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Earnings management: Are men from Mars and women from Venus?

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Abstract

Purpose – Research on gender and finance finds that women chief executive officers (CEOs) are relatively risk-averse and more ethical than their male counterparts. These differences are often presented as reasons for lower earnings management by firms led by women. A strand of contrasting literature however finds the notions of women being risk-averse and ethical not necessarily true for women occupying top leadership positions as women successful in shattering the glass ceiling adopt behaviors like men. This study attempts to understand the differences between the ethical tendencies of the two genders by examining if CEO power impacts the relation between CEO gender and earnings management.

Design/methodology/approach – The authors begin the analysis using standard regressions using the propensity score matched (PSM) samples and examine if CEO power mediates or amplifies relationship between CEO gender and earnings management. The authors use ordinary least squares (OLS) regression approach and instrumental variables (IV) estimation to address the endogeneity concerns.

Findings – This study's results suggest that the relationship between CEO gender and earnings management is mediated by CEO power. The authors find that women CEOs with lower power engage in lower earnings management. However, women CEOs with more power tend to engage in greater levels of earnings management than their male counterparts.

Originality/value – This study contributes the finance literature by showing women leaders successful in occupying top leadership positions are not necessarily more risk averse and more ethical. Less powerful women CEOs are subjected to potentially higher levels of scrutiny and are forced into an environment where they have to be seen as ethical. However, powerful women face the same concerns as their male counterparts and not necessarily more ethical.

Keywords Earnings management, CEO power, CEO gender

Paper type Research paper

1. Introduction

Extant psychology literature indicates that men and women have different ways of encoding memories, solve problems, and make decisions (Schmitt *et al.*, 2017; Xin *et al.*, 2019). Growing finance and accounting literature document significantly lower corporate risk and frauds for firms headed by women (Levi *et al.*, 2014; Faccio *et al.*, 2016). These studies overwhelmingly attribute these results to psychological differences between men and women with respect to their risk-taking tendencies and their moral compass. However, another strand of literature casts some doubts on these attributions. For example, Sila *et al.* (2016) find no evidence that gender diversity in boardrooms impacts equity risks. The study further suggests that prior findings of a negative relation between the two variables are potentially driven by unobserved firm factors. Similarly, using a sample of Chinese listed firms, Ye *et al.* (2010) find no significant difference in earnings quality for firms with female and male leaders. These findings suggesting that the notions of women being risk averse, ethical, and more likely to shy away from conflict may not be true for women in top executive positions. Thus, the role of gender in top-management team decision-making is still unclear. This study is an attempt to find some clarity.

This study explores earnings management by men and women chief executive officers (CEOs) to understand the differences between the ethical tendencies of the two genders. Financial performance of a firm arguably mirrors the efficiency and the ability of its CEO. Thus, financial reporting quality should reflect their abilities as well as their moral compass. CEOs take particular interest in reporting better operating performance because their employment and sometimes compensation is tied to it (Habib and Hossain, 2013). Although CEOs are not directly involved in the preparation of financial statements, studies such as Feng et al. (2011) and Adams et al. (2005) suggest that they can and do hold strong influence. Chu et al. (2019) suggest that CEOs use their power and authority to persuade chief financial officers (CFOs) to report optimistic accounting numbers to beat earnings expectations. Other studies such as Dikolli et al. (2020) take this even further in suggesting that CEOs achieve personal financial gains as a result of these optimistic reports.

Harris et al. (2019) examine the role of equity compensation as a boundary condition in the CEO gender and earnings management relationship. They find that women CEOs with high equity compensation show similar earnings management behavior vis-à-vis their male counterparts as equity compensation provide an incentive for female CEOs to take risks. Hence, the conduit of earnings management seems to be the CEO's ability to influence and persuade (Feng et al., 2011; Chu et al., 2019). Shiah-Hou (2021) explores the impact of CEO power on earnings management and find that CEOs with stronger structural power are more likely to provide lower earnings quality. The paper further asserts that the quality of disclosing earnings information is associated with motivations of the decision maker and CEO power acts as a tool to exert influence. Therefore, CEO power plays a role in the CEO's earnings management behavior. Thus, if, there exists a difference in the average men versus women CEO power, the relationship between CEO power and earnings management might incorrectly manifest as the relationship between CEO gender and earnings management. Therefore, it is important to study how CEO gender influences the firm's earnings management behavior, controlling for CEO power.

We find that CEO power does play an important role in determining the CEO's earnings management behavior. The results suggest that on average, firms headed by women CEOs indulge in significantly lower levels of earnings management vis-à-vis those headed by their male counterparts. However, this relationship seems to hold only for firms headed by women CEOs with low power. We find that firms headed by powerful women CEOs are more likely to engage in earnings management compared to their male counterparts. These results cast doubts on the notion of one gender being more ethical than the other. Instead, we suggest that less powerful CEOs are potentially subjected to higher levels of scrutiny and exercise less influence. Therefore, firms headed by less powerful female CEOs indulge in less earnings management.

The United States Glass Ceiling Commission (1995, p. 1) defines glass ceiling as "artificial barriers to the advancement of women and minorities." The commission further asserts, "The glass ceiling is the unseen, yet unbreakable barrier that keeps minorities and women from rising to the upper rungs of the corporate ladder, regardless of their qualifications or achievements" (p. 4). According to Wellington et al. (2003), occupational minorities face not only glass ceilings but also glass walls. Thus, they face not only barriers to their career advancement but also lateral barriers at almost every organizational level. Therefore, less powerful women CEOs are likely to face greater scrutiny and exercise potentially lesser influence than their male counterparts. Thereby, firms with less powerful women CEOs indulge in significantly lower levels of earnings management vis-à-vis their male counterparts.

As to our finding with respect to women CEOs with more power being more likely to engage in earnings management than their male counterparts, we draw upon the glass ceiling literature, for a possible explanation. Baxter and Wright (2000) argue that because of the glass ceiling women face more obstacles when trying to move up the organizational hierarchy

and face even greater challenges at the executive and board levels. Combining this with the assertion of Adams and Funk (2012) that women leaders need to act and behave like men once they occupy top leadership roles, we conjecture that more powerful women CEOs who are more capable act and behave more like "men" than their male counterparts.

The paper contributes to two distinct areas in the literature. First, we add to the body of growing research investigating whether firms headed by women CEOs are guided by a distinct moral compass (Jalbert *et al.*, 2013; Khan and Vieito, 2013; Ho *et al.*, 2015; Faccio *et al.*, 2016). Second, we add to the extant literature on the role of managerial power and earnings management.

The remainder of the article is organized as follows. We discuss hypothesis development in Section 2. Data and empirical model are presented in Section 3. Sections 4 and 5 contain the results and additional analysis. We conclude in Section 6.

2. Hypothesis development

The literature examining the role of gender in business ethics and risk-taking behaviors has grown tremendously over the past decade. Existing research suggests that CEO gender plays a crucial role in corporate choices relating to risk taking and ethics (Clikeman *et al.*, 2001). This literature attributes differences between the male and female gender as the explanation for distinct corporate outcomes (Gilligan, 1982; Betz *et al.*, 1989). For example, Betz *et al.* (1989) suggest that men are more interested in economic benefits and are more likely to break rules, while women are more likely to lean towards harmonious growth and are less inclined towards unethical practices. Likewise, Shawver *et al.* (2006) find that females are less likely to offer bribes and engage in unfair loan practices. Similarly, studies such as Dalton and Ortegren (2011) and Faccio *et al.* (2016) suggest that women leaders are less likely to make risky business decisions as women are more prone to social desirability. We derive our first hypothesis from this literature, whereby.

> *H1.* Firms with female CEOs engage in lower earnings management than firms managed by male CEOs.

CEO power captures the ability of the CEO to influence the firm's key decisions. We draw on the literature on CEO power to support our second hypothesis. Adams *et al.* (2005) find that powerful CEOs are less likely to compromise with other top executives. They suggest that this can result in more extreme decisions. However, we argue that if women are more ethical, then more powerful women CEOs are more likely to take their organization towards better financial reporting quality and lower earnings management. Hence our second hypothesis:

> *H2.* Firms with more powerful female CEOs engage in lower earnings management than firms managed by more powerful male CEOs.

Adams and Funk (2012) suggest that women who pursue leadership positions adopt behaviors like men to survive in the predominately male environment. They find that women who are successful in achieving top executive roles are more stimulated, oriented and self-directed than their male counterparts. Zalata *et al.* (2018) suggest that classification shifting declined significantly for firms headed by female CEOs post Sarbanes-Oxley (SOX) Act because female CEOs adopted other means to manipulate earnings. Similarly, Harris *et al.* (2019) find that women CEOs reduce earnings management only at low levels of equity compensation. They find no gender differences in earnings management behavior between CEOs at high levels of equity compensation. They argue that higher level ownership incentivizes more earnings management. These studies challenge the distinct moral compass argument of one gender vis-à-vis the other.

3. Data and methodology

3.1 Sample construction

Female CEO data is from ExecuComp database. This database contains information on executive compensation and other management variables on S&P 1500 firms. We define female CEO (CEO Fem) using an indicator variable that takes the value of 1 if a person is identified as a CEO (CEOANN = CEO) and female (Gender = Female) in the ExecuComp database. We obtain all board-related control variables from the ISS database and Compustat for earnings management variables. Our sample omits all firms in the financial services and utilities industries. We also remove all firm-year observations with missing information on CEO gender. The final sample yields 19,523 firm-year observations for the period of 2000–2016.

3.2 CEO power

CEO power is multi-dimensional in nature. We use two measures of managerial power widely used in the extant literature. We measure a CEO's structure power using CEO duality – that is, CEO role combined with that of the chair. The CEO is responsible for setting the firm's direction and designing the organizational culture, while board chair is responsible for overseeing the decision-making in boardrooms (Hermalin, 2005). A single individual serving as the CEO and the chairperson of the board increases the CEO's structure power (Harrison et al., 1988; Ocasio, 1994). We define CEO Dual as an indicator variable that takes the value of 1 if the CEO is serving as the chairperson of the board.

Prior studies argue that over-reliance on perceptual measures of power (e.g. CEO duality) lack objectivity (Finkelstein, 1992). Bebchuk et al. (2009) suggest that CEO power can be more objectively examined using relative compensation of top executives. We use CEO pay slice as the second measure of CEO power that captures the relative significance of CEO in terms of abilities, contribution, or skill. We follow Bebchuk et al. (2011) and define CEO pay slice as the CEO's total compensation as a fraction of combined total compensation of top-five executives (including the CEO) in a given year.

3.3 Earnings management

Earnings management can be broadly classified into accruals-based earnings management (AEM) and real earnings management (REM). In recent years, firms tend to use REM rather than AEM (Roychowdhury, 2006). Prior studies find that it is more difficult to detect manipulations using real activities because such activities are embedded in normal business operations such as production, cash flows and discretionary expenses (Kothari et al., 2016).

This study uses REM and AEM (discretionary accruals) as two measures of earnings management. Following the model developed by Roychowdhury (2006), managers can manipulate earnings in three ways: (1) over production, (2) sales manipulation and (3) reduction in discretionary expenses. We estimate the model for each SIC industry-year combinations using at least 10 observations and estimate abnormal production costs, abnormal discretionary expenses, and abnormal cash flows. Following Griffin et al. (2021), we construct a composite measure of REM by standardizing and summing up the three components: abnormal production costs, abnormal discretionary expenses, and abnormal cash flow from operations (Prod_r + Disx_r + CFO_r) [1].

Table 1 provides summary statistics of the sample and the subsamples of male- and female-led firms. Overall, we see an increase in women leaders from 1.16% in 2000 to 5.24% in 2006. The rise in women-headed firms has gained momentum since 2013. The percentage of CEOs occupying the dual role of board chair declined after 2009 because of the amendments to the Regulation S-K, which requires firms to disclose reasons for combining the roles of CEO and board chair. Table 1 also reports the frequency distribution of male- and female-led CEOs with power. We find an average of one-third of female CEOs serve as the board chair compared to around 50% of powerful male CEOs.

Year	# Firm-year obs	# Firm-year obs. with fem CEOs	% Firm-year obs. with fem CEOs	% fem CEOs with CEO duality	% male CEOs with CEO duality
2000	1,113	13	1.16	0	19.45
2001	1,099	13	1.18	7.69	22.83
2002	1,062	13	1.22	15.38	26.59
2003	1,095	16	1.46	12.50	29.56
2004	1,081	15	1.38	13.33	34.70
2005	1,032	18	1.74	16.67	41.81
2006	1,014	24	2.36	20.83	47.87
2007	779	23	2.95	34.78	56.21
2008	1,043	32	3.06	46.87	62.61
2009	1,102	38	3.44	44.73	63.62
2010	1,089	39	3.58	41.02	63.14
2011	1,287	43	3.34	46.51	59.64
2012	1,306	45	3.44	48.88	58.84
2013	1,329	51	3.83	47.05	55.79
2014	1,346	54	4.01	51.85	53.71
2015	1,353	59	4.36	44.06	51.77
2016	1,393	73	5.24	34.24	49.69
Total	19,523	569			

Note(s): This table presents the distribution of female CEOs by year

Table 1.
Frequency distribution

3.4 Empirical model

We use the following regression model to study the impact CEO gender and CEO power have on earnings management:

$$REM_{i,t} = \beta_0 + \beta_1 CEO\,Fem + \beta_2 CEO\,Power + \beta_3 CEO\,Fem^*Power + \sum_i Controls_{i,t} + \mu_{i,t},$$

(1)

where *CEO Fem* takes the value of 1 if the firm is headed by a female CEO in a given year, and 0 otherwise; *CEO Power* is measured by CEO Dual and CEO pay slice; and *CEO Fem*Power* is the interaction term between the gender variable and the power variable for each observation year. We also control for variables that impact a firm's decision to resort to earnings management. For firm-specific variables, we control for firm size, leverage, profitability and Tobin's Q, revenue growth, Altman Z-score, and auditor firm. Profitability, measured by ROA, is a proxy for a manager's incentive to manipulate earnings, and Tobin's Q controls for a firm's expected future growth opportunities. Altman Z-score is a measure of financial distress. Firms with higher financial constraints are more likely to conceal true earnings. Since the level of scrutiny increases with audits, we control for Big 8 audits by using the variable *Big 8*, which takes the value of 1 if the auditor of the firm for a given year is one of the Big 8 audit firms, [2] and 0 otherwise. We also control for fraction of independent directors, female directors, and CFO female. These variables control for gender diversity in boards. Construction and definitions of these variables are explained in Appendix.

Panel A of Table 2 provides descriptive statistics for the firm variables, board characteristics and CEO characteristics. The table also presents univariate analysis of difference in means for these variables. We find that compared to firms headed by male CEOs, firms headed by women CEOs have a significantly bigger board and a higher percentage of independent directors. Boards of firms headed by women have 30.5% women directors compared to 19.2% women directors in firms headed by males, indicating a higher percentage of female directors for firms headed by women. We also find that women occupy leadership roles for significantly smaller firms than males. The mean value of Z-score for the group of women CEOs is 2.268, significantly

Panel A: Difference in CEO, board and firm characteristics of firms headed by male and female CEOs

Variables	Firms headed by female CEOs (1)		Firms headed by male CEOs (2)		Difference in means (1)–(2)
	Mean	Std dev	Mean	Std dev	
CEO characteristics					
CEO tenure	8.773	4.764	11.547	7.830	−2.773***
CEO pct ownership	1.710	5.529	4.486	7.135	−2.776**
CEO duality	0.379	0.485	0.471	0.499	−0.092***
CEO pay slice	0.357	0.148	0.362	0.152	−0.004**
Board characteristics					
No. of directors	7.810	3.444	7.513	3.710	0.297**
Frac of ind directors	0.779	0.180	0.737	0.223	0.042***
Frac of female directors	0.305	0.192	0.116	0.132	0.189***
Firm characteristics					
Firm size	7.867	1.722	8.067	1.698	−0.200***
ROA	0.139	0.088	0.131	0.101	0.007
Tobin's Q	1.949	1.303	1.917	1.361	0.0361
Leverage	0.220	0.181	0.228	0.187	−0.008
Revenue growth	5.116	22.70	7.585	25.80	−2.468***
Big 8	0.947	0.223	0.929	0.255	0.0174
Z-score	2.268	1.344	2.099	1.546	0.169***

Panel B: Pearson correlation matrix between three individual REM variables and composite measure of REM

Variables	Prod_r	Disx_r	CFO_r	REM	DA
Prod_r	1.000				
Disx_r	0.654***	1.000			
CFO_r	0.557***	0.201***	1.000		
REM	0.910***	0.774***	0.728***	1.000	
DA	0.1279***	0.184**	0.311***	0.261**	1.000

Note(s): Panel A of the table shows the summary statistics of main CEO, board and firm variables used in the analysis. The table also shows the univariate analysis of the difference in the variables for firms headed by male and female CEOs. Definitions of the variables are listed in Appendix. Panel B of the table tabulates the correlation matrix in the three components of the real earnings management. Prod_r, Disx_r and CFO_r measure abnormal production cost, abnormal discretionary expense and abnormal operating cash flows, respectively. REM is calculated by standardizing and summing the three individual REM variables (Prod_r, Disx_r and CFO_r). ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 2.
Descriptive statistics

higher than the group of male CEOs, indicating that women are more likely to be hired in firms with higher financial constraints and thus higher bankruptcy risks.

Panel B of Table 2 documents the Pearson correlation matrix for the individual REM variables, composite measure of REM and accrual-based earnings management (DA). The three individual REM variables (Prod_r, Disx_r and CFO_r) show a strong and positive correlation suggesting that firms implement various REM tactics simultaneously. Furthermore, all REM variables are positively correlated with REM at 1% level. REM variables and discretionary accruals (DA) are also found to be positively correlated.

4. Results and empirical analysis
4.1 Univariate analysis
Table 3 presents the univariate analysis of difference in means for the REM variable between firms headed by female and male CEOs. Significant differences are found in the REM between

Panel A. Difference in earnings management in firms categorized by CEO gender

Variables	Male CEOs (1)		Female CEOs (2)		Difference (1)–(2)	
	Mean	Std dev	Mean	Std dev	Mean	t-stat
REM	0.143	2.053	−0.477	2.015	0.62***	2.563
Prod_r	0.584	0.801	−0.019	0.035	0.603***	3.271
Disx_r	0.909	0.884	−0.030	0.037	0.939***	2.316
CFO_r	0.059	0.869	−0.176	0.834	0.235	1.151
DA	0.010	0.071	−0.014	0.070	0.024**	2.147

Panel B. Difference in earnings management in firms categorized by CEO gender and power

Variables	CEOs with CEO duality			CEOs without CEO duality		
	Male CEOs	Female CEOs	Difference (1)–(2)	Male CEOs	Female CEOs	Difference (1)–(2)
REM	0.012	0.333	−0.321**	−0.008	−0.281	0.272***
Prod_r	0.009	0.141	−0.132***	−0.006	−0.118	0.111***
CFO_r	−0.028	−0.056	0.027	−0.025	−0.037	0.012
DA	0.007	0.001	0.008	−0.013	−0.022	0.009*

Note(s): Panel A tabulates the univariate analysis of earnings management variables for male and female CEOs. We use real earnings management (REM) as a measure of earnings management. Prod_r, Disx_r and CFO_r variables are abnormal production cost, abnormal discretionary expense and abnormal operating cash flows, respectively. In panel B, we categorize the firms by CEO gender and power. The table shows the difference in earnings management between firms headed by male and female CEOs with and without power. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 3.
Univariate analysis

the two groups. The group headed by female CEOs has a mean earnings management variable (REM) of −0.477 compared to 0.143 of the group headed by male CEOs. The difference is significant at the 1% level, suggesting that firms with women CEOs engage in significantly lower earnings management. Accruals-based earnings management variable (DA) also yields consistent results. This univariate finding suggests that on average, firms with female CEOs engage in significantly lower earnings management. The result agrees with the assertions of Hypothesis 1 (H1). We also find that the mean values of abnormal production costs (Prod_r) and abnormal discretionary expenses (Disx_r) are significantly lower for female CEOs than male CEOs. The difference in the mean abnormal operating cash flows (CFO_r) between firms headed by male and female CEOs are not significant.

In Panel B of Table 3, we divide the sample by managerial power as measured by the CEO being the chairperson of the board. The difference in REM between firms headed by male versus female CEOs widens when the CEO is not the chairperson of the board (0.272). In the higher power group where the CEO is also the chairperson of the board, the difference in REM is found to be negative (−0.321). The results suggest that when the CEO is not the chairperson of the board, firms with women CEO's engage in less earnings management vis-à-vis firms headed by their male counterparts. However, when the CEO is the chairperson of the group, on average the firms with women CEO seems to engage in more earnings management than firms with male CEOs. The distribution of male versus female CEOS is highly skewed. Roughly 2.81% of the sample consists of women CEO and less than half of them hold dual roles. Therefore, it is important to note caution in drawing conclusions from these univariate results. However, the numbers do suggest that CEO Power seems to affect the relationship between CEO gender and earnings management.

4.2 Empirical results
Extant research such as Ryan and Haslam (2005) indicate that firms headed by women might have different characteristics than firms headed by men. Hence, in order to compare the

behavior of the two genders, we create a propensity score matched (PSM) sample. The PSM treatment group is a sample of firms headed by women, and the control groups is a matched sample of firms with male CEOs. We use a probit model to estimate the propensity score of each sample, where the dependent variable is *CEO Fem* and the independent variables are firm size, ROA, Tobin's *Q*, *Z*-score, board size, and year and industry dummies. The propensity scores obtained from the first step are used to create sample of matched unique pairs of firm's lead by women CEOs and male CEOs. The paired sample consists of 796 firm-year observations comprising of 398 firm-year observations headed by women. We explore the relationship between CEO gender, power and earnings management using the ordinary least squares (OLS) model stated in Equation (1). Table 4 presents the results of the regression. In model 1, the coefficient of the CEO gender variable (*CEO Fem*) is negative and significant at the 5% level. This suggests that female CEOs engage in lower earnings management, consistent with H1. The coefficient of CEO power [3] (*CEO dual*) in model 2 is positive and significant at 1% level, thereby suggesting a positive relation between managerial power and REM consistent with existing literature (Shiah-Hou, 2021). Managers with high power have greater influence over board decisions and are more likely to pressurize the board to report optimistic accounting numbers. In Model (3), the coefficient of the interaction term (*CEO Fem*Dual*) is 0.899, significant at the 1% level [4]. This indicates that when the women CEO is also the board chair, the firm engages in relatively higher earnings management than firms headed by her male counterparts. This result is echoed in models 4 and 5. However, *abnormal operating cash flows* (CFO_r) which measures potential sales manipulation does not support this conclusion. Models 4 and 5 suggest that on average *abnormal production cost* (Prod_r), and *abnormal discretionary expenses* (Disx_r) are significantly higher in firms lead by women CEOs with more power, as compared to any other group of firms. Thus, in suggesting that powerful women CEOs are more likely to engage in earnings management than their male counterparts, these results reject H2.

The acceptance of H1 and the rejection of H2 suggest that although there are differences between the behavior of female CEOs and that of male CEOs, with respect to earnings management, those differences are moderated by CEO power. Furthermore, it seems to reject the attribution of the difference between the genders to distinct moral compass. We conjecture that this result is likely driven by the difference in the way that others in the profession accept a CEO of one gender vis-à-vis another gender. Drawing upon the glass ceiling literature discussed earlier in the introduction of this paper, we argue that less powerful women CEOs are likely to face a greater level of scrutiny and exercise potentially lesser influence than their male counterparts. To navigate the higher levels of scrutiny, firms with less powerful women CEOs indulge in significantly lower levels of earnings management vis-à-vis firms lead by their male counterparts.

5. Robustness tests

5.1 OLS regression

For robustness, we examine the impact of CEO gender and power on REM using the model in Equation (1) for the full sample. The estimation results are presented in Table 5. The main variable of interest is CEO gender and CEO Dual in models 1 and 2, respectively. Model 3 reports the results of interaction between CEO gender and CEO power on REM. Consistent with the results reported in Table 4, we find the coefficient of interaction term [5] (*CEO Fem*Dual*) is 0.798, significant at the 1% level. The results support our earlier findings whereby CEO power influences the relationship between gender and earnings management. Firms headed by powerful women CEOs engage in more earnings management than less powerful women CEOs. Furthermore, firms with more powerful women CEOs seem to engage in higher earnings management than firms lead by their male counterparts.

Variables	REM (1)	REM (2)	REM (3)	Prod_r (4)	Disx_r (5)	CFO_r (6)
Intercept	1.866*** (3.38)	1.722*** (3.13)	2.030*** (3.65)	0.610*** (2.63)	0.799*** (3.05)	0.620*** (2.77)
CEO fem	-0.180** (2.11)		-0.553*** (2.51)	-0.175* (1.91)	-0.309*** (2.98)	-0.068 (0.77)
CEO dual		0.505*** (3.34)	0.087* (1.78)	0.057* (1.81)	0.015 (1.16)	0.045** (2.13)
CEO Fem*Dual			0.899*** (2.98)	0.308*** (2.45)	0.625*** (3.38)	0.034 (1.28)
Leverage	1.07** (2.21)	1.06** (2.23)	1.06** (2.23)	0.143 (0.72)	0.448** (2.04)	0.467*** (2.43)
ROA	-1.52*** (3.15)	-1.70*** (3.35)	-1.87*** (3.54)	-4.453*** (4.37)	-0.353 (0.66)	-1.607*** (3.83)
Tobin's Q	-0.35*** (3.26)	-0.33*** (3.97)	-0.31*** (3.83)	-0.088*** (3.21)	-0.151** (2.12)	-0.797** (2.21)
Firm size	-0.182*** (3.21)	-0.205*** (2.61)	-0.229 (2.82)	-0.056*** (2.38)	-0.057** (2.13)	-0.115*** (2.88)
Revenue growth	-0.051* (1.69)	-0.052* (1.73)	-0.056* (1.88)	0.016 (1.33)	-0.007** (2.14)	-0.178 (1.15)
Z-score	0.508*** (3.17)	0.506*** (3.19)	0.521*** (3.17)	0.171*** (2.86)	0.137*** (3.06)	0.212*** (3.50)
Big 8	-0.821 (1.36)	-0.930 (1.15)	-0.965 (1.23)	-0.332 (1.32)	-0.172 (1.08)	-0.457 (1.13)
Board size	0.146 (1.04)	0.145 (1.06)	0.128 (0.93)	0.043 (0.75)	-0.162* (2.49)	0.077 (1.38)
Frac of ind directors	0.208 (1.51)	0.130 (1.32)	0.149 (1.37)	0.052 (1.31)	0.034 (1.18)	0.131 (1.16)
Frac of fem directors	-0.347* (1.91)	-0.556** (2.11)	-0.316** (2.23)	-0.140* (1.86)	-0.408* (1.87)	-0.232 (1.46)
CFO female	-0.249 (1.03)	-0.234 (1.07)	-0.221 (0.93)	-0.073 (0.74)	-0.160 (1.43)	0.012 (1.14)
No. of obs	796	796	796	796	796	796
R-squared	0.298	0.296	0.302	0.243	0.170	0.329
F-statistics	2.14***	2.56***	2.57***	6.30***	6.27***	2.89***
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): The table reports regression results on the relation between CEO gender, CEO power and earnings management based on the propensity score matched approach (PSM). The PSM treatment group is a sample of firms headed by women and the control group is a matched sample of firms with male CEOs. We first regress CEO Fem on firm size, ROA, market-to-book ratio and obtain the propensity score based on nearest neighbor match in a given year and industry. We then run the regression of CEO gender and power on REM on the matched sample. Prod_r (Abnormal production cost), Disx_r (abnormal discretionary expenses) and CFO_r (abnormal operating cash flows) are the individual REM variables. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 4.
Regression of CEO
gender and power on
earnings management
using propensity score
matched sample

Variables	REM (1)	REM (2)	REM (3)	Prod_r (4)	Disx_r (5)	CFO_r (6)
Intercept	2.825*** (2.91)	2.817*** (2.89)	2.831*** (3.11)	0.863*** (5.50)	0.819*** (2.65)	1.154*** (3.52)
CEO fem	−0.244*** (2.24)		−0.341*** (2.56)	−0.133*** (2.43)	−0.162*** (2.53)	−0.046* (1.87)
CEO dual		0.133*** (3.72)	0.109*** (3.00)	0.037** (2.23)	0.082*** (4.71)	0.109 (1.37)
CEO Fem*Dual			0.798*** (2.89)	0.321*** (3.81)	0.507*** (3.17)	0.030 (1.22)
Leverage	1.632*** (4.73)	1.654*** (4.32)	1.648*** (4.84)	0.415*** (4.07)	0.583*** (3.95)	0.648*** (4.31)
ROA	−1.532*** (4.07)	−1.545*** (4.14)	−1.543*** (3.96)	−4.010*** (3.86)	−0.480*** (3.67)	−0.650*** (2.88)
Tobin's Q	−0.450*** (2.51)	−0.451*** (2.89)	−0.450*** (3.01)	−0.122*** (3.47)	−0.186*** (2.56)	−0.141*** (2.65)
Firm size	−0.281*** (3.21)	−0.287*** (3.76)	−0.290*** (3.95)	−0.079*** (3.28)	−0.855*** (3.54)	−0.125*** (2.87)
Revenue growth	−0.033*** (4.84)	−0.034*** (4.87)	−0.039*** (4.80)	−0.023*** (2.86)	−0.031** (2.23)	−0.004 (1.32)
Z-score	0.667*** (7.05)	0.664*** (6.80)	0.664*** (6.85)	0.224*** (3.16)	0.140*** (3.29)	0.299*** (2.89)
Big 8	−0.461 (1.14)	−0.446 (1.45)	−0.440 (1.26)	−0.134 (1.02)	−0.211 (1.34)	−0.096 (1.26)
Board size	−0.971*** (3.26)	−0.095*** (3.21)	−0.097*** (3.26)	−0.024* (1.96)	−0.028* (2.01)	0.044* (1.96)
Frac of ind directors	0.248** (2.21)	0.239*** (2.75)	0.236*** (2.76)	0.056* (1.57)	−0.041 (1.09)	−0.138 (1.36)
Frac of fem directors	−0.426*** (3.05)	−0.441*** (3.26)	−0.421*** (3.02)	−0.176*** (2.14)	−0.420* (1.96)	−0.176** (2.13)
CFO female	−0.040 (1.06)	−0.035 (1.32)	−0.040 (1.26)	−0.016 (1.15)	−0.030 (1.04)	−0.058* (1.98)
No. of obs	12,966	12,966	12,966	12,966	12,966	12,966
R-squared	0.264	0.265	0.278	0.196	0.093	0.343
F-statistics	41.35***	41.16***	35.31***	38.42***	44.25***	51.40***
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): The table reports panel data OLS regression results on the relation between CEO gender, power and real earnings management (REM) for the whole sample. The table also shows the impact of CEO gender and power on individual REM variables: Prod_r (Abnormal production cost), Disx_r (abnormal discretionary expenses) and CFO_r (abnormal operating cash flows). CEO Fem is an indicator variable and has a value of 1 if CEO is a female and 0 otherwise. CEO power is measured using CEO Dual. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 5.
OLS regression of CEO gender and power on earnings management using the whole sample

5.2 Instrumental variable estimation
Harris *et al.* (2019) state that women CEOs are not randomly assigned to firms or given a high-power status, creating a potential for endogeneity bias in our results. To mitigate such self-selection biases, we use a two-stage least square (2SLS) instrumental variable estimation.

Following studies such Huang and Kisgen (2013), Harris *et al.* (2019), we use the state-level gender equality index developed by Sugarman and Straus (1988) as an exogenous instrumental variable. The rationale for using this variable is that a firm headquartered in a state that is more sympathetic to gender equality is more likely to appoint a female CEO. The index captures this effect through a metric that ranges from 0 to 100 and reflects the economic, political, and legal policies towards gender equality in each of the 50 U S. states. We assign a gender equality score (*Gen Equal Index*) to each firm-year observation based on the state in which the firm is headquartered. In the first step, we regress *CEO Fem* on the instrumental variable (*Gen Equal Index*) and other explanatory variables using a logit model as follows:

$$CEO\,Fem_{i,t} = \beta_0 + \beta_1\,Gen\,Equal_{i,t} + \beta_2\,CEO\,Dual_{i,t} + \beta_3 \sum_i Controls_{i,t} + \mu_{i,t}. \qquad (2)$$

In the second-stage regression, we use the predicted values from the first-stage regression to estimate the combined effect of CEO gender and CEO power on earnings management. The estimation results are presented in Table 6. Panel A of Table 6 shows that the coefficient of the instrumental variable (*Gen Equal Index*) is positive and significant at the 5% level. This indicates that women are more likely to occupy leadership positions in firms headquartered in states with higher gender equality index, consistent with Huang and Kisgen (2013). Panel B of Table 6 reports the results of the second-stage regression. Consistent with the OLS regression results in Tables 4 and 5, we find the interaction term [6] (*CEO Fem*Dual*) is positive and significant at the 5% level. The analysis once again suggests that power moderates the negative relation between CEO gender and earnings management.

6. Additional analysis
6.1 CEO turnover
While propensity score matching controls for differences between firms with women versus male CEOs, there are still possibilities of variables that the matching process has failed to account for potentially affecting our results. To address this concern, this section focuses on earnings management within the same firm when a male CEO is replaced by a female CEO and vice-versa, or if the firm witnesses a change in the power of the CEO. We identify a subsample of firm-year observations that witness a change in CEO or *CEO power* from the previous year. We categorize CEO turnover based on change in gender and power of the incoming CEO. The sub-sample consists of 385 firm year observations. 189 instances of male to female and 196 females to male changes. Panel A of Table 7 reports the descriptive statistics and univariate analysis for the sample of CEO turnover. In 41 cases, the incoming women hold dual position of CEO and board chair (powerful), while in 32 cases, the incoming women serve only as the CEO (less powerful). We compare the mean of change in REM one year after the change in leadership. We find an increase in REM when the incoming female leader has more power relative to the outgoing male CEO (coefficient of 0.470), significant at the 1% level. Furthermore, when the incoming woman CEO has less power than the outgoing male CEO, we find a decline in REM (coefficient of −0.698), significant at the 1% level. For the transition from female to male CEO, we find a positive and significant change in REM if the incoming male CEO holds more power than the outgoing female CEO. In the cases where less

| | Panel A. First-stage regression | Panel B. Second-stage regression | | |
| | (1) | (2) | (3) | (4) |
Dependent variable	CEO fem	REM	REM	REM
Intercept	0.104** (2.13)	1.826** (2.00)	5.780*** (2.61)	9.312*** (3.05)
Gen Equal Index	0.074** (2.23)			
Inst female		−1.709** (2.15)	−1.516* (2.06)	−1.297* (1.94)
CEO dual	0.078** (2.45)		0.526*** (3.50)	0.482** (2.34)
CEO Inst Fem*Dual				0.278*** (4.12)
Leverage	0.06 (1.07)	0.648* (2.05)	0.485* (1.96)	0.345* (1.89)
ROA	−0.124 (1.15)	−3.462*** (2.58)	−3.471*** (2.66)	−1.527*** (2.44)
Tobin's Q	−0.012 (1.47)	−1.157** (2.23)	−1.431* (1.95)	−1.714* (2.02)
Firm size	0.376*** (2.81)	−2.124* (1.96)	−2.260* (1.87)	−3.59* (2.23)
Revenue growth	0.014 (1.34)	0.013 (1.34)	0.017 (1.14)	0.023 (1.52)
Z-score	0.512** (2.36)	0.393*** (3.09)	0.346*** (2.73)	0.320*** (2.54)
Board size	0.056* (1.89)	−1.499 (1.14)	−1.670 (1.37)	−1.847 (1.67)
Frac of ind directors	0.261*** (3.05)	1.907* (2.05)	1.259* (1.93)	1.329* (2.04)
Frac of fem directors	1.396*** (6.29)	−1.974 (1.46)	−1.270 (1.55)	−1.343* (1.94)
CFO Female	0.148 (1.29)	−1.754 (1.06)	−1.797 (1.41)	−1.087 (1.55)
CEO Tenure	−0.145** (2.12)			
No. of obs	796	796	796	796
Log likelihood	−389.318			
Wald test	321.93***			
R-squared		0.286	0.298	0.308
Year fixed effects	Yes	Yes	Yes	Yes

Note(s): The table reports the regression results from two-stage least squared (2SLS) instrumental variable approach to mitigate endogeneity concerns. In the first-stage regression, the endogenous variable CEO Fem is regressed on the instrument variable (Gen Equal Index). In the second-stage regression (panel B), the predicted value from the first-stage regression is used to re-estimate the relation between CEO gender, power and earnings management. Inst Female is the instrumented variable from the first stage and Inst Fem*Dual is the interaction variable between instrumented gender variable and CEO power. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 6.
Instrumental variable approach results using matched sample

powerful male CEO replaces a powerful female CEO, the change in REM is negative although non-significant. These results support the earlier findings.

Panel B of Table 7 reports the regression results for the CEO turnover sample. The dependent variable is the change in REM one year after the CEO turnover. Models 1 and 2 examine CEO turnover where the incoming CEO has more power than the outgoing CEO, while models 3 and 4 examine the CEO turnover where the incoming CEO has less power than the outgoing CEO. We find a positive and significant change in REM when the incoming female CEO is more powerful (coefficient of 0.419) than the outgoing male CEO and a negative change in REM when the incoming female CEO is less powerful (−0.272). Once again, the results support the previous findings whereby earnings management behavior of women CEOs depends on the power they hold. Our results thus suggest that gender stereotypes of higher risk aversion and superior moral compass among CEOs may not be accurate.

6.2 Alternate measures of CEO power
We also examine the robustness of our results using an alternative measure of CEO power. Following Liu and Jiraporn (2010), we construct a power index using four normalized CEO power variables: CEO duality, CEO's founder status, CEO ownership and CEO pay slice. CEO duality captures the structural power with the CEO. CEO pay slice measures the relative

Panel A. Summary statistics of CEO turnover

CEO turnover	Male to female CEOs		Female to male CEOs	
	No. of obs	Change in REM	No. of obs	Change in REM
CEO Non-dual to dual	41	0.470**	32	0.588**
CEO Dual to non-dual	32	−0.698***	45	−0.112
CEO Dual to dual	29	0.276	30	0.236
CEO Non-dual to non-dual	87	−1.874*	89	0.113

Panel B. Regression results of the impact of CEO gender and power on earnings management using CEO turnover

Dep variable change in REM

	CEO non-dual to dual	CEO dual to dual	CEO dual to non-dual		CEO dual to dual	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.445 (1.13)	0.470 (1.11)	0.934 (1.40)	0.964 (1.45)	0.066 (1.47)	0.062 (1.55)
CEO Male to Female	0.419** (2.21)	0.289*** (2.66)	−0.272*** (3.08)		0.045 (1.14)	
CEO Female to Male				−0.513 (1.15)		0.099 (1.33)
Leverage	0.823* (1.67)	0.834* (1.76)	0.840* (1.98)	0.814* (1.67)	0.818* (1.66)	0.821* (1.84)
ROA	−0.957*** (3.45)	−1.096*** (3.21)	−0.965** (2.35)	−1.584*** (2.53)	−1.026** (2.31)	−1.202** (2.44)
Tobin's Q	−0.426 (1.55)	−0.424 (1.57)	−0.466 (1.04)	−0.066 (1.43)	−0.463 (1.16)	−0.465 (1.15)
Firm size	−0.025 (1.59)	0.024 (1.32)	−0.056 (1.33)	−0.051 (1.32)	−0.023 (1.60)	−0.023 (1.59)
Revenue growth	−0.025 (0.59)	−0.022 (0.31)	−0.004 (0.31)	−0.004 (0.32)	−0.003 (1.09)	−0.002 (1.06)
Z-score	0.094* (1.67)	0.093* (1.76)	0.097* (1.68)	0.086* (1.66)	0.098* (1.77)	0.098* (1.68)
Big 8	0.429 (1.39)	0.468 (1.35)	0.415 (1.07)	0.414 (1.09)	0.017 (1.13)	−0.017 (1.14)
Board size	−0.144 (1.08)	−0.144 (1.08)	−0.033 (0.89)	−0.038 (1.01)	−0.013 (1.30)	−0.014 (1.35)
Frac of ind directors	0.024 (0.11)	0.014 (0.23)	0.081 (1.17)	0.079 (1.32)	0.011 (0.29)	−0.010 (0.13)
Frac of female directors	0.062 (0.66)	0.062 (0.66)	0.038 (1.05)	0.052 (1.15)	0.030 (1.45)	0.024 (1.33)
No. of obs	189	196	189	196	189	196
R-squared	0.402	0.396	0.116	0.118	0.326	0.323
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Note(s): The table presents regression results of the impact of CEO gender and power on earnings management. Panel A presents summary statistics on CEO turnover based on gender and power. We examine if the change in gender and power results in change in earnings management. Panel B reports regression results of the impact of CEO gender and power on earnings management using the CEO turnover sample. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 7.
Impact of CEO gender and power on earnings management – Evidence using CEO turnover

ability of the CEO. The CEO, who is also the founder or owns a higher stake, has greater influence over the decision-making process (Pathan, 2009; Pour, 2015). We use principal component analysis (PCA) to extract one latent measure of power.

Table 8 reports the regression results using the extracted latent measure of CEO power. Consistent to our previous results, we find the interaction term (*CEO Fem*Power*) is 0.103, significant at the 1% level. This suggests that powerful female CEOs are more likely to engage in earnings management than their male counterparts. In models 3 and 4, we subdivide the sample into high-power and low-power CEO. A firm-year observation is categorized as high power if the power held by the CEO is more than the median power held by all CEOs. We find the coefficient of CEO gender (*CEO Fem*) is positive and insignificant for the high-CEO-power group, while negative and significant for low-CEO-power group.

6.3 Alternate measure of earnings management

Extant literature finds that managers also manage earnings through accruals (Jones, 1991; Dechow *et al.*, 1995). In this section, we use the modified Jones model (Dechow *et al.*, 1995) to estimate discretionary accruals as a measure of earning management.

After estimating total discretionary accruals, we re-run the regressions to examine the impact of CEO gender and power on total discretionary accruals as a measure of earnings management. The results presented in Table 9 are consistent with the previous results as reported and discussed in Tables 4 and 5. We find that the coefficient of CEO gender (*CEO female*) is negative and significant at 5% level in model 1. This suggests that on average firms headed by women CEOs engage in lower earnings management relative to firms headed by male CEOs. In Model (3), we test the combined impact of CEO gender and power on earnings

Sample	All REM	All REM	High CEO power REM	Low CEO power REM
Intercept	2.717*** (9.79)	2.716** (8.78)	1.678*** (15.65)	1.436*** (13.21)
CEO fem		−0.297* (1.76)	0.315 (1.33)	−0.277** (2.08)
CEO power	0.066*** (4.29)	0.064*** (4.08)		
CEO Fem*Power		0.103** (2.21)		
Leverage	1.657*** (4.91)	1.656*** (3.54)	1.345** (2.13)	1.365** (2.09)
ROA	−1.481*** (2.87)	−1.419*** (2.65)	−1.547*** (3.43)	−1.531*** (3.21)
Tobin's *Q*	−0.452** (2.11)	−0.452** (2.13)	−0.428** (2.07)	−0.431** (2.12)
Firm size	−0.272** (2.14)	−0.273** (2.21)	−0.265*** (2.65)	−0.254** (2.24)
Revenue growth	−0.003 (1.23)	−0.003 (1.15)	−0.002 (1.09)	−0.001 (1.14)
Z-score	0.667** (2.34)	0.667*** (2.35)	0.654** (2.21)	0.687** (2.15)
Big 8	0.0435 (1.29)	0.044 (1.13)	0.042 (1.07)	0.054 (1.14)
Board size	0.096* (1.66)	0.097* (1.72)	0.085 (1.53)	0.078 (1.46)
Frac of ind directors	0.259 (0.66)	0.257 (0.76)	0.221 (0.29)	0.332 (0.81)
Frac of fem directors	−0.312* (1.96)	−0.311* (1.87)	−0.068* (1.96)	−0.045* (1.67)
CFO Female	0.023 (0.34)	0.025 (0.44)	0.021 (0.31)	0.034 (0.42)
No. of obs	12,965	12,965	6,683	6,282
R-squared	0.065	0.064	0.081	0.076
F-statistics	41.56***	35.62***	28.71***	27.86***
Year fixed effects	Yes	Yes	Yes	Yes

Note(s): The table reports regression results using an alternate measure of CEO power. We construct a composite index using CEO duality, CEO founder status, CEO Pay Slice and CEO ownership variables. Panel A reports the pairwise correlation between the variables. Panel B reports the index weights obtained using PCA analysis. Panel C reports regression results of the impact of CEO gender and power on earnings management using the alternate measure of CEO power. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 8.
Alternate measure of CEO power

Sample Variables	(1) All DA	(2) All DA	(3) All DA	(4) Matched sample DA	(5) Matched sample DA
Intercept	1.083 (1.23)	1.903 (1.26)	1.359 (1.29)	0.169*** (3.14)	0.232*** (3.06)
CEO fem	−0.314** (2.12)		−0.103** (2.22)	−0.308*** (2.81)	−0.011* (1.89)
CEO dual		0.323*** (2.58)	0.265** (2.08)		0.823 (1.11)
CEO Fem*Dual			0.181*** (2.53)		0.019* (1.84)
Leverage	0.128*** (3.30)	0.132*** (3.15)	0.130*** (3.02)	0.323*** (2.87)	0.128*** (2.78)
ROA	−0.795*** (3.10)	−0.792*** (2.89)	−0.793*** (3.06)	−0.281*** (2.72)	−0.104*** (2.65)
Tobin's Q	−0.679*** (2.79)	−0.681*** (2.83)	−0.678*** (2.89)	−0.316*** (2.72)	−0.884*** (3.55)
Firm size	−0.280*** (4.58)	−0.294*** (4.54)	−0.302*** (5.07)	−0.207*** (3.29)	−0.393*** (3.21)
Revenue growth	−0.132** (2.23)	−0.132** (2.12)	−0.139** (2.07)	−0.054 (1.49)	−0.164* (1.87)
Z-score	0.548*** (8.71)	0.540*** (8.57)	0.541*** (8.58)	0.467*** (5.64)	0.576*** (6.16)
Big 8	−0.657** (2.29)	−0.622** (2.16)	−0.608** (2.12)	−0.894*** (2.68)	−0.424** (2.12)
Board size	0.190* (1.83)	0.186 (1.79)	0.190* (1.83)	0.223 (1.66)	0.139* (1.89)
Frac of ind directors	0.649 (1.26)	0.462 (1.14)	0.381 (1.13)	0.144 (1.35)	0.147 (1.32)
Frac of fem directors	−0.616 (1.26)	−0.734 (1.55)	−0.606 (1.24)	−0.218 (1.14)	−0.113 (1.35)
CFO female	0.447 (1.28)	0.430 (1.12)	0.445 (1.32)	0.462 (1.43)	0.506 (1.30)
No. of obs	12,965	12,965	12,965	796	796
R-squared	0.352	0.358	0.364	0.254	0.426
F-statistics	40.17***	40.68***	35.38***	30.71***	38.65***
Year fixed effects	Yes	Yes	Yes	Yes	Yes

Note(s): The table reports regression results using an alternate measure of earnings management. We use discretionary accruals (DA) as the measure of earnings management. Discretionary accruals are calculated using modified Jones model. Models 1, 2 and 3 test the impact of CEO gender and power on discretionary accruals for the whole sample, while models 4 and 5 test the gender and power impact on propensity score matched sample. ***, ** and * indicate statistical significance at the 1, 5 and 10% levels, respectively

Table 9.
Alternate measure of earnings management (Discretionary Accruals)

management. We find the coefficient of the interaction term (*CEO Fem*Dual*) is positive and significant at 1% level suggesting that firms headed by powerful CEOs engage in higher earnings management relative to the firms headed by their male counterparts. In models 4 and 5, we examine the impact of CEO gender and power on the matched sample and find consistent results.

7. Conclusion
Extant literature has attributed perceived psychological differences between the genders as drivers of differences in the professional behavior and performance of male versus female CEOs (Krishnan and Parsons, 2008; Gul *et al.*, 2013; Srinidhi *et al.*, 2011). However, other studies with potentially contradicting implications suggest that women successful in a predominantly male environment have to act and behave more like men (Adams and Funk, 2012). This paper takes a closer look at the relationship between gender and earnings management. Our results seem to suggest that *CEO power* moderates this relationship. While we do find that, on average, firms with women CEOs indulge in significantly lower levels of

earnings management, this seems to hold true only of firms with less powerful women CEOs. Firms with women CEOs with high power seem to engage in more earnings management than firms headed with their male counterparts. These results question the attribution of on average more risk aversion and ethical behavior of women CEOs to the differing moral and ethical compass of their gender. Instead, we suggest that in not accounting for CEO power, various extant studies suffer from misspecification and missing variable problem.

Drawing upon the glass ceiling literature (Powell and Butterfield, 2015), we suggest that a possible explanation for these results could be that less powerful women CEOs are subjected to potentially higher levels of scrutiny than their male counterparts. Thereby, they find themselves in an environment where they have to be seen as more ethical. In the presence of glass ceilings, the woman who has risen to the CEO position despite all the discriminations is more capable and qualified. If she is also more powerful, then in line with the assertion of Adams and Funk (2012), she acts and behaves and is also possibly driven by the same concerns as her male counterparts once she occupies the top leadership position. Thus, we see a higher level of earnings management behavior from her. Overall, this study provides a novel contribution to the finance literature by showing that power distorts the negative relationship between CEO gender and earnings management.

Notes

1. Following Griffin *et al.* (2021), we multiply the abnormal discretionary expenses and abnormal cash flows from operations by −1 to capture the increase in earnings management activities.

2. The Big 8 audit firms are the top-eight prestigious accounting firms across the United States: Arthur Andersen, Arthur Young, Deloitte Haskins and Sells, Ernst and Whinney, Peat Marwick Mitchell, Pricewaterhouse Coopers, Touche Ross and Coopers & Lybrand. Some of these firms merged over time and are presently top including Pricewaterhouse Coopers, Deloitte, Ernst and Young and Klynveld Peat Marwick Goerdeler (KPMG).

3. We also test the model using CEO pay slice as a measure of CEO power and find consistent results. Results available upon request.

4. Chen *et al.* (2018) point out that using residuals from first stage regressions as dependent variables in the second-stage regression can lead to biased coefficients and standard errors. Following their suggestion, we use the one stage estimation procedure. Our results remain robust.

5. We also use CEO pay slice as a measure of CEO power and find consistent results. Results available on request.

6. We also use CEO pay slice as a measure of CEO power and get consistent results. Results available on request.

References

Adams, R.B. and Funk, P. (2012), "Beyond the glass ceiling: does gender matter?", *Management Science*, Vol. 58 No. 2, pp. 219-235.

Adams, R.B., Almeida, H. and Ferreira, D. (2005), "Powerful CEOs and their impact on corporate performance", *Review of Financial Studies*, Vol. 18 No. 4, pp. 1403-1432.

Baxter, J. and Wright, E.O. (2000), "The glass ceiling hypothesis: a comparative study of the United States, Sweden, and Australia", *Gender and Society*, Vol. 14 No. 2, pp. 275-294, doi: 10.1177/089124300014002004.

Bebchuk, L., Cohen, A. and Ferrell, A. (2009), "What matters in corporate governance?", *Review of Financial Studies*, Vol. 22 No. 2, pp. 783-827.

Bebchuk, L.A., Cremers, K.M. and Peyer, U.C. (2011), "The CEO pay slice", *Journal of Financial Economics*, Vol. 102 No. 1, pp. 199-221.

Betz, M., O'Connell, L. and Shepard, J.M. (1989), "Gender differences in proclivity for unethical behavior", *Journal of Business Ethics*, Vol. 8 No. 5, pp. 321-324.

Chen, W.E.I., Hribar, P. and Melessa, S. (2018), "Incorrect inferences when using residuals as dependent variables", *Journal of Accounting Research*, Vol. 56 No. 3, pp. 751-796.

Chu, J., Dechow, P.M., Hui, K.W. and Wang, A.Y. (2019), "Maintaining a reputation for consistently beating earnings expectations and the slippery slope to earnings manipulation", *Contemporary Accounting Research*, Vol. 36 No. 4, pp. 1966-1998.

Clikeman, P.M., Geiger, M.A. and O'Connell, B.T. (2001), "Student perceptions of earnings management: the effects of national origin and gender", *Teaching Business Ethics*, Vol. 5 No. 4, pp. 389-410.

Dalton, D. and Ortegren, M. (2011), "Gender differences in ethics research: the importance of controlling for the social desirability response bias", *Journal of Business Ethics*, Vol. 103 No. 1, pp. 73-93.

Dechow, P., Sloan, R. and Sweeney, A. (1995 In press), "Detecting earnings management", *The Accounting Review*, Vol. 70 No. 2, pp. 193-225.

Dikolli, S.S., Keusch, T., Mayew, W.J. and Steffen, T.D. (2020), "CEO behavioral integrity, auditor responses, and firm outcomes", *Accounting Review*, Vol. 95 No. 2, pp. 61-88.

Faccio, M., Marchica, M.T. and Mura, R. (2016), "CEO gender, corporate risk-taking, and the efficiency of capital allocation", *Journal of Corporate Finance*, Vol. 39, pp. 193-209.

Feng, M., Ge, W., Luo, S. and Shevlin, T. (2011), "Why do CFOs become involved in material accounting manipulations?", *Journal of Accounting and Economics*, Vol. 51 Nos 1-2, pp. 21-36.

Finkelstein, S. (1992), "Power in top management teams: dimensions, measurement, and validation", *Academy of Management Journal*, Vol. 35 No. 3, pp. 505-538.

Gilligan, C. (1982), *In a Different Voice: Psychological Theory and Women's Development*, Harvard University Press, United States.

Griffin, P.A., Hong, H.A., Liu, Y. and Ryou, J.W. (2021), "The dark side of CEO social capital: evidence from real earnings management and future operating performance", *Journal of Corporate Finance*, Vol. 68, 101920.

Gul, F.A., Hutchinson, M. and Lai, K.M. (2013), "Gender-diverse boards and properties of analyst earnings forecasts", *Accounting Horizons*, Vol. 27 No. 3, pp. 511-538.

Habib, A. and Hossain, M. (2013), "CEO/CFO characteristics and financial reporting quality: a review", *Research in Accounting Regulation*, Vol. 25 No. 1, pp. 88-100.

Harris, O., Karl, J.B. and Lawrence, E. (2019), "CEO compensation and earnings management: does gender really matter?", *Journal of Business Research*, Vol. 98, pp. 1-14.

Harrison, J.R., Torres, D.L. and Kukalis, S. (1988), "The changing of the guard: turnover and structural change in the top-management positions", *Administrative Science Quarterly*, Vol. 33 No. 2, pp. 211-232.

Hermalin, B.E. (2005), "Trends in corporate governance", *Journal of Finance*, Vol. 60 No. 5, pp. 2351-2384.

Ho, S.S., Li, A.Y., Tam, K. and Zhang, F. (2015), "CEO gender, ethical leadership, and accounting conservatism", *Journal of Business Ethics*, Vol. 127 No. 2, pp. 351-370.

Huang, J. and Kisgen, D.J. (2013), "Gender and corporate finance: are male executives overconfident relative to female executives?", *Journal of Financial Economics*, Vol. 108 No. 3, pp. 822-839.

Jalbert, T., Jalbert, M. and Furumo, K. (2013), "The relationship between CEO gender, financial performance and financial management", *Journal of Business and Economics Research*, Vol. 11 No. 1, pp. 25-33.

Jones, J.J. (1991), "Earnings management during import relief investigations", *Journal of Accounting Research*, Vol. 29 No. 2, pp. 193-228.

Khan, W.A. and Vieito, J.P. (2013), "CEO gender and firm performance", *Journal of Economics and Business*, Vol. 67, pp. 55-66.

Kothari, S.P., Mizik, N. and Roychowdhury, S. (2016), "Managing for the moment: the role of earnings management via real activities versus accruals in SEO valuation", *Accounting Review*, Vol. 91 No. 2, pp. 559-586.

Krishnan, G.V. and Parsons, L.M. (2008), "Getting to the bottom line: an exploration of gender and earnings quality", *Journal of Business Ethics*, Vol. 78 No. 1, pp. 65-76.

Levi, M., Li, K. and Zhang, F. (2014), "Director gender and mergers and acquisitions", *Journal of Corporate Finance*, Vol. 28, pp. 185-200.

Liu, Y. and Jiraporn, P. (2010), "The effect of CEO power on bond ratings and yields", *Journal of Empirical Finance*, Vol. 17 No. 4, pp. 744-762.

Ocasio, W. (1994), "Political dynamics and the circulation of power: CEO succession in US industrial corporations, 1960-1990", *Administrative Science Quarterly*, Vol. 39 No. 2, pp. 285-312.

Pathan, S. (2009), "Strong boards, CEO power and bank risk-taking", *Journal of Banking and Finance*, Vol. 33 No. 7, pp. 1340-1350.

Pour, E.K. (2015), "IPO survival and CEOs' decision-making power: the evidence of China", *Research in International Business and Finance*, Vol. 33, pp. 247-267.

Powell, G.N. and Butterfield, D.A. (2015), "The glass ceiling: what have we learned 20 years on?", *Journal of Organizational Effectiveness: People and Performance*, Vol. 2 No. 4, pp. 306-326.

Roychowdhury, S. (2006), "Earnings management through real activities manipulation", *Journal of Accounting and Economics*, Vol. 42 No. 3, pp. 335-370.

Ryan, M.K. and Haslam, S.A. (2005), "The glass cliff: evidence that women are over-represented in precarious leadership positions", *British Journal of Management*, Vol. 16 No. 2, pp. 81-90.

Schmitt, D.P., Long, A.E., McPhearson, A., O'Brien, K., Remmert, B. and Shah, S.H. (2017), "Personality and gender differences in global perspective", *International Journal of Psychology*, Vol. 52, pp. 45-56.

Shawver, T.J., Bancroft, P.C. and Sennetti, J. (2006), "Can the 'clan effect' reduce the gender sensitivity to fraud? The case of the IPO environment", *Journal of Forensic Accounting*, Vol. 7 No. 1, pp. 185-208.

Shiah-Hou, S.R. (2021), "Powerful CEOs and earnings quality", *Managerial Finance*, Vol. 47 No. 12, pp. 1714-1735, doi: 10.1108/MF-07-2020-0363.

Sila, V., Gonzalez, A. and Hagendorff, J. (2016), "Women on board: does boardroom gender diversity affect firm risk?", *Journal of Corporate Finance*, Vol. 36, pp. 26-53.

Srinidhi, B.I.N., Gul, F.A. and Tsui, J. (2011), "Female directors and earnings quality", *Contemporary Accounting Research*, Vol. 28 No. 5, pp. 1610-1644.

Sugarman, D.B. and Straus, M.A. (1988), "Indicators of gender equality for American states and regions", *Social Indicators Research*, Vol. 20 No. 3, pp. 229-270.

United States Glass Ceiling Commission (1995), *A Solid Investment: Making Full Use of the Nation's Human Capital*, Glass Ceiling Commission, Washington, DC.

Wellington, S., Kropf, M.B. and Gerkovich, P.R. (2003), "What's holding women back?", *Harvard Business Review*, Vol. 81 No. 6, p. 18.

Xin, J., Zhang, Y., Tang, Y. and Yang, Y. (2019), "Brain differences between men and women: evidence from deep learning", *Frontiers in Neuroscience*, Vol. 13, p. 185.

Ye, K., Zhang, R. and Rezaee, Z. (2010), "Does top executive gender diversity affect earnings quality? A large sample analysis of Chinese listed firms", *Advances in Accounting*, Vol. 26 No. 1, pp. 47-54.

Zalata, A.M., Tauringana, V. and Tingbani, I. (2018), "Audit committee financial expertise, gender, and earnings management: does gender of the financial expert matter?", *International Review of Financial Analysis*, Vol. 55, pp. 170-183.

Appendix

Real earnings management (REM)	A measure of earnings management developed using the model developed by Roychowdhury (2006). It is the sum of abnormal production costs, discretionary expenses and cash flow from operations
CEO Fem	An indicator variable that takes a value of 1 if the CEO is a female for a given year and 0 otherwise
CEO Power	It is measured using CEO duality and CEO Pay Slice. CEO duality is an indicator variable that takes the value of 1 if the CEO is also the board chair. CEO Pay Slice is the ratio of the CEO's compensation to the combined total compensation of top-five executives
Leverage	[Short-term debt (DLC) + Long-term debt (DLTT)]/Total Assets (AT)
Firm Size	Natural Log of Book Assets (AT)
Profitability (ROA)	Ratio of earnings before interest taxes and depreciation to book assets (OIBDP/AT)
Market Value of Assets (MV)	The current market price times the number of shares outstanding (LT + PSTKL − TXDITC + CSHO*PRCC_F)
Tobin's Q	Ratio of market value of assets to book value of assets (MV/AT)
Revenue Growth	Ratio of difference in revenues in year t and $t-1$ to assets in year $t-1$ (Sale (t) − Sale$(t-1)$)/Sale$(t-1)$
Z-score	A formula to determine the level of financial constraints. Calculated as 1.2*(working capital/total assets) + 1.4*(retained earnings/total assets) + 3.3 (EBIT/total assets) + 0.6*(MV of equity/total liabilities) + 1*(sales/total assets)
Big 8	An indicator variable that takes the value of 1 if the firm is audited by Big 8 audit firms
No. of Directors	Total number of directors in the boards
Frac of Independent directors	Fraction of independent directors (Independent directors/total directors)
Frac of Female directors	Fraction of female directors in the board (Female directors/total directors)
CFO Female	An indicator variable that takes the value of 1 if the CFO is a female and 0 otherwise

Table A1.
Definitions of variables

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