ISSN 1808-057X
DOI: 10.1590/1808-057x20231692.en

ORIGINAL ARTICLE

When controls matter: evidence of non-linear association between Internal Control Weaknesses and Audit Quality

Vagner Antônio Marques[1]
https://orcid.org/0000-0001-7210-4552
Email: vagner.marques@ufes.br

Urias Otaviano Vaz[2]
https://orcid.org/0000-0002-1377-5695
Email: urias.vaz@edu.ufes.br

Débora Vieira Miranda[2]
https://orcid.org/0000-0003-2235-1891
Email: debora.v.miranda@edu.ufes.br

Ramon Palaoro Checon[1]
https://orcid.org/0000-0001-9542-4778
Email: ramon.checon@ufes.br

[1] Universidade Federal do Espírito Santo, Departamento de Ciências Contábeis, Vitória, ES, Brasil
[2] Universidade Federal do Espírito Santo, Programa de Pós-Graduação em Ciências Contábeis, Vitória, ES, Brasil

Received on 04.07.2022 – Desk acceptance on 05.09.2022 – 3rd version approved on 03.08.2023
Editor-in-Chief: Fábio Frezatti
Associate Editor: Eliseu Martins

ABSTRACT

This study aimed to analyze the association between Internal Control Weaknesses (or Internal Control Deficiencies – ICDs) and Audit Quality (AQ). The article fills a gap in the national literature, as it provides evidence of an association between reported ICDs and the main AQ proxies. The study is relevant because it evinces the lack of contemporary association between reported ICDs and the AQ of listed Brazilian companies, but found a lagged association between these variables. Unlike prior studies, it was observed that the ICDs reported in the previous year can function as an Audit Red Flag in the current year, thus contributing to risk assessment by accountants, auditors, members of governance and audit committees, and regulators. The study, documentary and descriptive, with a quantitative approach, analyzed data from a sample of 257 companies listed on the Brazil Stock Exchange and Over-the-Counter Market (Brasil, Bolsa, Balcão [B3]) in the period 2010-2018. Data were assessed using regression models with panel data, logistic and negative binomial. The results showed that, although there are significant differences between the AQ proxies for companies that reported ICD and those that did not, there is no contemporary and statistically significant association between ICD disclosure and AQ proxies. However, it was observed that audit delay and the probability of being involved in an Administrative Sanctioning Procedure (ASP) are associated with the number of ICDs reported in the previous year.

Keywords: internal control weaknesses, audit quality, audit regulation, corporate governance, financial reporting.

Correspondence address

Vagner Antônio Marques
Universidade Federal do Espírito Santo, Centro de Ciências Jurídicas e Econômicas, Departamento de Ciências Contábeis
Avenida Fernando Ferrari, 514, sala 34 – CEP 29075960
Goiabeiras – Vitória – ES – Brazil

This is a bilingual text. This article was originally written in Portuguese, published under the DOI https://doi.org/10.1590/1808-057x20231692.pt
Paper presented at the XV Congresso ANPCONT, December 2021, and at the XVIII Convenção de Contabilidade do Rio Grande do Sul, October 2021.

1. INTRODUCTION

This study analyzes the association between Internal Control Weaknesses (or Internal Control Deficiencies – ICDs) and Audit Quality (AQ). According to Di Pietra et al. (2014), since the 2000s, regulators in the accounting and auditing sector have sought to build the Corporate Governance (CG) environment with a view to improving the informational content of audit reports, AQ, and Internal Control Structure (ICS).

Rajgopal et al. (2021) observe that the previous literature has defined AQ as the auditor's likelyhood to identify and report flaws in the audited companies' accounting system, as well as to ensure the presentation of high quality financial information. Christensen et al. (2016) also point out that audit planning is a relevant factor for improving AQ, as the auditor generally seeks to mitigate audit risk, which can be divided into: (i) inherent risk, (ii) control risk, and (iii) detection risk. These stem from the nature of the audited account or event, deficiencies or weaknesses in internal controls, and the likelihood of not identifying a material error, respectively.

In line with the effort to improve the CG and ICS environment initiated after the Enron case, in 2009, the International Auditing and Assurance Standards Board (IAASB) approved the International Standard on Auditing (ISA) 265 – "Communicating deficiencies in internal control to those charged with governance and management." In Brazil, in the same year, the Brazilian Federal Accounting Council (Conselho Federal de Contabilidade [CFC]) approved the Brazilian Technical Accounting Standard for Auditing (Norma Brasileira de Contabilidade Técnica de Auditoria [NBC TA]) 265, which set up the auditor's obligation to report the ICDs to the governance bodies and the audited company's management. Additionally, the Instruction of the Brazilian Securities and Exchange Commission (Instrução da Comissão de Valores Mobiliários [CVM]) 480/2009 determined that companies should disclose them in their Reference Forms as of 2010.

Since the adoption of these standards, several studies have been conducted with a view to verifying their empirical implications (Ge & McVay, 2005; Lopes et al., 2019; Porte et al., 2018). Prior studies that analyzed the association between ICDs and AQ and/or book information have already documented that: (i) there is a strong association between ICD disclosure and the occurrence of subsequent fraud (Donelson et al., 2017); (ii) the remuneration package for employees and managers reduces the probability of occurrence of an ICD and financial restatements (Guo et al., 2016; Hoitash et al., 2012); (iii) business strategy is associated with the occurrence of an ICD and AQ (Bentley-Goode et al., 2017); (iv) the association between adopting the ICD disclosure standard and earnings management is still controversial (Amoah et al., 2017; Foster & Shastri, 2012; Lenard et al., 2016; Lu et al., 2011); (v) ICD disclosure is associated with a longer audit delay (Munsif et al., 2012); and (vi) ICD disclosure is associated with the resubmission of subsequent financial statements and the market reacts negatively to its disclosure (Li et al, 2018).

In the Brazilian national literature, studies on ICDs published in journals are scarce, with emphasis on research like that by Lopes et al. (2019), who analyzed the ICDs reported by listed Brazilian companies; Cunha et al. (2019), who provided evidence of an association between ICDs, conservatism, and earnings management; and Brandão et al. (2021), who analyzed the association between ICDs and Audit Red Flags (ARF). However, some papers published in Brazilian congresses sought to: propose an ICD index (Teixeira & Cunha, 2016); analyze the moderating effect of ICD (Teixeira & Cunha, 2016); and analyze the association between ICD and resubmission (Silote et al., 2021). Given this context, it is observed that there is a gap in the international literature, but mainly in the national one, regarding the analysis of the relationships between ICD disclosure and AQ. Therefore, this study sought to answer the following question:

- What is the association between Internal Control Weaknesses disclosure and Audit Quality?

The study, descriptive and documentary, with a quantitative approach, assessed data from 2010 to 2018 on 257 companies listed on B3. The data, obtained from COMDINHEIRO and from the Reference Forms made available by the CVM, were analyzed using descriptive statistics, tests of differences between mean values, and regression analysis (Negative Binomial, Logistics, and panel data with random effects). Anchored in the previous literature, we assessed the hypothesis that ICD disclosure is associated with lower AQ, as observed by Rice and Weber (2012), and that companies have incentives not to disclose ICDs, as they serve as signs of potential future issues, influencing risk assessment in companies. Despite

this hypothesis, it is possible that its disclosure serves as an incentive mechanism for the auditor to engage in mitigating audit risk, particularly risk control and detection (Donelson et al., 2017; Lenard et al., 2016).

Observing the association between ICDs and AQ has the potential to contribute to internal and external auditors, members of governance, audit and fiscal council committees, as well as regulators, as they provide evidence of the effectiveness of NBC TA 265 adoption with regard to improving AQ. However, unlike the previous literature, this effect is lagged. Grasping this phenomenon has the potential to impact the area, providing evidence that will make it possible to carry out other studies with various approaches, such as the experimental one. Also, it can contribute with insights for professionals and regulators regarding the need to improve ICD reporting in the Brazilian context, as well as evidence that the ICDs reported in the previous year can function as ARF for the auditor in planning their activities.

2. LITERATURE REVIEW

2. NBC TA 265 Adoption and Audit Quality

The recurrent cases of fraud, omission, and manipulation of financial information in the capital market have resulted in an effort to improve governance, internal control, and auditing (Di Pietra et al., 2014). Among the various regulatory changes since 2002, Sections 302 and 404 of the Sarbanes-Oxley Act set up parameters for classifying and disclosing material weaknesses in internal controls (Ge & McVay, 2005).

This ICD reporting requirement is based on the fact that their disclosure provides greater transparency regarding control risks and, therefore, the risk that the information disclosed is manipulated, opaque, or fraudulent (Donelson et al., 2017; Zakaria et al., 2016). Also, ICD disclosure can serve as an accountability mechanism of the company's governance bodies, managers, and auditors and that tends to influence substantial improvements in internal control systems, governance policy, and audit quality (Donelson et al., 2017; Foster & Shastri, 2012; Lu et al., 2011).

In the Brazilian context, the NBC TA 265, issued in 2009, started to determine that external auditors communicate to those responsible for governance the significant deficiencies identified during the audit. The purpose of this standard was to increase trust in audited financial reports, since information on the basis of preparation of book records and their controls is added to users of accounting information (Lopes et al., 2019).

The international literature has brought evidence that ICD disclosure can improve AQ (Bentley-Goode et al., 2017). In this context, AQ is a construct that considers that an auditor will have done a good job as it reduces the risk of issuing an inadequate opinion, mitigating the risk of material error and/or fraud in the financial statements (Francis, 2004).

Since this is a non-objectively measurable construct, several proxies have been used to capture AQ, including: Audit Delay (Munsif et al., 2012; Pizzini et al., 2015), Earnings Management (Lenard et al., 2016; Rajgopal et al., 2021), Resubmission of Financial Statements (Guo et al., 2016), and the Occurrence of Fraud (Donelson et al., 2017; Zakaria et al., 2016).

Audit delay consists of delayed disclosure of audited financial statements (Pizzini et al., 2015). Bailey et al. (2018) highlight that Audit Delay is an AQ proxy, as delayed disclosure of audited statements can signal quality issues in the reported book numbers.

Earnings Management (EM) consists of intended earnings manipulation in order to meet incentives related to the remuneration package, the company's indebtedness level, and political costs (Dechow et al., 2010). Christensen et al. (2016) observe that EM is measured through discretionary accruals (DAs) and signals, in addition to earnings manipulation, the greater or lesser AQ, since the earnings discretion level proves whether the auditors' job showed a greater or lesser quality.

Resubmission of financial statements, similar to EM, confirms a greater or lesser AQ, as resubmission stem from errors in financial statements (Guo et al., 2016). Marques et al. (2016) notice that the proportion of resubmissions of a qualitative nature is predominant and that the proportion of quantitative reasons is around 17%.

Finally, the last AQ proxy, which refers to the occurrence of fraud, sets up the Administrative Sanctioning Procedures (ASPs) related to irregularities with regard to accounting and/or auditing instituted by the CVM and regulated by the Instrução da CVM 607 (Comissão de Valores Imobiliários [CVM], 2019). Although the ASP does not necessarily constitute fraud, they refer to irregularities that, when arising from non-compliance

with accounting and/or auditing standards, indicate poor quality of the information disclosed (CVM, 2019). The study by Guerra et al. (2020), who analyzed the ASP judged by the CVM between 2008 and 2018, used the categorization of types of lawsuits to delimit the motivation of each type of ASP filed and judged against a company. On average, 4% of the companies analyzed within the period were condemned in ASPs.

2.2 Building Hypotheses

The hypothesis that companies with a greater number of ICDs have lower AQ stems from the fact that internal controls are constituted from the set of processes and tools that aim to mitigate the risk of error, fraud, and inefficiency in the use of assets (Zakaria et al., 2016; Rajgopal et al., 2021).

Among the various AQ proxies, audit delay is defined as delay in delivering financial statements and consequent loss of information quality for decision-making (Pizzini et al., 2015). In this context, Munsif et al. (2012) claim that the existence of ICDs in firms can constitute barriers to audit work, causing a greater audit delay. According to Lopes et al. (2019), ICDs are considered risk proxies for stakeholders. Brandão et al. (2021) highlight that ICDs can be regarded as a proxy for audit risk, since the greater their occurrence, the greater the probability of errors, fraud, and resource inefficiencies. Bailey et al. (2018), in turn, show that companies with lower corporate risks have a lower audit delay. Chalmers et al. (2019), on the other hand, demonstrate, in a literature review with mostly US articles on internal controls, that the higher the control quality, the lower the audit delay. Given this evidence, we sought to assess the first research hypothesis (H_1).

> H_1: Companies that report more Internal Control Weaknesses have a greater audit delay in the publication of financial statements.

According to Christensen et al. (2016), resubmission of financial statements is widely used as a proxy to measure AQ. According to Donelson et al. (2017), analyzing data from US companies, when ICS is fragile, there is a greater probability of fraud. Albring et al. (2018) claimed, when conducting research with a sample of companies also in the United States of America (USA), that ICDs are associated with the probability of resubmitting statements, which stems mainly from fraud, among other adverse events. From this perspective, it is observed that the previous literature suggests that the existence of significant weaknesses in the ICS of companies can give rise to issues in AQ and financial information, according to a study by Chang et al. (2020), with listed companies in Taiwan. In the Brazilian context, Silote et al. (2021) did not observe a significant association between ICDs and resubmission of financial statements, however, they noticed that there is an association between ICD disclosure and the reporting of emphasis paragraphs in the auditor's report. Thus, we sought to assess the second research hypothesis (H_2).

> H_2: Companies that report more Internal Control Weaknesses are more likely to resubmit financial statements.

Discretion of accruals (and of actual operations) is one of the main proxies for the earnings quality (Dechow et al., 2010), but also a proxy for AQ (Christensen et al., 2016). In the debate on the effect of weaknesses in internal controls and AQ measured through DAs, Foster and Shastri (2012), through research with US companies, found evidence that the existence of ICDs may be associated with the practice of manipulation of results. Lenard et al. (2016) observed, when comparing a group of companies that reported ICDs and another of companies that did not, that those that did so tend to show higher discretion levels in actual operations, but not in all proxies. If, on the one hand, the existence of ICDs opens up space for the occurrence of agency issues, on the other hand, it can serve as a stimulus for the internal and external audit team and the governance bodies to build more robust working programs that reduce the chance of manipulation, whether of accruals or operations (Amoah et al., 2017; Gleason et al., 2017; Heninger et al., 2018). Thus, we sought to assess the third research hypothesis (H_3).

> H_3: Companies that report more Internal Control Weaknesses have a higher level of discretionary accruals.

According to Di Pietra et al. (2014), the Enron scandal in the early 2000s was one of the main triggers for changes in the internal controls and auditing environment that resulted in the enactment of the Sarbanes-Oxley Act, substantiating all the concern with improving ICS, CG, and Compliance in companies, especially those listed. In this regard, Suh (2019) notices that improving internal

controls can reduce the likelihood of fraud and errors occurring, as it reduces the space for material flaws and fraud to occur. From the perspective of Zakaria et al. (2016), previous empirical evidence demonstrates that the internal control structure is a fraud mitigation mechanism. Donelson et al. (2017) corroborated this claim when they found evidence that ICD disclosure is associated with the occurrence of fraud, especially by managers and management-level employees. However, Zakaria et al. (2016) found indications that companies that engage in fraud avoid ICD reporting associated with manipulated accounts and/or operations. Still in this context, Defond and Lennox (2017) demonstrate that companies that are inspected by regulators tend to improve the audit of internal controls and, therefore, mitigate existing weaknesses.

In the Brazilian literature, Silote et al. (2021) and Brandão et al. (2021) found that ICDs are associated with audit Red Flags and emphasis paragraphs in the auditor's report. Also, the research carried out by Guerra et al. (2020) on ASP and CG identified that directors and members of boards of directors were the positions that most responded to ASPs. Furthermore, lawsuits for negligence, malpractice, or imprudence were the weaknesses most observed in companies that underwent some type of lawsuit. The study also found that companies with higher governance levels had a lower proportion of irregularities judged within the period. Based on these notes, we sought to assess the last hypothesis (H_4).

H_4: Companies that report more Internal Control Weaknesses are more likely to be involved in Administrative Sanctioning Procedures.

3. METHODOLOGICAL PROCEDURES

3.1 Research Design, Sample, Data Collection and Processing

The study, descriptive and documentary, with a quantitative approach, analyzed data on 257 companies listed on B3 for the period 2010-2018. The sample, intentional and non-probabilistic, has been defined by relevance. In this way, the companies with higher liquidity on B3 were searched, as they represent those with the greatest visibility in the capital market and have incentives for and against greater or lesser AQ and ICD disclosure (Lu et al., 2011; Rice & Weber, 2012; Silote et al., 2021). The period under study was due to the availability of data on ICDs, which occurred from 2010 on. The financial data were obtained from COMDINHEIRO, in the search of ASPs, and in the Reference Form, both from the CVM website, and analyzed using the software *Stata 16*.

3.2 Models and Operationalization of Variables

To evaluate the hypotheses (H_1, H_2, H_3 and H_4) of association between ICDs, which were considered the amount reported for each company in the sample in each year under analysis and AQ (audit delay, discretionary accruals, resubmission, and ASPs), using models 1 and 2, in which the AQ is a function of ICDs and other controlled factors (Controles), in line with Doyle et al. (2007), Li et al. (2018), Pizzini et al. (2015), and Zakaria et al. (2016). The definitions and operationalization of variables are displayed in Appendix A.

$$\text{QualAud}_{it} = \alpha + \mathbf{QtdeDCI_{it}} + \sum_{i=1}^{n} \beta_k \text{Controles} + \varepsilon_{it} \quad (1)$$

$$\text{QualAud}_{it} = \alpha + \mathbf{QtdeDCI_{it}} + \mathbf{QtdeDCI^2_{it}} + \sum_{i=1}^{n} \beta_k \text{Controles} + \varepsilon_{it} \quad (2)$$

Given the nature of dependent variables, a negative binomial model (for count data and data with hyperdispersion) was used to verify hypothesis 1 (ICDs → Audit Delay). For the analysis of hypotheses 2 (ICDs → Resubmission) and 4 (ICDs → ASPs), logistic regression was used, and for hypothesis 3 (ICDs → JonesMod), a regression model was used with panel data with random effects. Continuing quantitative variables were winsorized between 1% and 99%, in order to reduce the effect of extreme variables (outliers). Model validation tests and compliance with econometric assumptions followed Wooldridge's (2011) guidelines.

3.3 Dependent Variables

In this study, four AQ proxies were used: audit delay (Audit Delay), measured according to Pizzini et al. (2015) and Bailey et al. (2018), discretionary accruals (JonesMod) estimated according to Dechow et al. (1995), financial restatements (Reapr), obtained according to Li et al. (2018), and being involved in ASPs related to auditing and accounting issues, measured according to Guerra et al. (2020).

According to Pizzini et al. (2015), the fewer days there are between the closing of the fiscal year and the issuance of the audit report (Audit Delay), the higher audit quality.

Dechow et al. (2010) point out that discretionary accruals consist of an AQ proxy, since the lower the level of discretionary accruals, the higher AQ, since it is up to the auditor to ensure the veracity of disclosed financial information.

According to Li et al. (2018), the resubmission of financial statements constitutes another proxy for earnings quality and AQ, as a greater number of resubmissions of the same financial statement evidence a lower quality of previously reported numbers and, therefore, lower AQ.

Finally, the last AQ proxy was being involved in an ASP at the CVM. The ASPs stem from irregularities committed by economic agents and, according to Guerra et al. (2020), 52% of the lawsuits observed and judged in the period 2008-2018 by the CVM, referred to omission, inaccuracy in financial statements, or non-compliance with accounting and auditing standards. Therefore, the greater involvement in ASPs related to financial statements or accounting and auditing standards, the lower AQ.

3.4 Independent Variables

The independent variable of interest was ICD disclosure, in line with what was done by Doyle et al. (2007), Foster and Shastri (2012), and Lenard et al. (2016). The ICD was operationalized by the number of ICDs reported by each company/year, according to Doyle et al. (2007). The general hypothesis assessed was that the greater the number of reported ICDs, the lower AQ. Thus, a positive and significant signal is expected between QtdeICD and each AQ proxy (Christensen et al., 2016; Rajgopal et al., 2021).

3.5 Control Variables

As the phenomena in applied social sciences are complex, an attempt was made to control the incentives for higher or lower AQ. The managers' remuneration package is, from the perspective of Agency Theory, a way of aligning the interests of agents and principals. However, the variable remuneration package can serve as an incentive for a manager to obtain the lowest earnings quality. So, the variable remuneration of the board of directors (RemVar) and post-employment benefits (BenPosEmpr) were used as a potential control against the agents' opportunism, as observed by Lenard et al. (2016). It is expected that the higher the remuneration and benefits package is, the lower AQ will be. In turn, the general indebtedness level (NivEnd) seeks to control incentives related to the indebtedness level, particularly covenant agreements. In this context, it is expected that companies with a higher financial indebtedness level will have lower AQ, as managers would have incentives to manipulate book numbers in order to comply with contractual clauses or reduce risk perception by creditors (Amoah et al., 2017).

The effect of the auditor's effort measured through audit fees (HonAud) was also controlled. According to Albring et al. (2018), the higher the fees, the greater the audit risk, so there will be more effort by the auditor to mitigate the asymmetry and reduce their risk. For this reason, it is expected that the higher the HonAud, the higher AQ. We also tried to control company size (Tam), company performance (ROA), and company growth potential (MTB). Company size is associated with greater risk of asymmetries and/or complexity, however, according to Ge and McVay (2005) and Cunha et al. (2019), larger companies tend to have more robust ICS. Therefore, it is expected that the larger the size, the higher AQ. On the other hand, Amoah et al. (2017) observed that US companies with higher returns (ROA) and those with higher growth potential (MTB) tend to be, respectively, positively and negatively associated with lower earnings quality (AQ proxy). Therefore, the expected signs for ROA and MTB are negatively and positively associated with AQ proxies.

Finally, the effects of the decline (DECL) stage, the audit firm (Big4), the CG level (NivGov), the economic sector (SegEcon), and the Year were controlled. The decline stage was operationalized as proposed by Dickinson (2011) and also used by Krishnan et al. (2020), who observed that companies in the decline stage tend to show a lower earnings quality, as they have incentives to manipulate the results with a view to showing the market that they have recovery potential. According to Amoah et al. (2017) and Guerra et al. (2020), Big4 firms are more likely to have higher AQ, as they tend to demonstrate a better technological structure, a higher specialization level, and expertise in carrying out audit work. Therefore, it is

expected that companies audited by Big4 firms tend to have higher AQ. The CG level, economic sector, and year seek to control the effect of the governance, economic, and institutional environment, already reported in the previous literature (Amoah et al., 2017; Guerra et al., 2020; Brandão et al., 2021).

4. ANALYSIS AND DISCUSSION OF THE RESULTS

4.1 Descriptive Statistics

Initially, the analysis of descriptive statistics on the variables segregated between the companies that reported ICDs and those that did not (Table 1) was carried out. It was observed that, on average, 39.58% of companies report one or more ICDs. They reported 1,267 deficiencies, on average, which ranged from 1 to 8 (see the variable QtdeDCI). In terms of the preponderance of the types of ICDs reported (Panel C), it appears that 12.7% of the companies were related to the Reporting Policy (RP); 10.40% were related to Technological Flaws (TFs); and 9% refer to Training (Tr). It is also noteworthy that 7.70% of companies reported ICDs referring to Specific Accounts (SA) and 6.60% on Account Reconciliation (AR).

What can be concluded from the reported ICD frequencies is that, unlike the CVM's expectation, ICD non-disclosure is not an exception in the Brazilian context. This observation had already been reported by Lopes et al. (2019) among companies listed on the IBRX. On the one hand, it reinforces the need for greater monitoring by the regulator, since, as Rice and Weber (2012) observe, companies have incentives not to report an ICD, since it serves as a Red Flag along with auditors and other stakeholders. On the other hand, consistent with the perspectives of Donelson et al. (2017) and Lenard et al. (2016), the predominance of companies that did not report ICDs may be due to corrections made during the audit work or, also, failure in the monitoring process.

Table 1
Descriptive statistics used in the models

	With ICDs n = 829 39.58% | 0.016 | 0.375-0.417				With no ICDs n = 1,265 60.42% | 0.016 | 0.582-0.624				Diff.	
Panel A: Linear and contemporary relationship										
	$\bar{x}$	s	Min.	Max.	$\bar{x}$	s	Min.	Max.		
$AuditDelay_{it}$	3.88	0.40	3.00	5.00	3.86	0.43	3.00	6.00	0.02	NS
$JonesMod_{it}$	0.15	1.28	-7.64	4.28	-0.01	1.34	-7.64	4.28	0.16	***
$QtdeDCI_{it}$	1.27	1.58	0.00	8.00	0.00	0.00	0.00	0.00	1.27	***
$NivEnd_{it}$	0.49	0.29	0.00	1.16	0.46	0.28	0.00	1.16	0.03	***
$NivEnd_{it}$	13.26	1.33	10.06	16.74	13.01	1.42	10.06	16.74	0.25	***
$BenPosEmpr_{it}$	7.07	7.08	0.00	17.31	6.52	7.02	0.00	17.31	0.56	**
$RemVar_{it}$	12.03	5.43	0.00	17.13	11.36	5.80	0.00	17.13	0.67	***
Tam_{it}	21.42	1.78	16.55	25.48	21.16	1.79	16.55	25.48	0.25	***
ROA_{it}	-0.06	0.37	-2.25	0.36	0.00	0.30	-2.25	0.36	-0.07	***
MTB_t	1.52	2.20	-4.17	11.61	1.85	2.26	-4.17	11.61	-0.33	***
Panel B – Qualitative variables										
	$\bar{p}$	SE	[95% C.I.]		$\bar{p}$	SE	[95% C.I.]			
$Reapr_{it}$	0.131	0.012	0.110	0.156	0.163	0.010	0.144	0.185	-0.032	**
PAS_{it}	0.024	0.005	0.016	0.037	0.012	0.003	0.007	0.020	0.012	**
$DECL_{it}$	0.066	0.009	0.051	0.086	0.038	0.005	0.029	0.050	0.028	***
Panel B.2 – Audit firms										
	$\bar{p}$	SE	[95% C.I.]		$\bar{p}$	SE	[95% C.I.]			
$NBig4_{it}$	0.277	0.016	0.248	0.309	0.268	0.012	0.245	0.294	0.009	*
DTT_{it}	0.146	0.012	0.124	0.172	0.137	0.010	0.119	0.157	0.009	NS

Table 1
Cont.

	With ICDs n = 829 39.58% | 0.016 | 0.375-0.417				With no ICDs n = 1,265 60.42% | 0.016 | 0.582-0.624				Diff.	
EY_{it}	0.166	0.013	0.143	0.193	0.233	0.012	0.210	0.257	-0.066	***
$KPMG_{it}$	0.235	0.015	0.208	0.265	0.201	0.011	0.180	0.224	0.034	**
PWC_{it}	0.175	0.013	0.151	0.202	0.161	0.010	0.141	0.182	0.014	NS
Panel B.3 – Governance sector										
	$\bar{p}$	SE	[95% C.I.]		$\bar{p}$	SE	[95% C.I.]			
$TRAD_i$	0.326	0.016	0.295	0.358	0.439	0.014	0.411	0.466	-0.113	***
$N1_i$	0.084	0.010	0.067	0.105	0.080	0.008	0.066	0.096	0.004	NS
$N2_i$	0.071	0.009	0.056	0.091	0.055	0.006	0.044	0.069	0.016	*
NM_i	0.519	0.017	0.485	0.553	0.426	0.014	0.399	0.453	0.093	***
Panel B.4 – Economic sector										
	$\bar{p}$	SE	[95% C.I.]		$\bar{p}$	SE	[95% C.I.]			
BI_{it}	0.159	0.013	0.136	0.186	0.218	0.012	0.196	0.241	-0.059	***
COM_i	0.023	0.005	0.015	0.036	0.013	0.003	0.008	0.022	0.009	*
CC_i	0.328	0.016	0.297	0.361	0.263	0.012	0.239	0.288	0.065	***
CNC_i	0.081	0.009	0.064	0.101	0.082	0.008	0.068	0.098	-0.001	NS
MB_i	0.083	0.010	0.066	0.104	0.138	0.010	0.120	0.158	-0.055	***
PGB_i	0.033	0.006	0.022	0.047	0.044	0.006	0.034	0.056	-0.011	NS
SAU_i	0.095	0.010	0.077	0.117	0.047	0.006	0.036	0.060	0.049	***
TI_i	0.016	0.004	0.009	0.027	0.017	0.004	0.011	0.025	-0.001	NS
UP_i	0.182	0.013	0.157	0.210	0.180	0.011	0.160	0.202	0.002	NS

NS = Not statistically Significant; SE = standard errors; Reapr = Financial Restatements; PAS = Administrative Sanctioning Procedure; DECL = Decline Lifecycle Stage; NBig4 = Audit firms other than Deloitte, Ernest Young, KPM, and PriceWatherhouseCoopers; DTT = Auditing firm Deloitte; EY = Auditing firm Ernest Young; KPMG = Auditing firm KPMG; PWC = Auditing firm PriceWatherhouseCoopers; TRAD = B3's traditional governance sector; N1 = B3's N1 governance sector; N2 = B3's N2 governance sector; NM = B3's new governance market sector; BI = B3's Industrial goods sector; COM = B3's Communication (and Telecommunication) sector; CC = B3's Cyclical Consumption Sector; CNC = B3's Non-Cyclical Consumption Sector; MB = B3's Basic Materials Sector; PGB = B3's Oil, Gas and Biofuels Sector; SAL = B3's Health Sector; IT = B3's Information Technology Sector; UP = B3's Public Utility Sector.
****, **, * = significance at the 1%, 5%, and 10% level.*
Source: *Prepared by the authors.*

When analyzing the AQ proxies used in the study, it is observed that Audit Delay in companies with ICDs was higher than that of companies without ICDs, however, the difference between both was not statistically significant. While the first group showed the logarithm of the number of days between the end of the fiscal year and the disclosure of financial statements around 3.878, the group of companies without ICDs showed an average of 3.855. Regarding financial restatements (Reapr), 13.10% of the companies that reported ICDs showed some resubmission, while the group of companies that did not report showed an average of 16.3%. Although the difference between the proportions is small, it suggests that, in general terms, companies without ICDs tend to have more resubmissions of financial statements. However, it is noteworthy that, as observed in Marques et al. (2016), most resubmissions refer to correction of qualitative data and, sometimes, companies with better CG structures tend to make adjustments to the set of reported financial information.

The analysis of discretionary accruals, estimated by the modified Jones model (JonesMod), reinforces that companies without ICDs tend to show, in module terms, a lower level of discretion in earnings, since the average discretionary accruals of companies with ICDs was 0.15, statistically significant and higher than that observed among companies without ICDs. Regarding the proportion of ASPs filed by the CVM, it appears that companies with ICDs were involved, on average, in 4.3% of the ASPs, while those without ICDs were involved

in only 2.4%. Despite being a small proportion in both groups, it is verified, at the 5% significance level, that companies without ICDs are less likely to be involved in an ASP along with the CVM.

Additionally, it is observed that the control variables showed statistically significant differences at the 1% and 5% levels, which suggests that they may influence AQ proxies differently between companies with and without ICDs. In general terms, the test for the difference between the mean values and proportions of Audit Delay and Discretionary Accruals and the ASP reinforce the hypothesis that companies that report ICDs tend to have lower AQ, in line with what Rice and Weber (2012) show. However, in the case of Resubmission, evidence reinforces the perspective of Donelson et al. (2017) and Lenard et al. (2016) that companies with ICDs tend to have higher AQ, as auditors are more engaged in mitigating audit risk.

4.2 Analyzing the Association between Internal Control Weaknesses and Audit Quality

The verification of the association between the AQ proxies, QtdeDCI, and control variables was carried out based on the hypothesis of a linear and contemporary association between ICD disclosure and AQ (Table 2). Next, still in Table 2, the non-linear and contemporary association in Panel A and Panel B and the lagged relationship were analyzed, keeping all the control variables. In terms of the general significance of models, in all of them, at least one variable was statistically significant at the 1% level, as observed in the Wald statistics (x^2).

Table 2
Coefficients of the models for analysis of the linear association between disclosure of Internal Control Weaknesses and Audit Quality

	E.S.	$AuditDelay_{it}$ (H_1)		$Reapr_{it}$ (H_2)		$JonesMod_{it}$ (H_3)		PAS_{it} (H_4)	
Intercepto	+/-	**1.611*** **	**(0.046)**	**-3.783*** **	**(1.401)**	-0.409	(1.125)	**-8.077*** **	**(2.579)**
$QtdeDCI_{it}$	(+)	0.000	(0.002)	0.079	(0.066)	0.021	(0.023)	**0.236***	**(0.125)**
$NivEnd_{it}$	(+)	0.013	(0.009)	**0.766** **	**(0.323)**	-0.148	(0.154)	**2.159*** **	**(0.806)**
$HonAud_{it}$	(–)	-0.003	(0.004)	0.045	(0.088)	-0.018	(0.030)	**0.572*** **	**(0.209)**
$BenPosEmpr_{it}$	(–)	**-0.001*** **	**(0.000)**	0.010	(0.014)	0.012	(0.008)	**0.083*** **	**(0.031)**
$RemVar_{it}$	(+)	0.001	(0.001)	0.032	(0.021)	0.007	(0.020)	**-0.122*** **	**(0.038)**
Tam_{it}	(+)	**-0.008** **	**(0.003)**	0.081	(0.087)	0.021	(0.063)	-0.185	(0.179)
ROA_{it}	(–)	-0.008	(0.010)	0.110	(0.327)	-0.118	(0.140)	-0.013	(0.459)
MTB_{it}	(–)	**-0.008*** **	**(0.001)**	0.027	(0.034)	0.019	(0.018)	-0.011	(0.098)
$DECL_{it}$	(+)	**0.022*** **	**(0.009)**	0.380	(0.282)	0.102	(0.079)	**1.463***	**(0.765)**
DTT_{it}	(–)	-0.004	(0.009)	-0.019	(0.297)	-0.013	(0.094)	**-1.570***	**(0.928)**
EY_{it}	(–)	-0.015*	(0.008)	-0.145	(0.252)	0.107	(0.097)	-1.585	(1.044)
$KPMG_{it}$	(–)	0.001	(0.008)	-0.249	(0.286)	0.083	(0.099)	-0.696	(0.616)
PWC_{it}	(–)	-0.003	(0.009)	0.012	(0.278)	-0.039	(0.100)	0.063	(0.786)
$N1_i$	(–)	**0.015***	**(0.009)**	0.288	(0.362)	-0.045	(0.243)	1.034	(0.635)
$N2_i$	(–)	-0.011	(0.010)	0.094	(0.337)	0.026	(0.183)	1.085	(0.777)
NM_i	(–)	**-0.013** **	**(0.006)**	0.250	(0.252)	0.026	(0.246)	-0.290	(0.727)
Wald (x^2)		**289.68*** **		**156.58*** **		**44.38*** **		**223.83*** **	
R^2/Loglikelihood		-2,712.612		-748.974		1.93 | 4.19 | 2.86		-130.531	
Type		NB		Panel (Logit)		Panel (RE)		Panel (Logit)	
Observations		1,663		1,949		1,708		1,682	
Number of companies				228		200		220	
Sector control		Yes		Yes		Yes		Yes	
Year control		Yes		Yes		Yes		Yes	
EGM/GOF		49.03		84.09%				98.10%	
Sensitivity				5.61%				0.00%	
Specificity				98.54%				100.00%	
ROC				72.89%				84.19%	

Table 2
Cont.

E.S.	$AuditDelay_{it}$ (H_1)		$Reapr_{it}$ (H_2)		$JonesMod_{it}$ (H_3)		PAS_{it} (H_4)	
Panel B – Linear and lagged relationship								
Intercept	**1.578*** **	**(0.048)**	**-5.208*** **	**(1.775)**	0.328	(1.359)	**-7.630*** **	**(2.724)**
$QtdeDCI_{it-1}$	0.001	(0.002)	0.115	(0.076)	0.004	(0.019)	0.146	(0.117)
Other controls maintained: Yes								

Note: *Clustered robust standard errors in companies in parentheses. In models 1, 2, and 4, the odds ratios (Odds Ratios) are shown.*
ES = expected sign; RE = random effects; BN = Negative Binomial; EGM = Overall Model Efficiency; GOF = Hosmer-Lemeshow x^2 test statistics; DTT = Deloitte Touche Tomatsu Ltda; EY = Ernst & Yount Global Ltd; PWC = PricewaterhouseCoopers; N1 = B3's sector level 1; N2 = B3's sector level 2; NM = B3's New Market sector.
****, **, * Significance at the 1%, 5%, and 10% levels*
Source: *Prepared by the authors.*

It was observed that, in general terms, there was no statistical significance between AQ proxies, QtdeDC (p value > 0.005). These findings do not allow confirming the hypotheses analyzed in this study (H_1, H_2, H_3, and H_4), suggesting that the number of ICDs reported in the current fiscal year is not associated with AQ proxies. This evidence differs from the studies by Albring et al. (2018), Amoah et al. (2017), Chalmers et al. (2019), Chang et al. (2020), Donelson et al. (2017), Foster and Shastri (2012), Gleason et al. (2017), Heninger et al. (2018), and Rajgopal et al. (2021), but reinforce the results achieved by Lenard et al. (2016), who found no significant association between ICD disclosure and AQ.

As for the control variables, it was found that some of them are statistically significant, especially in models that sought to analyze the association between ICDs, Audit Delay (H_1), and ASP (H_4). In the case of the model for H_1 analysis, the greater the BenPosEmpr ($exp^{-0.001} = 0.999 \mid p < 0.001$), the smaller the AuditDelay. This negative effect on the chance of delay in delivering the Internal Audit Report (IAR) (AuditDelay) was also observed for the variables Tam ($exp^{-0.008} = 0.992 \mid p < 0.005$), MTB ($exp^{-0.008} = 0.992 \mid p < 0.001$), and NM ($exp^{-0.013} = 0.987 \mid p < 0.005$), which tend to have a lower chance of delaying the issuance of the IAR ($AuditDelay_{it}$). The 1% increase in BenPosEmpr, Tam, and MTB results in a reduction between 0.01% and 0.80% in the chance of delaying the issuance of the IAR ($AuditDelay_{it}$). In turn, companies audited by Ernest Young and those listed on the New Market sector have, respectively, 1.5% and 1.3% less chance of delaying the issuance of the IAR.

In the opposite direction, it was verified that companies classified in the Decline stage ($exp^{0.022} = 1.023 \mid p < 0.001$) and those listed on the N1 governance sector ($exp^{0.015} = 1.015 \mid p < 0.010$) have, respectively, 2.3% and 1.5% more chance of delaying the IAR. Regarding the effect of the decline stage, these findings reinforce those observed by Krishnan et al. (2020), i.e. companies classified in the Introduction and Decline stages, on average, are more likely to show lower quality book numbers. As for the N1 governance sector, Marques et al. (2016), also highlighted that companies with a higher CG level are more prone to resubmissions, as they tend to be under greater scrutiny and, therefore, more likely to resubmit statements as a sign of greater transparency and effectiveness of internal controls and corporate governance mechanisms.

In the models that analyzed hypotheses 2 and 3, the results were fragile and, despite at least one variable explaining the occurrence of a financial restatement ($Reapr_{it}$) or discretionary accruals ($JonesMod_{it}$), the control variables were mostly non-significant, as well as the variable of interest.

In the analysis of the contemporary relationship between $QtdeDCI_{it}$ and PAS_{it}, hypothesis 4, a weak association was observed ($exp^{0.236} = 1.266 \mid p < 0.010$), but suggesting that, for each reported ICD, there is an increase of 1.266 in the chance of becoming involved in an ASP. Despite this fragile association, other factors were statistically significant in the chance of the company to be involved in an ASP, and, among those that had a positive effect on the chance of involvement in an ASP, BenPosEmpr stood out ($exp^{0.083} = 1.087 \mid p < 0.001$), HonAudit ($exp^{0.572} = 1.772 \mid p < 0.001$), NivEnd ($exp^{2.159} = 8.664 \mid p < 0.001$), and Decline ($exp^{1.463} = 4.320 \mid p < 0.001$).

These findings suggest that percentage increases in BenPosEmpr lead to 1.087 more chance of engaging in an ASP. Likewise, percentage increases from NivEnd increase, on average, the chance of being involved in an ASP by 8.664. Also, it was observed that companies

classified in the Decline lifecycle stage are 4.320 times more likely to be involved in an ASP. HonAudit, contrary to expectations, with each percentage increase, increases the chance of being involved in an ASP by 1.772.

As for BenPosEmpr, Indebtedness Level, and Decline stage, these findings are consistent with what was found by N. Khoufi and W. Khoufi (2018) and Krishnan et al. (2020), i.e. these factors are associated with lower quality of book numbers, higher AuditDelay, as managers have incentives to manipulate book information, either to improve the subsequent remuneration package and/or to comply with contractual clauses agreed in loan contracts, or to reduce risk perception on the part of stakeholders. Despite the unexpected finding in the association between HonAudit and ASP, this relationship can be explained by the fact that audit fees reflect the auditor's judgment regarding audit risk. So, companies with greater risk are more likely to be involved in an ASP. This perspective is observed in Hoitash et al. (2007), who detected a positive association between quality of accruals and audit fees.

Finally, in the model that analyzed hypothesis 4, it was observed that RemVar ($\exp^{-0.122} = 0.885 \mid p < 0.001$) and being audited by Delloite ($\exp^{-1.570} = 0.205 \mid p < 0.001$) are associated with a lower probability of being involved in an ASP related to accounting and auditing issues. Evidence regarding DTT reinforces what was observed by Defond and Lennox (2017), who suggest that companies audited by the Big4, on average, report more ICDs than their smaller competitors, this in a likely consequence of carrying out a more detailed work in the analysis of Internal Controls, which also increases audit fees, thus reducing the possibility that the audited company engages in fraudulent activity and is condemned in an ASP. As for the RemVar effect, the findings suggest that the variable remuneration package serves as a mechanism to discourage practices that lead to the filing of an ASP, consistent with what was observed by Donelson et al. (2017), when analyzing this relationship between ICD disclosure and the occurrence of fraud in companies listed on the New York Stock Exchange.

4.2.1. Analyzing the non-linear relationship between disclosure of control weaknesses and audit quality

As the linear relationship observed in the previous international literature has not been confirmed in all the models used, the existence of a non-linear and contemporary relationship has been assessed (Panel A in Table 3). The findings suggest that, unlike the hypotheses analyzed in this and in prior studies, the relationship between AuditDelay, being in involved in an ASP, and the number of ICDs reported is non-linear, although this finding is more consistent when considering the lagged effect of ICD disclosure, particularly regarding the delay in issuing the IAR and the occurrence of ASP (Panel B in Table 3).

Table 3
Coefficient of the models for analysis of non-linear association between disclosure of Internal Control Weaknesses and Audit Quality

Panel A – Non-linear and contemporary relationship									
		AuditDelay$_{it}$ (H_1)		**Reapr$_{it}$ (H_2)**		**JonesMod$_{it}$ (H_3)**		**PAS$_{it}$ (H_4)**	
Intercept	+/-	**1.618*** **	**(0.046)**	**-3.713*** **	**(1.389)**	**-0.389**	**(1.149)**	**-7.221*** **	**(2.744)**
QtdeDCI$_{it-1}$	(+)	0.008	(0.006)	0.151	(0.169)	0.033	(0.062)	**1.350** **	**(0.563)**
QtdeDCI$^2_{it-1}$	(-)	-0.002	(0.001)	-0.017	(0.036)	-0.003	(0.010)	**-0.272** **	**(0.138)**
Other controls maintained: Yes									
Wald (x^2)		**289.37*** **		**161.11*** **		**45.18***		**251.46*** **	
R^2/Loglikelihood		-2,712.58		-748.867		1.93 | 4.20 | 2.86		-127.81	
Types		**NB**		Panel (Logit)		Panel (RE)		Panel (Logit)	
Panel B – Non-linear and lagged relationship									
	E.S.	**AuditDelay$_{it}$**		**Reapr$_{it}$**		**JonesMod$_{it}$**		**PAS$_{it}$**	
Intercept	**+/-**	**1.591*** **	**(0.048)**	**-4.994*** **	**(1.772)**	0.290	(1.390)	**-6.202** **	**(2.808)**
QtdeDCI$_{it-1}$	(+)	**0.015** **	**(0.006)**	0.331	(0.204)	-0.024	(0.059)	**1.881*** **	**(0.623)**
QtdeDCI$^2_{it-1}$	(–)	**-0.003** **	**(0.001)**	-0.050	(0.051)	0.006	(0.011)	**-0.451** **	**(0.192)**
NivEnd$_{it}$	(+)	0.010	(0.009)	**1.253*** **	**(0.381)**	-0.058	(0.176)	**2.508*** **	**(0.794)**
HonAud$_{it}$	(–)	**-0.006***	**(0.004)**	0.091	(0.097)	-0.035	(0.036)	**0.497** **	**(0.207)**
BenPosEmpr$_{it}$	(–)	**-0.001*** **	**(0.000)**	0.009	(0.016)	0.018*	(0.009)	**0.084** **	**(0.035)**

Table 3
Cont.

Panel B: Non-linear and lagged relationship									
	E.S.	**AuditDelay$_{it}$**		**Reapr$_{it}$**		**JonesMod$_{it}$**		**PAS$_{it}$**	
RemVar$_{it}$	(+)	0.001	(0.001)	0.039	(0.025)	0.011	(0.021)	**-0.125*** **	**(0.040)**
Tam$_{it}$	(+)	**-0.006***	**(0.003)**	0.033	(0.110)	-0.009	(0.078)	-0.224	(0.181)
ROA$_{it}$	(–)	-0.008	(0.010)	0.180	(0.364)	-0.142	(0.144)	0.016	(0.468)
MTB$_{it}$	(–)	**-0.006*** **	**(0.001)**	0.042	(0.040)	0.015	(0.019)	-0.023	(0.096)
DECL$_{it}$	(+)	**0.025*** **	**(0.009)**	0.350	(0.363)	0.112	(0.089)	**1.417***	**(0.772)**
DTT$_{it}$	(–)	-0.003	(0.009)	-0.116	(0.329)	0.017	(0.111)	**-1.533***	**(0.913)**
EY$_{it}$	(–)	**-0.017** **	**(0.008)**	0.135	(0.274)	0.142	(0.115)	-1.566	(1.018)
KPMG$_{it}$	(–)	-0.002	(0.007)	-0.157	(0.309)	0.130	(0.117)	-0.504	(0.643)
PWC$_{it}$	(–)	-0.005	(0.010)	0.121	(0.309)	-0.006	(0.118)	0.167	(0.799)
N1$_i$	(–)	0.008	(0.009)	0.014	(0.456)	-0.088	(0.253)	**1.228** **	**(0.626)**
N2$_i$	(–)	-0.013	(0.010)	-0.017	(0.404)	-0.003	(0.199)	1.264	(0.830)
NM$_i$	(–)	**-0.019*** **	**(0.006)**	0.246	(0.279)	0.008	(0.260)	-0.268	(0.755)
Wald (x^2)		**274.82*** **		**69.32*** **		38.29		**170.65*** **	
R^2/Loglikelihood		-2,114.16		-671.49		2.53 | 5.11 | 3.15		-96.998	
Type		NB		Panel (Logit)		Panel (RE)		Panel (Logit)	
Observations		1,301		1,301		1,516		1,246	
Number of companies		199		199		200		191	
Sector control		Yes		Yes		Yes		Yes	
Year control		Yes		Yes		Yes		Yes	
EGM/GOF		47.41%		76.48%				97.91%	
Sensitivity				99.29%				0.00%	
Specificity				5.68%				100.00%	
ROC				66.39%				88.16%	

Note: *Clustered robust standard errors in companies in parentheses. In models 1, 2, and 4, the odds ratios (Odds Ratios) are shown.*
RE = random effects; E.S. = expected sign; BN = Negative Binomial; EGM = Overall Model Efficiency; GOF = Hosmer-Lemeshow x^2 test statistics; DTT = Deloitte Touche Tomatsu Ltda; EY = Ernst & Yount Global Ltd; PWC = PricewaterhouseCoopers; N1 = B3's sector level 1; N2 = B3's sector level 2; NM = B3's New Market sector.
****, **, * Significance at the 1%, 5%, and 10% levels*
Source: *Prepared by the authors.*

It was found that for each ICD reported in the previous period, the chance of increasing AuditDelay increases by 1.012 ($\exp^{0.015} + \exp^{-0.003} = 1.012 \mid p < 0.001$), which, in turn, increases the chances by 4.179 to be involved in an ASP ($\exp^{1.881} + \exp^{-0.451} = 4.179 \mid p < 0.001$). These findings suggest that ICD reporting can serve as an indicator of the probability of delays in issuing the IAR, as well as the chance of being involved in an ASP, which is in line with what was found in prior studies by N. Khoufi and W. Khoufi (2018). It was also observed that the effects of control variables remained, as shown in Table 2.

4.2.2 Additional analyses

Additional analyses were carried out centering the quantitative variables on the sector/year median. The purpose was to verify if the findings were sensitive to this transformation. In this way, the regression parameters captured the effect of the group that had the highest QtdeDCI, NivEnd, HonAudit, etc., on the chance of delaying the IAR (Audit Delay), resubmitting the statements (Reapr), and being involved in an ASP. The results displayed in Panel A of Table 4 reinforce what has already been observed in Table 3, with regard to the models that analyzed hypotheses 1 and 4. However, a moderating effect was not verified for those companies that had a number of ICDs greater than the sector/year median.

Table 4
Odds Ratios of the models for analysis of the effects of groups above the sector/year median

Panel A – Odds Ratios of the models for analysis of the effect of companies above the sector/year median in each explanatory variable of Audit Quality						
	$AuditDelay_{it}$ (H_1)		**$Reapr_{it}$ (H_2)**		**PAS_{it} (H_4)**	
Constant	**4.245*****	**(0.042)**	**0.295*****	**(0.094)**	**0.010*****	**(0.009)**
$Maior\_QtdeDCI_{it}$	1.002	(0.006)	1.317	(0.262)	**2.553****	**(1.221)**
$Maior\_NivEnd_{it}$	1.004	(0.005)	**1.337***	**(0.224)**	**2.546***	**(1.242)**
$Maior\_HonAud_{it}$	0.993	(0.007)	1.145	(0.226)	1.653	(1.042)
$Maior\_BenPosEmpr_{it}$	**0.982*****	**(0.006)**	1.208	(0.220)	2.013	(1.171)
$Maior\_RemVar_{it}$	1.002	(0.005)	1.290	(0.231)	0.426	(0.223)
$Maior\_Tam_{it}$	**0.978*****	**(0.006)**	1.059	(0.207)	1.158	(0.669)
$Maior\_ROA_{it}$	**0.981*****	**(0.005)**	**0.664****	**(0.108)**	**0.343****	**(0.164)**
$Maior\_MTB_{it}$	**0.971*****	**(0.005)**	1.257	(0.212)	1.254	(0.554)
Other controls maintained: Yes						
Panel B – Odds Ratios of the models for analysis of the moderating effect of companies with disclosure of Internal Control Weaknesses above the sector/year median and Audit Quality						
	$AuditDelay_{it}$ (H_1)		**$Reapr_{it}$ (H_2)**		**PAS_{it} (H_4)**	
Constant	**5.328*****	**(0.277)**	**0.018****	**(0.030)**	0.001	(0.005)
$Maior\_QtdeDCI_{it}$	**0.769****	**(0.079)**	1.217	(3.574)	0.443	(2.932)
Niv_End_{it}	1.011	(0.010)	**2.595****	**(0.975)**	**20.454*****	**(22.555)**
$HonAud_{it}$	0.999	(0.004)	0.971	(0.095)	1.406	(0.447)
$BenPosEmpr_{it}$	**0.999*****	**(0.000)**	1.004	(0.015)	1.082	(0.070)
$RemVar_{it}$	**1.001***	**(0.001)**	1.024	(0.025)	**0.883***	**(0.057)**
Tam_{it}	**0.988*****	**(0.003)**	1.146	(0.107)	0.868	(0.232)
ROA_{it}	**0.979****	**(0.011)**	1.609	(0.778)	1.141	(0.824)
MTB_{it}	**0.992*****	**(0.001)**	0.994	(0.040)	0.934	(0.097)
$Maior\_QtdeDCI_{it}$*$NivEnd_{it}$	1.003	(0.020)	0.500	(0.378)	0.117	(0.200)
$Maior\_QtdeDCI_{it}$*$HonAudit_{it}$	0.989	(0.009)	**1.585****	**(0.349)**	1.717	(0.828)
$Maior\_QtdeDCI_{it}$*$BenPosEmpr_{it}$	0.999	(0.001)	1.026	(0.033)	1.009	(0.095)
$Maior\_QtdeDCI_{it}$*$RemVar_{it}$	1.001	(0.002)	1.046	(0.062)	1.059	(0.126)
$Maior\_QtdeDCI_{it}$*Tam_{it}	**1.019****	**(0.008)**	**0.721***	**(0.129)**	0.784	(0.333)
$Maior\_QtdeDCI_{it}$*ROA_{it}	1.032	(0.022)	0.366	(0.275)	0.638	(0.877)
$Maior\_QtdeDCI_{it}$*MTB_{it}	1.000	(0.004)	**1.189****	**(0.098)**	1.206	(0.216)
Other controls maintained: Yes						

Note: *All quantitative variables were turned into dummy variables, which took a value of 1 when the respective observation was greater than the sector/year median, and 0 when not. This procedure created groups of companies with higher QtdeDCI, NivEnd, HonAudit, etc., in relation to the sector/year median.*
Source: *Prepared by the authors.*

5. FINAL REMARKS

This article analyzes the association between ICDs and AQ. The findings did not confirm the research hypotheses (H_1, H_2, H_3, and H_4), thus showing that there is no contemporary association between ICD disclosure and AQ. This corroborates the observation pointed out in the study by Lopes et al. (2019), i.e. Brazilian companies, on average, try not to disclose ICDs, they may be motivated by less monitoring by regulators and not to demonstrate possible flaws in their internal controls, which are often seen negatively by the market (Rice & Weber, 2012). However, unlike the previous literature, this study shows that there is a lagged and non-linear association between

ICD disclosure, Audit Delay, and being involved in an ASP. This finding demonstrates that ICD disclosure in a year serves as a ARF in the subsequent year, however, this signaling only occurs from an upper threshold of reported ICDs. As found by Brandão et al. (2021), in a recent study, companies that report ICDs tend, on average, to improve AQ in the following year through better internal control, reducing the possibility of being sanctioned for fraud.

This evidence contributes to accountants, auditors, governance bodies and internal controls, fiscal councils, market analysts, and regulators, as it demonstrates that ICD disclosure can contribute to assess audit risk, but also to assess the risk of informational asymmetry. These findings partially reinforce the evidence provided by Donelson et al. (2017), as ICD disclosure serves, from a certain amount reported, as a stimulus for the auditor to engage more robustly in the best AQ. The results achieved also suggest that the analyses of linear and contemporary associations commonly used in related studies may not be consistent with the Brazilian reality, giving rise to the need for further studies to validate the persistence of the results observed.

Despite the contributions, this study has limitations, because, despite having observed a significant and non-linear association between ICD, Audit Delay, and being involved in an ASP, the causal relationship has not been analyzed. Furthermore, it is possible that other variables can influence this phenomenon, which requires further studies on the subject. In this sense, it is suggested that new studies be carried out and that they seek to address the causality relationship between AQ and the occurrence of exogenous events, such as the determination of resubmission by the CVM, and being involved in ASPs. Also, the analysis of other AQ proxies may be included in the discussion, in order to strengthen the evidence.

REFERENCES

Albring, S. M., Elder, R. J., & Xu, X. (2018). Unexpected fees and the prediction of material weaknesses in internal control over financial reporting. *Journal of Accounting, Auditing & Finance 33*(4), 485-505. https://doi.org/10.1177/0148558X16662585

Amoah, N. Y., Anderson, A., Bonaparte, I., & Tang, A. P. (2017). Internal control material weakness and real earnings management. In C. R. Lehman (Ed.), *Parables, myths and risk* (Vol. 20, pp. 1-21). Emerald.

Bailey, C., Collins, D. L., & Abbott, L. J. (2018). The impact of enterprise risk management on the audit process: Evidence from audit fees and audit delay. *Auditing: A Journal of Practice & Theory*, *37*(3), 25-46. https://doi.org/10.2308/ajpt-51900

Bentley-Goode, K. A., Newton, N. J., & Thompson, A. M. (2017). Business strategy, internal control over financial reporting, and audit reporting quality. *Auditing: A Journal of Practice & Theory*, *36*(4), 49-69. https://doi.org/10.2308/ajpt-51693

Brandão, C. V., Ballarini, L. M., Marques, V. A., & Freitag, V. da C. (2021). *Red flags* de auditoria e divulgação das deficiências de controles internos nas empresas do IBRX 100. *Revista Contemporânea de Contabilidade*, *18*(48), 22-39. https://doi.org/10.5007/2175-8069.2021.e76636

Chalmers, K., Hay, D., & Khlif, H. (2019). Internal control in accounting research: A review. *Journal of Accounting Literature*, *42*, 80-103. https://doi.org/10.1016/j.acclit.2018.03.002

Chang, Y.-T., Chen, H.-C., Cheng, R. K., & Chi, W. (2020). Misstatements and internal control over operations and compliance. *Journal of International Accounting Research*, *20*(1), 31-48. https://doi.org/10.2308/JIAR-2020-016

Christensen, B. E., Glover, S. M., Omer, T. C., & Shelley, M. K. (2016). Understanding audit quality: Insights from audit professionals and investors. *Contemporary Accounting Research*, *33*(4), 1648-1684. https://doi.org/10.1111/1911-3846.12212

Comissão de Valores Imobiliários. (2019). *Instrução CVM n. 607, de 17 de junho de 2019, que dispõe sobre o rito dos procedimentos relativos à atuação sancionadora no âmbito da Comissão de Valores Mobiliários.* http://conteudo.cvm.gov.br/export/sites/cvm/legislacao/instrucoes/anexos/600/Inst607.pdf

Cunha, P. R., Silva, A., & Rohenkohl, L. B. (2019). Internal control deficiencies and conservative and opportunist accounting choices. *Contabilidade, Gestão e Governança*, *22*(3), 368-385. https://doi.org/10.21714/1984-3925_2019v22n3a4

Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, *50*(2-3), 344-401. https://doi.org/10.1016/j.jacceco.2010.09.001

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, *70*(2), 193-225.

Defond, M. L., & Lennox, C. S. (2017). Do PCAOB inspections improve the quality of internal control audits? PCAOB inpections and internal control audit quality. *Journal of Accounting Research*, *55*(3), 591-627. https://doi.org/10.1111/1475-679X.12151

Dickinson, V. (2011). Cash flow patterns as a proxy for firm life cycle. *The Accounting Review*, *86*(6), 1969-1994. https://doi.org/10.2308/accr-10130

Di Pietra, R., McLeay, S., & Ronen, J. (Orgs.). (2014). *Accounting and regulation*. Springer.

Donelson, D. C., Ege, M. S., & McInnis, J. M. (2017). Internal control weaknesses and financial reporting fraud. *Auditing:*

A Journal of Practice & Theory, *36*(3), 45-69. https://doi.org/10.2308/ajpt-51608

Doyle, J. T., Ge, W., & McVay, S. (2007). Accruals quality and internal control over financial reporting. *The Accounting Review*, *82*(5), 1141-1170. https://doi.org/10.2308/accr.2007.82.5.1141

Foster, B. P., & Shastri, T. (2012). Material internal control weaknesses and earnings management in the post-SOX environment. *Journal of Applied Business Research (JABR)*, *29*(1), 183. https://doi.org/10.19030/jabr.v29i1.7566

Francis, J. R. (2004). What do we know about audit quality? *The British Accounting Review*, *36*(4), 345-368. https://doi.org/10.1016/j.bar.2004.09.003

Ge, W., & McVay, S. (2005). The disclosure of material weaknesses in internal control after the Sarbanes-Oxley Act. *Accounting Horizons*, *19*(3), 137-158. https://doi.org/10.2308/acch.2005.19.3.137

Gleason, C. A., Pincus, M., & Rego, S. O. (2017). Material weaknesses in tax-related internal controls and last chance earnings management. *Journal of the American Taxation Association*, *39*(1), 25-44. https://doi.org/10.2308/atax-51511

Guerra, R. B., Marques, V. A., & Martins, V. G. (2020, dezembro). O que eu fiz contra o mercado de capitais? Uma análise dos processos sancionadores julgados pela CVM no período de 2007-2018. In *14o Congresso ANPCONT*, Foz do Iguaçu, PR.

Guo, J., Huang, P., Zhang, Y., & Zhou, N. (2016). The effect of employee treatment policies on internal control weaknesses and financial restatements. *The Accounting Review*, *91*(4), 1167-1194. https://doi.org/10.2308/accr-51269

Heninger, W. G., Johnson, E. N., & Kuhn, J. R. (2018). The association between it material weaknesses and earnings management. *Journal of Information Systems*, *32*(3), 53-64. https://doi.org/10.2308/isys-51884

Hoitash, R., Hoitash, U., & Johnstone, K. M. (2012). Internal control material weaknesses and CFO compensation. *Contemporary Accounting Research*, *29*(3), 768-803. https://doi.org/10.1111/j.1911-3846.2011.01122.x

Hoitash, R., Markelevich, A., & Barragato, C. A. (2007). Auditor fees and audit quality. *Managerial Auditing Journal*, *22*(8), 761-786. https://doi:10.1108/02686900710819634

Khoufi, N., & Khoufi, W. (2018). *An empirical examination of the determinants of audit report delay in France. Managerial Auditing Journal*, *33*(8-9), 700-714. https://doi:10.1108/maj-02-2017-1518

Krishnan, G. V., Myllymäki, E., & Nagar, N. (2020). Does financia reporting quality vary across firm life cycle? *Journal of Business Finance & Accounting*, *48*(5-6), 954-987. https://doi.org/10.1111/jbfa.12508

Lenard, M. J., Petruska, K. A., Alam, P., & Yu, B. (2016). Internal control weaknesses and evidence of real activities manipulation. *Advances in Accounting*, *33*, 47-58. https://doi.org/10.1016/j.adiac.2016.04.008

Li, Y., Park, Y., & Wynn, J. (2018). Investor reactions to restatements conditional on disclosure of internal control weaknesses. *Journal of Applied Accounting Research*, *19*(3), 423-439. https://doi.org/10.1108/JAAR-10-2017-0107

Lopes, I. M. O., Marques, V. A., & Louzada, L. C. (2019). Deficiências dos controles internos das empresas listadas na [B3]. *Revista Evidenciação Contábil & Finanças*, *7*(3), 105-126. https://doi.org/10.22478/ufpb.2318-1001.2019v7n3.41207

Lu, H., Richardson, G., & Salterio, S. (2011). Direct and indirect effects of internal control weaknesses on accrual quality: Evidence from a unique Canadian regulatory setting*: Effects of internal control weaknesses on accrual quality. *Contemporary Accounting Research*, *28*(2), 675-707. https://doi.org/10.1111/j.1911-3846.2010.01058.x

Munsif, V., Raghunandan, K., & Rama, D. V. (2012). Internal control reporting and audit report lags: Further evidence. *Auditing: A Journal of Practice & Theory*, *31*(3), 203-218. https://doi.org/10.2308/ajpt-50190

Pizzini, M., Lin, S., & Ziegenfuss, D. E. (2015). The impact of internal audit function quality and contribution on audit delay. *Auditing: A Journal of Practice & Theory*, *34*(1), 25-58. https://doi.org/10.2308/ajpt-50848

Porte, M., Saur-Amaral, I., & Pinho, C. (2018). Research in auditing: Main themes. *Revista Contabilidade & Finanças*, *29*(76), 41-59. https://doi.org/10.1590/1808-057x201804410

Rajgopal, S., Srinivasan, S., & Zheng, X. (2021). Measuring audit quality. *Review of Accounting Studies*, *26*, 559-619. https://doi.org/10.1007/s11142-020-09570-9

Rice, S. C., & Weber, D. P. (2012). How effective is internal control reporting under SOX 404? Determinants of the (non-)disclosure of existing material weaknesses. *Journal of Accounting Research*, *50*(3), 811-843. https://doi.org/10.1111/j.1475-679X.2011.00434.x

Silote, N., Freitas Rezende, E., Marques, V. A., & Costa Freitag, V. (2021). Deficiências de controles internos, republicações e opinião do auditor: Evidências no mercado brasileiro. *Revista de Educação e Pesquisa em Contabilidade*, *15*(3), 310-328. https://doi.org/10.17524/repec.v15i3.2876

Suh, J. B. (2019). The effects of reducing opportunity and fraud risk factors on the occurrence of occupational fraud in financial institutions. *Crime and Justice*, *56*, 79-88. https://doi.org/doi.org/10.1016/j.ijlcj.2019.01.002

Teixeira, S. A., & Cunha, P. R. (2016, julho). Efeito moderador das deficiências do controle interno na relação entre seus determinantes e consequentes. In *16o Congresso USP de Controladoria e Contabilidade*, São Paulo, SP. https://congressousp.fipecafi.org/anais/16UspInternational/220.pdf

Zakaria, K. M., Nawawi, A., & Salin, A. S. A. P. (2016). Internal controls and fraud: empirical evidence from oil and gas company. *Journal of Financial Crime*, *23*(4), 1154-1168. https://doi.org/10.1108/JFC-04-2016-0021

Wooldridge, J. M. (2011). *Econometric analysis of cross section and panel data* (2nd ed.). The MIT Press.

FUNDING

The authors thank the Brazilian National Council for Scientific and Technological Development (Conselho Nacional de Desenvolvimento Científico e Tecnológico [CNPq]) and the Espírito Santo State Research and Innovation Support Foundation (Fundação de Amparo à Pesquisa e Inovação do Espírito Santo [FAPES]) for financial support in carrying out this research.

APPENDIX A

Operationalization of the Audit Quality proxies and control variables used in the study

Acronym	Description	E.S.	Operationalization	Prior research
Explained variables (Audit Quality proxies)				
JonesMod	Discretionary Accruals	NA	Discretionary Accruals estimated by the modified Jones model (Dechow et al., 1995).	Dechow et al. (1995)
Reapr	Financial Restatements	NA	Dummy variable that takes the value 1 when the company resubmitted the financial statement for quantitative reasons, 0 when not.	Li et al. (2018)
AuditDelay	Audit Delay	NA	Logarithm of the difference (in days) between the end date of the fiscal year and the date of issue of the auditor's report.	Bailey et al. (2018) Pizzini et al. (2015)
ASP	Administrative Sanctioning Procedure	NA	Dummy variable that takes value 1 when the company has been involved in a ASP, 0 when not.	Guerra et al. (2020)
Explanatory variables of interest (internal control weaknesses)				
QtdeDCI	Internal Control Weaknesses	(+)	Total ICDs reported in the i-th company, in year t.	Doyle et al. (2007) Foster & Shastri (2012) Lenard et al. (2016)
Explanatory control variables				
RemVar	Variable Compensation of the Executive Board	(–)	Natural logarithm of the total variable compensation paid to the board of directors.	Lenard et al. (2016)
BenPosEmpr	Post-Employment Benefit	(–)	Natural logarithm of post-employment benefits paid to the executive board.	Lenard et al. (2016)
NivEnd	Short-Term Indebtedness Level	(+)	Total liabilities divided by total assets.	Amoah et al. (2017) Marques et al. (2016)
HonAud	Audit Fee	(+)	Natural logarithm of total audit fees.	Amoah et al. (2017)
Tam	Size	(+)	Natural logarithm of total assets.	Amoah et al. (2017)
ROA	Return on Assets	(+)	Earnings before taxes on total assets.	Amoah et al. (2017)
MTB	Market-to-Book	(+)	Market value of stocks divided by Equity.	Amoah et al. (2017)
DECL	Decline Lifecycle Stage	(+/-)	Dummy variable that takes value 1 for the Decline stage according to the Dickinson model, 0 for the others.	Krishnan et al. (2020)
Big4	Big 4	(+)	Dummy variable that takes value 1 when the auditor is Deloitte, Ernest & Young, KPMG or PWC.	Amoah et al. (2017)
$NivGo_{vit}$	Corporate Governance Level	(+)	Dummy variable that takes the value 1 for the i-th corporate governance level, 0 for the others.	Brandão et al. (2021)
$SegEcon_{i}$	Economy Sector	(+/-)	Dummy variable that takes value 1 for the i-th sector, 0 for the others.	Amoah et al. (2017)
Ano_{it}	Control of Years	(+/-)	Dummy variable that takes value 1 for the i-th sector, 0 for the others.	Amoah et al. (2017)

E.S. = expected sign; NA = non applicable.
Source: *Prepared by the authors.*