Do Differences in CFO Audit Experience Matter to Financial Statement Quality? A Canadian Perspective

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ABSTRACT

The Canadian qualification process for professional accountants affords an opportunity to study the effects of audit experience/education on several performance metrics. We analyze and classify the audit experience and education of chief financial officers (CFOs) of Canadian companies for the period 2006 – 2021. We then test the associations between audit experience and CFO education and several performance metrics, including financial performance, operational performance, quality of ESG disclosures, earnings quality, strength of internal control, and financial statement reliability (i.e., the likelihood of restating annual financial statements). We find that revenue is higher when a company's CFO has an MBA degree than when a company's CFO does not have an MBA degree. However, both internal control effectiveness and financial statement reliability are higher when a company's CFO has audit experience than when a company's CFO does not have audit experience, especially when the CFO has an MBA.

Keywords: chief financial officer, CFO, MBA, CPA, corporate reporting.

1. INTRODUCTION

One of the key questions about corporate reporting relates to the roles and characteristics of senior managers who are responsible for financial management, financial performance and related financial reporting, maintaining internal control and other corporate activities such as reporting on environmental, social and governance (ESG) metrics. Of all the senior managers, the CFO plays the most significant role in overseeing financial reporting and ensuring that internal control over financial reporting is established and maintained in compliance with various business and regulatory requirements (Aier et al. 2005, Ge et al. 2011, Geiger and North 2006, Li et al. 2010, Mian 2001, Wang 2010). We examine whether certain characteristics of CFOs such as their experience and education, and in particular, audit experience, are differentially associated with performance metrics associated with corporate performance, financial management, internal control, financial reporting quality and ESG disclosures. Our study differs from previous studies of CFO background in that it focuses on the Canadian environment which differs in several important ways from the US professional and financial reporting structures which have been studied previously by Hoitash, Hoitash and Kurt (2016), Rhodes and Russomano (2020) and Bernard, Ge, Matsumoto and Toynbee (2023). Many CFOs may not have any accounting experience and even those who do may not have auditing experience. Until 2014, Canada had three major accounting bodies that issued different designations and led many of their members to CFO careers, but their educational and apprenticeship processes were quite different. For example, only one of the three major accounting bodies required audit experience during their qualification process. All Canadian Chartered Accountants who qualified before the merger of the Canadian

accounting bodies in 2014 had at least one year of audit experience. In the US, work experience requirements to qualify for a CPA license vary from state to state and may not require experience in public accounting, which includes auditing.

We analyze CFO biographies and classify the education credentials and experience of CFOs of Canadian public companies for the period 2006 – 2021. Based on previous research (Aier et al. 2005, Hoitash et al. 2016) we focus on CFOs with MBAs and/or CAs/CPAs. If a CFO has a MBA degree we code it as an indicator of a general management, finance or other background, whereas a CFO with accounting credentials requiring public practice experience or a record of actual work experience in an audit firm is an indicator audit experience. Of course, a CFO can have both of these or neither of them and we capture such backgrounds as well.[1] Next we gather data for seven key metrics used in previous research: 1) sales growth and 2) cash flows are measures of financial performance (Hoitash et al. 2016); 3) cost efficiency is a measure of operational efficiency in generating financial performance (Hoitash et al. 2016); 4) internal control effectiveness is a means for ensuring that an organization achieves its operational, compliance and financial reporting objectives.[2] 5) Accruals are a measure of earnings quality; 6) restatements are a joint measure of financial reporting and audit quality. Restatements (other than technical restatements such as those following mergers) provide direct evidence of both intentional misstatements and unintentional errors, the breakdown of internal control and low audit quality

[1] For example, CFOs without any accounting backgrounds, CFOs with US CPAs, CFOs with foreign accounting credentials.

[2] Internal control effectiveness is measured by an entity's compliance with an internal control framework such as COSO or other comparable frameworks. In the U.S.A. compliance with the financial reporting component of COSO is a reporting, certification and audit requirement for public companies. In Canada, it is a reporting and certification requirement. So reported internal control weaknesses (material by definition) reflect the information risks present in an organization's financial reporting system for which CEOs and CFOs are jointly responsible.

(e.g., Dechow et al. 2010, DeFond and Jiambalvo 1991, Kinney 2000, Kinney and McDaniel 1989); and finally, 7) environmental, social and governance (ESG) reporting is a relatively new reporting paradigm that extends corporate reporting beyond financial statements to broader value creation and risk areas for which both CEOs and CFOs are responsible. Then, we test the associations between CFOs' experience and education categories and relevant performance metrics.

In our tests, we find that companies whose CFOs have MBAs, regardless of their audit experience, have stronger sales growth performance than those with Canadian accounting training, which seems to detract from sales growth. Companies with CFOs with audit experience are more likely than those without such training to be associated with effective internal control. Also, CFOs with audit experience are less likely to be associated with the restatement of annual financial statements. However, having an MBA seems to overrule audit experience, as CFOs with both audit experience and an MBA have a significantly positive association with restatements. Finally, companies with MBA CFOs and Canadian trained accounting CFOs have significantly lower ESG scores compared to other CFOs. This finding suggest the need for further investigation of this result.

This study contributes to the literature in several ways. First it indicates that it is a CFO's audit experience rather than an accounting designation that is likely to improve financial reporting reliability. Secondly, it suggests that while appointing a CFO without audit experience may be advantageous in certain circumstances (Hoitash et al. 2016) such an appointment may come at the

cost of diminished financial reporting reliability that corporate boards, audit committees and recruiters should be aware of.

In the balance of this paper we discuss the background and motivation for this study, describe how we classified CFO experience and education, describe the method, sample and variables used in tests, present descriptive statistics and test results, and conclude.

2. MOTIVATION AND HYPOTHESES DEVELOPMENT

The CFO has primary responsibility for overseeing financial management, financial reporting and ensuring internal control over financial reporting is established and maintained (Aier, Comprix, Gunlock, and Lee 2005, Ge Matsumoto, and Zhang 2011, Collins, Masli, Reitenga, and Sanchez 2009, Geiger and North 2006, Li, Sun and Ettredge 2010, Mian 2001, Wang 2010). CFO financial expertise is associated with both the revelation and remediation of internal control weaknesses (Johnstone, Li and Rupley 2011, Krishnan 2005, and Li et al. 2010). Relative to CEOs, CFOs receive larger bonus reductions following reporting of internal control weaknesses (Hoitash, Hoitash and Johnstone, 2012), turn over at a greater rate following restatements due to irregularities3 (Hennes et al. 2008), and suffer greater turnover and within-firm demotions following non-fraudulent restatements (Burks 2010). However, CFOs are not uniform in background experience and education and questions about the importance of various backgrounds

[3] Identified by Hennes et al. (2008, 1489) as restatements containing the word "fraud" or "irregularity" or variants thereof, restatements related to SEC or Department of Justic investigations, and the presence or absence of "other investigations into the accounting matters (e.g., the Audit Committee hires a forensic accounting firm").

for CFOs are debated in the press[4] and considered by CEOs and boards at the time of CFO recruitment and appointment. In the past, a CFO "saw the business more through an accounting lens than through strategy and value-creation lenses" (Groysberg, Kelly, and MacDonald 2011), whereas now, "[n]early one-third of new CFOs … have spent a sizable portion of their career in investment banking, consulting, or private equity" (Agrawal, Goldie, and Huyett 2013). In many organizations a CFO plays a more strategic role, particularly in larger organizations with a separate chief accounting officer/controller and treasurer reporting to the CFO. Hoitash et al. (2016) provide an overview of literature documenting the shift away from CFOs with accounting backgrounds and find that the accounting background of CFOs may actually be detrimental to firm value for companies in high-growth industries. Nevertheless, financial expertise continues to be an important determinant of financial performance and CFO bonuses (Indjejikian and Matejka 2009) and research shows that CFO financial expertise is associated with a lower likelihood of restatement (Aier et al. 2005).

Definitions of financial expertise vary in prior research. Frequently, researchers restrict financial expertise to accounting expertise evidenced by accounting qualifications (i.e., Certified Public Accountants and Chartered Accountants), prior audit experience (work or partner experience at a Big 4/5/6/8 or national audit firm), or experience supervising accounting functions (i.e., prior experience as a chief financial officer, chief accounting officer, vice president of finance, controller, or treasurer). The definition of financial expertise is sometimes expanded (e.g.,

[4] E.g., "CFOs today: Is a bean-counting background optional?", J. Stoller, the Globe and Mail, March 23, 2015; "Is an accounting background important for today's CFOs?" D. McCann, CFO.com, May 18, 2016. Finance Chiefs Collect Strings of Acronyms to Bolster Credentials", A. Stuart, The Wall Street Journal/, June 6, 2016.

Keune and Johnstone 2011) to include those with finance expertise (i.e., bankers, investment bankers, Certified Financial Analysts, venture capitalists, and business school faculty).

Given the importance of the CFO's role with respect to reporting quality, the wide variation in measures of financial expertise, and the possible shift away from more traditional measures of accounting expertise (i.e., a CPA designation and audit experience), there have been several studies of the impact of types of financial expertise on financial reporting quality (Aier et al. 2005, Hoitash et al. 2016). However, those studies focused on U.S. CFOs. Ours is the first study to investigate the role of CFOs outside the U.S.A., addressing a business environment that is similar but not the same, namely Canada. Using CFOs of Canadian public companies can yield a better understanding of the impact of CFOs on various performance indicators and thereby assist CEOs and audit committees to make appropriate choices when recruiting and appointing CFOs, professional bodies and academic institutions to develop appropriate curricula for the CFOs of tomorrow, and auditors to refine their control risk assessments based on the characteristics of their clients' CFOs. Bernard et al. (2020) discuss the trade-offs between accounting expertise possessed by some CFO's and other capabilities such as those implied by an MBA or those implied by having audit experience. We predict that CFOs with audit experience will have higher performance associated with financial statement reliability and internal control effectiveness than CFOs with other capabilities. We predict that CFOs with other backgrounds, such as MBA, will be associated with stronger revenues and cash flows, but weaker financial statement reliability and internal control effectiveness.

H1 Revenue and cash flow are higher when a company's CFO has an MBA degree than when a company's CFO does not have an MBA degree.

H2 Internal control effectiveness is higher when a company's CFO has audit experience than when a company's CFO lacks audit experience.

H3 Financial statement reliability is higher when a company's CFO has audit experience than when a company's CFO does not have an accounting education or audit experience, where reliability is measured by Total Accruals and Restatements.

3. RESEARCH METHOD AND SAMPLE SELECTION

3.1 Sample Selection

First, we identify companies traded on the Toronto Stock Exchange (TSX). We use the Audit Analytics' Canada Audit Opinions database that tracks all auditor reports on financial statements of Canadian public companies disclosed since 2005. This database shows the Canadian exchange upon which the companies' shares are traded. Beginning with all 6,333 audit opinions of English annual financial statements in this database, we identify 423 issuers with shares traded on the TSX for at least one year of Audit Analytics' coverage. Then, as detailed in Table 1, we select and match information from Audit Analytics, BoardEx, and Eikon Refinitiv databases to construct our sample.

3.2 CFO and CEO Identification and Classification

We identify the CFOs of TSX companies using BoardEx. BoardEx assigns a unique BoardID to each company and a unique DirectorID to each individual covered. These IDs facilitate matching data between BoardEx databases. We obtain BoardEx's company identifiers (BoardID) for 413 of the 423 TSX issuers by manually matching by TSX issuer name the Audit Analytics Audit Opinions data to BoardEx's Company Profile database. Then, using the BoardIDs thus obtained, we search for the words "CFO" or "Chief Financial Accountant" in the "RoleName" field in BoardEx's Individual Profile Employment database. We identify CFOs covered by BoardEx for all but 23 of these TSX issuers. Using the list of the 981 CFOs that we identify for these TSX companies, we obtain employment and educational background information from BoardEx's Individual Profile Employment and Individual Profile Education databases, respectively.

We manually create indicator variables for the designations Canadian trained CFOs earned using BoardEx's Individual Profile Education database. While similar designations may be used in different countries, BoardEx data includes both the name of the designation and the name of the granting institution. In particular, we manually code for Canadian Chartered Accountant designations (CA), Certified Management Accountant designations (CMA) and Certified General Accountant designations (CGA). We also manually code for accounting designations earned outside of Canada (e.g., US CPA). When a CFO has more than one accounting designation, we code only the designation awarded first based on the "Award" date where available in BoardEx. When an award date for the designation is not available, we refer to other BoardEx information

when making the determination (e.g., the CFO's age). We automatically code for whether the CFO has an MBA based on BoardEx's "MBA" code.

Using the list of companies and their CFOs created using the BoardEx data, we expand the data to form CFO company-year panel data so that the data may be merged with financial control data and CFO tenure at a company may be easily computed. We use the "DateRoleStart" and "DateRoleEnd" fields of the employment records of CFOs to construct a dataset comprised of the company year, CFO name, and DirectorID for all CFOs flagged by BoardEx for the TSX companies in the sample. Following Bernard, Ge, Matsumoto, and Toynbee (2021), we eliminate CFOs who are serving on an interim basis or subordinate to other executives in the finance function. We then merge this dataset by company-year with the audit opinions on audited financial statements of TSX companies. The result of this expansion is a sample comprised of 5,044 company-year records with both CFO data (CFO names and DirectorIDs) and data from the Audit Opinions database (i.e., auditor firm, audit-related fees, NAISC industry code, the fiscal year of the audit opinion, and the stock Ticker symbols).

Once the CFO panel data is complete, we use other data from Audit Analytics (retrieved using Audit Analytics' Issuer Number and the fiscal year of the Audit Opinion) and Eikon Refivitiv to construct the other variables to complete the dataset. We obtain whether the financial statements were subsequently restated from Audit Analytics Canada Financial Restatements database (coverage since 2006), whether management reported ineffective internal controls over financial reporting from Audit Analytics Control database (coverage since 2015), and ESG and financial data from Eikon Refinitiv. The sample size was reduced by 1,068 observations when observations

for years before 2006 and after 2021 were dropped from the sample because of Audit Analytics' limited coverage of Audit Opinions and Financial Restatements in databases prior to 2006 and because BoardEx data was only available to us up to December 2021.

ESG and financial data required to construct other variables in the study were obtained from the Eikon Refinitiv database using stock ticker symbols. Company-years lacking total asset data in Eikon Refinitiv are dropped from the sample (521 observations). These selection criteria resulted in a sample of 3,455 company-years which includes 711 individual CFOs. We then repeated the procedures described above for the identification of CFOs to identify the CEOs for these 3,455 company-years. When our BoardEx searches failed to identify a CEO or provide their educational or employment backgrounds, we searched for this data using public filings available in SEDAR (i.e., Annual Information Forms and CEO certifications), LinkedIn and Google. Our searches identified 974 individual CEOs for the 3,455 company-years with CFO data. Dropping the 1,027 company-years lacking ESG data from Refinitiv results in a final sample of 2,228 company-years for our tests. This final sample includes data for 522 CFOs and 677 CEOs.

We summarize our sample selection procedures in Table 1. The Appendix provides variable definitions and data sources.

3.3 Tests of hypotheses

As hypothesized, we predict that CFOs' education, professional designation and experience are associated both positively and negatively with key performance indicators listed in Table 2. Table 2 has three panels showing three periods of time: 2006-2021, 2006-2014 and 2015-

2021. We split the 2006-2021 period at 2014 because that is the year of the merger of the CA, CGA and CMA professional accounting bodies to create a new body and designation of Chartered Professional Accountant (CPA).

As discussed previously, our dependent variables are seven performance measures: revenue (*SalesGrowth*), cash flow (*CashFlow*), cost efficiency (*CostEfficiency*), internal control effectiveness (*ICWeak*), accrual quality (*Accruals*), annual restatements (*Restatements*), and sustainability disclosure quality (*ESG*). Our primary independent variables are characteristics of CFOs: CFOs with audit experience (*AuditExp*), that is CFOs granted a Chartered Accountant (CA) designation in Canada as the qualification for this requires at least one year of audit experience; CFOs with a Canadian CA, CMA or CGA designation (*CDNTrained*); CFOs with an MBA (*MBA*); CFOs with a Canadian CA designation and an MBA (*AuditExpwithMBA*); and CFOs with a Canadian CA designation without an MBA (*AuditExpwithoutMBA*)[5].

We also include several variables reflecting characteristics of the CFO's employer as control variables: the number of years the CFO has served in this position (*CFOTenure*), whether the CEO has an MBA (*CEOhasMBA*), whether the company is audited by a Big 4 firm (*Big4*), whether the financial statements of a previous year have been restated, Audit Fees (*AuditFees* - ln of Audit Fees used in tests) Market Capital M (*MarketCap* – lnMktCap used in tests), profitability (*ROA*). firm leverage (*Leverage*), potential for growth (*BM*), whether the company is undergoing

[5] While we coded for other accounting designations we do not focus on these as results as few of these were significant in our tests (not reported in tables). For example, there were no significant results when we reran our tests for the 2006-2021 time period and included US CPAs (six percent of the CFOs in the sample), CGAs (less than two percent) and CFOs lacking an accounting designation (19 percent of the CFOs). The only significant result ($p<.05$) that we observed in our tests for other CFOs education was for the four percent of CFOs who are CMAs that were associated with a reduction in the likelihood of internal control weakness reporting.

and merge, acquisition or restructuring (*OrgChange*), whether the CEO is also the Board Chair (*CEODuality*), and industry (*Mining, Finance. Manufacturing, and OtherIndustry*). These control variables have been shown to represent various performance incentives. For example, companies with Market Capital high and high ROA may experience higher sales growth and cash flow. Companies undergoing organizational change may exhibit weak financial performance, may not adequately resource their accounting and control functions and may be associated with greater likelihood of internal control deficiencies (Dechow et al. 2010) and accounting irregularities such as excessive accruals and restatements than companies operating in a steady state. Firm leverage (*Leverage*) and low growth (*BM*), may increase the likelihood of excessive accruals and restatements, whereas stronger corporate governance (*CEODuality*) and higher quality audits (Big 4) are expected to mitigate the risks of misstatements. Higher audit fees (*AuditFees*) may reflect more intense audits due to internal control deficiencies or accounting irregularities but may correct those issues and reduce the likelihood of them being observed.

We used linear regressions to test the associations between CFO backgrounds and five continuous measures (sales growth, cash flow, cost efficiency, accruals and ESG scores) and logit regressions to test associations between CFO backgrounds and two dichotomous measures (restatement and ineffective controls). Because of the number of observations dropped when running these tests with commonly used industry and year fixed effects, these fixed effects were not used. Instead, tests were partitioned by two time periods (2006 – 2014; 2015-2021) and additional regressions run with industry fixed effects added for the largest three industries (Mining, Finance and Manufacturing) based on two-digit NAISC codes. Standard errors were clustered two-ways, by company and year for all tests.

4. ANALYSIS AND RESULTS

4.1 Descriptive Statistics

Table 2 presents descriptive statistics of the dependent, independent test variables and control variables for the sample and for subsamples in the 2006-2014 and 2015 – 2021 time periods. Overall, Table 2 shows that the distributions of the variables are similar in the two time periods. Approximately seventy percent of the CFOs were trained in Canada as either Chartered Accountants, Certified Management Accountants, or Certified General Accountants. Over 90% of these Canadian trained accountants (*CNDTrained*) qualified as Chartered Accountants (*AuditExp* – 64% of the sample) and acquired audit experience during the qualification process. The less than 10% of these CFOs known to have audit experience (*AuditExp*) also have an MBA (*AuditExpwithMBA*) and comprise 7% of the sample. In contrast, approximately one-fifth of all CFOs in the sample have an MBA (*MBA*). This proportion is similar to the one-quarter of CEOs that have an MBA (*CEOhasMBA*). The average tenure of CFOs (*CFOTenure*) in the sample is over four years which is longer than the average tenure of CEOs (2.3 years – not reported in table).

4.2 Correlations

Tables 3, the correlation table, highlights the correlations between variables within the dependent variables group, the correlations between variables within the independent variables group and between the dependent and independent variables. For the KPIs, these data show that sales growth is positively associated with internal control weaknesses and negatively associated

with accruals and cost efficiency, cash flow is positively associated with cost efficiency, accruals and ESG disclosure quality and negatively associated with restatement, internal control weaknesses are positively associated with sales growth, and accruals are negatively associated with ESG disclosure quality.

For the correlations between CFO education and experience and KPIs, the data show that sales growth is positively associated with CFOs having an MBA (with and without audit experience (*AuditExp*); cash flow is positively associated with CDN training; internal control weaknesses are negatively associated with CFOs with Canadian accounting training (*CDNTrained*).

Overall, these correlations suggest that CFOs' varied education and experience are associated with varied corporate performance as reflected by the seven KPIs studied in this paper.

4.3 Test results

Tables 4-9 present the regression results used in the multiple tests of hypotheses for each of the dependent variables. The results of the tests of cost efficiency are not presented in the Tables as the associations between cost efficiency and the independent and all control variables in regressions are not significant (p>.1).

Table 4 (Sales Growth) shows that higher sales growth is associated with the CFO having an MBA. Thus, H1 is supported. Further, Canadian accounting qualifications and audit experience are negatively associated with sales growth (p<.05), a result consistent with Hoitash et al. (2016), unless the CFO also has an MBA. (p<.1). These results are the same when industry fixed effects

are included in the regressions and directionally consistent for the 2006-2014 and 2015-2021 time periods, although the level of significance does not always reach conventional levels (not reported in Tables).

Table 5 (Cash Flow) shows that the positive association between CFO education and audit experience is not significant ($p<.05$). The results are the same when industry fixed effects are included (not reported in tables). Thus, H1 is not supported. Table 5 also shows that cash flow is positively associated with CFO tenure and negatively associated with the CEO having an MBA ($p<.05$). In additional analysis (not reported in the tables) we find that the associations between cash flow and CFO tenure and the CEO having MBA are observed for the 2015-2021 time period, but not for the earlier 2006-2014 period ($p<.05$).

Table 6 (Accruals) shows that the audit experience and education of CFOs are not associated with total accruals ($p>.1$). We also find insignificant associations between accruals and CFO experience and education when fixed industry effects are included and in additional tests in the 2006-2014 and the 2015-2021 time periods (not reported in the tables). These test results do not support for H3.

Table 7 reports the results of our test of the associations between internal control effectiveness and CFO audit experience and education. This test is limited to the 2015-2021 time period as Audit Analytics' Canadian Control Database coverage begins in 2015. Table 7 shows that CFOs with Canadian training and those with audit experience are associated with fewer internal control weaknesses, that is, more effective internal control systems ($p<.01$). However, MBA credentials appear to mitigate this effect reducing it to an insignificant level ($p>.1$). These

results are the same when industry fixed effects are included except the significance of the association between internal control effectiveness and CFOs with audit experience and an MBA is reduced ($p<.05$) (not reported in tables). Thus, H2 is partially supported.

Table 8 reports the results of our test of the associations between restatements and CFO audit experience and education. Table 8 shows that CFOs with audit experience but without an MBA are associated with fewer restatements, that is, more reliable financial statements. In contrast, CFOs with both audit experience and an MBA are associated with more restatements ($p<.05$). These results are the same when industry fixed effects are included except that the significance of the association between internal control effectiveness and CFOs with both audit experience and an MBA is reduced ($p=.102$) (not reported in tables). Most of the 41 restated company-years are in the 2006-2014 time period. Results for the 2006-2014 period are directionally consistent with the results reported in Table 8 although significance does not reach conventional levels for the test of *AuditExpwithMBA* ($p>.1$). Nine of the 41 restated company-years are in the 2015-2021 time period. Two of these nine restated company-years had CFOs with audit experience but without an MBA while none of the nine company-years had CFOs with both audit experience and an MBA.

Finally, Table 9 shows that CFOs with MBAs and Canadian trained CFOs are associated with lower quality ESG disclosures ($p<.1$). This result is similar when industry fixed effects are included in the regressions (not in the tables).

Overall, these results suggest that CFOs with Canadian accounting credentials and audit experience are associated with more effective internal control systems and more reliable financial

statements. However, they are not necessarily associated with higher sales growth or cash flow or higher quality ESG disclosures.

5. CONCLUSION

In this study we demonstrate that revenue is higher when a company's CFO has an MBA degree than when a company's CFO does not have an MBA degree. However, internal control effectiveness and financial statement reliability are higher when a company's CFO has audit experience than when a company's CFO lacks audit experience. It is noteworthy, however, that the MBA credential appears to override the audit experience, resulting in less reliable financial statements (when reliability is measured by restatements) when a company's CFO has both audit experience and an MBA, than when the CFO has audit experience but no MBA. Contrary to prior research (Aier et al. 2005) we do not find that accounting education alone or an MBA reduces the likelihood of restatement.

This study is subject to several limitations. One limitation of this study is that the choice of an accountant with a certain type of experience is endogenous. An extension of this study would be to control for endogeneity through propensity score matching or other techniques. Another possible limitation is the risk that variables omitted from multivariate analyses are biasing test results. Although in our logistic regressions we tried to incorporate control variables shown to be significant in similar tests by prior research, omitted management/auditor incentive variables may affect the findings. Prior research shows that other influences apart from CFO expertise are associated with financial reporting quality (Dechow et al. 2010). For example, when bonus and

equity incentives constitute a large portion of CFO compensation, CFOs may engage in opportunistic behavior. Feng et al. (2011) find that CFOs succumb to CEOs in material accounting manipulations, suggesting the association of CFO incentives and intentional misstatements may mimic that of CEOs. However, such succumbing need not lead to intentional misstatement if the CEO is not motivated to misreport. Accordingly, future research can extend this study by including additional CEO characteristics.

Keeping the abovementioned limitations in mind, we believe that our study contributes to the literature in several ways. First, it indicates that it is a CFO's audit experience in addition to an accounting designation that is likely to improve financial reporting. Secondly, it suggests that while appointing a CFO without audit experience may be advantageous in certain circumstances (Hoitash et al. 2016) to increase reported sales growth, such an appointment may come at the cost of weaker internal control and diminished reporting quality that corporate boards, audit committees and recruiters should be aware of. Third, it implies that certain combinations of credentials can have unexpected results. For example, an MBA can override the accounting training and audit experience of a CFO, affecting the company's KPIs in a potentially undesirable way. If reported sales growth and cash flows are not accurate reflections of actual business performance, then their higher values may be illusory. Unfortunately, restatements often occur sometime after optimistic sales growth numbers are reported so it is difficult to use them concurrently with the reported sales growth numbers to adjust those numbers. Fourth, it raises questions for CFO recruiters, CEOs and audit committees to consider regarding how to balance the impact of different credentials on desired corporate outcomes. Fifth, it raises questions about training of future CFOs, especially about the role of audit experience in promoting strong internal control and reliable financial reporting. It also raises questions about the nature of MBA training and the attributes of MBA graduates, that suggest the need for an investigation of MBA curricula. At the same time, our finding that accounting credentials of CFOs are

associated with lower quality ESG disclosures call for measures to address this result through education and other measures, since ESG reporting is becoming an important factor in corporate performance.

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Appendix – Variable Definitions and Sources

Variable Name	Definition (Source)
Dependent variables	
SalesGrowth	Ratio of annual change in sales to lagged sales [Eikon Refinitiv TRFTotRevenue].
CashFlow	Ratio of cash flow from operating activities to total assets [Eikon Refinitiv TRFNetCashFlowOp / TRFTotAssets].
Accruals	The absolute value of total accruals, scaled by total assets, over the three years prior to the fiscal year. If three years of data are not available, we use the prior one or two years [Eikon Refinitiv abs(TRFOpProfBefNonRecurIncExpn - TRFNetCashFlowOp) / TRFTotAssets].
ICWeak	Indicator variable equal to one if management reports internal controls over financial reporting are ineffective, and zero otherwise. [AuditAnalytics].
Restatement	Indicator variable equal to one if the audited annual financial statement has been restated, and zero otherwise [AuditAnalytics].
CostEfficiency	Difference between the annual change in total cost and annual change in sales, scaled by total assets. Multiplied by -1 for ease of interpretation [Eikon Refinitiv (Δ TRFOpExpnTot – Δ TRFTotRevenue) TRFTotAssets) * -1]
Environment	A score between 1 and 12 based on an overall Enviroment ESG score of - D to A+ where equal to one if the Environment ESG score is D- and 12 if it is A+ [Eikon Refinitiv TREnvironmentPillarScoreGrade].
ESG	The total of scores for the Environment, Social and Governance Pillars [Eikon Refinitiv TREnvironmentPillarScoreGrade, TRSocialPillarScore, TRGovernancePillarScoreGrade].
Main test variables	
AuditExp	Indicator variable equal to one if the CFO is a Canadian Chartered Accountant [BoardEx].

CDNTrained	An indicator variable equal to one if the CFO is a Canadian Chartered Accountant, a Canadian Certified Management accountant or a Canadian Certified General Accountant, and zero otherwise [BoardEx].
MBA	Indicator variable equal to one if the CFO has an MBA degree, and zero otherwise [BoardEx].
CAwithMBA	Indicator variable equal to one if the CFO is a Canadian Chartered Accountant (CA) and has an MBA degree, and zero otherwise [BoardEx].
CAwithoutMBA	Indicator variable equal to one if the CFO is a Canadian Chartered Accountant without an MBA degree, and zero otherwise [BoardEx].
Control variables	
CFOTenure	The number of years that the CFO has been appointed as the CFO of the company [BoardEx].
CEOhasMBA	Indictor variable equal to one if the CEO has an MBA, zero otherwise [BoardEx].
Big4	An indicator variable equal to one if the company is audited by one of the Big 4 auditing firms [Audit Analytics].
PrevRestate	An indicator variable equal to one if the company has restated an audited annual financial statement in a previous year, and zero otherwise [Audit Analytics].
lnAuditFees	The natural logarithm of the Audit Fees [Audit Analytics].
lnMktCap	The natural logarithm of the market capitalization [Eikon Refinitiv TRCompanyMarketCapitalization].
ROA	Return on assets [Eikon Refinitiv TRFOpProfBefNonRecurIncExpn/TRFTotAssets].
Leverage	Leverage, where values greater than 1 are winsorized to 1 [Eikon Refinitiv TRFTotLiab / TRFTotAssets].
BM	Book-to-market [TRFComEqTot / TRCompanyMarketCapitalization]
OrgChange	An indicator variable if restructuring or merger/acquisition costs were incurred during the year [Eikon Refinitiv TRRestrChrg TRFCostsAssocWithIPOsMergers].

CEODuality	An indicator variable equal to 1 if the CEO is also the Chair of the Board and zero otherwise [Eikon Refinitiv TRAnalyticCEOChairmanSeparation].
Industry	Indicator variables equal to one based on the North American Industry Classification System (NAICS) for each of the three largest industrial sections in the sample (Mining sector 21; Finance sector 52; Manufacturing sectors 31 -33), and equal to one for OtherIndustry otherwise.

TABLE 1 Sample Selection

Sample Criteria	Number of TSX issuers	Number of Company-years
Auditor opinions on annual financial statements (English) for the period 1996 - 2022 for 423 public companies traded on the Toronto Stock Exchange (TSX) that are included in Audit Analytics Canada (SEDAR) Audit Opinions Database	423	6,333
Less: Observations not covered in BoardEx's Company Profile Details database.[b]	(10)	(117)
Less: Observations without records of CFO appointments in BoardEx's Individual Profile Employment database.	(21)	(945)
Less: Observations without records in the Individual Profile Education database.	(2)	(227)
Number of Issuers with matching BoardEx CFO data	390	5,044
Less: less observations before 2006 and after 2021 [a, b]		(1,068)
Less: Observations without Total Assets in the Eikon Refinitiv database		(521)
Company-years with CFO data (711 CFOs) and financial control data		3,255
Less: Observations without ESG variables in the Eikon Refinitiv database		(1,027)
Sample for analysis [c]		2,228

a. The Audit Analytics Canada (SEDAR) Audit Opinion database includes all auditor reports on financial statements of Canadian public companies since 2005 and only a more limited number of reports for the 1996 - 2005 time period.

b. The BoardEx data used was last accessed November, 2021.

c. The sample includes observations for 522 CFOs and 677 CEOs. The number of company-years used in tests will vary depending upon availability of the financial control variable data.

Table 2 Descriptive Statistics of the Dependent and Independent Variables for two time periods (2006 - 2014 and 2015 - 2021)

	Fiscal Years 2006 - 2021					Fiscal Years 2006 - 2014					Fiscal Years 2015 - 2021				
	N	M	sd	Min	Max	N	M	sd	Min	Max	N	M	sd	Min	Max
Dependent Variables															
SalesGrowth	2223	0.02	0.18	-3.75	1.19	836	0.04	0.15	-1.31	1.19	1387	0.02	0.19	-3.75	0.81
CashFlow	2422	0.08	0.08	-0.52	0.70	943	0.08	0.08	-0.49	0.37	1479	0.07	0.08	-0.52	0.70
Accruals	2272	0.04	0.05	0.00	0.75	842	0.05	0.06	0.00	0.75	1430	0.04	0.04	0.00	0.27
ICWeak	1528	0.02	0.14	0.00	1.00	157	0.01	0.08	0.00	1.00	1371	0.02	0.14	0.00	1.00
Restatement	2428	0.02	0.13	0.00	1.00	948	0.03	0.18	0.00	1.00	1480	0.01	0.08	0.00	1.00
CostEfficiency	2221	0.01	0.27	-1.22	12.27	836	0.01	0.09	-1.22	1.09	1385	0.01	0.34	-0.33	12.27
Environment	2428	3.99	3.08	1.00	12.00	948	3.53	3.02	1.00	12.00	1480	4.29	3.08	1.00	12.00
ESG	2428	14.27	6.25	2.02	31.30	948	13.09	6.22	2.02	31.30	1480	15.03	6.16	2.11	30.34
Independent Variables															
AuditExp (all CAs)	2428	0.64	0.48	0	1	948	0.64	0.48	0	1	1480	0.63	0.48	0	1
CDNTrained	2428	0.69	0.46	0	1	948	0.70	0.46	0	1	1480	0.69	0.46	0	1
MBA	2428	0.20	0.40	0	1	948	0.19	0.39	0	1	1480	0.21	0.40	0	1
AuditExpwith MBA	2428	0.07	0.25	0	1	948	0.09	0.28	0	1	1480	0.06	0.23	0	1
AuditExpwithout MBA	2428	0.57	0.50	0	1	948	0.56	0.50	0	1	1480	0.57	0.49	0	1
Control Variables															
CFOTenure	2428	4.85	3.52	1	21	948	4.17	2.84	1	14	1480	5.29	3.84	1	21
CEOhasMBA	2428	0.25	0.43	0	1	948	0.24	0.42	0	1	1480	0.26	0.44	0	1
Big4	2428	0.98	0.15	0	1	948	0.97	0.16	0	1	1480	0.98	0.15	0	1
PrevRestate	2428	0.01	0.08	0	1	948	0.01	0.10	0	1	1480	0.00	0.06	0	1
AuditFees M[a]	2423	2.66	4.93	0	41.00	947	2.68	4.63	0	26.46	1476	2.65	5.11	0	41.00
Market Capital M[a]	2335	7002.37	13669.90	0	149154.50	913	6699.97	12076.10	5	115725.20	1422	7196.53	14602.63	0	149154.50
ROA	2423	0.05	0.10	-2	1	943	0.06	0.10	-1	1	1480	0.04	0.10	-2	1
Leverage	2428	0.53	0.23	0	1	948	0.53	0.23	0	1	1480	0.53	0.24	0	1
BM	2332	25.23	750.62	-282	30891.02	912	0.74	1.40	-21	15.52	1420	40.96	961.73	-282	30891.02
OrgChange	2428	0.29	0.45	0	1	948	0.22	0.41	0	1	1480	0.33	0.47	0	1
CEODuality	2428	0.35	0.48	0	1	948	0.34	0.47	0	1	1480	0.35	0.48	0	1
Mining	2428	0.32	0.47	0	1	948	0.33	0.47	0	1	1480	0.31	0.46	0	1
Finance	2428	0.15	0.36	0	1	948	0.14	0.35	0	1	1480	0.15	0.36	0	1
Manufacturing	2428	0.13	0.34	0	1	948	0.13	0.34	0	1	1480	0.13	0.34	0	1
OtherIndustry	2428	0.41	0.49	0	1	948	0.40	0.49	0	1	1480	0.41	0.49	0	1

a the natural logarithim is used in tests

TABLE 3 Pearson Correlations for Company-Years 2006-2021

	SalesGrowth	CashFlow	CostEfficient	Accruals	ICWeak	Restatement	ESGComp	AuditExp	CDNTrained	MBA	AuditExpwMBA	AuditExpwMB
SalesGrowth	1											
CashFlow	0.0868*	1										
CostEfficient	-0.3034*	0.2151*	1									
Accruals	-0.0866*	0.0927*	0.0348	1								
ICWeak	0.0894*	-0.0313	0.0570*	-0.0271	1							
Restatement	-0.0069	-0.0463*	-0.0079	-0.0162	-0.0124	1						
ESGComp	-0.0329	0.0580*	-0.0282	-0.1159*	-0.0500	0.0110	1					
AuditExp	-0.0145	0.0235	0.0199	0.0310	-0.0558*	-0.0736*	-0.0996*	1				
CDNTrained	-0.0045	0.0560*	0.0194	0.0333	-0.0765*	-0.0370	-0.1483*	0.8827*	1			
MBA	0.0428*	-0.0313	-0.0099	-0.0298	0.0399	0.0062	-0.0071	-0.3050*	-0.3023*	1		
AuditExpwithMBA	0.0461*	-0.0137	-0.0011	0.0244	-0.0138	0.0402*	-0.0323	0.2056*	0.1815*	0.5426*	1	
AuditExpwithoutMBA	-0.0377	0.0298	0.0199	0.0177	-0.0478	-0.0920*	-0.0802*	0.8661*	0.7645*	-0.5733*	-0.3111*	1
CFOTenure	0.0044	0.0859*	0.0069	0.0105	-0.0226	-0.0498*	0.0473*	0.1102*	0.0953*	-0.0720*	0.0037	0.1051*
CEOhasMBA	-0.0131	-0.0423*	-0.016	-0.0828*	0.0196	-0.0098	0.0288	-0.0970*	-0.0949*	0.1356*	0.1158*	-0.1533*
Big4	-0.0739*	0.0461*	-0.0055	0.0185	-0.1049*	-0.0214	0.0562*	-0.0735*	-0.0578*	-0.023	-0.0534*	-0.0441*
PrevRestate	-0.0086	-0.0036	-0.0059	-0.0081	-0.0094	0.5200*	0.0315	-0.0605*	-0.0498*	-0.04	-0.0214	-0.0478*
lnAuditFees	0.0001	-0.0575*	-0.0266	-0.2448*	0.0798*	0.0889*	0.4579*	-0.2084*	-0.2208*	0.1299*	0.0151	-0.2100*
lnMktCap	0.1416*	0.1716*	-0.0786*	-0.3075*	0.0003	0.022	0.3883*	-0.1009*	-0.0842*	0.0623*	-0.0083	-0.0938*
ROA	0.4781*	0.6123*	-0.2112*	-0.0668*	0.0231	-0.0161	0.0660*	0.0575*	0.0688*	-0.03	-0.0036	0.0577*
Leverage	-0.0241	-0.0904*	0.0339	-0.2200*	0.0597*	0.0567*	0.1693*	-0.0833*	-0.0879*	0.0950*	0.0265	-0.0945*
BM	-0.0012	-0.1911*	-0.0214	0.1058*	-0.0051	-0.0044	-0.0097	-0.0433*	-0.0490*	0.0218	-0.0089	-0.0375
OrgChange	-0.0337	-0.0527*	-0.0213	-0.0241	0.0378	0.0222	0.1208*	-0.1480*	-0.1740*	0.0027	-0.0549*	-0.1157*
CEODuality	-0.0162	0.0481*	0.0275	0.0285	0.0346	0.0388	-0.0835*	0.0226	0.0407*	0.0002	0.0242	0.0096

	CFOTenure	CEOhasMBA	Big4	PrevRestate	lnAuditFees	lnMktCap	ROA	Leverage	BM	OrgChange	CEODuality
CFOTenure	1										
CEOhasMBA	-0.0692*	1									
Big4	0.0095	0.0411*	1								
PrevRestate	-0.0071	0.0148	0.0123	1							
lnAuditFees	-0.0714*	0.1657*	0.0761*	0.0560*	1						
lnMktCap	0.0136	0.0923*	0.0726*	0.0112	0.5968*	1					
ROA	0.0567*	0.0154	0.0057	-0.0064	0.0367	0.3016*	1				
Leverage	-0.1231*	0.0904*	-0.0303	0.0247	0.4555*	0.2330*	-0.0215	1			
BM	-0.0078	-0.0191	0.0052	-0.0026	-0.0339	-0.2661*	-0.2079*	-0.0639*	1		
OrgChange	-0.0754*	0.0796*	0.0522*	-0.0155	0.2687*	0.0710*	-0.0556*	0.1924*	-0.0212	1	
CEODuality	-0.0588*	0.0494*	0.0403*	0.0199	0.0218	-0.0123	0.0381	-0.0285	0.0450*	0.0717*	1

TABLE 4 Associations Between Sales Growth and CFO Audit Experience and Education - Company-Years 2006 – 2021

	SalesGrowth	SalesGrowth	SalesGrowth	SalesGrowth	SalesGrowth
AuditExp	-0.018				
	(2.27)**				
CDNTrained		-0.016			
		(2.04)**			
MBA			0.028		
			(3.28)***		
AuditExpwithMBA				0.034	
				(1.74)*	
AuditExpwithoutMBA					-0.026
					(3.57)***
CFOTenure	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.82)	(0.91)	(0.91)	(1.14)	(0.74)
CEOhasMBA	-0.005	-0.004	-0.006	-0.006	-0.007
	(0.70)	(0.66)	(0.96)	(0.76)	(1.04)
Big4	-0.090	-0.089	-0.084	-0.083	-0.088
	(2.16)**	(2.14)**	(2.06)**	(2.11)**	(2.18)**
lnAuditFees	-0.007	-0.007	-0.007	-0.006	-0.008
	(1.13)	(1.14)	(1.10)	(0.95)	(1.25)
lnMktCap	0.006	0.006	0.006	0.006	0.006
	(1.19)	(1.23)	(1.24)	(1.25)	(1.23)
ROA	0.903	0.904	0.904	0.900	0.905
	(4.46)***	(4.45)***	(4.47)***	(4.42)***	(4.49)***
Leverage	0.020	0.020	0.017	0.018	0.020
	(0.72)	(0.73)	(0.63)	(0.67)	(0.74)
BM	0.000	0.000	0.000	0.000	0.000
	(4.78)***	(4.81)***	(4.87)***	(4.86)***	(4.82)***
OrgChange	0.009	0.009	0.012	0.012	0.009
	(0.79)	(0.77)	(1.03)	(1.02)	(0.82)
CEO_Duality	-0.013	-0.013	-0.014	-0.014	-0.013
	(1.74)*	(1.74)*	(1.83)*	(1.87)*	(1.71)*
_cons	0.042	0.039	0.016	0.003	0.052
	(0.50)	(0.46)	(0.20)	(0.03)	(0.64)
N	2139	2139	2139	2139	2139
Number of Company Clusters	265	265	265	265	265
Number of Year Clusters	16	16	16	16	16
adj. R-sq	0.25	0.25	0.25	0.25	0.25

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

Table 5 Associations Between Cash Flow and CFO Audit Experience and Education Company-years 2006 – 2021

	CashFlow	CashFlow	CashFlow	CashFlow	CashFlow
AuditExp	-0.007				
	(1.71)*				
CDNTrained		-0.003			
		(0.77)			
MBA			0.004		
			(0.76)		
AuditExpwithMBA				-0.001	
				(0.12)	
AuditExpwithoutMBA					-0.006
					(1.33)
CFOTenure	0.001	0.001	0.001	0.001	0.001
	(2.47)**	(2.34)**	(2.33)**	(2.21)**	(2.48)**
CEOhasMBA	-0.010	-0.009	-0.009	-0.009	-0.010
	(2.13)**	(2.03)**	(2.14)**	(2.02)**	(2.29)**
Big4	0.022	0.023	0.024	0.023	0.023
	(1.18)	(1.22)	(1.27)	(1.22)	(1.24)
lnAuditFees	-0.006	-0.006	-0.006	-0.006	-0.006
	(2.07)**	(2.00)**	(1.96)**	(1.90)*	(2.06)**
lnMktCap	0.002	0.002	0.002	0.002	0.002
	(0.77)	(0.79)	(0.78)	(0.77)	(0.79)
ROA	0.469	0.468	0.468	0.467	0.469
	(3.77)***	(3.76)***	(3.76)***	(3.76)***	(3.76)***
Leverage	-0.018	-0.018	-0.019	-0.019	-0.018
	(1.21)	(1.23)	(1.25)	(1.23)	(1.22)
BM	0.000	0.000	0.000	0.000	0.000
	(2.04)**	(2.01)**	(1.98)**	(1.96)**	(2.02)**
OrgChange	0.001	0.001	0.002	0.002	0.002
	(0.31)	(0.37)	(0.48)	(0.43)	(0.38)
CEO_Duality	0.005	0.005	0.005	0.005	0.005
	(0.89)	(0.86)	(0.82)	(0.82)	(0.86)
_cons	0.085	0.077	0.072	0.072	0.082
	(1.82)*	(1.65)*	(1.59)	(1.56)	(1.80)*
N	2316	2316	2316	2316	2316
Number of Company Clusters					
Number of Year Clusters					
adj. R-sq	0.39	0.39	0.39	0.39	0.39

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

Table 6 Associations Between Accruals and CFO Audit Experience and Education for Company-Years 2006–2021

	Accruals	Accruals	Accruals	Accruals	Accruals
AuditExp	-0.001				
	(0.26)				
CDNTrained		-0.001			
		(0.22)			
MBA			0.002		
			(0.44)		
AuditExpwithMBA				0.006	
				(0.88)	
AuditExpwithoutMBA					-0.002
					(0.71)
CFOTenure	0.000	0.000	0.000	0.000	0.000
	(0.18)	(0.19)	(0.18)	(0.23)	(0.14)
CEOhasMBA	-0.006	-0.006	-0.006	-0.006	-0.006
	(1.48)	(1.47)	(1.53)	(1.60)	(1.58)
Big4	0.010	0.010	0.010	0.011	0.010
	(1.54)	(1.55)	(1.60)	(1.61)	(1.56)
lnAuditFees	-0.002	-0.002	-0.002	-0.001	-0.002
	(0.78)	(0.78)	(0.77)	(0.77)	(0.83)
lnMktCap	-0.007	-0.007	-0.007	-0.007	-0.007
	(4.15)***	(4.14)***	(4.13)***	(4.08)***	(4.13)***
ROA	0.008	0.008	0.008	0.007	0.008
	-0.31	-0.31	-0.31	-0.3	-0.33
Leverage	-0.031	-0.031	-0.032	-0.031	-0.031
	(3.25)***	(3.25)***	(3.28)***	(3.29)***	(3.25)***
BM	0.000	0.000	0.000	0.000	0.000
	(1.86)*	(1.89)*	(1.93)*	(1.96)*	(1.86)*
OrgChange	0.004	0.004	0.004	0.004	0.004
	(0.92)	(0.91)	(0.97)	(1.01)	(0.91)
CEO_Duality	0.001	0.001	0.001	0.001	0.001
	(0.22)	(0.22)	(0.21)	(0.19)	(0.23)
_cons	0.233	0.233	0.232	0.230	0.236
	(7.57)***	(7.52)***	(7.56)***	(7.43)***	(7.76)***
N	2,178	2,178	2,178	2,178	2,178
Number of Company Clusters	262	262	262	262	262
Number of Year Clusters	16	16	16	16	16
adj. R-sq	0.12	0.12	0.12	0.12	0.12

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

Table 7 Associations Between Management's Reporting of Ineffective Internal Controls and CFO Audit Experience and Education 2015 – 2021

Inefffective ICFR = 1 Effective ICFR = 0	ICWeak	ICWeak	ICWeak	ICWeak	ICWeak
AuditExp	-0.857 ***				
	(3.81)				
CDNTrained		-1.099 ***			
		(5.13)			
MBA			0.501		
			(0.84)		
AuditExpwithMBA				-0.347	
				-0.33	
AuditExpwithoutMBA					-0.787 ***
					(2.84)
CFOTenure	-0.033	-0.031	-0.041	-0.046	-0.035
	(0.55)	(0.52)	(0.67)	(0.82)	(0.59)
CEOhasMBA	-0.514	-0.518	-0.623	-0.482	-0.584
	(1.09)	(1.09)	(1.14)	(0.91)	(1.19)
Big4	-1.963	-1.930	-1.806	-1.804	-1.975
	(1.96) *	(1.90) *	(1.83) *	(1.87) *	(1.98) **
lnAuditFees	0.788	0.750	0.820	0.831	0.788
	(2.82) **	(2.70) ***	(2.80) ***	(2.72) ***	(2.80) ***
lnMktCap	-0.371	-0.365	-0.348	-0.343	-0.355
	(1.79) *	(1.75) *	(1.68) *	(1.66) *	(1.73) *
ROA	4.811	4.749	5.034	4.899	4.842
	(1.73) *	(1.80) *	(1.71) *	(1.62)	(1.81)
Leverage	0.416	0.380	0.358	0.309	0.429
	(0.23)	(0.21)	(0.19)	(0.16)	(0.24)
BM	-0.001	-0.001	-0.001	-0.001	-0.001
	(1.40)	(1.12)	(1.56)	(1.44)	(1.21)
OrgChange	-0.011	-0.070	0.118	0.101	0.008
	(0.02)	(0.16)	(0.25)	(0.21)	(0.02)
CEO_Duality	0.560	0.595	0.510	0.543	0.542
	(1.30)	(1.42)	(1.19)	(1.30)	(1.27)
_cons	-5.327	-4.746	-6.957	-7.054	-5.706
	(1.84) *	(1.60)	(2.66) ***	(2.66) ***	(2.04) **
N	1,313	1,313	1,313	1,313	1,313
Number of Company Clusters	252	252	252	252	252
Number of Year Clusters	7	7	7	7	7
Pseudo R2	0.1018	0.1112	0.0909	0.0869	0.0992
Area under the ROC	0.7274	0.7366	0.7365	0.7271	0.73

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

AuditAnalytics coverage of internal controls over financial reporting began in 2015

Table 8 Association Between the Likelihood of Restatement and Audit Experience and Education for Company-Years 2006 - 2021

	Restatement		Restatement		Restatement		Restatement		Restatement	
AuditExp	-0.572									
	(1.05)									
CDNTrained			0.262							
			(0.40)							
MBA					0.612					
					(0.87)					
AuditExpwithMBA							1.681	**		
							(2.08)			
AuditExpwithoutMBA									-1.415	
									(2.62)	***
CFOTenure	-0.216		-0.232		-0.224		-0.249		-0.212	
	(1.70)	*	(1.86)	*	(1.81)	*	(2.15)	**	(1.79)	*
CEOhasMBA	-0.864		-0.837		-0.963		-0.996		-0.960	
	(1.17)		(1.07)		(1.21)		(1.24)		(1.41)	
Big4	-1.620		-1.483		-1.443		-1.335		-1.697	
	(1.74)	*	(1.64)	*	(1.53)	*	(1.26)		(1.77)	*
PrevRestate	6.828		7.062		7.211		7.406		6.932	
	(5.85)	***	(5.42)	***	(5.37)	***	(5.50)	***	(6.02)	***
lnAuditFees	0.590		0.659		0.628		0.641		0.534	
	(2.07)	**	(2.01)	**	(2.05)	**	(2.13)	**	(1.81)	*
lnMktCap	-0.187		-0.170		-0.188		-0.163		-0.206	
	(1.26)		(1.20)		(1.31)		(1.16)		(1.36)	
ROA	0.018		-0.006		0.180		0.275		0.018	
	(0.01)		0.00		(0.09)		(0.15)		(0.01)	
Leverage	1.150		0.998		1.131		1.210		1.364	
	(1.06)		(0.98)		(1.00)		(1.08)		(1.29)	
BM	0.000		0.000		0.000		0.000		0.000	
	(1.38)		(1.09)		(1.28)		(0.92)		(1.33)	
OrgChange	0.066		0.133		0.133		0.216		0.062	
	(0.17)		(0.35)		(0.32)		(0.60)		(0.15)	
CEO_Duality	0.842		0.801		0.823		0.807		0.871	
	(1.61)		(1.53)		(1.48)		(1.43)		(1.65)	*
_cons	-7.089		-8.913		-8.212		-9.078		-5.702	
	(1.34)		(1.44)		(1.55)		(1.82)	*	(1.07)	

N	2322	2,322	2,322	2,322	2,322
Number of Company Clusters	262	165	165	165	165
Number of Year Clusters	16	9	9	9	9
Pseudo R2	0.3324	0.3284	0.3322	0.3489	0.3535
Area under the ROC	0.8534	0.8532	0.8708	0.8707	0.8745

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

Table 9 Associations Between Sustainability and CFO Audit Experience and Education for Company-Years 2015 - 2021

	ESG	ESG	ESG	ESG	ESG
AuditExp	-2.392				
	(1.10)				
CDNTrained		-5.051			
		(2.18)**			
MBA			-3.624		
			(1.74)*		
AuditExpwithMBA				-1.995	
				(0.76)	
AuditExpwithoutMBA					-1.686
					(0.78)
CFOTenure	0.163	0.177	0.106	0.125	0.148
	(0.58)	(0.65)	(0.38)	(0.44)	(0.53)
CEOhasMBA	-1.715	-1.910	-1.128	-1.453	-1.788
	(0.73)	(0.84)	(0.47)	(0.61)	(0.74)
Big4	-5.270	-4.369	-6.249	-5.736	-5.316
	(0.31)	(0.25)	(0.39)	(0.36)	(0.32)
lnAuditFees	4.663	4.374	4.859	4.836	4.730
	(2.73)***	(2.58)**	(2.88)***	(2.85)***	(2.75)***
lnMktCap	2.647	2.710	2.732	2.669	2.647
	(2.48)**	(2.56)**	(2.52)**	(2.47)**	(2.47)**
ROA	-3.055	-1.685	-5.219	-4.188	-3.527
	(0.28)	(0.15)	(0.46)	(0.38)	(0.32)
Leverage	-1.910	-1.442	-2.237	-2.277	-2.107
	(0.37)	(0.28)	(0.44)	(0.45)	(0.41)
BM	1.212	1.225	1.170	1.192	1.197
	(1.87)*	(1.95)*	(1.73)*	(1.80)*	(1.83)*
OrgChange	1.385	1.076	1.416	1.524	1.541
	(0.70)	(0.55)	(0.72)	(0.77)	(0.79)
CEO_Duality	-4.399	-4.377	-4.391	-4.467	-4.432
	(2.42)**	(2.43)**	(2.37)**	(2.43)**	(2.43)**
_cons	-73.887	-70.408	-77.847	-77.236	-75.132
	(2.95)***	(2.74)***	(3.08)***	(3.07)***	(2.96)***
N	1274	1274	1274	1274	1274

Number of Company Clusters	134	134	134	134	134
Number of Year Clusters	16	16	16	16	16
adj. R-sq	0.25	0.26	0.25	0.24	0.25

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