095$ ; INVEST: mean early respondents = 44.57%, mean late respondents = 41.31%;  $T = .582$ ,  $p = .562$ .

<sup>8</sup> We would like to point out that these nonsignificant findings from the Tukey-HSD tests could also be caused by a lower sample size because they just consider two case versions, whereas the ANOVAs are based on four case versions. We did some further tests in which we compared reasonable with limited assurance without differing between the assurance providers and these tests revealed significant differences (CREDIT:  $p = 0.055$ ; ADVICE:  $p = 0.079$ ).

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## AUTHOR BIOGRAPHIES

**Reiner Quick** is Professor in Auditing at the Department of Accounting and Auditing, Darmstadt University of Technology. His research covers audit quality, auditor independence, provision of nonaudit services, auditor rotation, and assurance services.

**Sanjar Sayar** is a Ph.D. student at the Department of Accounting and Auditing, Darmstadt University of Technology. His research interest is focused on CMS reporting and audits.

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## APPENDIX (CASE INFORMATION)

### Experimental case

#### General

The global company Lube & Grease AG offers high-performance lubricants and special greases for a wide variety of applications. With 85 subsidiaries and approximately 7,500 employees, the group is considered to be an established manufacturer.

## Important financial figures of Lube & Grease AG

Key Figure	2017	Change compared with previous year (%)
Total assets	2.27 bn. €	+ 3.6%
Sales	2.72 bn. €	+ 8.3%
Equity ratio	76.2%	2.8%
Net income	0.322 bn. €	+ 3.1%
Operating profit	0.448 bn. €	+ 1.2%
Return on equity	26.8%	- 1.3%
Dividend yield	2.4%	+ 0.9
Price-earnings ratio	27.36%	+ 5.4%

## Audit of the consolidated annual financial statements by a Big 4 audit firm

The statutory annual financial statements for the financial year 2017 were prepared in accordance with the German Commercial Code (HGB). The consolidated financial statements and the consolidated management report of Lube & Grease AG, based on the international accounting standards IFRS to be applied in the European Union (EU), were audited by a Big 4 audit firm. An unqualified audit opinion was issued.

## Existence of a compliance management system (CMS)

With a group-wide “compliance-management-system” reported in the annual report, Lube & Grease AG ensures compliance with laws and a self-imposed code of conduct in the areas of antitrust law, prevention of corruption, money laundering, conflicts of interest, fraud/embezzlement, as well as the regulation of downstream kick-back benefits in purchasing. The “compliance-management-system” aims to prevent, detect, and sanction regulatory infringements within the company systematically and sustainably. The resulting compliance directive applies to all officers, directors, and employees of the corporate group and ensures that the value system is consistently and continuously practiced on a broad scale.

## Compliance with the German Corporate Governance Code (DCGK)

Lube & Grease AG complies with all recommendations of the German Corporate Governance Code in the version of 7 February 2017, since the declaration of compliance (§ 161 AktG [German Stock Corporation Act]), and will continue to comply with the recommendations in the future with a very high degree of compliance.

**Assurance on the compliance management system (CMS)**

Lube & Grease AG has not commissioned an audit of the existing CMS.

(2, i) Lube & Grease AG has appointed a Big-4 audit firm to audit the CMS.

(2, ii) Lube & Grease AG has appointed TÜV Rheinland to audit the CMS.

**Declaration of assurance level**

(3, i) In the financial year 2017, a Big-4 auditing firm audited the compliance management system of Lube & Grease AG risk-based.

During the examination of the CMS, the processes were confirmed as effective.

(3, ii) In the financial year 2017, a Big-4 auditing firm audited the compliance management system of Lube & Grease AG risk-based. During the examination of the CMS, significant process errors were not detected.

(3, iii) In the financial year 2017, TÜV Rheinland audited the compliance management system of Lube & Grease AG risk-based. During the examination of the CMS, the processes were confirmed as effective.

(3, iv) In the financial year 2017, TÜV Rheinland audited the compliance management system of Lube & Grease AG risk-based. During the examination of the CMS, significant process errors were not detected.