Female Directors and Managerial Opportunism: Monitoring versus Advisory Female Directors

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Abstract

Going beyond the mere participation of female directors within boardrooms, we investigate which of the two major boards of directors' roles (*advisory versus monitoring*) is best played by female directors in order to make a difference to shareholders. More specifically, we investigate the impact that advisory and monitoring female directors have on managerial opportunism with a specific focus on earnings management. Using sample of US firms, we find evidence suggesting that female directors holding monitoring roles mitigate managerial opportunism, as measured by discretionary accruals. In contrast to the current argument that advisory directors in general are better able to sustain and improve earnings quality, we find no evidence that suggests that advisory female directors are significantly associated with lower managerial opportunism. Overall, the results remain robust after controlling for potential endogeneity problems, corporate governance, and external auditor quality.

Keywords: Female directors, gender differences, advisory versus monitoring directors, earnings management, economic versus social theories.

JEL Classification: G3, G30

Introduction

Corporate boards perform two main roles: (i) advising and (ii) monitoring corporate executives (Adams & Ferreira, 2007; Faleye, Hoitash, & Hoitash, 2011, 2013; Hsu & Hu, 2016; Jensen, 1993). The central objective of this study, therefore, is to investigate which of these two major board of directors' roles (advisory versus monitoring) is best played by female directors within boardrooms in order to make a difference to shareholders. More specifically, we investigate what impact advisory and monitoring female directors have on managerial opportunism[1] with a specific focus on earnings management. Our analyses are informed by a theoretical framework that draws insights from economic- and social-based theories.

Despite constituting a large part of the labor force, particularly in developed countries, the percentage of women holding top leadership and management posts, such as CEOs and directorships, has traditionally been very low (Adams, 2016), and thereby resulting in a lack of gender diversity in corporate boardrooms. For example, Adams and Ferreira (2009) report that in 2007, only about 0.4%, 8%, 9%, 11% and 15% of directorships of major corporations were held by women in Japan, Europe, Canada, Australia and the US, respectively. More recent evidence indicates that the historically low representation of women in senior leadership roles of major corporations persists (Bechtoldt, Bannier, & Rock, 2019; Kirsch, 2018; Mallin & Farag, 2017). This is an important academic and policy issue because boardroom homogeneity can result in sub-optimal board decisions (Adams, de Haan, Terjesen, & van Ees, 2015). Indeed, major past corporate scandals/failures (e.g., AIG/Enron/Lehman Brothers) and financial crises (e.g., 2007/08 banking crisis) (Terjesen & Sealy, 2016) have been attributed to poor governance practices arising partly from lack of diversity and independence in corporate boardrooms (Adams & Funk, 2012). Consequently, and through a mixture of mandatory/statutory quotas (e.g., 40% in Norway) and voluntary good governance schemes (e.g., 25% in the UK), the past three decades have witnessed considerable reforms around the world aimed at enhancing

governance and gender diversity in corporate boardrooms (Singh, Terjesen, & Vinnicombe, 2008). Early evidence indicates that such schemes, particularly mandatory/statutory board gender quotas, have generally helped in steadily improving women's representation in corporate boardrooms in a number of countries, where this representation is enforced (Adams, 2016; Terjesen, Aguilera, & Lorenz, 2015; Terjesen, Couto, & Francisco, 2016).

According to Brancato and Patterson (1999), and Wang and Clift (2009), the appointment of female directors draws on two different aspects; a *moral justice* case, whereby 'company boardrooms should be more gender diverse because this is the right thing to do' or a *business* case because 'boardroom gender diversity would improve shareholder value'. Indeed, academics and corporate leaders have often argued that the representation of women within corporate boardrooms should be considered in the context of the value that it brings to shareholders (Brancato & Patterson, 1999; Carter, Simkins, & Simpson, 2003)[2].

Noticeably, most of the existing board gender diversity reforms have been pursued on the basis that women are systematically (e.g., cognitively, physiologically and psychologically) different from men such that female directors may be able to bring unique experiences, expertise, perspectives, preferences, skills, talents, values and work ethic to boardrooms that male directors may not normally have (Adams, 2016; Croson & Gneezy, 2009). These factors may help improve the quality of board decisions (Charness & Gneezy, 2012). Such good attributes can also impact positively on governance structures and corporate outcomes (Adams & Ferreira, 2009).

In this case and on the one hand, economic-based theories incorporating behavioral (Campos-Vazquez & Cuilty, 2014), economic (Croson & Gneezy, 2009), organizational (Lara, Osma, Mora, & Scapin, 2017; Srinidhi, Gul, & Tsui, 2011) and psychological (Khlif & Achek, 2017) predictions suggest that women are more risk-averse than men, irrespective of ambiguity, costs, familiarity and/or framing. Croson and Gneezy (2009) and Powell and Ansic (1997)

demonstrate further that women's risk-aversion is partly because they are less aggressive, competitive, overconfident and self-interested, but more altruistic, conservative, cautious, communal, fair, independent, objective and responsible. These 'hard' skills (e.g., altruism, conservatism, independence, objectivity, responsibility and risk-aversion) can arguably enable female directors to monitor executives more intensely than male directors would.

On the other hand, social-based theories drawing insights from behavioral, ethical and social role theories suggest that men and women differ when it comes to ethical judgment, and that women are, on average, more ethical than men (Adams & Funk, 2012; Glover, Bumpus, Sharp, & Munchus, 2002; Lund, 2008; Simga-Mugan, Daly, Onkal, & Kavut, 2005). For example, social role theory (Chizema, Kamuriwo, & Shinozawa, 2015; Eagly, 2009) suggests that women are more predisposed to depict 'communal' traits, which tend to focus on maintaining interpersonal relationships and showing concern for the wellbeing of others (e.g., caring, nurturing, sympathy and friendliness). By contrast, men are more 'agentic', tending to value traits, such as achievement, ambition, control, financial status and power (Adams, 2016). These superior 'soft' skills (e.g., benevolence, caring, friendliness, sympathy and trustworthy) embodied by female directors can also help them to gain the trust of executives such that firm-specific information can be revealed to them in order, arguably, to permit them to perform their advisory role better than male directors do (Adams & Ferreira, 2007; Faleye et al., 2013).

Consequently, a large number of studies have shown that gender diversity has a positive impact on several corporate outcomes, including corporate social responsibility, dividend pay-out, disclosure, governance structures, firm value/performance and stock price informativeness (Adams, Gray, & Nowland, 2010; Adams & Ferreira 2004; Carter et al., 2003; Gul, Srinidhi, & Ng, 2011; Khlif & Achek, 2017; Kirsch, 2018; Liu, Wei, & Xie, 2014; Terjen et al., 2016). Of greater relevance to our study, however, is that a number of studies show that gender-diverse boards are associated with lower levels of managerial opportunism with specific reference to

earnings management (Abbot et al., 2012; Ho, Li, Tam, & Zhang, 2015; Srinidhi et al., 2011; Sun, Kent, Qi, & Wang, 2107).

Nevertheless, existing policy discussions (Adams, 2016), public debate (Ryan, Haslam, Morgenroth, Rink, Stoker, & Peters, 2016) and academic research (Terjesen et al., 2016) have focused mainly on the mere presence or participation of female directors within corporate boards to the neglect of other critical issues. These critical issues include those, such as identifying the channels of female director contribution, determining the optimal number of female directors, ascertaining the most gender-effective roles, and identifying pathways to top executive posts, such as CEO and CFO positions for female directors (Adams & Ferreira, 2007, 2009; Smith, Smith, & Verner, 2013; Terjesen & Sealy, 2016). For example, gender diversity in itself can have negative effects on board effectiveness by generating conflicts among board members (Adams & Ferreira, 2009; Terjesen et al., 2015). However, female director quotas appear to have been arbitrarily set without being informed by reliable evidence relating to their potential impact on boardroom effectiveness and corporate performance (Ryan et al., 2016; Sojo, Wood, Wood, & Wheeler, 2016). With specific reference to gender-effective board roles, while, to date, it is clear within the literature that female directors are, on average, both better advisors and monitors of corporate executives on behalf of shareholders (Adams & Ferreira, 2004, 2009; Hsu & Hu, 2016; Lara et al., 2017; Srinidhi et al., 2011; Zalata, Tauringana, & Tingbani, 2018), it is not theoretically or empirically clear as to which of the two major board roles – advisory or monitoring – is better suited for female directors.

Consequently, we seek to contribute to the existing literature by addressing one of these critical issues – *what roles are best suited for female directors, with specific focus on advisory and monitoring committees within a context of managerial opportunism (earnings management)*? Specifically, our study extends and contributes to the current debate on gender diversity and managerial opportunism through its distinctive and explicit investigation of the two different

major roles (either advisory or monitoring) played by female directors inside corporate boardrooms. In order to investigate our research question, we measure managerial opportunism (earnings management) by discretionary accruals. Drawing on a sample of US firms for the period 2007 to 2014, we provide new evidence that suggests that female directors appear to contribute more to the integrity of financial reporting when they hold monitoring roles. In contrast to the current argument that advisory directors, in general, are more able to sustain and improve earnings quality (Hsu & Hu, 2016), we could not find evidence to suggest that advisory female directors are significantly associated with lower managerial opportunism.

Our study contributes to current studies by showing that the role of female directors within boardrooms is an important attribute affecting the integrity of financial reports. In particular, we show that female board members are better able to improve financial reporting integrity if they hold monitoring rather than advisory roles. Our results have important implications for corporate boards of directors and the broader gender diversity debate and policy reforms that have been pursued around the world by illuminating the most effective roles that female directors can play within corporate boardrooms. Therefore, in order to enhance the integrity of financial reporting, and thus increase investors' confidence, it is more appropriate for corporate boards to consider appointing female directors into monitoring roles than into advisory ones. In addition, our findings have an important policy implication for regulators in different jurisdictions. They suggest that the mere participation of female directors within boardrooms does not necessarily improve the integrity of firms' financial reporting. Our findings also demonstrate that firms with female monitoring directors tend to exhibit better earnings quality and, therefore, recent legislative changes regulating gender quotas might be extended beyond this, to incorporate and specify the most value-adding roles that female directors may play inside corporate boardrooms.

The remainder of the paper is organized as follows. The next section presents the underlying theory and hypothesis. The following sections outline the research design and data sources, and report and discuss the empirical findings, while the final section concludes the paper.

Theory and hypothesis development

In this section, we draw on and discuss economic-based (e.g., economic and organizational theories) and social-based (e.g., ethical and social role theories) theories that can explain why female directors may be better placed to perform the board advisory and monitoring roles than their male counterparts are, and subsequently develop our hypothesis.

Economic theory, risk aversion and female directors' board monitoring role

A key assumption underlying the 'business/economic' case for the global push for the inclusion of more women on corporate boards is that women are systematically (e.g., behaviorally, cognitively, physiologically and psychologically) different from men (Adams & Funk, 2012; Zalata, Ntim, Aboud, & Gyapong, 2018). Thus, women may bring diverse/new beliefs, experiences, perspectives, values and work ethic that may enhance board decision-making and effectiveness. Such attributes can ultimately enhance governance structures and corporate outcomes (Brinkhuis & Scholtens, 2017). Observable gender differences in these attributes, beliefs, behaviors and values are important because they can offer us insights into how men and women may differ in terms of their commitment to, and performance of, their fiduciary duties, as company directors in general (Khlif & Achek, 2017), but also their key role of monitoring top management in particular (Adams & Ferreira, 2007; Faleye et al., 2011, 2013). Agency theory suggests that managers are typically opportunistic and self-serving and who, if left un-monitored, will usually pursue their own interests to the detriment of those of shareholders (Abernathy, Beyer, & Rapley, 2014; Adams & Ferreira, 2008). To reduce inherent

agency problems (managerial opportunism) (Beaudoin, Cianci, & Tsakumis, 2015), corporate executives need to be monitored and disciplined by outside directors, who are by contrast expected to be more conservative, independent, objective and responsible (Powell & Ansic, 1997); attributes that the behavioral and psychology literature (Sarin & Wieland, 2016) indicates are more evident in women than in men. By extension, therefore, female directors should be better at monitoring corporate executives than their male counterparts are.

In this case, corporate boards tend to perform their principal monitoring functions through monitoring committees – namely audit, compensation and governance/nomination committees (Faleye et al., 2011). We, therefore, argue that one channel by which women can demonstrate their superior monitoring skills in restraining managerial opportunism (earnings management) is to serve on all or some of these monitoring committees[3].

As a result, a large number of accounting, behavioral, business, economics, finance, management and psychology studies have provided evidence that supports the positive[4] effect of gender diversity on a number of behavior and corporate outcomes (Khlif & Achek, 2017; Wang & Clift, 2009). Moreover — and drawing on behavioral, finance and psychological theories — it has been shown that female directors tend to not only have fewer meeting attendance problems, but also that their presence positively influences male directors' behavior by improving their meetings' attendance record (Adams & Ferreira, 2009). The existing literature has also shown that women are often better prepared for board meetings, and are more diligent and stringent in monitoring the financial reporting process (Glover et al., 2002; Huse & Solberg, 2006; Lara et al., 2017). Additionally, women are more compliant with rules and regulations, and thus can improve board independence by reducing 'groupthink' tendencies that can enhance complex problem solving (Abbot et al., 2012; Capezio & Mavisakalyan, 2016; Faleye et al., 2013; Hsu & Hu, 2016; Khlif & Achek, 2017).

Consequently, and relying mainly on insights from the above economics-inspired studies, evidence has emerged that indicates that female directors are better at monitoring and disciplining top management, and thereby restraining managerial opportunism (earnings management), than male directors are.

Social theory, ethics and female directors' board advisory role

An alternative argument to the 'business/economic' case for the inclusion of more women on corporate boards is the 'ethical/moral' case, which suggests that women along with ethnic minorities form the largest proportion of the labor force, and thus the inclusion of women in the boardroom is simply the 'right thing' to do (Brancato & Patterson, 1999). Beyond the moral argument and relying on a number of behavioral, ethical, psychological and social theories – there are several benefits for including women on corporate boards (Glover et al., 2002; Wang & Clift, 2009). These include serving as a good governance and social responsibility practice, encouraging greater connection with customers, employees, investors and other stakeholders, and promoting effective corporate leadership. More importantly, several studies suggest that men and women differ when it comes to ethical judgment, and that women are, on average, more ethical than men (Adams & Funk, 2012; Glover et al., 2002; Lund, 2008; Simga-Mugan et al., 2005). Kohlberg (1984) shows that gender differences in ethical sensitivity arise from observable differences in moral development, whereby female moral reasoning is based on caring, compassion, gaining trust and maintaining relationships by meeting the expectations of others, thereby leading to a higher tendency to exhibit more ethical behavior. By contrast, male moral reasoning is based on the need to maintain law and order with special emphasis on achievement, competition, justice, power and rights, thereby leading to a higher tendency to engage in unethical behavior[5]. Similarly, Adams and Funk (2012) indicate that women care more about self-transcendence values (benevolence, stakeholder, self-direction, shareholder,

hedonism and universalism) and less about self-enhancement values (achievement, conformity and power).

Further, according to social role theory (Chizema et al., 2015; Eagly, 2009), men and women tend to behave in accordance with the expectations of the stereotypical social roles that they are expected to perform, which can embody either 'agentic' or 'communal' traits. Women are more predisposed to 'communal' traits, which tend to focus on maintaining interpersonal relationships and concern for the wellbeing of others (e.g., caring, nurturing, sympathy and friendly). By contrast, men are more 'agentic', tending to value traits, such as achievement, ambition, control, financial status and power. Discernibly, the findings of several behavioral, psychological and social studies support the theoretical prediction that women are more ethical and/or communal than men are (Adams & Funk, 2012; Ibrahim & Angelidis, 2009; Lund, 2008; Simga-Mugan et al., 2005; Stedham, Yamamura, & Beekun, 2007; Walumbwa, Morrison, & Christensen, 2012; Zeni, Buckley, Mumford, & Griffith, 2016). Thus, it can be argued that female directors' superior communal traits and ethical values place them in a stronger position to perform the key advisory role[6] of providing strategic counsel and advice to top management through serving on board advisory committees, such as HRM, marketing and production committees (Faleye et al., 2011, 2013; Kim, Mauldin, & Patro, 2014).

Nevertheless, and whereas it is so far clear within the literature that female directors are both better advisors and monitors of corporate executives on behalf of shareholders, it is not theoretically or empirically clear as to which of the two major board roles – advisory or monitoring – is more suitable for female directors to perform. Adams and Ferreira's (2007) theoretical model suggests that CEOs face a trade-off in providing information to the board. If they provide the board with more firm-specific information, they will receive high-quality strategic counselling and advice. However, by disclosing more firm-specific information,

CEOs risk subjecting themselves to more intense monitoring and scrutiny by their independent boards.

Further, and given time constraints, directors can devote their time effectively either to advisory or monitoring activities, but not necessarily both (Faleye et al., 2011, 2013; Hsu & Hu, 2016). Thus, on the one hand, female directors have superior 'soft' skills (e.g., benevolence, caring, friendly and sympathy) that can plausibly help them to be better placed than male directors to gain the trust of executives such that firm-specific information can be revealed to them in order to permit them to perform their advisory role well by providing higher-quality strategic counselling than male directors can offer. On the other hand, female directors possess 'hard' skills (e.g., altruism, conservatism, independence, objectivity, responsibility and risk-aversion) that, arguably, can allow them to monitor executives more intensely than male directors can. Consequently — and as there is no current empirical evidence — we seek to contribute to the literature by examining which of the two major board roles is more suitable for female directors to perform effectively.

Hypothesis development

As previously noted, corporate boards perform two main roles: (i) monitoring and (ii) advisory. Audit, compensation, governance and nomination committees that are often required to be composed solely of independent directors usually tend to carry out the monitoring function. Consequently, directors who serve on these committees are more able to shape board policies and influence strategic decisions (Reeb & Upadhyay, 2010). Observably, many independent directors tend to concomitantly serve on multiple monitoring committees, and this implies that they tend to devote significant time to their monitoring responsibilities (Heidrick & Struggles, 2007). In contrast to monitoring directors, some directors serve on advisory committees, such as finance, investment, and strategy committees (Faleye et al., 2011, 2013; Kim et al., 2014).

Distinct from monitoring committees, the membership of advisory committees is often dominated by executive directors, usually with a relatively smaller number of experienced independent directors, who offer strategic advice and counselling to the corporate executives (Adams et al., 2009; Hsu & Hu, 2016).

Corporate boards, particularly those of the major global corporations have, however, traditionally been highly homogenous (Rebérioux & Roudaut, 2016), usually composed mainly of middle-aged white men (Derks, Van Laar, & Ellemers, 2016), with negative implications for corporate governance and performance (Adams, 2016). Consequently, extensive reforms aimed at enhancing boardroom gender diversity have been pursued worldwide. These reforms have ranged from statutory board quotas for women ('hard'/regulation/mandatory regime) (e.g., Norway) to good governance best practice recommendations ('soft'/self-regulation/voluntary framework) (e.g., the UK) (Terjesen & Singh, 2008). Several studies have reported that such affirmative reforms have led to a steady, but discernible increase in the presence of women on the boardrooms around the world (Mallin & Farag, 2017; Ryan et al., 2016; Sojo et al., 2016). Consequently and drawing insights from the economic- and social-based theories that we have discussed in the previous section, several empirical studies have shown that women have superior ability over men to impact positively on a number of governance structures and corporate outcomes (Gul et al., 2011; Gul, Hutchinson, & Lai, 2013; Khlif & Achek, 2017; Kirsch, 2018). For example, Adams and Ferreira (2004), Carter et al. (2003), Gulamhussen and Santa (2015), Rose (2007) and Terjen et al. (2016) have shown that gender diversity has a positive impact on performance. Conversely, it has been argued that a firm's performance is contingent on reported earnings that might be artificially inflated (Sun et al., 2011, 2017). Hence, other studies have focused on the extent to which gender-diverse boards are effective at preventing corporate fraud and wrong-doing (Ho et al., 2015; Palvia, Vahamaa, & Vahamaa, 2015). In particular, some studies have examined whether shareholders can benefit from female

directors' unique expertise by constraining managerial opportunism (Peni & Vahamaa, 2010), thereby improving the credibility of financial reports (Srinidhi et al., 2011).

The findings of existing studies suggest that less earnings management (Labelle, Gargouri, & Francoeur, 2010; Thiruvadi & Huang, 2011; Srinidhi et al., 2011), lower likelihood of re-statements (Abbott, Parker, & Presley, 2012), more conservative financial reporting (Ho et al., 2015; Palvia et al., 2015), and lower probability of financial fraud (Cumming, Leung, & Rui, 2015; Sun et al., 2017) are all common characteristics of firms with female directors..

While the aforementioned global board gender diversity policy reforms along with the findings of theoretical and empirical studies provide many useful insights on the value of female directors, these studies have focused simply on the mere *participation* of female directors with little attention paid to the role that female directors should play. Therefore, in this paper, our objective is to contribute to the literature by addressing the important question of what director roles female directors perform more effectively in boardrooms.

Westphal and Stern (2007) argue that female directors are chosen more for their monitoring than their advising qualities. It seems that gender studies have based their theoretical argument on the proposition that, given their ethical and risk-aversion behavior, female directors are more likely to provide superior monitoring over management financial reporting decisions, and therefore mitigate managers' opportunism than male directors are (Cumming et al., 2015; Srinidhi et al., 2011). One might postulate that intensive monitoring and interventions in the reporting process improve operating decisions and financial reporting integrity (Gul, Srinidhi, & Tsui, 2008) and, given that female directors are more ethical and risk-averse than their male counterparts, the appointment of females into monitoring roles would arguably improve the integrity of financial reports. One problem with these studies is their measure of the quality of female directors. Specifically, they just focus on the participation of female directors without providing direct empirical evidence on whether the main driver of this improved information

environment is the monitoring role played by female directors or not. One way of tackling this problem is to classify female board members into two groups – *monitoring* directors and *advisory* directors.

By contrast, monitoring directors might diminish the effectiveness of the board as their intense monitoring may erode the trust between CEOs and monitoring directors with the result that CEOs are less likely to disclose strategic information to these directors (Adams, 2009; Adams & Ferreira, 2007; Holmstrom, 2005). This in turn might affect their monitoring and advising ability. Supporting this, Faleye et al. (2011) find that firms with more directors performing monitoring roles exhibit worse acquisition and innovation performance. In contrast, Faleye et al. (2013) find that firms that have more directors, who hold advisory roles, exhibit better acquisition and innovation performance. In terms of earnings performance, Hsu and Hu (2016) show that firms with more advisory directors have better earnings quality. That is, it might be that female directors' advising and counselling roles would create value for shareholders. To date, the advisory role of board members remains relatively under-studied (Hsu & Hu, 2016) and, arguably, advisory directors are seen as more friendly to CEOs, who are more likely to share strategic information with them (Adams, 2009; Holmstrom, 2005). Thus, it is possible that this strategic information would help directors to provide better advice, and thereby improve firms' underlying performance through operating decisions instead of opportunistic financial reporting decisions. In other words, advisory directors can be expected to be associated with less managerial opportunism.

This distinction in the female director's role is important, as it might provide new insight that would shape legalisation/policy reforms that currently focus exclusively on arbitrary imposition of gender quotas. For example, if firms decide to appoint new female directors into non-strategic positions within the boardroom, they may be of less benefit to shareholders (Rebérioux & Roudaut, 2016). To the best of our knowledge, no prior study has investigated

the role that female directors should play within boardrooms. We know, however, that female directors have superior 'soft' skills (e.g., benevolence, caring, friendly and sympathy) based on social theories, and 'hard' skills (e.g., altruism, conservatism, independence, objectivity, responsibility and risk-aversion) based on economic theories that make them both better advisors and monitors of managers than male directors are. Consequently, and as there is no current empirical evidence, we seek to contribute to the literature by examining which of the two major board roles (advisory versus monitoring) is more suitable for female directors to perform. However — and given that female directors can theoretically perform both roles equally well — our central hypothesis to be tested is that:

H1: There are no significant differences between advisory and monitoring female directors' ability to restrain managerial opportunism.

Research design

Measurements of the main variables

Discretionary accruals

To investigate whether monitoring and advisory female directors restrain managerial opportunism, we use discretionary accruals as a proxy for earnings management. Discretionary accruals can be defined as the extent to which accruals embedded in earnings are opportunistically used by management. Specifically, it represents the inflated earnings that cannot be explained through firms' fundamental and normal activities (Jones, 1991). In order to generate a measure for discretionary accruals (DACC), we draw on prior studies and use the performance-adjusted Jones (1991) expectation equation as follows:

$$ACC_{i,t}/AT_{i,t-1} = \beta_0 + \beta_1\, 1/AT_{i,t-1} + \beta_2\ Adj\_REV_{i,t}/AT_{i,t-1} + \beta_3\, PPE_{i,t}/AT_{i,t-1} + \beta_4\, ROA_t + \varepsilon_{it}, \quad (1)$$

where *ACC* refers to accruals measured as income before extraordinary items minus operating cash flows. *AT* is total assets. Following the extant earnings management research (e.g., Abbott et al., 2016; Badolato et al., 2014; Bedard et al., 2004; Jones, 1991), we deflate all variables, including the dependent variable, by lagged total assets in order to reduce heteroscedasticity in residuals. More discussion of this can be found in Firebaugh and Gibbs (1985) and Jones (1991). In addition, estimating discretionary accruals using raw data might be biased towards big or small firms. *Adj_REV* refers to the change in revenues less change in accounts receivable. *PPE* is gross property, plant, and equipment. *ROA* is return on assets, calculated as net income before extraordinary items scaled by lagged total assets. We then calculate the discretionary accruals (*DACC*) for each firm as the residuals from equation (1) estimated annually for each two-digit SIC industry with at least 10 observations. Given the lack of a specific theory predicting the direction of discretionary accruals, we focus on the absolute value of discretionary accruals, (*ABS_DACC*), whereby a higher value denotes higher managerial opportunism, and vice versa.

Monitoring and advisory female directors

Board committees could be generally classified into either monitoring (e.g., audit, compensation, governance and nominations) or advising (e.g., finance/investment, strategy and executive) committees. Directors tend to serve on two or more committees and, therefore, we follow Faleye et al. (2011) in defining a monitoring director, as one who serves on at least two of the four main monitoring committees. The rationale behind this, as noted by Faleye et al. (2011, p.164), is that most directors often serve on no more than two monitoring committees and, consequently, directors serving on two committees are unlikely to serve on other committees; that is, most of their duties are monitoring-related. Following this, we classify the non-executive female director as a monitoring director if she sits on at least two of the four monitoring committees. We, then, define female monitoring directors (*FMONT*), as the

percentage of monitoring female directors to the total number of monitoring directors. That is, we conjecture that allocating more of the available monitoring seats to female directors instead of male directors might create extra value for shareholders[7].

Hsu and Hu (2016) define a director as advisory if s/he does not serve on a monitoring committee, particularly audit committee. However, Faleye et al. (2013) follow a more holistic definition and identify a director as advisory if s/he has been a director for at least one year and does not serve on any monitoring committees, but serves on at least one advisory committee if the company has any. Therefore, we follow Faleye at al. (2013) and classify a non-executive female director as an advisory director if she does not serve on any of the monitoring committees[8]. We, then, define female advisory directors (*FADV*) as the percentage of female advisory directors to the total number of advisory directors[9].

Empirical equation

To test our hypothesis and examine whether female advisory and monitoring directors affect managerial opportunism or earnings management, we use the following equation:

$$ABS\_DACC_t = \beta_0 + \beta_1 FADV_t + \beta_2 FMONT_t + \beta_3 SIZE_t + \beta_4 LEV_t + \beta_5 OCF_t + \beta_6 ROA_t + \beta_7 MBV_t + \beta_8 LOSS_t + \beta_9 LNOA_t + \beta_{10} LACC_t + \beta_{11} TMONT_t + \beta_{12} TADV_t + \varepsilon_t, \quad (2)$$

where *ABS_DACC* is the absolute value of discretionary accruals (*DACC*), while *FMONT* and *FADV* represent our different proxies capturing female advisory and monitoring directors, as discussed above. To test our main hypothesis, we focus on the coefficients – β_1 and β_2. If female directors mitigate managerial opportunism and, therefore, constrain earnings management, then, the coefficients on *FADV* (β_1) and *FMONT* (β_2) should be negative and significant. In addition, we control for other variables that might influence the level of earnings management activities as identified by prior research. These variables include firm size (*SIZE*),

leverage (*LEV*), operating cash flows (*OCF*), return on assets (*ROA*), market-to-book value (*MBV*), losses (LOSS), lagged net operating assets (*LNOA*), and lagged accruals (*LACC*). However, it has been noted that the use of ratio variables (in particular *FADV* and *FMONT*) can be statistically problematic because they can implicitly impose constraints on the coefficients that are not explicitly tested empirically (Bradshaw & Radbill, 1987; Firebaugh & Gibbs, 1985; Kritzer, 1990; Kronmal, 1993; Long, 1980; Schuessler, 1974). Therefore, and to mitigate any concerns of omitted variables that may arise from the use of ratios, we control for the raw number of total monitoring directors (men and women) and the raw number of total advisory directors (men and women). These variables are defined in Table 1.

[Insert Table 1 here]

Sample selection and data sources

The financial information for all firms required to calculate the dependent variable is obtained from *Compustat* for the period 2007 to 2014. In order to avoid the immediate impact of the Sarbanes-Oxley Act (SOX) on directors' behavior towards managerial opportunism, we use data collected from a more relatively stable period, several years after the spate of US financial scandals and the introduction of SOX. From 89,760 firm-year observations (after excluding duplicated observations) covering the period from 2007 to 2014, we excluded 50,239 firm-year observations with missing variables required to estimate our expectation equations (equation 1 and 3) as well as those with missing control variables included in equation 2. Since financial firms have a different financial reporting/regulatory environment and corporate governance/capital structure, we excluded 2,294 firm-year observations from our sample that belong to financial firms (Barua, Davidson, Rama, & Thiruvadi, 2010). In addition, we excluded 527 firm-year observations that relate to non-financial industries with less than 10 firm-year observations in order to ensure sufficient observations for the estimation of our

expectation equations. Finally, we then merged these financial data with female directors' data obtained from the ISS (formerly *RiskMetrics*) database and excluded further 29,250 firm-year observations with missing data in the ISS database. The final sample with the full data required, therefore, consists of 7,450 firm-year observations over the 2007–2014 period.

Results

Descriptive statistics

Table 2 summarizes the descriptive statistics for different variables used in the analysis. It shows that advisory female directors (*FADV*) represent 6% of the advisory directors, while female monitoring directors (*FMONT*) represent 14% of the monitoring directors. In addition, Table 2 reports the Pearson correlation coefficients among *ABS_DACC, FADV* and *FMONT*, and other independent variables used in the analysis. It shows a negative relationship between *ABS_DACC* and *FMONT*, and a positive relationship between *ABS_DACC* and *FADV*, suggesting that appointing females into monitoring roles constrains managerial opportunism. However, these results are still preliminary, and we should only draw firm inferences after the inclusion of other control variables in the regression model. Full correlation matrix is reported in the Appendix. In general, the correlation matrix does not show the existence of any potential serious multicollinearity problems.

[Insert Table 2 here]

Multivariate analysis

We investigate whether advisory and monitoring female directors are able to curtail managerial opportunism (earnings management). To do this, and as stated earlier, we classify female directors into two groups based on their role on the board. In particular, we classify them into advisory (*FADV*) and monitoring (*FMONT*) directors. However, before carrying out our analysis, we should conduct initial exploration of our data in order to choose the panel data

technique that is most suitable to estimate our models (Antonakis, Bastardoz, & Rönkkö, 2019; McNeish, & Kelley, 2018). These panel data techniques include random-effects, fixed-effects and/or between-effects (Full discussions relating to these techniques can be found in Antonakis et al., 2019; McNeish, & Kelley, 2018). We thus, first, report our findings using the random-effects estimator under Model (1) of Table 3. However, the Sargan-Hansen test of over-identifying restrictions (fixed-effects versus random-effects) is 152.395 and its χ^2 (19) *P*-value is 0.0000, suggesting, therefore, that a fixed-effects estimator will be more appropriate for our dataset. We, thus, report our findings using the fixed-effects estimator under Model (2) of Table 3 and unsurprisingly they show insignificant relationship between *ABS_DACC* and both *FADV* and *FMONT*. This might be because our governance variables (e.g., *FMONT* and *FADV*) are stable with small within-firm changes from year to year to the extent that such small changes in *FMONT*, for example, are unlikely to reflect or be captured in *ABS_DACC*. In supporting this, our results show that the standard deviation of *FMONT* within firms is 0.06 with 36.02% of firms having no variance. Furthermore, Figure 1 which captures the Kernel Density of *FMONT* supports our conclusion that there is little within-firm level variance, whereas between-firm level variations are significantly large. Qualitatively similar findings are found for *FADV*. In addition, the estimated intraclass correlation (ICC) for *ABS_DACC*, *FMONT* and *FADV* are 0.44, 0.71 and 0.29, respectively; suggesting the existence of high variability in the variables in between firms. In this case, between firm-level rather than within-firms fixed-effects estimator will be the more appropriate statistical estimator for our data. Therefore, our subsequent analysis focuses mainly on between firm-level differences using a between-effects estimator.

[Insert Figure 1 here]

[Insert Figure 2 here]

We report our results using between-effects model in Table 3 under Model (3) and they show an insignificant relationship between advisory female directors (*FADV*) and discretionary accruals (*ABS_DACC*). In contrast to the *FADV* results, our results reported under model (3) show a significant negative relationship between monitoring female directors (*FMONT*) and *ABS_DACC*. In addition, our findings suggest the coefficient on *FMONT* is significantly different from that on *FADV* [*F(1, 1345) = 3.56 and P = 0.0595*], demonstrating that *FMONT* has a more pronounced impact on managerial opportunism than *FADV* has. Our results reported in Table 3 suggest that advisory directors are less likely to mitigate earnings management (less managerial opportunism). High earnings management might be a result of managerial inattention or/and managerial opportunism, and neither of these can be curtailed by advisory directors, although it is plausible that they help CEOs to improve their operating business decisions (Gul et al., 2008). That is, mitigating earnings management necessitates close scrutiny of CEOs in order to report more accurately, and our results suggest that this might be achieved by appointing female directors into monitoring roles.

Overall, our results reported in Tables 3 indicate that less managerial opportunism is associated with the appointment of female directors into monitoring roles. Specifically, our analysis provides substantial evidence to suggest that smaller discretionary accruals represent a characteristic of firms with female directors playing monitoring roles, and therefore demonstrating that these directors appear to be effective in curtailing managerial opportunism. In contrast, we do not find the same results in firms with female advisory directors (*FADV*). The importance of our new results is that it is not female directors' mere participation in board decision-making that necessarily mitigates managerial opportunism; rather it is the specific *role* that they play within the boardroom that matters. Our current study, therefore, adds to existing understanding of how and why the roles of female directors can and/or may affect the quality of financial reporting.

[Insert Table 3 here]

Controlling for endogeneity

Notwithstanding the existence of alternative views (e.g., van Lent, 2007), it has been widely acknowledged in theory-based empirical accounting research like ours (e.g., Chenhall & Moers, 2007a, b; Gippel, Smith, & Zhu, 2015; Larcker & Rusticus, 2010) that the reliability of the estimated empirical coefficients may be affected by the existence of possible endogeneity problems. The endogeneity concern has been re-enforced within the broader leadership, management and organization studies literature (e.g., Antonakis, Bendahan, Jacquart, & Lalive, 2010). Broadly, the endogeneity problem may arise due to a variety of reasons, including omitted variables, reverse causality/simultaneity, measurement error, common-method variance, model misspecification and/or equilibrium conditions (e.g., Antonakis et al., 2010; Chenhall & Moers, 2007a). Whereas some scholars (e.g., Gippel et al., 2015) have recommended the use of natural experiments as the gold standard (Antonakis et al., 2010), but which are often difficult to implement in empirical accounting, leadership and management research, others (e.g., Antonakis et al., 2010; Chenhall & Moers, 2007a; Larcker and Rusticus, 2010) have identified practical and useful steps that researchers can follow in addressing such possible endogeneity problems. Specifically, and in terms of empirical accounting research, Larcker and Rusticus (2010, p.196, Table 4) have summarized these practical steps as follows: (i) describing the nature of the endogeneity problem; (ii) exploring alternative research designs; (iii) conducting exogeneity test on the key explanatory variable(s) to ascertain whether it (they) is(are) endogenous or not (i.e., evaluate the first-stage results and diagnostics); (iv) using economic theory to justify the choice of instruments; (v) demonstrating the relevance and validity of the instruments used (i.e., assess the second-stage results and diagnostics, as well as run sensitivity tests on the choice of instruments); and (vi) comparing and contrasting OLS and instrumented coefficients. Antonakis et al. (2010) have also suggested largely similar tools for

tackling endogeneity problems within the context of empirical leadership and organizational studies research.

In this study, we follow the practical steps outlined above by Larcker and Rusticus (2010) and Antonakis et al. (2010) in addressing possible endogeneity problems that may affect our findings. For example, our previous analysis might be subject to potential self-selection bias if female monitoring directors and discretionary accruals are endogenously determined. Specifically, and as has been appropriately pointed out to us by an anonymous reviewer, the endogeneity question that we face in this study is: *Are female directors presence on monitoring/advisory committees predicting managerial opportunism or is managerial opportunism predicting female directors' presence on monitoring/advisory committees?* This is because it is likely that better performing companies, with lower managerial opportunism, may choose female directors for their monitoring committees. By contrast, poorly performing companies, with high managerial opportunism, may select female directors for their advisory committees. This potential reverse causality/simultaneity explanation can understandably cast serious doubts on the validity of our findings (Antonakis et al., 2010). Furthermore, we may have omitted variables that simultaneously correlate both with the selection of female directors to advisory/monitoring committees (*FMONT/FADV*) and with managerial opportunism (*ABS_DACC*) (Larcker & Rusticus, 2010). In this case, any conclusions drawn from our models might be misleading.

Consequently, in order to address any potential endogeneity concerns, we apply three widely employed methods in the literature, namely the: (i) two-stage least squares (*2SLS*) instrumental variables approach; (ii) Heckman selection model; and (iii) propensity-score matching approach.

Two-stage least squares (2SLS) instrumental variables approach

To deal with any potential endogeneity problems that may arise from reverse causality, we use the two-stage least squares (*2SLS*) instrumental variables approach. In this case, we have used three instrumental variables, which are theoretically likely to influence monitoring and advisory female directors (*FADV* and *FMONT*), but unlikely to directly influence our dependant variable – managerial opportunism (*ABS_DACC*) – except potentially through our control variables and the regression error terms (Adams & Ferreira, 2009; Antonakis et al., 2010; Larcker & Rusticus, 2010). These theoretically potentially exogenous variables are the percentage of male directors with outside directorships in firms with at least (i) one monitoring female director and (ii) one advisory female director, as well as (iii) the percentage of female directors in an industry. Observably, our first two proposed instruments have been employed previously by Adams and Ferreira (2009) and Levi, Li, and Zhang (2014), whereas the third instrument has been discussed and employed in other past studies (e.g., Adams, 2016; Hillman, Cannella, & Harris, 2002; Hillman, Shropshire, & Cannella, 2007; Srinidhi et al., 2011).

Females are generally under-represented in senior corporate leadership roles, such as directorships of major public corporations, with lack of connections regularly cited as one of the causes (Adams & Ferreira, 2009). Specifically, it has been argued that directors of the major corporations are often recruited from a pool of male candidates, who tend to have similar backgrounds, usually with strong informal/historical (e.g., attended the same school) connections (the so-called 'old boys club') (Adams, 2016; Adams & Ferreira, 2004). Consequently, and as females are naturally not part of such informal 'old boys clubs', they are less likely to be appointed as directors; this at least partly accounts for their under-representation in senior corporate leadership roles (Adams, 2016). Therefore, a theoretically plausible alternative variable that can be used as a possible instrument for our female director variables is the percentage of male directors with outside directorships in firms with at least (i)

one monitoring female director (*FMONT*); and (ii) one advisory female director (*FADV*). These instruments are theoretically or intuitively appealing for two reasons.

First, we will expect to see more representation of women within boardrooms with such male directors because, as they work with other female directors, they are better able to observe the true value of female directors within the other external boardrooms that they serve on (Adams & Ferreira, 2009; Adams & Funk, 2012). In particular, by working closely with female directors on other external boards, such male directors will have a first-hand knowledge of the superior skills, talent and work ethic of female directors, and thereby debunking any erroneous negative stereotypes and prejudices that they might have been holding generally about female directors, such as their leadership styles and preferences (Adams, 2016; Adams & Ferreira, 2008). Therefore, such well 'connected' or 'networked' male directors who are more exposed to the value of female directors are also more likely to be receptive to, and in fact, arguably actively canvass support for, the appointment of more female directors to their own boards (Adams & Ferreira, 2009).

Second and closely related to our first theoretical argument is that as male directors are relatively better networked and often belong to the 'old boys club' from which future directors are generally recruited, female directors who serve with such well networked male directors will become equally connected to such director 'clubs'/'networks' (Adams et al., 2010, 2015). Noticeably, this has the potential not only to create alternative female networks, such as 'old girls clubs', but also to critically connect both networks ('old boys and girls clubs') (Adams, 2016; Adams et al., 2010). Hence, this may not only expose current connected female directors to new director appointment opportunities, but also possibly set in motion a 'snowball' effect that may extend and expand director appointment opportunities for recruiting additional/new female directors to such corporate boards (Adams, 2016; Adams et al., 2015). In sum, this indicates that the more networked male directors are to female directors through their service

on other external boards, the higher the number of female directors are that are likely to be appointed to their own boards (i.e., to the boards of such male directors with strong connections with female directors via other external boards) (Adams & Ferreira, 2009).

Whereas the above argument is essentially applicable to the recruitment of female directors to the main corporate boards, we argue that this can be extended to both the advisory (*FADV*) and monitoring (*FMONT*) sub-committees of the main boards. That is, well connected monitoring male directors, who serve on monitoring committees of other external corporate boards with female directors would have observed their superior monitoring abilities, and thus are likely to become advocates for the appointment of monitoring female directors to their own boards' monitoring committees. Therefore, we conjecture that the higher that this ('connected or networked monitoring male directors' on a board through the provision of monitoring service on other external boards) percentage is, then, theoretically, the higher will be the percentage of monitoring female directors on their own boards. This network connection is, however, difficult to be directly measured, but could be indirectly measured by male directors' other outside directorships. Thus, following Adams and Ferreira (2009)[10], our first instrument is the percentage of male directors with outside directorships in firms with at least one monitoring female director. We apply similar logic to this for *FADV* and, therefore, our second instrument is the percentage of male directors with outside directorships in firms with at least one advisory female director.

Finally, Hillman et al. (2002, 2007) argue that the nature of an industry is likely to affect the potential benefits of having female directors on the boards of directors of corporations in such an industry and, by implication, the likelihood of appointing female directors. For example – and apart from the unique skills that female directors bring to corporate boards – industries with a large female labor base are likely to gain additional legitimacy benefits by appointing female directors to their boards. Thus, companies that operate in industries with a high degree

of dependence on females in the labor pool are likely to have higher percentage of women on their boards (Hillman et al., 2002, 2007). In line with this theory, Adams (2016) shows that female directorships are, for instance, more common in corporations that operate in the services industries (e.g., food, retail, hotel and marketing), which tend to rely heavily on female labor force, but rare in others (e.g., engineering and technology), which rarely rely on female employees. Consequently, it is reasonable to contend that the percentage of female directors in an industry would theoretically affect the appointment of female directors, whereby industries (e.g., service industries) with greater numbers of female directors are more likely to have a larger pool of talented female directors to appoint from compared with industries (e.g., engineering and high-tech industries) with a smaller pool of potential female directors to recruit from (Srinidhi et al., 2011). Thus, our final instrument is the percentage of female directors in each industry[11]. Our core assumption underlying these instruments, therefore, is that the higher the percentage for each of these instruments, the higher the percentage of advisory and monitoring female directors that should be observed on a relevant firm's board of directors and vice versa.

As a result, the three instruments should theoretically be highly ('*relevant*') correlated with the independent variables (*FADV* and *FMONT*), but uncorrelated ('*valid*') directly with our dependent variable (*ABS_DACC*) and the regression error terms and, thus, arguably exogenous to our model. However, such a theoretical conjecture is not sufficient to proof exogeneity until it has been subjected to a series of serious statistical tests. Therefore, and following Larcker and Rusticus (2010), we have first tested whether *FADV* and *FMONT* are endogenous within our model or not. However, the Wu-Hausman [F (2, 1350) = 1.32281 and P-value = 0.2667] and Durbin (score) [$\chi^2(2)$ = 2.66979 and P-value = 0.2632] demonstrate that *FADV* and *FMONT* are not correlated with the error term[12]. This demonstrates that our estimates using normal regression are not significantly different from our estimates using instrumental

variables and consequently, we cannot reject exogeneity of the *FADV* and *FMONT* within our model (Antonakis, Bendahan, Jacquart, & Lalive, 2010).

Nonetheless, to eliminate any doubts of any potential endogeneity concerns in our setting, we re-estimate our analysis using our suggested three instrumental variables. To conduct our *2SLS* analysis, we use *xtivreg* command in Stata with between-effects option and report this analysis in Table 4. Following Larcker and Rusticus (2010) and Antonakis et al. (2010), we first test whether these instruments are related to our independent variables (*FADV* and *FMONT*). Consistent with our expectation, the first-stage regression results evince that these instruments are significantly correlated with *FADV* and *FMONT*. In addition, as suggested by Larcker and Rusticus (2010), we need to demonstrate that our instruments are both relevant and valid. We check the validity of our instruments in many other ways. For example, the reported values of the *F*-statistic in all the regressions are more than the recommended value of 10 and the *F*-values of the excluded instruments are [*F* (3, 1344) are 215.21 and 180.15] in *FADV* and *FMONT*'s first-stage regression in Table 4, respectively. Second, the Cragg-Donald Wald *F*-statistic is 178.171, which is above Stock-Yogo's critical value of 13.43 and, therefore, we reject the null hypothesis that our instruments are weak.

Nevertheless, the Sargan-Hansen statistic is 3.445 and its $\chi^2(1)$ *P*-value = 0.0634, suggesting that at least one instrument is correlated with the error term and, therefore, we reject the null hypothesis that our instrumental variables are jointly exogenous. However, we find that, in case of the *FADV* model, *MEN_MONT* and in the case of the *FMONT* model, *F_INDUS* are drivers for the Sargan-Hansen test. Therefore, we run our *2SLS* regression using either *FADV* or *FMONT* separately and drop the instrument that drives the Sargan-Hansen statistic for *FADV* or *FMONT*. Our unreported results shows that the coefficient on *FADV* is -0.032 (the Sargan-Hansen statistic's is 0.394 and its $\chi^2(1)$ *P*-value is 0.5300 and coefficient on *FMONT* is -0.055 (the Sargan-Hansen statistic's is 2.175 and its $\chi^2(1)$ *P*-value is 0.1403). These coefficients are

qualitatively similar to those obtained when including *FADV* and *FMONT* jointly as reported in Table 4 under model (3).

Finally, and in line with Larcker and Rusticus (2010), we present the second-stage regression results under Model (3) of Table 4 and consistent with our previously reported findings in Table 3, Table 4 still shows insignificant coefficient on *FADV* and significant coefficient on *FMONT*, suggesting that having higher *FMONT* leads to lower earnings management.

[Insert Table 4 here]

Heckman selection model

As recommended by Antonakis et al. (2010), and Larcker and Rusticus (2010), researchers need to explore alternative research designs in their bid to address any possible endogeneity problems. Hence, we additionally follow Srinidhi et al. (2011) and use an alternative two-stage model that has been developed by Heckman (1976) to address potential endogeneity problems as follows. In the first-stage model, we compute the inverse Mills ratio (*MILLS*) from a probit model that captures the likelihood of companies appointing female directors into either advising or monitoring roles. In particular, this probit model controls for the percentage of female directors in the industry and the percentage of male directors with outside directorships in firms with at least one monitoring female director or the percentage of male directors with outside directorships in firms with at least one advisory female director. We also control for the percentage of independent directors, the average number of their outside directorships, firm size, percentage change in sales, return on assets, Tobin's *Q*, annual stock return and firm age[13]. In the second stage, we add the inverse *MILLS* ratio to equation (2), as an additional control variable in order to address any endogeneity issues. Our reported findings in Table 4 under Model (4) are qualitatively similar to our results reported under the main analysis, and therefore suggesting that our results reported under the main analysis do not appear to be driven by endogeneity problems.

Propensity-score matching

Finally, we further use the propensity score (*PS*) matched sample method, as a final alternative research design that is aimed at mitigating the presence of any potential endogeneity problems (Shipman, Swanquist, & Whited, 2016). In particular, we first calculate the probability of appointing female directors into monitoring roles by regressing *FMONT* (as a dummy variable) on the same variables included in equation (2). The predicted value from this Tobit regression represents the *PS*, which we then employ to match each *FMONT* firm with a non-*FMONT* firm using the nearest-neighbor method. Similar to Chen, Leung and Goergen (2017), we set the maximum difference in the *PS* between firms with and without *FMONT* to be 0.1%. For firms with *FMONT*, we find matches of 2,443 firms-year observations. Our reported results in Panel A of Table 5 show no significant differences in the observable characteristics between firms with *FMONT* and their matched sample without *FMONT*, and therefore, suggesting that the *PS* matching method has removed all observable differences, but this is related to the presence of *FMONT*. Furthermore, we find that firms with *FMONT* have statistically lower *ABS_DACC* than their matched firms without *FMONT* (significant differences at 1%).

Similarly, we have followed the same *PS* procedures for firms with *FADV* and matched them with nearest-neighbor firms without *FADV*. However, our reported findings in Panel B of Table 5 still suggest that *FADV* has no impact on the level of *ABS_DACC*. In particular, we did not find any significant differences between firms with and without *FADV* in terms of *ABS_DACC*. That is, our results reported under the main analysis do not appear to be subject to the existence of any endogeneity problems.

[Insert Table 5 here]

Missing control variables

As pointed out to us by an anonymous reviewer and, indeed, similar to past archival studies of this nature, it is possible that our findings may be driven by some forms of omitted variables,

and thus the potential for omitted variables bias needs to be explicitly addressed. For example, prior research suggests that firms' ability to engage in earnings management is contingent on the quality of firms' corporate governance (e.g., Peasnell et al., 2005; Yang & Krishnan, 2005; Zalata & Roberts, 2016). Thus – and although our results indicate that female directors playing monitoring roles within corporate boardrooms create value for shareholders – other missing governance variables may rather be the key driver of this observed shareholder value creation. That is, our results might be an explanation of these missing variables. The empirical question, thus, is whether, after controlling for other missing governance mechanisms, female directors who play monitoring roles within the boardroom are still plausible in constraining managerial opportunism. Therefore, as a robustness analysis, we control for strong governance mechanisms in our model. These mechanisms include board size, audit committee size, the percentage of independent directors, their stock ownership and outside directorships, and the percentage of financial expert directors on the audit committee (Abbott, Parker, & Peters, 2004; Beasley, 1996; Bedard, Chtourou, & Courteau, 2004; Klein, 2002; Xie, Davidson, & DaDalt, 2003; Zalata & Roberts, 2016).

Further, as previously discussed, the use of ratio variables can be statistically problematic and, therefore, to further mitigate omitted variables concerns that may arise from the use of ratios, we have controlled for the raw number of men and women in the different committees. Additionally and so far, we have classified non-executive female directors into *FADV* and *FMONT* based on operationalization derived from Faleye et al. (2011, 2013) and, therefore, *FADV* and *FMONT* reflect the sum of women directors that qualify for being in the different roles. However, we acknowledge that our finding might be affected by other female directors that do not meet our operationalization. Consequently, as a robustness check, we control for the percentage of other female directors, who are not classified as either *FADV* or *FMONT*. Finally, past studies suggest that firms' ability to manipulate their earnings is constrained when

they are audited by one of the Big-4 auditors (Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Francis, Maydew, & Sparks, 1999). Therefore, to ensure that our findings are not driven by Big-4 auditors, we control for Big-4 auditors. After controlling for these governance mechanisms, our reported results in Table 6, under Model (1), still support our earlier findings under Table 3.

[Insert Table 6 here]

Accruals estimation errors

Our previous measure for discretionary accruals is based on the performance-adjusted version of Jones' (1991) equation. However, some other studies (see McNichols, 2002) have also used accruals estimation error, as a proxy for managerial opportunism. Therefore, as a robustness test, we estimate equation (2) using the measure of managerial opportunism based on Accruals Estimation Errors (*AEE*), which is measured by using the expectation equation proposed by McNichols (2002) as follows:

$$ACC_{i,t}/AT_{i,t-1} = \beta_0 + \beta_1 OCF_{i,t-1}/AT_{i,t-2} + \beta_2 OCF_{i,t}/AT_{i,t-1} + \beta_3 OCF_{i,t+1}/AT_{i,t} + \beta_4 \Delta SALES_{i,t}/AT_{i,t-1} + \beta_5 PPE_{i,t}/AT_{i,t-1} + \varepsilon_{it,} \quad (3)$$

where *OCF* refers to cash flows from operations in years *t*, *t*-1, and *t*+1; and *ΔSALES* refers to the change in sales. The *AEE* for each firm is then estimated as the residuals from equation (3) that is run annually for each two-digit SIC industry code with at least 10 observations. Using this measure, our un-tabulated results still show that female monitoring directors are more likely to constrain managerial opportunism. However, we still could not find any evidence that *FADV* can also add value to shareholders.

Alternative measure for monitoring and advisory female directors

Under the main analysis, we use the *percentage* of advisory and monitoring female directors to capture the *participation* of advisory and monitoring female directors, respectively. However,

as a robustness analysis, we measure *FMONT* and *FADV*, as dummy variables. In particular, we set *FMONT* to one if the firm has at least one female monitoring director, and zero otherwise. Similarly, we set *FADV* to one if the firm has at least one advisory female director, and zero otherwise. The results of this analysis are reported in Table 6 under Model (2) and are qualitatively similar to the previously reported results under the main analysis. This additionally demonstrates that earnings quality could be improved by appointing female directors into monitoring roles instead of into advisory roles.

In addition, under the main analysis, we classify a female director, as a monitoring director, if she sits on at least two of the four (i.e., audit, nomination, remuneration and governance committees) main monitoring committees. However, as an alternative measure, we classify a female director, as a monitoring director, if she sits on at least three major monitoring committees and, similar to the main analysis, we define *FMONT*, as the percentage of female monitoring directors to the total number of monitoring directors. The results of this analysis are reported in Table 6 under Model (3) and are qualitatively similar to the reported results under the main analysis.

Discussion

The presence of women within the boardroom represents one of the important topics that have been investigated in business and management studies, with the extant research suggesting generally that the appointment of female directors does create value for shareholders. In fact, due to increasing mandatory and voluntary affirmative reforms (whereby public corporations are expected to appoint a certain percentage or number of female directors to their boards) aimed at enhancing gender diversity in boardrooms worldwide, the percentage of women in the boardrooms of major corporations is also steadily increasing. For example, Srinidhi et al. (2011) show that 67% of their sampled firms have at least one female director, with a good number of existing studies suggesting further that board gender diversity has a positive effect

on governance structures and corporate outcomes. However, the current gender reforms, regulations and extant studies have focused mainly on the mere participation of female directors in the boardroom rather than strategically delving into a number of other important issues, such as the most effective roles that female directors can perform on corporate boards. Given the behavioral, economic and social differences between female and male directors, existing evidence suggests that female directors do make a difference in the boardroom. What we do not know, however, is which role within corporate boardrooms best suits female directors. Our study is, therefore, among the first to investigate which role is best played by female directors within boardrooms in order to create value for shareholders.

Drawing on a sample of US firms over the 2007–2014 period, we show that not all female directors are associated with lower managerial opportunism (earnings management), but that *monitoring* female directors are predominantly more effective in restraining managerial opportunism. Furthermore, we could not find any evidence to suggest that *advisory* female directors are significantly associated with lower managerial opportunism. Overall, it appears that there are remarkable opportunities in improving firms' corporate governance not only through having more gender-diverse boards (Cumming et al., 2015), but also through appointing female directors strategically into specific roles; particularly, monitoring roles.

Theoretical contributions and implications

It is widely known within the existing literature that corporate boards perform two main roles: (i) advising and (ii) monitoring corporate executives (Jensen, 1993). It has also been suggested theoretically that female board members tend to improve the quality of decisions that are often taken by corporate boards, and thereby effectively enhance governance structures and corporate outcomes (Adams & Ferreira, 2009). Meanwhile, the positive effects of board gender diversity on corporate governance structures and outcomes are inherently underpinned by

economic-based (e.g., agency, behavioral, organizational and risk-aversion theories) and social-based (ethical, psychological, and social role theories) theories (Adams & Funk, 2012; Chizema et al., 2015). However, past studies have often investigated the effect that female directors can have in boardrooms without grounding them in economic- and social-based theoretical explanations/predictions. In this case and based on the '*economic' theories*, we have shown that, in theory, female directors are more likely to be better at '*monitoring*' corporate executives than their male counterparts are. In contrast and based on the '*social*' *theories*, we have demonstrated that female directors are theoretically better at '*advising*' corporate executives than male directors are. Our study has, therefore, arguably offered a compelling socio-economic theoretical explanation as to why female directors may be better than male directors at performing both *advisory* and *monitoring* roles within corporate boardrooms. The empirical question that remains to be answered, however, is *which of the two roles can female directors perform the best?* Consequently, and in line with the predictions of our socio-economic theoretical framework, we further empirically show that female directors are able to restrain managerial opportunism, but they are more able to do so when they are appointed into monitoring roles rather than into advisory ones. Our results, therefore, offer directions and opportunities for future theoretical development and expansion. In particular, future studies can employ our socio-economic theoretical framework to investigate and explain critical issues that will go beyond the mere participation of female directors in corporate boardrooms, such as the optimal board gender balance and pathways for female directors' career progression to top senior management roles in the major global corporations (e.g., CEO/CFO roles).

Practical contributions and implications

Our results have an important practical implication for firms by illuminating the best role that female directors should play within boardrooms. While the extant research suggests that it is desirable to appoint female directors to corporate boardrooms, our results further suggest that

female directors appointed into monitoring roles indeed enhance the integrity and quality of the financial reporting process. We hope that our findings will inform firms to give more nuanced consideration as to who should play which role when designing their board structures in order to make a difference for their shareholders.

Limitations

Whereas our findings are important and robust, we explicitly acknowledge their limitations. For example, and similar to all positive accounting studies of this nature, our proxies for advisory and monitoring roles, and managerial opportunism may or may not reflect practice. Future studies may, therefore, offer new insights by conducting in-depth interviews regarding these issues with academics, auditors, directors, CEOs, CFOs, regulators and shareholders. Similarly, while we interestingly find that it is monitoring female directors who appear to have a higher ability to improve the integrity of financial reports, we were unable to investigate the precise mechanisms that monitoring female directors use to constrain managerial opportunism. Future research might use other methodological approaches and datasets to investigate this research question, which may offer additional insights on these mechanisms. Further – and although we have made every effort using a large battery of tests to rigorously address any possible endogeneity problems that may affect our findings – we admit that it is almost impossible to completely eliminate such problems (e.g., Larcker & Rusticus, 2010; van Lent, 2007) from theory-based positive empirical accounting research of this nature. Our results should, therefore, be interpreted with some level of caution in terms of inferences regarding statistical causations.

Conclusions and future directions

As previously noted, to date, the focus of board gender diversity reforms and academic research has mostly been on the level of representation and participation by females in boardrooms.

Noticeably, recent affirmative reforms have successfully resulted in a steady increase in the number of female board members, particularly in developed countries. This paper has explicitly identified for the first time in this field of discourse the specific role that is played by female directors, which results in a positive difference for shareholders. As noted above, we are able to show that female directors have higher capacity to make a major difference in the boardroom for shareholders when they play a monitoring role rather than an advisory role. Our study is, therefore, one of the earliest to provide a significant sense of direction for future policy-makers, researchers and regulatory authorities. Future research can address other critical issues, such as the optimal board gender balance that a corporate board should have in order to be effective.

Another direction of future empirical research may be to replicate this study using data from other developed markets in order to ascertain whether this is exclusively a USA phenomenon or not. Replicating the study by employing different econometric methods may also shed different perspectives on the results and outcomes. From a future theoretical research aspect, the social and economic theoretical predictions can be confirmed and/or extended. This is particularly true if data from other developed markets offer further support for our results. Despite the limitations of our study, we contribute to the existing literature by providing evidence that answers the crucial question of what role female directors should play within corporate boardrooms in order to create value for shareholders. Further, and although mandatory gender quotas within boardrooms exist in many countries, our results suggest that regulators may consider going beyond this to explicitly make recommendations regarding the specific roles and positions that should be performed and held by female directors, respectively. At least, at the firm-level, the process of hiring and appointing females to the board of directors should seriously take into consideration the position they may occupy.

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ENDNOTES

[1]Managerial opportunism refers to the classic principal-agent problem, whereby rational managers (agents) are typically assumed to be opportunistic and self-serving and who, if left un-monitored, will usually pursue their own interests at the expense of those of shareholders (principals) (Abernathy et al., 2014; Adams & Ferreira, 2008; Jensen, 1993; Zalata & Roberts, 2017). In this case, managers often have several avenues, whereby they can be opportunistic by extracting shareholders' wealth, including executive pay package arrangements, financial reporting policy changes and earnings management, corporate social responsibility activities, and third party and related transactions, amongst others. In this paper, we focus on the potential managerial opportunism that may arise from earnings management. Managers can, for example, fraudulently manipulate earnings upwards in order to meet performance targets, and thereby falsely boost their bonus and pay packages.

[2]Past research has examined different benefits of having female directors to shareholder. For example, some studies have investigated whether female representation within boardrooms is associated with improved corporate performance (e.g., Gulamhussen & Santa 2015; Rose, 2007). However, corporate performance is contingent on reported earnings that might be artificially inflated, and therefore other studies have investigated whether shareholders can benefit from female directors by improving the credibility of financial reports, which can be achieved through their ability to constrain managerial opportunism (e.g., Srinidhi et al., 2011).

[3]Adams and Ferreira (2009) show that female directors are more likely to sit on monitoring committees, such as audit, compensation, nomination and governance committees.

[4]It should be noted that greater gender diversity can also have some negative consequences, such as generating conflicts, and co-ordination and communication problems, as well as increasing labor costs, and thus can have a negative effect on governance structures and corporate outcomes (Terjesen & Sealy, 2015, 2016).

[5]We note that Kolberg's (1984) theory has been criticized for not necessarily depicting the natural mode of reasoning of men and women from birth, but a conformation that is usually achieved through exposure to pre-existing social roles and gender stereotypes, particularly at home (Glover et al., 2002; Ibrahim & Angelidis, 2008; Owhoso, 2002).

[6]Consistent with the predictions of the risk-aversion theory, the communal/ethical nature of women compared with men also implies that female directors are more likely to be better monitors of managers on behalf of shareholders than men are. In other words, both the communal/ethical (social) and risk-aversion (economic) theories end up with the same conclusion – female directors are more likely to perform both the board advisory and monitoring roles better than male directors do.

[7]The total number of monitoring directors reflects the sum of female and male directors, who qualify to be included in the different categories, according to our definition of monitoring directors. We follow the same approach for the total number of advisory directors.

[8]ISS (formerly RiskMetrics) does not show which advisory committee directors serve on. Therefore and following past studies (Faleye et al., 2011, 2013), we have assumed that directors, who did not serve on monitoring committees, serve on other advisory committees.

[9]We did not specify that directors need to have at least one year of service experience because firms prepare their financial statement at the end of the financial year and, therefore, directors serving on the board at this time are likely to be those who were in charge of the integrity of the financial statements published in that year.

[10]While Adams and Ferreira (2009) have focused on the percentage of male directors with board connections to all female directors, we have adjusted this measure to suit the role of females within boardrooms.

[11]Our estimation of *ABS_DACC* accounts for unobservable industry factors (i.e., we start by running our expectation equation at the industry level on a yearly basis and therefore, it removes variations in discretionary accruals that are related to industry effects). Therefore, concerns that our instruments (in particular *F_INDUS*) might be correlated with *ABS_DACC* through industry may, arguably, be minimal in our setting. However, as a

further robustness check, we have excluded the percentage of female directors in each industry, and our unreported findings remaining qualitatively unchanged.

[12] In order to perform our 2SLS regression analysis, we use xtivreg command in Stata with between-effects option and this does not support the endogeneity test. However, since between-effects model is a cross-sectional regression on panel means, we calculate cluster means of all the variables and use the ivregress 2sls command after which we test for the endogeneity using estat endogenous command.

[13]Tobin's *Q* is measured as total assets minus total equity plus the market value of equity, scaled by total assets. Stock return is measured as the difference between the stock price at the end and the beginning of the year, scaled by stock price at the beginning of the year. Firm age is measured as the natural log of the number of years during which the firm has reported total assets on *COMPUSTAT* since 1977.

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Figure 1: Kernel density estimate for FMONT standard deviation

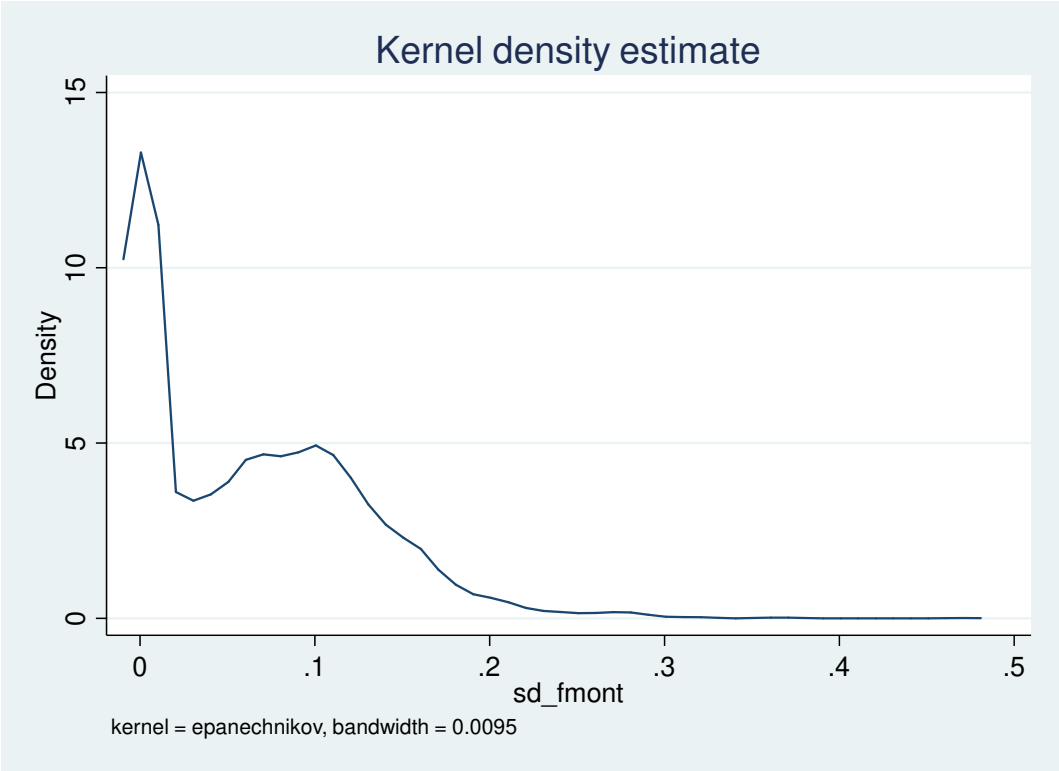
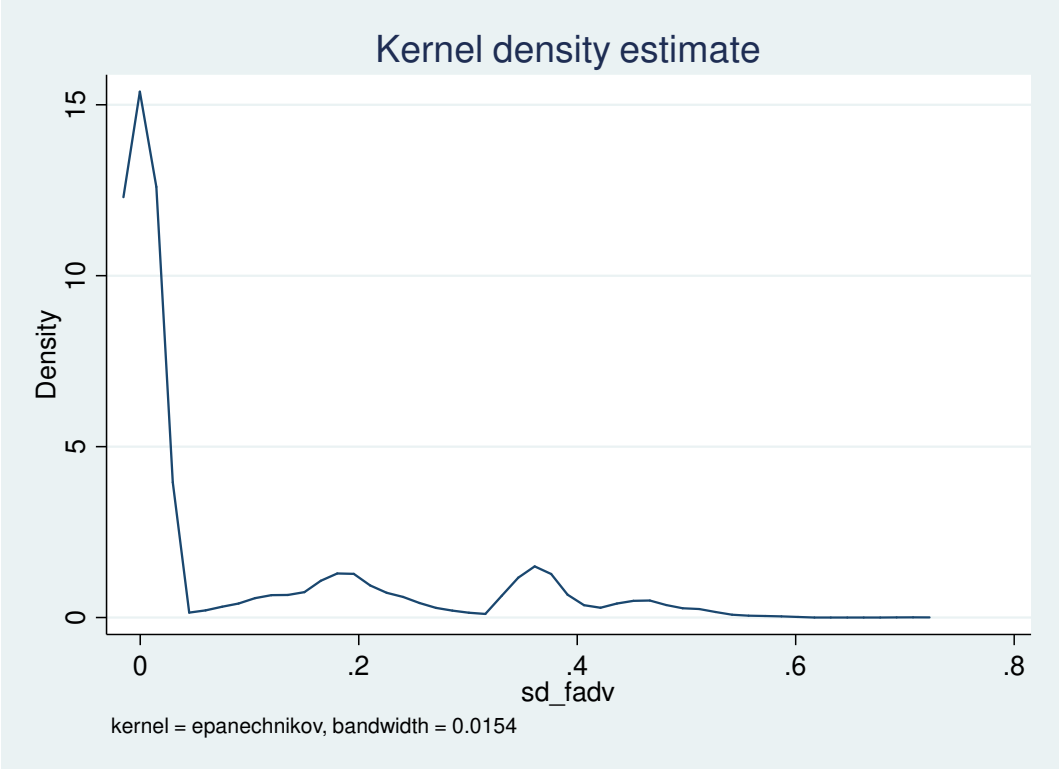


Figure 2: Kernel density estimate for FADV standard deviation



List of Tables

Table 1
Variables' definition and measurements

Variables	*Operationalization*
Dependant variable	
ABS_DACC	Absolute value of discretionary accruals.
Main independent variables	
FADV	The percentage of female advisory directors to the total number of advisory directors.
FMONT	The percentage of monitoring female directors to the total number of monitoring directors.
Control variables	
SIZE	The natural logarithm of firms' market value.
LEV	The proportion of total debt to total assets.
OCF	Cash flows from operations scaled by total assets.
ROA	Net income before extraordinary items divided by lagged total assets.
MBV	The proportion of firms' market value to total common equity.
LOSS	Dummy variable that takes the value of one if net income before extraordinary items is a loss, and zero otherwise.
LNOA	Lagged net operating assets measured as net operating assets divided by sales. Net operating assets is the difference between operating assets and operating liabilities. Operating assets is calculated as total assets less cash and cash equivalents. Operating liabilities is calculated as total assets less total debt, less book value of common and preferred equity, and less non-controlling interests.
LACC	Last year's total accruals divided by last year's lagged total assets.
TMONT	Total raw number of monitoring directors (men and women).
TADV	Total raw number of advisory directors (men and women).
Corporate governance variables	
BSIZE	The total number of directors.
ACSIZE	The total number of directors that serve on the audit committee.
IND	The total number of independent directors to the total number of directors.
BOWN	The percentage of shares held by independent directors.
BOUT	The average number of other outside directorships by independent directors.
ACFEX	The percentage of audit committee members with financial experience.

Variables	*Operationalization*
CCSIZE	The total number of directors that serve on the compensation committee.
NCSIZE	The total number of directors that serve on the nomination committee.
GCSIZE	The total number of directors that serve on the governance committee.
UCFEM	The percentage of other non-executive female directors that are not classified as either FADV or FMONT.
Variables used to control for endogeneity	
MEN_MONT	The percentage of male directors with outside directorships in other firms with at least one monitoring female director to the total number of directors in firms with monitoring female directors.
MEN_ADV	The percentage of male directors with outside directorships in firms with at least one advisory female director to the total number of directors in firms with advisory female directors.
F_INDUS	The percentage of female directors within each two-digit SIC industry.
MILLS_FADV	Inverse Mills ratio from a probit model capturing the likelihood of appointing female directors into advising roles.
MILLS_FMONT	Inverse Mills ratio from a probit model capturing the likelihood of appointing female directors into monitoring roles.

Table 2: Descriptive statistics and correlation matrix

Variables	*Descriptive statistics*		*Correlation Matrix*											
	MEAN	STD DEV	ABS_DACC	FADV	FMONT	SIZE	LEV	OCF	ROA	MBV	LOSS	LNOA	LACC	TMONT
ABS_DACC	.08	.08												
FADV	.06	.20	.01											
FMONT	.14	.16	-.07	-.03										
SIZE	7.84	1.53	.04	.11	.20									
LEV	.21	.17	-.11	.04	.11	.18								
OCF	.11	.07	.30	.01	-.02	.18	-.21							
ROA	.06	.08	.18	.01	.00	.28	-.22	.58						
MBV	3.01	2.87	.19	.02	.07	.27	.07	.34	.33					
LOSS	.13	.34	.00	-.03	-.03	-.27	.06	-.29	-.65	-.13				
LNOA	.79	.68	-.07	.01	-.01	.16	.37	-.13	-.21	-.20	.04			
LACC	-.06	.07	-.08	.01	.02	.07	-.01	-.21	.11	-.05	-.16	-.06		
TMONT	4.60	1.52	-.07	-.04	.10	.17	.16	-.04	-.01	.00	-.05	.09	.05	
TADV	.87	1.05	-.05	.24	.04	.17	.10	-.05	-.03	-.02	.00	.06	.02	-.11

n = 7450, All variables are defined in Table 1.

Tables 3

Predicting discretionary accruals from key variables in different model specifications

	Model (1) Random-effects		Model (2) Fixed-effects		Model (3) Between-effects	
Variables	Coefficient.	z-statistic	Coefficient.	t-statistic	Coefficient.	t- statistic
FADV	-.001	-.20	.001	.17	-.003	-.25
FMONT	-.015	-2.21**	.001	.12	-.034	-3.05***
SIZE	-.001	-.53	-.005	-1.97**	.002	1.53
LEV	-.006	-.80	.020	1.76*	-.047	-4.13***
OCF	.269	16.46***	.244	13.10***	.262	5.19***
ROA	.050	2.87***	.025	1.29	.132	2.64***
MBV	.001	3.62***	.000	.50	.005	6.34***
LOSS	.018	5.60***	.010	2.85***	.052	5.87***
LNOA	-.006	-2.68***	-.021	-6.22***	.008	2.81***
LACC	-.007	-.52	.023	1.66*	-.083	-1.73*
TMONT	-.001	-1.89*	.000	-.18	-.002	-1.73*
TADV	-.002	-1.68*	-.001	-.83	-.003	-1.43
_CONS	.069	8.23***	.113	5.54***	.040	3.01***
Year fixed effects[14]	YES		YES		YES	
R^2	12.60%		6.84%		24.10%	
F/Wald χ^2	693.38***		23.45***		22.48***	

Note: We report here the test of the significance of the difference between the coefficients of monitoring and advisory female directors (*FADV* = *FMONT*) in the above three models, respectively: Model 1: difference = 0.014, $\chi^2(1) = 3.40$, $p = .0654$; Model 2: difference = 0.000, $F(1, 6066) = 0.00$, $p = .9793$; Model 3: difference = 0.031, $F(1, 1345) = 3.56$, $p = .0595$.

n = 7,450; ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively. All variables are defined in Table 1.

Tables 4

Predicting discretionary accruals from key variables in different model specifications (controlling for endogeneity)

	Model (1) 2SLS First Stage (FADV)		Model (2) 2SLS First Stage (FMONT)		Model (3) 2SLS Second stage		Model (4) Inverse mills ratio	
Variables	Coefficient.	t- statistic	Coefficient.	t- statistic	Coefficient.	z- statistic	Coefficient.	t- statistic
FADV					-.028	-1.29	-.003	-.23
FMONT					-.042	-2.05**	-.033	-2.76***
SIZE	-.001	-.49	.000	.05	.002	1.74*	.003	1.66*
LEV	.023	1.10	-.008	-.33	-.045	-3.95***	-.045	-3.90***
OCF	.229	2.47**	.002	.02	.269	5.30***	.266	5.28***
ROA	-.238	-2.57**	.002	.02	.124	2.45**	.126	2.49**
MBV	-.001	-.42	-.001	-.37	.005	6.29***	.005	6.20***
LOSS	-.043	-2.64***	.026	1.39	.051	5.79***	.053	5.97***
LNOA	-.008	-1.50	.002	.42	.007	2.58**	.007	2.66***
LACC	.137	1.55	.019	.19	-.077	-1.58	-.076	-1.56
TMONT	.000	.03	-.010	-3.62***	-.002	-1.71*	-.002	-1.54
TADV	.018	4.96***	.006	1.37	-.002	-.85	-.003	-1.42
MEN_MONT	-.079	-2.90***	.629	20.37***				
MEN_ADV	5.047	25.22***	-.575	-2.52**				
F_INDUS	.132	1.62	.836	8.98***				
MILLS_FADV							.003	.28
MILLS_FMONT							.004	.54
_CONS	.008	.29	.032	1.02	.040	2.95***	.024	.88
Year fixed effects	YES		YES		YES		YES	
R^2	38.88%		34.37%		23.84%		24.27%	
F/Wald χ^2	42.75***		35.19***		421.92***		20.48***	
F Test of excluded instruments	215.21***		180.15***					
Cragg-Donald Wald *F* statistic					178.171***			
Sargan-Hansen statistic					3.445*			

Sargan-Hansen statistic [$\chi^2(1)$ P-value]	0.0634

Note: We report here the test of the significance of the difference between the coefficients of monitoring and advisory female directors (FADV = FMONT) in models 3 and 4, respectively: Model 3: difference = 0.014, $\chi^2(1) = 0.26$, $p = 0.6124$; Model 4: difference = 0.030, $F(1, 1342) = 3.16$, $p = 0.0758$.

n = 7,450 in the first 3 models and 7,447 in model (4); ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively. All variables are defined in Table 1.

[14] We thank an anonymous methods reviewer for pointing out the importance of controlling for year fixed-effects especially in the between-effects model.

Table 5

Propensity score

Panel A: Test of significant differences in firms' observable characteristics and discretionary accruals (Post-matching using FMONT)

Variable	Firms with FMONT (*n= 2443)*	Matched firms without FMONT (*n= 2443)*	t- statistic
FADV	.056	.056	-.03
SIZE	7.779	7.799	-.50
LEV	.209	.205	.81
OCF	.113	.113	-.02
ROA	.061	.062	-.14
MBV	2.991	3.015	-.30
LOSS	.131	.135	-.34
LNOA	.782	.784	-.12
LACC	-.062	-.063	.15
TMONT	4.441	4.446	-.14
TADV	.876	.881	-.15
ABS_DACC	.071	.083	-5.29***

Panel A: Test of significant differences in firms' observable characteristics and discretionary accruals (Post-matching using FADV)

Variable	Firms with FADV (*n= 539)*	Matched firms without FADV (*n= 539)*	t- statistic
FMONT	.127	.122	.61
SIZE	8.343	8.338	.05
LEV	.229	.238	-.91
OCF	.112	.117	-1.25
ROA	.066	.069	-.66
MBV	3.116	3.202	-.46
LOSS	.102	.095	.41
LNOA	.816	.786	.76
LACC	-.056	-.060	1.09
TMONT	4.384	4.475	-1.06
TADV	1.896	1.883	.22
ABS_DACC	.079	.077	.37

All variables are defined in Table 1.

Tables 6

Predicting discretionary accruals from key variables in different model specifications (Robustness analysis)

	Model (1)		Model (2)		Model (3)	
Variables	Coefficient.	t- statistic	Coefficient.	t- statistic	Coefficient.	t- statistic
FADV	-.004	-.36	.003	.32	-.003	-.23
FMONT	-.034	-3.01***	-.012	-3.09***	-.019	-2.21**
SIZE	.003	1.89*	.002	1.48	.002	1.21
LEV	-.039	-3.38***	-.046	-4.10***	-.049	-4.31***
OCF	.271	5.38***	.259	5.14***	.257	5.10***
ROA	.126	2.47**	.133	2.66***	.138	2.75***
MBV	.004	5.92***	.005	6.31***	.005	6.31***
LOSS	.053	5.94***	.051	5.80***	.051	5.83***
LNOA	.007	2.47**	.008	2.76***	.008	2.98**
LACC	-.075	-1.54	-.088	-1.83*	-.088	-1.83*
TMONT	.003	1.44	-.001	-.92	-.002	-1.65*
TADV	-.004	-1.77*	-.003	-1.57	-.003	-1.33
BSIZE	.001	.98				
ACSIZE	-.006	-1.93*				
CCSIZE	-.001	-.27				
GCSIZE	.002	.67				
NCSIZE	-.008	-1.98**				
IND	.023	1.24				
BOWN	-.042	-.84				
BOUT	-.001	-.14				
ACFEX	-.001	-.19				
UCFEM	-.026	-.75				
BIG4	-.019	-2.86***				
_CONS	.043	2.32**	.038	2.82	.041	3.08

Year fixed effects	YES	YES	YES
R^2	25.30%	24.12%	23.85%
F	15.06***	22.51***	22.17***

Note: We report here the test of the significance of the difference between the coefficients of monitoring and advisory female directors (FADV = FMONT) in the above three models, respectively: Model 1: difference = 0.030, $F(1, 1334) = 3.31$, $p = 0.0692$; Model 2: difference = 0.015, $F(1, 1345) = 2.53$, $p = 0.1120$; Model 3: difference = 0.016, $F(1, 1345) = 1.17$, $p = 0.2786$.

n = 7,450; ***, **, and * denote significance at 1%, 5%, and 10% levels, respectively. All variables are defined in Table 1.

Appendix: Full correlation table

	ABS_DACC	FADV	FMONT	SIZE	LEV	OCF	ROA	MBV	LOSS	LNOA	LACC	TMONT	TADV	MEN_MONT
FADV	.01													
FMONT	-.07	-.03												
SIZE	.04	.11	.20											
LEV	-.11	.04	.11	.18										
OCF	.30	.01	-.02	.18	-.21									
ROA	.18	.01	.00	.28	-.22	.58								
MBV	.19	.02	.07	.27	.07	.34	.33							
LOSS	.00	-.03	-.03	-.27	.06	-.29	-.65	-.13						
LNOA	-.07	.01	-.01	.16	.37	-.13	-.21	-.20	.04					
LACC	-.08	.01	.02	.07	-.01	-.21	.11	-.05	-.16	-.06				
TMONT	-.07	-.04	.10	.17	.16	-.04	-.01	.00	-.05	.09	.05			
TADV	-.05	.24	.04	.17	.10	-.05	-.03	-.02	.00	.06	.02	-.11		
MEN_MONT	-.06	.00	.53	.35	.17	-.02	.01	.09	-.06	-.03	.05	.34	.01	
MEN_ADV	-.01	.52	.01	.17	.05	-.01	.01	.02	-.02	.02	.02	-.02	.25	.08
F_INDUS	-.02	.10	.27	.16	.16	.02	.07	.14	-.10	-.03	.05	.04	.10	.15
BSIZE	-.09	.13	.26	.53	.27	-.06	-.01	.03	-.09	.10	.07	.32	.40	.36
ACSIZE	-.09	-.02	.12	.26	.18	-.05	.01	.00	-.08	.09	.08	.58	-.11	.32
CCSIZE	-.08	-.05	.13	.21	.16	-.04	.01	.01	-.07	.07	.07	.62	-.14	.30
GCSIZE	-.07	-.04	.11	.24	.17	-.03	.00	.00	-.05	.08	.05	.78	-.12	.34
NCSIZE	-.07	-.05	.10	.23	.16	-.02	.01	.01	-.06	.09	.05	.80	-.13	.34
IND	-.02	.01	.17	.21	.14	-.05	-.04	.05	-.02	.07	.01	.25	-.18	.28
BOWN	-.01	-.02	-.06	-.19	.00	-.01	-.06	-.01	.09	-.03	-.04	-.01	.02	-.08
BOUT	-.01	.04	.12	.36	.15	-.04	-.03	.07	.00	-.02	.03	.13	.06	.40
ACFEX	-.03	.04	.06	.10	.08	-.02	-.03	.01	.02	.02	-.02	-.03	.04	.06
UCFEM	-.02	.00	-.05	.23	.08	-.03	.00	.06	-.04	-.01	.03	-.15	-.04	-.01
BIG4	-.07	.02	.15	.25	.18	-.01	-.04	.01	-.02	.06	-.03	.13	.03	.16

	MEN_ADV	F_INDUS	BSIZE	ACSIZE	CCSIZE	GCSIZE	NCSIZE	IND	BOWN	BOUT	ACFEX	UCFEM
F_INDUS	.08											
BSIZE	.17	.23										
ACSIZE	.01	.09	.44									
CCSIZE	.00	.09	.39	.59								
GCSIZE	-.01	.04	.37	.50	.54							
NCSIZE	-.01	.02	.35	.51	.57	.94						
IND	.03	.04	.20	.28	.28	.30	.28					
BOWN	-.03	-.04	-.05	-.04	.00	-.02	-.01	.05				
BOUT	.12	-.02	.29	.18	.16	.19	.17	.22	-.06			
ACFEX	.04	.07	.09	-.12	-.05	.00	-.03	.08	-.04	.08		
UCFEM	.02	.18	.28	.08	.04	-.03	-.05	.19	-.04	.14	.08	
BIG4	.02	.03	.24	.12	.12	.15	.12	.15	-.03	.16	.07	.10