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Do Female CEOs Moderate the Link between Female Directors on Audit Committees and Audit Quality: Evidence from the UK

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Abstract: *We examine female chief executive officers (CEOs) in the context of women directors on audit committees (ACs) and audit quality. Previous research has yet to examine whether the presence of a female CEO affects the relationship between female membership in AC and audit quality. This study focuses on FTSE 350 firms, covers the period 2009-2015, and utilizes ordinary least-squares regression to test our hypothesis. The research found a positive relation between the proportion of female directors on ACs and the quality of the audit in the event of a female CEO. Furthermore, the finding is robust to endogeneity bias. In addition, our result is robust to an alternative audit quality proxy. Appointing women to CEO roles in businesses can further increase the link between women on ACs and audit quality. In addition, the results of the study support the efforts of corporate governance regulators to expand the number of female directors.*

Key Words: Women Directors, Female CEOs, Audit Committees, Audit Quality, United Kingdom

Introduction

Audit committees (ACs) monitor the financial reporting process and thereby maintain the integrity of financial information disclosed to shareholders (Zalata et al., 2018). As a result, ACs maintain the trust of shareholders in the financial reports. Research suggests the composition of ACs affects their effectiveness (Abbasi et al., 2020; Lai et al., 2017). Several countries have enacted gender quotas, including Norway and Germany, while others, such as Australia and the United States (US), compel corporations to disclose their policy on the representation of female directors (Financial Reporting Council (FRC), 2018a; Lai et al., 2017; Terjesen & Sealy, 2016). Female directors make for stronger watchdogs since they have a lower tolerance for opportunistic behavior (Srinidhi et al., 2011). Female members of AC affect the audit opinion, decrease earnings management, and raise audit fees, according to an empirical study (Aldamen et al., 2018; Gavious et al., 2012; Lai et al., 2017; Pucheta-Martinez et al., 2016).

Female Chief Executive Officers (CEOs) enhance the effectiveness of female AC directors because they view ethics as an integral part of leadership (Fine, 2009; Ho et al., 2015), which is a key element of a high-quality audit. Additionally, having a diverse leadership team can bring a range of perspectives and experiences, which may enhance the overall quality of decision-making and risk management within the organization. Despite the legislative initiatives to enhance the share of female directors on boards, Ho et al. (2015) and Kotiranta et al. (2007) identify a lack of female CEOs. This limited representation of females in leadership positions indicates the need to investigate avenues where female directors present on the board can be more effectively utilized (that is, whether they ought to have a leadership position in the form of a CEO). Therefore, we investigate if having a female CEO strengthens the positive link between women

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on the AC and the quality of audit. Our results have implications for firms focusing on enhancing their audit quality. Our results may also be helpful for auditors in devising audit strategies.

Research Objective

The objective of the research is to investigate whether female CEOs affect the relationship between female directors on ACs and audit quality.

Research Question

Is the relationship between female directors on ACs and audit quality influenced by the presence of female CEOs?

This research contributes to the literature on ACs. This is the first study to demonstrate a positive relationship between women directors on ACs and audit quality in the context of female CEOs. Numerous studies (Abbasi et al., 2020; Arun et al., 2015; Ittonen et al., 2010; Lai et al., 2018; Zalata et al., 2018) assess the connection between female directors on ACs and audit quality, but none have investigated whether female CEOs play a role in this relation.

The following is the outline of the research project. In the following part, we will formulate our hypothesis. In Chapter 3, we detail our methods. After part four analyzes the results, the last section provides a summary and suggests directions for future research.

Literature Review

Theoretical Framework

Resource dependence and upper echelons theory suggest that organizations are affected by individual characteristics of directors. As a result, CEOs' characteristics may affect corporate outcomes. Female CEOs may bring diverse perspectives and experiences to the table, which can lead to a more comprehensive evaluation of audit risks and improved audit quality. In addition, agency theory purports that agents act against the interests of principals, and as a result, principals implement monitoring mechanisms to protect their interests. One such mechanism is female CEOs due to their greater attention to ethics in leadership (Fine, 2009). Furthermore, social role theory posits that people's behaviors are influenced by the expectations associated with their social roles. In the case of female CEOs, social role theory would suggest that societal expectations of females may influence the way they behave in leadership positions.

Hypothesis Development

As female CEOs regard ethical issues to be vital to leadership, female leaders may adopt a more ethical approach, which is more likely to result in accurate financial reporting (Fine, 2009; Francoeur et al., 2022; Ho et al., 2015). Females are also expected to depict ethical behavior (Aobo & Giorici, 2023; Dadanlar & Abebe, 2020). According to Miethe and Rothschild (1994), women perceive a greater obligation to report wrongdoing because of their status in society. Kaplan et al. (2009) found that gender diversity in the workplace promotes the anonymous reporting of financial reporting fraud. Farooq et al. (2022) found that female CEOs negatively affect related-party transactions, while Zalata et al. (2022) found an inverse link between female CEOs and classification shifting of financial reporting items. Hence, financial reporting may benefit from the increased openness of companies led by female CEOs (Ho et al., 2015; Kotiranta et al., 2007; Ullah et al., 2019). Since more information is now publicly available, female AC directors can do a better job of improving audit quality.

Evidence suggests that companies led by women CEOs undertake more efforts to reduce the gender wage gap and foster a family-friendly workplace for their female employees (Aobo & Giorici, 2023; Ho et al., 2015; Tate & Young, 2012). The reasoning behind this is that if female employees are encouraged to work harder, productivity should increase. Faccio et al. (2016) evidence that female CEOs are linked with lower earnings volatility and greater likelihood of firm survival. Lim and Chung (2021), Vo et al. (2020), and Ullah et al. (2019) substantiate that female CEOs have a positive link with corporate social responsibility, firm performance, and investment efficiency, respectively. Javed et al. (2022) substantiated that female CEOs are positively linked with green innovation. Furthermore, Dadanlar and Abebe (2021)

found that female CEOs reduce the likelihood of corporate misconduct lawsuits. Hence, female CEOs may motivate female AC members to work harder, thereby resulting in better audit quality.

Moreover, according to Gul et al. (2011), female executives inspire more discourse among board members since they adopt a more trust-oriented leadership style. Gul et al. (2011) found that female CEOs increase the proportion of company-specific information reflected in stock prices. In addition, Francoeur et al. (2022) evidence that female CEOs disclose greater earnings forecasts. As a result of the greater discussion of business-related problems, it is suitable to believe that female AC members will have a better grasp of audit risks.

Additionally, Hoang et al. (2019) evidenced that female CEOs are risk-averse. This indicates that female CEOs may inculcate a risk-averse culture in an organization (Weng & Kim, 2023), which will lead female AC members to put in additional efforts in auditing to ensure that there is minimal misstatement risk in the financial reports, thereby causing higher audit quality.

The above discussion suggests that female AC directors improve audit quality if the CEO is a woman. Hence, we predict the following hypothesis:

H1: In the case of female CEOs, the positive relationship between female directors serving on an AC and audit quality is greater.

Methodology

The research focuses on firms listed on the FTSE 350 index. We concentrate on the FTSE 350 index to ensure increased data availability (Lueg et al., 2014). Our sample period covers the period from 2009 to 2015. We started our sample period in 2009 to avoid affecting our results due to the global financial crisis of 2007-08 (Hassanein et al., 2019). Our sample ends in 2015 because of the greater regulatory pressure to increase female directors in 2016, thereby limiting variation in female directors from 2016 (Davies, 2016). In addition, the analysis excludes non-financial companies because of their unique reporting structures (Zalata et al., 2018).

As per Goodwin-Stewart and Kent (2006), audit fees ascertain audit effort and thereby could be used to determine audit quality. This study adopts a log of audit fees as the dependent variable (Ghafran & O'Sullivan, 2017). Our audit fee model is:

$$af = \beta_o + \beta_1 acfp*ceogen + \beta_2 acfp + \beta_3 ceogen + \beta_4 fin + \beta_5 acmpa + \beta_6 acs + \beta_7 acm + \beta_8 ind + \beta_9 naf + \beta_{10} ta + \beta_{11} sto + \beta_{12} pdeb + \beta_{13} lon + \beta_{14} sub + \beta_{15} roa + IND + YE + \varepsilon$$

Information about corporate governance was manually gathered from yearly reports. Annual reports, FAME, Datastream, and Osiris were used to gather the financial information.

The main independent variable in this study is the interaction of the ratio of female directors on ACs and CEO gender. On the basis of prior literature (Abbasi et al., 2020; Méndez et al., 2017), we utilize complexity, size of firms, proportion of stock, proportion of receivables, profitability, London-based auditor, non-audit fees, AC size, AC meetings, and independent directors, multiple directorships of AC members and AC financial expertise as control variables in this study.

The proportion of inventory and receivables indicates higher audit risk (Lai et al., 2017) and, therefore, requires greater audit effort, thereby higher audit fees. Also, the greater the audit complexity, the greater the audit effort (Zaman et al., 2011), and, as a result, the higher the audit fee. Moreover, auditors based in London indicate greater audit fees (due to the higher cost of living), in line with Clatworthy and Peel (2007). Further, large firms are prone to earnings management and hence encompass greater audit risk (Chih et al., 2008), requiring more audit work and, thereby, higher audit fees. In addition, the use of non-audit services may lead auditors to possess greater knowledge about the client, resulting in greater audit work and, hence, higher audit fees (Whisenant et al., 2003). Furthermore, lower profitability is indicative of higher audit risk, which may require less audit effort and, thereby, lower audit fees (Abbasi et al., 2020).

A larger AC size translates into a greater variety of members being present in AC (Zalata et al., 2018), suggesting better audit effort and, thereby, audit fees. Additionally, the more the AC meetings, the more

the work related to audit issues (Abbasi et al., 2020), resulting in greater audit fees. Moreover, higher board independence suggests a greater percentage of directors working for the interest of shareholders (rather than for their personal interests), indicating greater audit effort and, hence, higher audit fees (Zaman et al., 2011). Also, AC with multiple directorships and financial expertise may indicate in-depth discussion about audit work, resulting in higher audit fees (Abbasi et al., 2020; Sultana et al., 2019).

All the variables are defined in Table 1 and are ascertained in line with Abbasi et al. (2020) and Lai et al. (2017).

Table 1

Variable definition

Variables	Definition
Audit fees (af)	Natural log of audit fees
Female directors on the AC (acfp)	The ratio of female directors on the AC
Female CEO (ceogen)	One of the firm's CEOs is a female; otherwise, 0
Interaction of female directors on the AC and female CEO (acfp*ceogen)	Interaction of proportion of female directors on the AC and dummy variable, which is one if the CEO is a female; otherwise, 0
Multiple directorships on AC (acmpa)	Average directorships held by AC members
AC size (acs)	Number of AC members
AC meetings (acm)	Number of AC meetings
AC financial expertise (fin)	Proportion of financial experts on the AC (explained in the methodology section)
Board Independence (ind)	The proportion of independent directors on the board
Non-audit fees (naf)	Natural log of non-audit fees
Firm size (ta)	Natural log of total assets
Inventory (sto)	Proportion of stock to total assets
Receivables (deb)	Proportion of receivables to total assets
London-based auditor (lon)	One of the auditors is based in London; otherwise, 0
Complexity (sub)	Natural log of the number of subsidiaries
Profitability (roa)	Return on assets (proportion of net income to total assets)
Operating cashflows (ocfta)	Proportion of cash flow from operations to total assets
Incidence of loss (loss)	One if the firm incurs a loss in the current year; otherwise, 0
Leverage (lev)	Proportion of liabilities compared to total assets
Sales growth (salegr)	Per annum growth in sales
Market-to-book ratio (mtb)	Proportion of market value of equity to book value of equity
One-year lagged female directors on AC (lacfp)	One-year lagged proportion of female directors on AC
One-year lagged female CEO (lceogen)	One-year lagged presence of female CEO
imr1	Inverse mills ratio related to the proportion of female directors on the AC
imr2	Inverse mills ratio related to female CEOs
IND	Industry dummy variables
YE	Year dummy variables

This table defines the variables used in the models.

Results and Discussion

Descriptive Statistics

The descriptive statistics are presented in Table 2. The average size and frequency of AC meetings is four members. These numbers may show how strictly businesses adhere to a UK corporate governance regulation that mandates at least three people serve on an AC and that the committee meets at least three times per year (Ghafran & O'Sullivan, 2017). The presence of women in ACs in our UK sample averaged 0.206, which is higher than the mean value of 0.12 found by Zalata et al. (2018) in the US. In addition, as in Kotiranta et al. (2007), only 6% of the sample consists of female CEOs.

Table 3 presents the correlation matrix. It shows that female directors on ACs are positively correlated with audit fees, while our moderating variables are positively, however insignificantly, correlated with audit fees. Given that our study's greatest VIF value of 3.09 is less than 10, there are no multicollinearity issues (Bose et al., 2017).

Table 2

Descriptive statistics

Variable	Mean	Standard Deviation	Minimum	Maximum
af	7.156	1.307	1.099	10.472
acfp	0.206	0.183	0.000	0.750
ceogen	0.059	0.236	0.000	1.000
Fin	0.857	0.184	0.000	1.000
acmpa	1.821	0.797	0.000	6.500
Acs	3.965	1.066	2.000	8.000
acm	4.442	1.640	1.000	15.000
Ind	0.561	0.108	0.000	0.857
naf	6.355	1.369	1.099	10.870
Ta	15.049	1.465	12.140	19.242
Sto	0.131	0.178	0.000	0.912
deb	0.110	0.090	0.000	0.660
Lon	0.752	0.432	0.000	1.000
sub	2.854	0.997	0.000	5.832
Roa	0.077	0.096	-0.616	0.763

This table presents descriptive statistics in relation to the variables. af (audit fees), acfp (female directors on audit committees), ceogen (ceo gender), fin (financial expertise of audit committee), acmpa (multiple directorship of audit committee), acs (audit committee size), acm (audit committee meetings), ind (audit committee independence), naf (non-audit fees), ta (total assets), sto (proportion of stock to assets), deb (proportion of receivables to assets), lon (London-based auditor), sub (number of subsidiaries), roa (return on assets)

Source: Author's own elaboration

Table 3

Correlation matrix

	af	acfp* ceogen	acfp	ceogen	fin	acmpa	acs	Acm	ind	naf	ta	sto	deb	lon	sub	roa
af	1.000															
acfp* ceogen	0.002	1.000														
acfp	0.105***	0.103**	1.000													
ceogen	-0.023	0.643***	-0.093**	1.000												

	af	acfp* ceogen	acfp	ceogen	fin	acmpa	acs	Acm	ind	naf	ta	sto	deb	lon	sub	roa
Fin	0.147***	0.053	0.011	0.108***	1.000											
acmpa	0.055	-0.002	0.126***	0.000	0.127***	1.000										
Acs	0.254***	0.021	0.271***	-0.004	0.001	-0.088**	1.000									
Acm	0.453***	-0.075*	0.050	-0.146***	0.194***	0.073*	0.090**	1.000								
Ind	0.531***	-0.049	0.191***	0.005	0.194***	0.124***	0.340***	0.441***	1.000							
Naf	0.762***	-0.029	0.013	-0.017	0.108***	0.021	0.227***	0.428***	0.447***	1.000						
Ta	0.771***	0.016	0.202***	-0.020	0.229***	0.119***	0.233***	0.484***	0.519***	0.655***	1.000					
Sto	-0.331***	-0.010	0.040	-0.056	-0.060	0.107***	-0.061	-0.154***	-0.151***	-0.286***	-0.181***	1.000				
Deb	0.085**	-0.021	-0.129***	-0.012	-0.013	-0.194***	0.020	-0.076*	-0.166***	-0.031	-0.275***	-0.133***	1.000			
Lon	0.358***	-0.064	-0.049	0.003	0.123***	-0.010	0.151***	0.225***	0.334***	0.359***	0.337***	0.025	-0.229***	1.000		
Sub	0.524***	0.005	-0.040	0.002	0.013	0.044	0.101**	0.190***	0.244***	0.346***	0.253***	-0.276***	0.178***	0.135***	1.000	
Roa	-0.164***	-0.012	0.057	-0.038	-0.165***	-0.036	0.007	-0.080**	-0.122***	-0.102**	-0.202***	0.230***	0.053	-0.083**	0.110***	1.000

Regression analysis

The regression analysis is presented in Column 1 of Table 4. Without taking into account the gender of CEOs, it shows a positive relationship between audit fees and female membership on ACs. This finding supports Abbasi et al. (2020). Column 2 of Table 4 reveals that the interaction between the female

directorship on an AC and female CEOs is positively associated with audit fees. Therefore, we accept our hypothesis. It suggests that female directors on an AC can further increase audit fees if the CEO is a female. Our results are in line with Farooq et al. (2022), who found that female CEOs reduce related party transactions.

Table 4
Regression

	Column 1	Column 2
acfp*ceogen		0.757*
		(1.676)
acfp	0.417**	0.417*
	(1.989)	(1.909)
ceogen		0.008
		(0.047)
fin	-0.297	-0.309
	(-1.388)	(-1.426)
acmpa	0.015	0.015
	(0.422)	(0.433)
acs	-0.020	-0.0212
	(-0.493)	(-0.542)
acm	0.005	0.008
	(0.217)	(0.338)
ind	1.015**	1.020**
	(2.610)	(2.566)
naf	0.257***	0.263***
	(4.293)	(4.323)
ta	0.490***	0.486***
	(10.830)	(10.660)
sto	-0.447	-0.432
	(-1.457)	(-1.408)
deb	2.735***	2.698***
	(3.408)	(3.373)
lon	0.287**	0.287**
	(2.530)	(2.445)
sub	0.246***	0.243***
	(5.322)	(5.179)
roa	-0.451	-0.443
	(-0.894)	(-0.875)
Constant	-3.300***	-3.261***
	(-5.829)	(-5.790)
Observations	630	625
Adjusted R^2	0.842	0.843
YE	YES	YES
IND	YES	YES
F Test	69.53***	65.96***

This table presents ordinary least square regression results and informs the link between female directors on ACs and audit fees (Column 1) and the moderating impact of female CEOs on the relation between female AC members and audit fees (Column 2). t-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. acfp (female directors on audit committees), ceogen (ceo gender), fin (financial expertise of audit committee), acmpa (multiple directorship of audit committee), acs (audit committee size), acm (audit committee meetings), ind (audit committee independence), naf (non-audit fees), ta (total assets), sto (proportion of stock to assets), deb (proportion of receivables to assets), lon (London-based auditor), sub (number of subsidiaries), roa (return on assets).

Source: Author's own elaboration

Endogeneity

Characteristics that cause firms to select female directors may also be related to audit fees, causing endogeneity bias. In order to address the endogeneity in female directors on AC and CEO gender, this study employs Heckman's (1979) procedure. This methodology is an effective methodology to address unobservable characteristics, given that it deals with both time-varying and non-time-varying characteristics (Lennox et al., 2012). This procedure requires a first-stage probit model involving determinants of female directorship on an AC and female CEOs. Afterward, inverse mill ratios from both these models are determined and included in the model determining audit fees. In order to successfully implement this methodology, a variable that ascertains female membership in the AC and female CEOs but does not affect audit quality needs to be introduced (Zalata et al., 2018). In accordance with Renders et al. (2010), who contend that corporate governance rules have a lesser tendency to change, one-year lags of the endogenous variables are used. One-year lag of the female directors on the AC (lacfp) and of female CEOs (lceogen) are likely to be positively associated with the endogenous variables. The Hausman test also indicates the appropriateness of using the lags as it reveals that both female directors on the AC and female CEOs are not endogenous (unrelated to the error term), and thus, the lags are not expected to be linked with the error term (and therefore not associated with audit quality) due to the persistence of the endogenous variables (Bruynseels & Cardinals, 2014).

The first-stage probit model related to female directors on the AC and female CEOs includes a one-year lag of the endogenous variables, corporate governance (multiple directorships of AC, independent directors, AC size, AC meetings), firm size, firm risk, and firm performance.

Female directors more probably choose firms with better corporate governance policies (Gul et al., 2013; Lara et al., 2017). Directors with additional directorships may possess high experience and greater knowledge (Ahn et al., 2010; He & Yang, 2014; Méndez et al., 2017), so AC's multiple directorships are likely to depict better ability to improve monitoring. Independent directors exhibit higher corporate governance quality as they are likely to demand higher and better monitoring efforts to enhance their reputation (Zaman et al., 2011). So, greater multiple directorships of an AC and independent directors are expected to have a positive linkage with the probit models as they depict better corporate governance and thus attract more female directors. Greater AC size is likely to increase the firm's access to resources and thus improve monitoring quality (Zaman et al., 2011); however, a large AC size may also cause members to undertake less responsibility (Vafeas, 2005). An increase in the number of AC meetings is expected to equip the members with a greater understanding of financial reporting matters, which enhances oversight (Mangena & Tauringana, 2008); however, greater meetings could also depict problematic issues that need addressing (Andres & Vallelado, 2008; Vafeas, 1999). Thus, female directors could also perceive AC size and meetings to be indicative of the strength of corporate governance. Due to the opposing viewpoints related to the size of AC and meetings, the sign of these variables in the probit model is not predicted.

Large firms have better gender diversity policies as they face more pressure to meet the expectations of society (Srinidhi et al., 2011). In addition, as female directors tend to be less risky in nature (Gavious et al., 2012; Zalata et al., 2018), they could choose firms with low risk (Ittonen et al., 2010). Therefore, firm size is more likely to have a positive sign in the probit model, while a negative sign is anticipated in the scenario of firm risk.

First-stage probit results in Column 1 of Table 5 for female directors on an AC indicate that the lag, multiple directorships of AC, and firm performance are significant and positive as per our expectations. It also shows that AC size is significant in accordance with our prediction, and its positive sign depicts that female members on the AC perceive a large AC to be effective.

In line with our expectations, Column 2 of Table 5 shows that the lag and AC's additional directorships are positively and significantly associated with the presence of female CEOs. It also shows that AC size and meetings are significant as predicted, and their negative association depicts that female CEOs consider large AC size and greater AC meetings to be poor monitoring mechanisms. Column 3 of Table 5 presents regression results for our hypothesis and includes inverse mills ratios related to female membership on the AC and female CEOs. The result shows that the interaction of female membership on AC and female CEOs has a positive and significant association with audit fees even after addressing endogeneity concerns.

Furthermore, there are no multicollinearity concerns in our second step, as all VIF values are below the limit of 10 (Bose et al., 2017), which lends further credibility to our Heckman procedure (Lennox et al., 2012).

Table 5

Endogeneity

	Column 1	Column 2	Column 3
acfp*ceogen			1.584*
			(1.860)
acfp			0.408*
			(1.780)
ceogen			-0.490
			(-1.536)
lacfp	2.313***		
	(11.360)		
lceogen		5.624***	
		(11.340)	
fin			-0.259
			(-1.044)
acmpa	0.261**	0.636***	0.016
	(2.014)	(2.599)	(0.373)
acs	0.793***	-0.491***	-0.018
	(5.815)	(-2.710)	(-0.472)
acm	-0.067	-0.683***	0.011
	(-1.146)	(-2.713)	(0.454)
ind	1.347	2.071	1.094**
	(1.222)	(1.249)	(2.464)
naf			0.202***
			(5.128)
ta	-0.006	0.074	0.504***
	(-0.078)	(0.322)	(11.660)
sto	0.064	-0.314	-0.560*
	(0.140)	(-0.463)	(-1.959)
deb	-0.161	0.727	2.684***
	(-0.138)	(0.571)	(3.208)
lon			0.349***
			(2.637)
sub			0.229***
			(4.780)
roa	2.310**	-1.084	-0.542
	(2.343)	(-0.645)	(-1.137)
imr1			-0.192
			(-0.801)
imr2			-0.939**
			(-2.306)
Constant	-5.057***	-0.307	-2.328***
	(-5.363)	(-0.093)	(-3.122)
Observations	623	547	495
Adjusted R^2			0.863
Pseudo R^2	0.617	0.834	
YE	YES	YES	YES
IND	YES	YES	YES
Wald test	256.39***	712.45***	
F Test			61.27***

Column 3 presents the second-stage Heckman results and presents the results after addressing endogeneity. Column 1 and column 2 present the results pertaining to determinants of female AC directors and female CEOs, respectively. T-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. acfp (female directors on audit committees), ceogen (ceo gender), lacfp (lag of female directors on audit committees), lceogen (lag of ceo gender), fin (financial expertise of audit committee), acmpa (multiple directorship of audit committee), acs (audit committee size), acm (audit committee meetings), ind (audit committee independence), naf (non-audit fees), ta (total assets), sto (proportion of stock to assets), deb (proportion of receivables to assets), lon (London-based auditor), sub (number of subsidiaries), roa (return on assets) Source: Author's own elaboration

Meet or Beat Zero Earnings Benchmark

Meet or beat zero earnings benchmark and audit fees are considered to be the best proxies for audit quality for assessing the effectiveness of ACs (Abbasi et al., 2020). We follow Francis and Yu (2006) in determining whether to meet or beat the zero earnings benchmark. When the return on assets is between 0% and 5%, the meet or beat zero earnings benchmark is set at 1, and if it is above 5%, it is set at 0. Better audit quality is indicated by a negative value in our independent variable for this metric.

Corporate governance control variables are identical to the audit fee model. We use Arun et al. (2015) for the adoption of control variables (and their measurement) related to financial characteristics (firm size, financial condition, and firm growth). According to Arun et al. (2015), we can determine a company's size as log of its total assets; its operational cash flow as the ratio of its cash flow from operations to its total assets; its leverage as the ratio of its total liabilities to its total assets; its loss incidence as one if it has suffered a loss in the current year, otherwise 0; and its performance as its return on assets.

The first column of Table 6 shows that the interaction of the proportion of women on ACs and the proportion of female CEOs is significantly and negatively associated with meeting or beating the zero earnings benchmark. Consistent with our expectations, the frequency of AC meetings, level of financial expertise of the AC, leverage, firm size, and firm performance are related to meeting or beating the zero earnings benchmark.

In accordance with the previous literature (Aobdia, 2018; Francis & Yu, 2009), a second cut-off of 0.04 is adopted in the second column of Table 6 (here, the meet or beat zero earnings benchmark is determined as one if the return on assets is between 0 and 0.04 otherwise 0). Column 2 of Table 6 results corroborate our original findings.

Table 6

Meet or beat zero earnings benchmark.

	Column 1	Column 2
acfp*ceogen	-3.645*	-3.636*
	(-1.732)	(-1.716)
Acfp	-1.019***	-1.222***
	(-2.720)	(-2.911)
Ceogen	0.741	0.753
	(1.532)	(1.543)
Acmpa	0.026	-0.103
	(0.374)	(-1.485)
Fin	-0.883**	-0.837**
	(-2.473)	(-2.248)
Acs	-0.046	-0.072
	(-0.613)	(-0.956)
Acm	-0.085*	-0.124***
	(-1.948)	(-2.734)
Ind	-1.116	-0.787
	(-1.325)	(-0.861)

	Column 1	Column 2
Ta	0.155**	0.157**
	(2.127)	(1.990)
Ocfta	4.152**	3.679*
	(2.016)	(1.896)
Loss	-0.453	-0.177
	(-1.168)	(-0.497)
Roa	-6.597**	-5.775**
	(-2.242)	(-2.219)
Lev	0.665*	0.685*
	(1.842)	(1.807)
Salegr	0.019	0.141
	(0.043)	(0.311)
Mtb	-0.001	0.000
	(-0.515)	(0.082)
Constant	-0.554	-0.457
	(-0.581)	(-0.476)
Observations	738	738
Pseudo R^2	0.226	0.220
Year effects	YES	YES
Industry effects	YES	YES
Wald test	108.90***	117.23***

This table presents the regression results using an alternative audit quality proxy. T-statistics are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. acfp (female directors on audit committees), ceogen (ceo gender), fin (financial expertise of audit committee), acmpa (multiple directorships of the audit committee), acs (audit committee size), acm (audit committee meetings), ind (audit committee independence), naf (non-audit fees), ta (total assets), ocfta (proportion of operating cashflows over assets), loss (incidence of loss in the current year), roa (return on assets), lev (leverage), salegr (growth in sales), mtb (market to book ratio).

Source: Author's own elaboration

Conclusion

Female CEOs are still a rarity in the business world despite efforts by corporate governance legislators to promote gender equality in the workplace (Ali et al., 2014; Ho et al., 2015). As a result, it is vital to investigate whether the presence of female CEOs affects the link between female directors on ACs and the quality of audits. Our findings show that the interaction of the presence of female directors on AC and female CEOs is positively related to audit quality.

The implications of our research are as follows. The findings suggest that firms should hire more women CEOs to improve audit quality, as it strengthens the positive link between the presence of women on the AC and audit quality. In addition, the study supports the efforts of corporate governance regulators to increase the percentage of women serving on corporate boards (Abbasi et al., 2020; Zalata et al., 2018). While our findings highlight the benefits of having women in top executive positions, they also suggest that policymakers may regularly undertake initiatives to help businesses realize these benefits. Our result may also be useful for auditors, as it suggests that corporations with female CEOs may have relatively less audit risk and, thereby, may require lower audit effort.

There are, however, some restrictions on the scope of this research. Future research could study different types of female CEOs to determine whether all female CEOs improve audit quality or only those with particular attributes. Future researchers could supplement the new finding regarding the influence of female CEOs in increasing the efficiency of female directors on ACs by using qualitative analysis, such as interviews, as opposed to the quantitative approach taken in this study.

The study also has a few limitations. First, audit quality is difficult to ascertain, given that it is unobservable. Although we use two measures to ascertain audit quality, we are not certain our proxies encompass audit quality. Second, we only use one method to address endogeneity. Hence, our results may still be prone to endogeneity.

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