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Board gender reforms and voluntary disclosure: International evidence from management earnings forecasts

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Abstract

Research Question/Issue: This study examines the relationship between boardroom gender diversity reforms (BGDRs) and corporate voluntary disclosure in the form of management earnings forecasts (MEFs) in a sample of 43 countries over the period 2000 to 2020.

Research Findings/Insights: Taking advantage of the staggered adoption of the gender diversity reforms that aim to improve women's representation on boards, we find that firms exhibit a greater propensity for and frequency of issuing MEFs. These findings hold for both governance-based and legislation-based reforms but are stronger for the latter. Furthermore, we find stronger results (a) when female directors possess higher financial expertise and serve on board sub-committees, (b) when board activity (meetings and attendance) improved following BGDRs, (c) for firms that had all-male boards before the reforms and where gender diversity increased shortly after the reforms, and (d) for countries with greater legal enforcement and gender equality. Our findings are robust using the stacked difference-in-differences approach and alternative samples, models, and fixed effects. In addition, we find that, after the reforms, there is an increase in the forecast horizon, forecast width, bad news disclosure, accuracy, and the number of disaggregated forecast items.

Theoretical/Academic Implications: Our study provides the first international and comprehensive evidence of the positive role of board gender reforms in the corporate information environment and offers vital policy implications.

Practitioner/Policy Implications: Our study informs the ongoing debate regarding the effectiveness of and business case for gender diversity reforms. By documenting a causal link between BGDRs and voluntary disclosure, our study provides important implications for policymakers, regulators, investors, and top management teams.

KEYWORDS

corporate governance, board gender diversity reforms, management earnings forecasts, voluntary disclosure

1 | INTRODUCTION

Over the past two decades, there has been a surge in boardroom gender diversity reforms (BGDRs) worldwide. Since 2003, when Norway became the first country to require listed firms to have at least 40% female directors on board, 26 countries have gradually enacted similar gender diversity reforms (Fauver et al., 2022; Mensi-Klarbach & Seierstad, 2020; Poletti-Hughes & Dimungu-Hewage, 2023). One of the United Nations Sustainable Development Goals (UNSDGs) clearly discourages gender discrimination in the workplace (see UN Resolution 70/1, the 2030 Agenda). Although prior studies find an increase in boardroom gender diversity after the reforms (Poletti-Hughes & Dimungu-Hewage, 2023), these reforms still attract much debate as to whether such reforms increase firm value (e.g., Klettner et al., 2016). Some proponents argue that greater boardroom gender diversity can enhance corporate governance, improve firm performance, and add social benefits (Abbott et al., 2012; Y. Chen et al., 2016; Eagly & Carli, 2003; Gyapong et al., 2021; Hillman et al., 2007). In contrast, some opponents argue that governance-based BGDRs may not be strongly enforced as the level of boardroom gender diversity is still very low globally. Such reforms, even if legislated for greater enforcement, may lead to a shortage of sufficiently experienced female directors, and firms employing younger and less experienced female board members may experience deteriorating business operations (Poletti-Hughes & Dimungu-Hewage, 2023). With these contradicting and debatable effects of BGDRs on firm outcomes, this study aims to extend this line of research by providing novel evidence on the impact of BGDRs on corporate voluntary disclosure in the form of management earnings forecasts (MEFs).

We choose to examine corporate voluntary disclosure, in particular MEFs, because MEFs are important channels for managers to influence investors' earnings expectations, preempt litigation concerns, and reduce information asymmetry between firm insiders and external investors (Cao et al., 2017; Hirst et al., 2008; Houston et al., 2019; W. Li et al., 2019; Tsang et al., 2019). As MEFs are forecasts of earnings before the earnings announcements and are voluntarily provided by firms' managers, MEFs are perceived as more important information sources for investors than other information channels, such as earnings announcements (Beyer et al., 2010).

However, whether BGDRs can affect voluntary disclosure, particularly MEFs, remains an unopened blackbox. On one hand, the enactment of BGDRs may result in more voluntary disclosures for three reasons. First, to the extent that BGDRs increase the gender diversity of firms, firms may have better corporate governance due to historical views that female directors are more ethical and independent with better communication and monitoring skills (Guedhami et al., 2014; Gul et al., 2011; Gull et al., 2022; Srinidhi et al., 2011; Stulz, 2005; Zalata et al., 2019). When firms' corporate governance is improved, it mitigates managers' incentives to withhold information for personal interests and encourages the firms to disclose more information to outside investors (Eng & Mak, 2003; Zaman et al., 2021). Second, as female directors are more risk averse than male directors (Harrison et al., 2007; Watson & McNaughton, 2007), firms with more female directors vis-à-vis BGDRs may have greater incentives to provide more voluntary disclosure to help reduce firm risk or the risks of being sued for withholding information (Blacconiere & Patten, 1994; Christensen, 2016; Toffel & Short, 2011). Third, the BGDRs tend to attract more foreign investors (Fauver et al., 2022), which increases the demand for information from the companies. Thus, BGDRs may result in firms providing more voluntary disclosures to satisfy the information needs of these investors (L. Chen et al., 2019).

On the other hand, firms may reduce the extent of voluntary disclosure after the enactment of BGDRs due to a variety of reasons. First, according to the opponents of board gender reforms, corporate governance may even get worse after the reforms due to inexperienced and less-qualified female directors being appointed to the board, which may result in opportunistic behavior by the management and less information disclosure. Second, voluntary disclosure, such as MEFs, may increase litigation and proprietary risks (Billings & Cedergren, 2015; I. Kim & Skinner, 2012; Rogers et al., 2011; Rogers & Van Buskirk, 2009). Hence, to the extent that female directors are more risk averse, firms may disclose less information after the gender diversity reforms. Third, relative to male directors, female directors are more conservative (Francis et al., 2015), which may lead firms to avoid voluntary disclosure after BGDRs. Given these conflicting arguments, and increasing BGDRs around the world, it is vital to explore what impacts BGDRs have on firms' voluntary disclosure practices, particularly MEFs.

We answer this question based on a large dataset of 80,402 firm-year observations from 15,650 listed firms located in 43 countries for the period 2000–2020. Taking advantage of the staggered enactment of gender diversity reforms, we implement a difference-in-differences (DiD) approach to examine the impact of BGDRs on MEFs. Our main results reveal that firms increased the extent of MEFs after the reforms. Our results are economically significant too, that is, the enactment of BGDRs leads to a subsequent increase in the issuance (frequency) of MEFs by 5.02% (35.28%) from the mean value. We further find that this relationship is stronger for legislation-based reforms than governance code-based reforms. We also find that the results are stronger (in both magnitude and significance) when female directors possess higher financial expertise and when they serve on board sub-committees. Our cross-sectional tests at the firm level reveal more pronounced results for firms that are more likely to be affected by the reforms, that is, (1) firms with all-male directors prior to the reforms and (2) firms that increased gender diversity after the reforms. Our country-level cross-sectional tests indicate more pronounced results for firms in countries with greater law enforcement and gender equality. This is because reforms are more effective in countries with greater law enforcement (Blake & Moschieri, 2017), and female directors are less likely to be symbolic in countries with greater gender equality (Post & Byron, 2015).

Due to the concern that staggered DiD may cause the bias of the treatment effects in the presence of treatment effect heterogeneity (Baker et al., 2022; Barrios, 2021; Cengiz et al., 2019), we follow Fauver et al. (2022) and implement the stacked DiD regression and rerun our estimation. Our results still hold. We further conduct multiple tests, including (1) alternative samples that exclude the United States (i.e., the county that is more representative in our sample), (2) alternative samples, (3) alternative models, (4) alternative fixed effects, and (5) additional controls of board size, board independence, and passage of board independence reforms. We continue to find consistent results.

Finally, we extend our investigation to examine whether BGDRs also affect the quality of MEFs. We find that, after BGDRs, firms tend to issue timelier, more accurate, and more detailed MEFs. These results are consistent with our earlier argument that BGDRs may increase corporate governance and firms' information transparency. We also find that, after the reforms, firms tend to issue MEFs with more bad news disclosure, consistent with our argument that female directors are more conservative and are less likely to withhold bad news to mitigate potential litigation. These results are also consistent with the finding that female directors tend to underestimate upcoming earnings (Bamber et al., 2010).

Our paper has two main contributions to the literature. First, we add to the much-debated literature on board gender diversity reforms and provide new evidence for the real benefits of the board gender diversity reforms: That is, firms exhibit more voluntary disclosure after the reforms. Our study provides important regulatory guidance for countries that hope to make their reforms more effective (e.g., increase legal enforcement or gender equality) and for countries that have not enacted the reforms, such as China and Korea. Our paper also answers the recent call for research on gender diversity due to the concern about causal inference (Adams, 2016). The relative exogenous setting arising from the staggered enactment of BGDRs offers a great opportunity for us to show the impact of gender diversity on voluntary disclosure.

Second, our study contributes to the growing stream of MEF literature (Hirst et al., 2008; Wiedman, 2000). Specifically, prior studies have shown that MEFs are affected by a company's legal and regulatory environments (Baginski et al., 2002; Bailey et al., 2003; Heflin et al., 2003; Johnson et al., 2001; Wang, 2007). We extend this line of research by adding that BGDRs also affect MEFs. Furthermore, while prior studies (e.g., Ajinkya et al., 2005; Karamanou & Vafeas, 2005) increase our understanding of the role of effective governance mechanisms (e.g., board independence and institutional ownership) in voluntary disclosure practices, the role of gender diversity vis-à-vis BGDRs as an important determinant of governance effectiveness remains unexplored. Voluntary disclosure is costly but very useful for various stakeholders, especially investors, creditors, and shareholders, and therefore, our study provides evidence of the positive role played by gender reforms in curbing information asymmetry. Thus, we add to this line of research by proposing another vital determinant of MEFs. Finally, this study adds to the scant scholarship investigating MEFs in the international setting. MEFs are affected by country-level institutions (W. Li et al., 2019), language (Guan et al., 2020), and the adoption of IFRS (X. Li & Yang, 2016). Our paper provides new evidence from the perspective of board reforms.

This study is organized as follows. Section 2 presents the literature review and hypothesis. Section 3 describes the sample and research design. Section 4 presents the results, and Section 5 concludes the paper.

2 | LITERATURE REVIEW AND HYPOTHESES

2.1 | BGDRs

The lack of gender equality in corporate boards remains a huge concern for sustainable development worldwide. According to Deloitte (2019), the average proportion of females on boards is only 16.9% globally, with only 3.5% of board chairs being female in 2018. Advocacy of gender diversity reforms has become one of the 17 goals of the United Nations Sustainable Development (see UN Resolution 70/1, the 2030 Agenda). Echoing this advocacy, the last few decades have witnessed an explosion of BGDRs. At the time of our investigation, 26 countries gradually enacted BGDRs, either as the governance code based or legislative based (Mensi-Klarbach & Seierstad, 2020). The first reform was passed in Norway in 2003, requiring listed companies to have at least 40% of females on the corporate board (Ahern & Dittmar, 2012; Matsa & Miller, 2013). Since then, public pressure on boardroom gender reforms has intensified in other countries. For example, in 2007, Spain became the first country in the European Union to introduce a gender quota law, suggesting that companies should have at least 40% of their boards of directors composed of females. In 2010, the UK Financial Reporting Council provide recommendations in the UK Corporate Governance Code, requiring the UK-listed firms to report their board's gender policy, measurable objectives on gender diversity, and the progress in achieving these objectives. Soon after 2010, the European Commission (EC) launched the "Women on the Board Pledge for Europe."[1]

Most countries begin their reforms by amending governance codes to include gender diversity guidelines on board directors' appointments. Several countries further resort to legislation that includes quotas and sanctions. These legislation-based and governance-based reforms urge firms to substantially increase the number of female directors on boards (Poletti-Hughes & Dimungu-Hewage, 2023). As the enactment of the BGDRs depends on a country's political and social institutions, there are substantial variations in their timing.

However, the enactment of such reforms is still under much debate (e.g., Klettner et al., 2016). Proponents of the reforms argue that more boardroom gender diversity can enhance corporate governance, improve firm performance, and add social benefits (Francoeur et al., 2008). Prior studies argue that such reforms can boost board monitoring and reduce agency conflicts by breaking the old boys' network (Adams et al., 2010) and improving the availability and appointment of a better-qualified pool of females for directorships (Eagly & Carli, 2003; Hillman et al., 2007). This is because female directors can bring a fresher and more independent perspective (Capezio & Mavisakalyan, 2016). Compared with male directors, female directors are less likely to adhere to the prevailing board culture (Konrad et al., 2008; Zaman et al., 2023). In addition, studies also find that female directors have superior internal controls (Abbott et al., 2012; Y. Chen et al., 2016). For example, boards with more female directors tend to reduce agency costs by reducing excess free cash flows through dividends (Byoun et al., 2016; Ye et al., 2019) and improving investment efficiency (Farooq et al., 2023). Gul et al. (2011) suggest that gender-diverse boards improve the information environment through more intensive oversight than similar all-male boards. Adams and Kirchmaier (2016) further suggest that the better communication skills of female directors promote board efficiency and increase the extent of monitoring.

In contrast, the opponents of these reforms argue that governance-based laws do not have teeth. Even for legislation-based reforms, a quota requirement may result in females being chosen over male candidates even if male candidates have higher qualifications and experiences. Furthermore, these reforms may lead to the excess demand for more female directors, which creates a shortage of women with sufficient experience (Poletti-Hughes & Dimungu-Hewage, 2023). Consistent with this view, prior studies argue that female directors do not necessarily improve financial performance (Adams & Ferreira, 2009; Labelle et al., 2015). For example, based on the BGDR in Norway in 2003, Ahern and Dittmar (2012) find a significant drop in the stock price at the announcement of the reform and a large decline in firm performance over the next few years, consistent with the view that firms choose boards to maximize value. They suggest that BGDRs may lead to younger and less experienced boards and deteriorate operating performance. Overall, evidence on the real effect of these reforms is still an open question that calls for more research.

2.2 | MEFs

MEFs are important types of voluntary disclosure through which corporate management alleviates the information asymmetry surrounding firms (King et al., 1990). Studies suggest that capital market participants pay greater attention to MEFs (Ajinkya et al., 2005; Balakrishnan et al., 2014; Healy et al., 1999). More and better MEFs can significantly improve firms' cost of capital (e.g., Baginski & Rakow, 2012; Leuz & Verrecchia, 2000), liquidity (e.g., Balakrishnan et al., 2014; Diamond & Verrecchia, 1991), information environment (e.g., Ajinkya & Gift, 1984; Karamanou & Vafeas, 2005), and access to foreign capital markets (L. Chen et al., 2019; Tsang et al., 2019). Research also suggests that voluntary disclosures such as MEFs are a major channel through which managers signal their commitment to corporate transparency (Ajinkya et al., 2005; Botosan & Harris, 2000; Graham et al., 2005; Karamanou & Vafeas, 2005; Lys et al., 2015).

2.3 | Board gender diversity reforms and MEFs

Prior literature is unclear about whether BGDRs affect corporate voluntary disclosure. The literature contains contradictory predictions regarding the relationship between the reforms and voluntary disclosures. Several factors support the prediction of a positive relationship. First, to the extent that BGDRs increase gender diversity, firms may have better corporate governance due to female directors being considered more ethical, independent, and less likely to adhere to the prevailing board culture, with superior internal control than the male counterparties (Guedhami et al., 2014; Gul et al., 2011; Nadeem, 2020; Srinidhi et al., 2011; Stulz, 2005; Zalata et al., 2019). Also, better governed boards encourage more information disclosure to outside investors (Eng & Mak, 2003) by limiting managerial opportunism (Fama, 1980; Fama & Jensen, 1983) and the ability to profit from inside information such as insider trading (Dai et al., 2016). Thus, firms may engage in more voluntary disclosure after the BGDRs.

Second, female directors are more risk averse than male directors (Eckel & Füllbrunn, 2015; Harris et al., 2006; Sapienza et al., 2009; Watson & McNaughton, 2007). Some studies support that providing more voluntary disclosures may help reduce firm risk. For example, by committing to more voluntary disclosure practices, firms can obtain not only various stock market benefits but also more favorable attention from various stakeholders, thus mitigating concerns about potential regulatory scrutiny and enforcement actions (Blacconiere & Patten, 1994; Christensen, 2016; Toffel & Short, 2011). Furthermore, by issuing more MEFs, firms can guide analysts' expectations to avoid negative earnings surprises, which makes the stock price decline (Matsumoto, 2002). Studies also show that by committing to better voluntary disclosure practices, firms can alleviate future litigation concerns and costs (Houston et al., 2019; Patten & Trompeter, 2003; Rogers et al., 2011; Skinner, 1997). Following these studies, to the extent that female directors are more risk averse and care more about multiple stakeholder interests (Nadeem, 2020), we posit that firms exhibit an increase in the likelihood and the frequency of MEF after the BGDRs.

Third, Fauver et al. (2022) find that firms attract more foreign investors after the BGDRs. Prior studies also find a strong positive association between foreign institutional ownership and managers' provision of voluntary disclosures (e.g., Tsang et al., 2019). Therefore, to the extent that the BGDRs make domestic firms more attractive to foreign institutional investors, firms may supply more voluntary disclosures to gain the attention of these investors (L. Chen et al., 2019).

However, it is also possible that firms may reduce the extent of voluntary disclosure after the BGDRs. Prior research suggests that managers still have litigation and enforcement risk concerns about issuing voluntary disclosures (Billings & Cedergren, 2015; I. Kim & Skinner, 2012; Rogers et al., 2011; Rogers & Van Buskirk, 2009). For example, S. Chen et al. (2011) suggest that managers are concerned about being sued for issuing inaccurate or misleading MEFs. They further show that litigation fears reduce firms' incentives to provide disclosures, particularly forward-looking disclosures such as MEFs. Existing literature also argues that female directors, due to being risk averse, adopt disclosure styles that are less precise and underestimate upcoming earnings relative to male directors (Bamber et al., 2010). Furthermore, female directors are more conservative in their financial reporting than their male counterparts (Francis et al., 2015), and when directors are more conservative, they tend to disclose less information (Hui et al., 2009). Therefore, it is also possible that firms with more female directors are less likely to voluntarily disclose information, especially forward-looking information such as MEFs. Taken together, this discussion leads to our hypothesis in the alternate form below:

H1. Firms exhibit a positive change in the likelihood and the frequency of MEF after BGDRs.

3 | VARIABLE DEFINITIONS AND RESEARCH DESIGN

3.1 | Data and sample

Our sample covers 43 countries for the period 2000–2020, and data are obtained from different resources. First, we collect the BGDR information from Fauver et al. (2022). Their sources include EC (2012), Deloitte (2017), Catalyst (2018a, 2018b), European Corporate Governance Institute (ECGI), and prior studies (Ahern & Dittmar, 2012; Smith, 2014). To proxy for voluntary disclosure, we follow prior studies and focus on the extent to which firms provide MEFs (W. Li et al., 2019; X. Li & Yang, 2016). We obtain these data from the S&P CapitalIQ Compustat database (CapitalIQ hereafter). CapitalIQ collects MEFs from various sources, including firm filings with stock exchanges, major financial news media, and subscriptions to commercial sources of financial information. CapitalIQ reports MEFs in the Key Developments dataset under Corporate Guidance.

Next, we obtain the firm-level accounting data from Compustat Global, Compustat North America, and CRSP. We also utilize FactSet and IBES databases for institutional ownership and analyst following, respectively. The country-level information, such as the GDP, is obtained from the World Development Indicators. We rely on La Porta et al. (1997, 1998) for information such as the equity market development and the strength of law enforcement in a country. For additional analyses, we source board- and director-level information from ASSET4 (now Refinitiv) and BoardEx, respectively. See Appendix A for more information.

Our sample period starts from 2000 because CapitalIQ coverage is relatively sparse in the earlier years. Following Fauver et al. (2017, 2022), to mitigate the concern about confounding events, we restrict our analyses to 5 years before and after the BGDRs. As the most recent year of the reform is 2015, our sample periods end in 2020. Based on these restrictions, our final sample consists of 80,402 firm-year observations for 15,650 unique firms from 43 countries worldwide.[2]

Table 1 tabulates our sample distribution by region. Most of our sample is from the United States (25,640 observations), followed by China (17,217 observations). This table further shows the first year of gender diversity board reforms and the reform type in each region.

TABLE 1 Sample distribution by country/regions.

No.	Region	Obs.	%	Reform year	Reform type	*MEF_ISSUE*	*MEF_FREQ*
1	Sweden	557	0.69	2004	Governance code	0.142	0.228
2	Austria	202	0.25	2009	Governance code	0.683	1.525
3	Luxembourg	39	0.05	2009	Governance code	0.385	0.590
4	South Africa	464	0.58	2009	Governance code	0.409	0.571
5	Finland	647	0.80	2010	Governance code	0.836	2.598
6	Ireland	126	0.16	2010	Governance code	0.587	2.063
7	Poland	633	0.79	2010	Governance code	0.243	0.575
8	United Kingdom	4677	5.82	2010	Governance code	0.439	0.746
9	Malaysia	2004	2.49	2011	Governance code	0.238	0.328
10	Singapore	824	1.02	2012	Governance code	0.289	0.535
11	Thailand	837	1.04	2012	Governance code	0.227	0.453
12	Greece	221	0.27	2013	Governance code	0.077	0.109
13	Hong Kong	1532	1.91	2013	Governance code	0.407	0.601
14	United States	25,640	31.89	2013	Governance code	0.794	2.921
15	Switzerland	860	1.07	2014	Governance code	0.631	1.358
	Sub-total/avg	39,263	48.83	-	-	0.426	1.013
16	Norway	380	0.47	2003	Legislation	0.113	0.155
17	Spain	299	0.37	2007	Legislation	0.291	0.381
18	Belgium	349	0.43	2011	Legislation	0.524	1.083
19	France	1983	2.47	2011	Legislation	0.428	0.939
20	Italy	832	1.03	2011	Legislation	0.387	0.706
21	Netherland	382	0.48	2011	Legislation	0.599	1.356
22	Australia	2724	3.39	2012	Legislation	0.598	1.279
23	Denmark	259	0.32	2012	Legislation	0.903	3.255
24	India	4193	5.22	2013	Legislation	0.141	0.210
25	Germany	1888	2.35	2015	Legislation	0.793	2.599

TABLE 1 (Continued)

No.	Region	Obs.	%	Reform year	Reform type	*MEF_ISSUE*	*MEF_FREQ*
	Sub-total/avg	13,289	16.53	-	-	0.478	1.196
26	Argentina	68	0.08	-	-	0.074	0.132
27	Brazil	669	0.83	-	-	0.166	0.253
28	Canada	1477	1.84	-	-	0.635	2.261
29	Chile	272	0.34	-	-	0.040	0.048
30	China	17,217	21.41	-	-	0.172	0.258
31	Colombia	46	0.06	-	-	0.130	0.217
32	Cyprus	47	0.06	-	-	0.511	1.362
33	Indonesia	905	1.13	-	-	0.200	0.313
34	Korea	3508	4.36	-	-	0.063	0.099
35	Mexico	336	0.42	-	-	0.235	0.330
36	New Zealand	627	0.78	-	-	0.558	1.163
37	Peru	122	0.15	-	-	0.074	0.123
38	Philippines	470	0.58	-	-	0.385	0.664
39	Portugal	240	0.30	-	-	0.213	0.275
40	Russia	350	0.44	-	-	0.443	1.129
41	Saudi Arabia	585	0.73	-	-	0.055	0.079
42	Turkey	707	0.88	-	-	0.091	0.136
43	United Arab Emirates	204	0.25	-	-	0.299	0.515
	Sub-total/avg	27,850	34.64	-	-	0.241	0.520
	Total/Avg	80,402	100	-	-	0.458	1.358

Note: This table presents the sample distributions of the 80,402 firm-year observations by country/region. We show the first year of boardroom gender diversity reform and the reform type. In each region, we also report the average percentage of firm-years with a MEF (*MEF_ISSUE*) and the average frequency of MEFs (*MEF_FREQ*).

Our sample includes 15 countries with governance code types of BGDRs, representing 39,263 observations; 10 countries with the legislation-based BGDRs, representing 13,289 observations; and 18 countries with no reform as the benchmark sample, representing 27,850 observations. Furthermore, this table presents the average percentage of firm-year observations with a MEF (*MEF_ISSUE*) and the average frequency of MEFs (*MEF_FREQ*). We find that Denmark has the largest percentage of firms issuing MEFs, followed by Finland and the United States.

3.2 | Research design

Using the staggered adoption of BGDRs in different countries, we implement a staggered DiD design (Guan et al., 2020; Hope et al., 2013; K. Kim et al., 2016). Our treatment group includes firm-years representing BGDRs (either governance code or legislation reforms), and all the remaining firm-years are included in the control group, which allows us to control for other contemporaneous shocks that may affect the relationship between BGDRs and voluntary disclosure. To test our hypothesis that firms may increase or decrease the extent of voluntary disclosure after BGDRs, we use the following model:

$$MEF\_ISSUE_{i,t} \text{ or } MEF\_FREQ_{i,t} = \beta_0 + \beta_1 POST_{i,t-1} + Controls + Firm\,FE + Year\,FE + \varepsilon, \quad (1)$$

where the dependent variable, *MEF_ISSUE*, is an indicator variable equal to 1 if a firm *i* issued a forecast in year *t* and zero otherwise. *MEF_FREQ* is the number of MEFs issued by firm *i* in year *t*. These variables capture the propensity of firms to issue MEFs and the average frequency of their MEF issuance. *POST* is an indicator variable that equals one if the sample year corresponds to a country's gender diversity reform in that or any following year and zero otherwise. A positive (negative) coefficient on *POST* indicates that firms increase (decrease) the extent of voluntary disclosure after female board reform.

Following prior studies (Cao et al., 2017; W. Li et al., 2019; Tsang et al., 2023), we control for firm characteristics and country-level institutional factors in our model. In terms of firm-level control variables, we control for various factors that may affect the extent of voluntary disclosure. We use *FIRMSIZE* (the natural logarithm of total assets) to capture the sample firm's size. Larger firms tend to issue more MEFs due to the economies of scale in disclosure (Kasznik & Lev, 1995). We control for a firm's profitability by its return on assets (*ROA*), the growth opportunities by the book-to-market ratio (*BM*), and the

information demand from debtholders by its leverage ratio (*LEV*). We use a firm's absolute abnormal accruals (*ACCRUAL*) adjusted for industry and year averages as a measure of earnings opacity (Lobo et al., 2012). We include the number of analysts following a firm (*ANA_COV*) to control for a firm's information environment (Lang & Lundholm, 1993, 1996). We measure its operational complexity and uncertainty using the number of business and geographical segments of the firm (*BUS_SEG* and *GEO_SEG*), respectively. To capture the extent of information demand from institutional investors, we control for the percentage of shares owned by institutional investors (*INSTI_OWN*) (Benlemlih et al., 2023). We also consider industry competition (*COMPETITION*), as measured by the industry's Herfindahl index multiplied by −1, to capture the cost of disclosing proprietary information. In terms of the country-level control variables, we use per capita GDP (*PCGDP*) to control for differences in the standard of living and development between countries (Choi et al., 2008, 2009).

4 | EMPIRICAL RESULTS

4.1 | Descriptive statistics

Table 2 provides the descriptive statistics of our key variables. The mean of *MEF_ISSUE* is 0.458, suggesting that about 45.8% of observations in our sample have at least one MEF in a year. The average frequency of MEFs (*MEF_FREQ*) is about 1.358 per year. These statistics are generally consistent with prior studies on international MEFs (e.g., tab. 1 in Cao et al., 2017). Furthermore, the mean value of *POST* is 0.301, suggesting that approximately 30.1% of our sample observations correspond to BGDRs, and are comparable to prior studies (e.g., Fauver et al., 2022). Last, the distributions of our control variables are generally consistent with those in the prior literature (Cao et al., 2017; W. Li et al., 2019; Tsang et al., 2023).

We then perform correlation analysis and report results in Table 3. We find a positive significant correlation between *POST* and two proxies for MEFs, giving us an initial indication of the positive impact of BGDRs on voluntary disclosure. Nonetheless, we note that the correlation does not exceed 0.3 among any variables (control variables and the independent variable), indicating that multicollinearity is not an issue in our sample.

4.2 | BGDRs and MEFs

We test our hypothesis by estimating the model specified in Equation (1) and present the results in Table 4. The dependent variables are the issuance and frequency of MEFs (i.e., *MEF_ISSUE* and *MEF_FREQ*). Columns (1) and (2) report the results using the full sample. *POST* takes the value of one for the firms from countries with BGDR year and all years after that during our sample period and zero otherwise. Columns (3) and (4) report the results using the observations from countries with governance code-based reforms, and columns (5) and (6) report the results for legislation-based reforms.

In columns (1) and (2), we find that after the reforms, the issuance (coefficient = 0.023; *P* value <.01) and frequency (coefficient = 0.157; *P* value <.01) of MEFs significantly increased.

TABLE 2 Descriptive statistics.

	Obs.	Mean	SD	Q1	Median	Q3
MEF_ISSUE	80,402	0.458	0.498	0.000	0.000	1.000
MEF_FREQ	80,402	1.358	1.862	0.000	0.000	3.000
POST	80,402	0.301	0.459	0.000	0.000	1.000
FIRMSIZE	80,402	7.531	2.666	5.728	7.407	8.934
ROA	80,402	0.022	0.142	0.009	0.043	0.081
BM	80,402	0.863	1.547	0.255	0.480	0.869
LEV	80,402	0.482	0.224	0.313	0.484	0.636
ACCRUAL	80,402	0.076	0.087	0.021	0.049	0.097
BIG4	80,402	0.526	0.499	0.000	1.000	1.000
ANA_COV	80,402	7.368	7.570	2.000	5.000	10.000
BUS_SEG	80,402	1.152	0.400	1.000	1.000	1.386
GEO_SEG	80,402	1.118	0.391	1.000	1.000	1.099
INSTI_OWN	80,402	0.238	0.315	0.000	0.076	0.374
COMPETITION	80,402	0.267	0.154	0.175	0.257	0.290
PCGDP	80,402	22.624	22.140	3.838	8.148	47.976

Note: This table reports the means, percentiles, and standard deviations of our main variables. The sample consists of 80,402 firm-year observations from boardroom gender diversity reform countries within a 5-year window centered on the year of boardroom gender diversity reforms and from countries with no boardroom gender diversity reform in 2000–2020. All the continuous variables are winsorized at the 1st and 99th percentiles. We detail the variable definitions in Appendix A.

TABLE 3 Correlation results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. *MEF_ISSUE*		.94***	.20***	−.12***	−.06***	−.03***	.14***	.04***
2. *MEF_FREQ*	.79***		.22***	−.10***	−.05***	−.06***	.15***	.04***
3. *POST*	.20***	.20***		−.15***	−.05***	−.05***	.06***	.02***
4. *FIRMSIZE*	−.13***	−.09***	−.16***		.13***	.10***	.23***	−.19***
5. *ROA*	−.04***	−.02***	−.07***	.26***		−.24***	−.26***	−.04***
6. *BM*	−.05***	−.08***	−.03***	.16***	−.03***		−.07***	−.09***
7. *LEV*	.15***	.15***	.07***	.19***	−.13***	−.02***		−.04***
8. *ACCRUAL*	.03***	.03***	.04***	−.20***	−.22***	−.05***	−.02***	
9. *BIG4*	.37***	.40***	.18***	−.10***	−.02***	−.00	.15***	−.03***
10. *ANA_COV*	.28***	.36***	.06***	.37***	.14***	−.05***	.12***	−.07***
11. *BUS_SEG*	.00	.01**	−.08***	.13***	.12***	.01**	.10***	−.07***
12. *GEO_SEG*	.24***	.27***	.08***	−.06***	−.01*	−.02***	.02***	−.00
13. *INSTI_OWN*	.47***	.58***	.14***	−.11***	−.04***	−.12***	.13***	.06***
14. *COMPETITION*	.01***	.01	−.01***	−.04***	−.01***	.00	.02***	.02***
15. *PCGDP*	.36***	.40***	.27***	−.26***	−.16***	−.06***	.09***	.08***

	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. *MEF_ISSUE*	.37***	.31***	−.02***	.23***	.46***	.10***	.33***
2. *MEF_FREQ*	.41***	.37***	−.02***	.26***	.53***	.11***	.38***
3. *POST*	.18***	.05***	−.08***	.09***	.08***	−.02***	.26***
4. *FIRMSIZE*	−.07***	.37***	.16***	−.07***	−.21***	−.10***	−.24***
5. *ROA*	−.02***	.17***	.07***	−.01***	−.07***	−.05***	−.13***
6. *BM*	.02***	−.17***	.05***	.01	−.05***	−.02***	−.01
7. *LEV*	.14***	.13***	.11***	.02***	.12***	.03***	.05***
8. *ACCRUAL*	−.02***	−.07***	−.07***	.02***	.11***	.04***	.06***
9. *BIG4*		.34***	−.02***	.22***	.42***	.10***	.28***
10. *ANA_COV*	.29***		.03***	.12***	.35***	.06***	.10***
11. *BUS_SEG*	−.00	.04***		.05***	.04***	−.01	−.10***
12. *GEO_SEG*	.22***	.14***	.08***		.26***	.05***	.18***
13. *INSTI_OWN*	.41***	.35***	.04***	.29***		.17***	.39***
14. *COMPETITION*	.03***	.01	.02***	.01*	.01**		.08***
15. *PCGDP*	.31***	.11***	−.07***	.20***	.44***	.01**	

Note: This table reports the correlation coefficients of all the variables in our main tests. Variable definitions are in Appendix A. The Pearson (Spearman) correlations are in the lower left (upper right) corner.

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

These results support our prediction that firms increase the extent of voluntary disclosure after the reforms. The observed effects are also economically significant. BGDRs lead to a subsequent increase in the issue of MEFs by 5% of the mean value (i.e., 0.023/0.458) and the frequency of MEFs by 11.56% of the mean value (i.e., 0.157/1.358).

We then compare the effectiveness of governance code reforms and legislation reforms for voluntary disclosure. The coefficients on *POST* are significantly positive in columns (3) and (4) for governance code and columns (5) and (6) for legislation-based reforms. However, we note that the results for legislation reforms are significantly stronger (both in terms of magnitude and significance) than governance code reforms, indicating that enforceable reforms are more effective than soft reforms.

With respect to the control variable, we find that firms with a higher percentage of institutional ownership (*INSTI_OWN*) have a higher intent to issue MEFs. Additionally, we find that firms audited by one of the Big 4 auditors are more likely to issue MEFs, suggesting that institutional investors and the auditors play a monitoring role in corporate voluntary disclosures. Moreover, firms in countries with higher GDP per capita (*PCGDP*) are less likely to issue MEFs. These results are consistent with those in prior studies (Ajinkya et al., 2005; Guan et al., 2020).

TABLE 4 Board gender reforms and management earnings forecasts.

	(1)	(2)	(3)	(4)	(5)	(6)
	Full sample		Governance code reforms		Legislation reforms	
Dep =	*MEF_ISSUE*	*MEF_FREQ*	*MEF_ISSUE*	*MEF_FREQ*	*MEF_ISSUE*	*MEF_FREQ*
POST	0.023***	0.157***	0.040***	0.233***	0.061***	0.354***
	(0.008)	(0.024)	(0.009)	(0.029)	(0.012)	(0.045)
FIRMSIZE	0.028***	0.104***	0.026***	0.101***	0.025***	0.067***
	(0.004)	(0.014)	(0.005)	(0.014)	(0.005)	(0.014)
ROA	0.090***	0.464***	0.086***	0.471***	0.061*	0.301**
	(0.021)	(0.076)	(0.023)	(0.083)	(0.037)	(0.126)
BM	0.000	−0.007	0.000	−0.007	0.004	0.009
	(0.002)	(0.006)	(0.003)	(0.007)	(0.003)	(0.007)
LEV	0.059***	0.184***	0.058***	0.171**	0.074***	0.215***
	(0.018)	(0.062)	(0.019)	(0.068)	(0.025)	(0.076)
ACCRUAL	0.008	−0.049	0.006	−0.077	0.049	0.050
	(0.022)	(0.066)	(0.024)	(0.072)	(0.034)	(0.084)
BIG4	0.020**	0.075**	0.027**	0.087**	0.016	0.062*
	(0.010)	(0.031)	(0.012)	(0.036)	(0.013)	(0.035)
ANA_COV	−0.000	0.004**	−0.001	0.002	−0.002*	−0.001
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
BUS_SEG	0.003	0.011	−0.000	0.001	0.004	0.055*
	(0.008)	(0.024)	(0.008)	(0.026)	(0.011)	(0.029)
GEO_SEG	−0.005	−0.032	−0.004	−0.005	0.004	−0.049
	(0.010)	(0.034)	(0.011)	(0.039)	(0.014)	(0.045)
INSTI_OWN	0.061***	0.324***	0.058***	0.338***	0.197***	0.646***
	(0.017)	(0.067)	(0.018)	(0.070)	(0.048)	(0.169)
COMPETITION	−0.018	−0.065	−0.000	−0.060	−0.030	−0.032
	(0.023)	(0.051)	(0.025)	(0.053)	(0.027)	(0.059)
PCGDP	−0.000	0.001***	−0.000*	0.001***	0.001**	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Constant	−1.121***	−4.227***	−1.105***	−3.631***	−0.899***	−5.392***
	(0.250)	(0.666)	(0.258)	(0.699)	(0.295)	(0.851)
Observation	80,402	80,402	67,113	67,113	41,139	41,139
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Coeff on *POST* (5)–(3) or (6)–(4)			$P < .01$	$P < .01$		
Adjusted R^2	.570	.736	.577	.749	.470	.698

Note: This table presents the baseline results of the influence of the boardroom gender diversity reforms on voluntary disclosure. *POST* is an indicator variable that equals one in the year of the boardroom gender diversity reform and all years after it and zero otherwise. The first dependent variable, *MEF_ISSUE*, is an indicator variable equal to one if the firm issued a forecast in year *t* and zero otherwise. The second dependent variable, *MEF_FREQ*, is the number of MEFs issued by a firm in year *t*. Columns (1) and (2) report the results using the full sample. Columns (3) and (4) report the results using the observations from countries with governance code-based boardroom gender diversity reforms and the countries with no boardroom gender diversity reform as the benchmark. Columns (5) and (6) report the results using the observations from countries with legislation-based boardroom gender diversity reforms and countries with no boardroom gender diversity reform as the benchmark. See Appendix A for the variable definitions. Robust standard errors are clustered at the industry and year levels. Standard errors are reported in parentheses.

*P values of 10%.

**P values of 5%.

***P values of 1%.

4.3 | Dynamic DiD analysis

Following Bertrand and Mullainathan (2003) and Fauver et al. (2022), we conduct a dynamic DiD analysis. In Table 5, we replace *POST* with indicator variables that track the effect of the reforms before and after they become effective and estimate the parallel trends assumption of our DiD analysis. We include the following indicator variables, which are *PRIOR_YEAR2*, *PRIOR_YEAR1*, *YEAR0*, *POST_YEAR1*, and *POST_YEAR2+*, with the *Year 0* being the year in which the reform is passed and equal one when the year the gender diversity reform becomes effective and 2 years before and at least 2 years after and zero otherwise. Table 5 presents the results. The coefficients on *PRIOR_YEAR2*, *PRIOR_YEAR1*, and *YEAR0* are insignificant during the pre-reform period. These coefficients become significantly positive from *Year 1* onward. These results increase our assurance that the parallel trend assumption, the key assumption of our DiD analysis, is satisfied.

TABLE 5 Dynamic difference-in-differences analysis.

Dep =	(1) *MEF_ISSUE*		(2) *MEF_FREQ*	
PRIOR_YEAR2	−0.003	(0.010)	0.049	(0.030)
PRIOR_YEAR1	0.012	(0.011)	0.062	(0.044)
YEAR0	0.011	(0.012)	0.043	(0.037)
POST_YEAR1	0.032**	(0.013)	0.085*	(0.037)
POST_YEAR2+	0.059***	(0.014)	0.128***	(0.045)
FIRMSIZE	0.029***	(0.004)	0.104***	(0.014)
ROA	0.086***	(0.021)	0.470***	(0.076)
BM	0.000	(0.002)	−0.006	(0.006)
LEV	0.057***	(0.018)	0.189***	(0.063)
ACCRUAL	0.009	(0.022)	−0.042	(0.066)
BIG4	0.019**	(0.010)	0.077**	(0.031)
ANA_COV	−0.000	(0.001)	0.004**	(0.002)
BUS_SEG	0.001	(0.008)	0.007	(0.024)
GEO_SEG	−0.005	(0.010)	−0.031	(0.034)
INSTI_OWN	0.059***	(0.017)	0.329***	(0.067)
COMPETITION	−0.017	(0.023)	−0.060	(0.051)
PCGDP	0.000	(0.000)	0.001***	(0.000)
Constant	−0.827***	(0.263)	−4.454***	(0.749)
Observation	80,402		80,402	
Firm FE	Yes		Yes	
Year FE	Yes		Yes	
Adjusted R^2	.570		.737	

Note: This table shows the results of the dynamic DiD models. In particular, we follow Bertrand and Mullainathan (2003) and replace the *POST* indicator with indicator variables that track the effects of the boardroom gender diversity reforms before and after they become effective. These indicator variables are *PRIOR_YEAR2*, *PRIOR_YEAR1*, *YEAR0*, *POST_YEAR1*, and *POST_YEAR2+*, which equal one for the year the female board reform becomes effective and 2 years before and at least 2 years after and zero otherwise. See Appendix A for the other variable definitions. Robust standard errors are clustered at the firm level. Standard errors are reported in parentheses.

*P values of 10%.

**P values of 5%.

***P values of 1%.

4.4 | Director-level cross-sectional tests

In the preceding sections, we have established that BGDRs significantly increase a firm's likelihood of issuing a MEF. But how these reforms actually result in this positive outcome is a question worth exploring. From this section onward, we perform several cross-sectional tests to understand the mechanisms that could link BGDRs with corporate outcomes (in our case, voluntary disclosure). We first perform director-level cross-sectional tests. Prior studies (e.g., Mangena & Pike, 2005) argue that firms disclose more information when their directors have higher financial expertise. This is even more important for MEFs as financially expert directors would have a better understanding of the earnings-related information and the importance of conveying such information to various stakeholders. Similarly, prior studies (e.g., Kolev et al., 2019) argue that board committees—specialized subgroups—are immensely vital for performing many of the board's most critical functions such as setting executive compensation and overseeing financial reporting. This implies that BGDRs could have positive implications for MEFs when such reforms improve board-level committees through female representation on such committees (Nadeem, 2022).

We perform cross-sectional tests for female directors' financial expertise and their representation on board committees. More specifically, we gauge the changes in MEFs when female directors' financial expertise increase (decrease) and when their committee memberships increase (decrease) following BGDRs. The results are presented in Table 6. In columns (1) and (2), we note a significant positive impact on *MEF_ISSUE* and *MEF_FREQ* when female directors have higher financial expertise. In columns (3) and (4), we find that higher female committee membership is significantly positive with *MEF_ISSUE* and *MEF_FREQ*. Taken together, these findings indicate that the increase in MEFs is due to board's improved (financial) expertise and female directors' participation in board committees following BGDRs.

4.5 | Board-level cross-sectional tests

It is also possible that BGDRs enhance voluntary disclosure by improving the overall board effectiveness in terms of board activity. Board activity may improve board's monitoring ability and ultimately lead to better decision-making. Prior studies (e.g., Brick & Chidambaran, 2010; Vafeas, 1999) provide sufficient evidence that board's meeting frequency has a positive impact on firm value. Similarly, Chou et al. (2013) conclude that board activity, measured in terms of attendance of board meetings, has a significant positive impact on firm performance. Therefore, we perform cross-sectional tests at the board level and report results in Table 7. In columns

TABLE 6 Director-level cross-sectional tests.

Dep =	(1) *MEF_ISSUE*	(2) *MEF_FREQ*	(3) *MEF_ISSUE*	(4) *MEF_FREQ*
POST_FEMALE_FIN_INCR	0.035***	0.199***		
	(0.010)	(0.053)		
POST_FEMALE_FIN_DECR	0.011*	0.128**		
	(0.005)	(0.056)		
POST_FEMALE_COMM_INCR			0.044**	0.178**
			(0.018)	(0.065)
POST_FEMALE_COMM_DECR			0.010*	0.133*
			(0.004)	(0.067)
FIRMSIZE	0.014***	0.190***	0.016***	0.188***
	(0.004)	(0.047)	(0.004)	(0.041)
ROA	0.083***	0.184***	0.085***	0.187***
	(0.021)	(0.042)	(0.020)	(0.043)
BM	0.001	0.019	0.001	0.015
	(0.001)	(0.014)	(0.001)	(0.016)
LEV	0.033***	0.174***	0.035***	0.171***
	(0.009)	(0.051)	(0.009)	(0.052)
ACCRUAL	0.004	0.059	0.005	0.060
	(0.003)	(0.036)	(0.003)	(0.035)
BIG4	0.051**	0.205***	0.052**	0.191**
	(0.019)	(0.079)	(0.020)	(0.077)
ANA_COV	0.006*	0.025***	0.006*	0.024***
	(0.003)	(0.005)	(0.003)	(0.005)
BUS_SEG	0.014	0.011	0.012	0.010
	(0.008)	(0.021)	(0.007)	(0.019)
GEO_SEG	−0.024	−0.082	−0.026	−0.081
	(0.023)	(0.074)	(0.023)	(0.061)
INSTI_OWN	0.159**	0.407**	0.158**	0.414***
	(0.077)	(0.187)	(0.075)	(0.167)
COMPETITION	−0.016	−0.039	−0.019	−0.044
	(0.017)	(0.031)	(0.014)	(0.035)
PCGDP	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	−2.394***	−2.003***	−1.486***	−1.954***
	(0.184)	(0.557)	(0.274)	(0.462)
Observation	80,402	80,402	80,402	80,402
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
P value of a and b	*P* < .10	*P* < .10	*P* < .01	*P* > .10
Adjusted R^2	.571	.736	.571	.736

Note: This table presents the cross-sectional tests that examine whether our results are more pronounced for firms that increase the number of board meetings and board meeting attendance. *POST_FEMALE_FIN_INCR(DECR)* is an indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's female directors have more (less) financial expertise within 3 years after the reforms and zero otherwise. *POST_FEMALE_COMM_INCR(DECR)* is an indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's female directors sit on more committees on average within 3 years after the reforms and zero otherwise. See Appendix A for variable definitions. Robust standard errors are clustered at the firm level. The standard errors are reported in parentheses.

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

TABLE 7 Board-level cross-sectional tests.

Dep =	(1) *MEF_ISSUE*	(2) *MEF_FREQ*	(3) *MEF_ISSUE*	(4) *MEF_FREQ*
POST_BOARD_MEET_INCR	0.059***	0.194***		
	(0.011)	(0.061)		
POST_BOARD_MEET_DECR	0.013*	0.066*		
	(0.006)	(0.036)		
POST_BOARD_ATTEN_INCR			0.061***	0.205***
			(0.019)	(0.065)
POST_BOARD_ATTEN_DECR			0.014	0.025
			(0.015)	(0.041)
FIRMSIZE	0.048***	0.141***	0.053***	0.143***
	(0.014)	(0.027)	(0.011)	(0.034)
ROA	0.072***	0.204***	0.085**	0.208***
	(0.017)	(0.031)	(0.037)	(0.041)
BM	0.000	0.015	0.001	0.009
	(0.002)	(0.011)	(0.001)	(0.006)
LEV	0.059***	0.267***	0.046	0.276
	(0.018)	(0.072)	(0.027)	(0.143)
ACCRUAL	0.003	0.053	0.040	0.063
	(0.002)	(0.046)	(0.022)	(0.048)
BIG4	0.042*	0.194***	0.040*	0.193**
	(0.020)	(0.061)	(0.019)	(0.067)
ANA_COV	0.005	0.016***	0.004	0.014***
	(0.003)	(0.003)	(0.004)	(0.004)
BUS_SEG	0.009	0.009	0.007	0.012
	(0.007)	(0.024)	(0.009)	(0.015)
GEO_SEG	−0.016	−0.053	−0.008	−0.057
	(0.027)	(0.064)	(0.016)	(0.034)
INSTI_OWN	0.205***	0.357*	0.188***	0.366***
	(0.067)	(0.167)	(0.053)	(0.107)
COMPETITION	−0.026	−0.048	−0.028	−0.047
	(0.037)	(0.036)	(0.043)	(0.051)
PCGDP	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	−1.462***	−1.582***	−1.636***	−1.329***
	(0.045)	(0.357)	(0.092)	(0.316)
Observation	31,394	31,394	31,394	31,394
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
P value of a and b	*P* < .01	*P* < .10	*P* < .01	*P* < .01
Adjusted R^2	.591	.688	.598	.691

Note: This table presents the cross-sectional tests that examine whether our results are more pronounced for firms that increase the number of board meetings and board meeting attendance. *POST_BOARD_MEET_INCR*(*DECR*) is an indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's number of board meetings increases (decreases) within 3 years after the reforms and zero otherwise. *POST_BOARD_ATTEN_INCR (DECR)* is an indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's average board meeting attendance increases (decreases) within 3 years after the reforms and zero otherwise. See Appendix A for variable definitions. Robust standard errors are clustered at the firm level. The standard errors are reported in parentheses.

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

(1) and (2), we note that firms are more likely to (and more frequently) issue MEFs when board meetings increase following BGDRs. Similarly, in columns (3) and (4), we note that firms are more likely to (and more frequently) issue MEFs when board meeting attendance increase following BGDRs. Taken together, we find evidence that BGDRs may enhance voluntary disclosure by improving boards monitoring effectiveness through board activity.

4.6 | Firm-level cross-sectional tests

Prior studies have shown that the existence of female directors on board has a large impact on firm-level business decision-making such as investment (Levi et al., 2014), mergers and acquisitions (Huang & Kisgen, 2013), and discretionary accruals (Peni & Vähämaa, 2010). To the extent that the representation of female directors also affects voluntary disclosure, we predict our results to be more pronounced for firms with all-male directors prior to the BGDRs because these firms are more likely to be affected by the reforms. To test this prediction, we use *POST_ALL_MALE_YES(NO)*, an indicator variable that equals one in the year of gender diversity reforms and all years after it, where the firm's board directors are (not) all males within 3 years prior to the reforms and zero otherwise. Following similar logic, we predict our results to be more pronounced for firms that increase gender diversity after the reforms. Thus, we use *POST_INCR_FEMALE_YES(NO)*, an indicator variable that equals one in the year of the BGDRs and all years after it, where these firms (do not) increase the percentage of female directors within 3 years after the reforms and zero otherwise.

The results are reported in Table 8. Columns (1) and (2) report the coefficients on *POST_ALL_MALE_YES* and *POST_ALL_MALE_NO* are both positive and significant with the issuance and frequency of MEFs. Similarly, in columns (3) and (4), the coefficients on *POST_INCR_FEMALE_YES* and *POST_INCR_FEMALE_NO* are both positive and significant with the issuance and frequency of MEFs. Moreover, we also compare the difference relations with all dependent variables between the coefficients on the *POST_ALL_MALE_YES(NO)* and *POST_INCR_FEMALE_YES(NO)*. Most of the results show that firms with all-male directors prior to the reforms or an increase in the percentage of female directors within 3 years after the reforms exhibit a more significant increase in the issuance and frequency of MEFs. That is, the effects of BGDRs on voluntary disclosure are more pronounced for firms with all-male directors prior to the reforms or firms that increase the percentage of female directors after the reforms.

4.7 | Country-level cross-sectional tests

Prior studies have shown that institutional and cultural factors also affect the success of corporate governance reforms, such as law enforcement (Fauver et al., 2017; Tsang et al., 2023) and gender equality (Fauver et al., 2022). As a formal institutional factor, a more pronounced relation is documented between government regulation and firms' decision-making when the legal enforcement is stronger (Blake & Moschieri, 2017). Similarly, as informal institutional factors, social norms are rules and standards understood by members of a group that guide and constrain social behavior, which also imposes strong constraints on firms' decisions-making (Aghion et al., 2010; Guan et al., 2020). Therefore, we conjuncture the influence of gender diversity reforms to be more pronounced for firms in countries with greater legal enforcement or greater gender equality. Specifically, we partition observations after the BGDRs into two groups based on the extent of country-level legal enforcement. The data on the extent of legal enforcement are collected from La Porta et al. (1998). *POST_LARGE(SMALL)_ENFORCE* is an indicator variable that equals one in the year of the BGDRs and all years after it, where the country's *LEG_ENF* is larger (smaller) than the sample median and zero otherwise. Similarly, *POST_LARGE (SMALL)_GEND_EQUAL* is an indicator variable that equals one in the year of the BGDRs and all years after it, where the country's gender equality is larger (smaller) than the sample median and zero otherwise. As shown in Table 9, we note that the results are only significant for countries with greater legal enforcement and gender equality. These results indicate that BGDRs are mostly effective in countries with stronger legal enforcement and greater gender equality.

4.8 | Stacked DiD

Due to the concern that staggered DiD may cause the bias of the treatment effects in the presence of treatment effect heterogeneity (Barrios, 2021; Cengiz et al., 2019), we use the stacked DiD regression and rerun our estimation, following the way of Fauver et al. (2022). Specifically, we use never-treated firms and firms that are not yet treated or untreated during the event window as the control group. We stack all the treatment-cohort to run the regression analysis with the fixed effects of industry, year, and country. As shown in Table 10, the coefficients on *POST* remain positive and significant in the stacked regressions. These results offer further support that our inference is unlikely to be affected by the inherent limitation of the staggered DiD model.

4.9 | Entropy-balancing approach

To ensure that our main results do not suffer from functional misspecification biases, we now apply an alternative matching technique, that is, entropy balancing of the firms affected by BGDRs (treatment group) and firms in countries with no BGDRs (control group). The entropy-balancing approach enables balanced covariates distribution for treatment and control groups by assigning weight observations in the control group on a continuous scale (Hainmueller, 2012). For the purpose of implementing entropy balancing, we use *POST*, an indicator variable that equals one if the sample year corresponds to a country's gender diversity reform in that or any following year and zero otherwise, as our treatment variable. We expect to obtain a balanced mean for all the covariates specified in the model (1) across both

TABLE 8 Firm-level cross-sectional tests.

Dep =	(1) *MEF_ISSUE*	(2) *MEF_FREQ*	(3) *MEF_ISSUE*	(4) *MEF_FREQ*
POST_ALL_MALE_YES	0.024***	0.259***		
	(0.009)	(0.054)		
POST_ALL_MALE_NO	0.023***	0.150***		
	(0.008)	(0.024)		
POST_INCR_FEMALE_YES			0.026***	0.184***
			(0.008)	(0.025)
POST_INCR_FEMALE_NO			0.008**	0.076*
			(0.003)	(0.045)
FIRMSIZE	0.028***	0.105***	0.028***	0.103***
	(0.004)	(0.014)	(0.004)	(0.014)
ROA	0.090***	0.464***	0.090***	0.468***
	(0.021)	(0.076)	(0.021)	(0.076)
BM	0.000	−0.007	0.000	−0.007
	(0.002)	(0.006)	(0.002)	(0.006)
LEV	0.059***	0.183***	0.060***	0.188***
	(0.018)	(0.062)	(0.018)	(0.062)
ACCRUAL	0.008	−0.051	0.010	−0.042
	(0.022)	(0.066)	(0.022)	(0.066)
BIG4	0.020**	0.077**	0.020**	0.073**
	(0.010)	(0.031)	(0.010)	(0.031)
ANA_COV	−0.000	0.004**	−0.000	0.004**
	(0.001)	(0.002)	(0.001)	(0.002)
BUS_SEG	0.003	0.009	0.004	0.016
	(0.008)	(0.024)	(0.008)	(0.024)
GEO_SEG	−0.005	−0.033	−0.005	−0.030
	(0.010)	(0.034)	(0.010)	(0.034)
INSTI_OWN	0.061***	0.317***	0.064***	0.340***
	(0.017)	(0.067)	(0.017)	(0.067)
COMPETITION	−0.018	−0.064	−0.018	−0.066
	(0.023)	(0.051)	(0.023)	(0.051)
PCGDP	0.000	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	−1.121***	−4.230***	−0.627***	−1.548***
	(0.250)	(0.666)	(0.045)	(0.154)
Observation	80,402	80,402	80,402	80,402
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
P value of a and b	*P* > .10	*P* < .10	*P* < .10	*P* < .01
Adjusted R^2	.570	.736	.570	.736

Note: This table presents the cross-sectional tests that examine whether our results are more pronounced for firms with all-male directors prior to the reform or firms that increase the percentage of female directors after the reform. *POST_ALL_MALE_YES(NO)* is an indicator variable that equals one in the year of the boardroom gender diversity reform and all years after it, where the firm's board directors are (not) all males within 3 years prior to the reforms and zero otherwise. *POST_INCR_FEMALE_YES(NO)* is an indicator variable that equals one in the year of the boardroom gender diversity reform and all years after it, where the firms (do not) increase the percentage of female directors within 3 years after the reforms and zero otherwise. See Appendix A for variable definitions. Robust standard errors are clustered at the firm level. The standard errors are reported in parentheses.

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

TABLE 9 Country-level cross-sectional tests.

Dep =	(1) *MEF_ISSUE*	(2) *MEF_FREQ*	(3) *MEF_ISSUE*	(4) *MEF_FREQ*
POST_LARGE_ENFORCE	0.044***	0.222***		
	(0.009)	(0.029)		
POST_SMALL_ENFORCE	0.015	0.044		
	(0.011)	(0.029)		
POST_LARGE_GEND_EQUAL			0.030***	0.176***
			(0.008)	(0.027)
POST_SMALL_GEND_EQUAL			0.001	0.090**
			(0.013)	(0.036)
FIRMSIZE	0.030***	0.108***	0.028***	0.105***
	(0.004)	(0.014)	(0.004)	(0.014)
ROA	0.087***	0.454***	0.089***	0.463***
	(0.021)	(0.076)	(0.021)	(0.076)
BM	0.000	−0.007	0.000	−0.007
	(0.002)	(0.006)	(0.002)	(0.006)
LEV	0.054***	0.170***	0.057***	0.178***
	(0.018)	(0.062)	(0.018)	(0.063)
ACCRUAL	0.005	−0.061	0.007	−0.052
	(0.022)	(0.066)	(0.022)	(0.066)
BIG4	0.022**	0.081***	0.021**	0.077**
	(0.010)	(0.031)	(0.010)	(0.031)
ANA_COV	−0.000	0.004**	−0.000	0.004**
	(0.001)	(0.002)	(0.001)	(0.002)
BUS_SEG	−0.001	−0.001	0.002	0.008
	(0.008)	(0.024)	(0.008)	(0.024)
GEO_SEG	−0.008	−0.040	−0.006	−0.035
	(0.010)	(0.034)	(0.010)	(0.034)
INSTI_OWN	0.046***	0.281***	0.054***	0.305***
	(0.017)	(0.068)	(0.017)	(0.068)
COMPETITION	−0.017	−0.063	−0.018	−0.066
	(0.023)	(0.051)	(0.023)	(0.051)
PCGDP	−0.000	0.001***	−0.000	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	−1.130***	−4.254***	−1.137***	−4.272***
	(0.250)	(0.666)	(0.250)	(0.664)
Observation	80,402	80,402	80,402	80,402
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
P value of a and b	*P* < .01	*P* < .01	*P* < .01	*P* < .01
Adjusted R^2	.570	.737	.570	.736

Note: This table presents the cross-sectional tests that examine whether our results are more pronounced for countries with greater legal enforcement and greater gender equality. *POST_LARGE(SMALL)_ENFORCE* is an indicator variable that equals one in the year of the boardroom gender diversity reforms and all years after them, where the country's *LEG_ENF* is larger (smaller) than the sample median and zero otherwise. *POST_INCR_FEMALE_YES(NO)* is an indicator variable that equals one in the year of the boardroom gender diversity reforms and all years after it, where the country's gender equality is larger (smaller) than the sample median and zero otherwise. See Appendix A for variable definitions. Robust standard errors are clustered at the firm level. The standard errors are reported in parentheses.

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

TABLE 10 Stacked difference-in-difference.

Dep =	(1) *MEF_ISSUE*		(2) *MEF_FREQ*	
POST	0.033***	(0.006)	0.090***	(0.019)
FIRMSIZE	0.021***	(0.001)	0.057***	(0.004)
ROA	0.045***	(0.012)	0.309***	(0.042)
BM	0.005***	(0.001)	0.013***	(0.002)
LEV	0.079***	(0.007)	0.217***	(0.023)
ACCRUAL	0.061***	(0.010)	0.049*	(0.026)
BIG4	0.023***	(0.004)	0.069***	(0.012)
ANA_COV	−0.003***	(0.000)	−0.005***	(0.001)
BUS_SEG	0.000	(0.003)	0.037***	(0.008)
GEO_SEG	0.013***	(0.005)	0.021	(0.015)
INSTI_OWN	0.159***	(0.012)	0.725***	(0.043)
COMPETITION	−0.007	(0.008)	−0.022	(0.016)
PCGDP	0.000	(0.000)	0.001***	(0.000)
Constant	−0.532***	(0.084)	−3.753***	(0.244)
Observation	347,969		347,969	
Firm FE	Yes		Yes	
Year FE	Yes		Yes	
Adjusted R^2	.469		.666	

Note: This table presents the results using the stacked difference-in-difference approach. See Appendix A for variable definitions. Robust standard errors are clustered at the firm level. The standard errors are reported in parentheses.

*P values of 10%.

**P values of 5%.

***P values of 1%.

treatment and control groups. Panel A of Table 11 shows that after applying entropy-balancing weights, the distribution of the mean (as well as variance and skewness) values of all the covariates in the treatment and control groups become nearly identical, which were clearly unidentical before the balancing (see the left half of panel A). We then rerun our Equation (1) on this matched sample and report results in panel B. We continue to find a significant positive relationship between *POST* and *MEF_ISSUE* and *MEF_FREQ*. These results provide evidence that our baseline results are robust to the alternative matching approach.

4.10 | Robustness tests

We now check the robustness of our baseline results in several ways. Table 12 reports these results. First, in columns (1) and (2), we exclude firms located in the United States to verify that our findings are not driven by firms from countries that are highly represented in our sample (i.e., the United States). In columns (3) and (4), we report the main results using the model that excludes Canada because Canadian regulation was disclosure-based and aimed at informing stakeholders on firms' diversity practices, which does not mandate

TABLE 11 Entropy balance approach.

Panel A: Sample descriptive before and after entropy balancing												
	Before entropy balancing						After entropy balancing					
	BGDR_DUMMY = 1			*BGDR_DUMMY* = 0			*BGDR_DUMMY* = 1			*BGDR_DUMMY* = 0		
	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness	Mean	Variance	Skewness
FIRMSIZE	6.881	5.318	0.225	7.811	7.615	0.671	6.881	5.318	0.225	6.881	5.318	0.225
ROA	0.007	0.027	−2.617	0.029	0.017	−3.152	0.007	0.027	−2.617	0.007	0.027	−2.617
BM	0.793	2.018	5.796	0.893	2.550	5.337	0.793	2.018	5.796	0.793	2.018	5.796
LEV	0.506	0.053	0.244	0.472	0.049	0.218	0.506	0.053	0.244	0.506	0.053	0.244
ACCRUAL	0.081	0.009	2.399	0.074	0.007	2.669	0.081	0.009	2.399	0.081	0.009	2.399
BIG4	0.666	0.223	−0.703	0.465	0.249	0.140	0.666	0.223	−0.703	0.666	0.223	−0.703
ANA_COV	8.025	65.240	1.482	7.085	53.630	1.705	8.025	65.240	1.482	8.025	65.240	1.482
BUS_SEG	1.105	0.142	0.914	1.172	0.166	0.803	1.105	0.142	0.914	1.105	0.142	0.914
GEO_SEG	1.168	0.168	1.195	1.096	0.145	1.427	1.168	0.168	1.195	1.168	0.168	1.195
INSTI_OWN	0.304	0.124	0.797	0.210	0.086	1.430	0.304	0.124	0.797	0.304	0.124	0.797
COMPETITION	0.265	0.020	1.762	0.269	0.026	1.560	0.265	0.020	1.762	0.265	0.020	1.762
PCGDP	31.740	602.600	−0.151	18.700	390.800	0.725	31.740	602.600	−0.151	31.740	602.600	−0.151

(Continues)

TABLE 11 (Continued)

Panel B: Regressions using the entropy-balanced sample				
Dep =	(1) *MEF_ISSUE*		(2) *MEF_FREQ*	
POST	0.017*	(0.010)	0.160***	(0.027)
FIRMSIZE	0.029***	(0.007)	0.131***	(0.023)
ROA	0.098***	(0.027)	0.410***	(0.089)
BM	−0.001	(0.003)	−0.003	(0.009)
LEV	0.043*	(0.023)	0.124	(0.080)
ACCRUAL	0.011	(0.029)	0.022	(0.095)
BIG4	0.016	(0.012)	0.065*	(0.035)
ANA_COV	0.003***	(0.001)	0.013***	(0.003)
BUS_SEG	0.002	(0.010)	−0.006	(0.035)
GEO_SEG	−0.012	(0.013)	−0.066	(0.041)
INSTI_OWN	0.025	(0.019)	0.171**	(0.073)
COMPETITION	0.011	(0.035)	−0.094	(0.093)
PCGDP	−0.000	(0.000)	0.001	(0.000)
Constant	−1.524***	(0.330)	−5.028***	(0.909)
Observation	80,402		80,402	
Industry FE	Yes		Yes	
Year FE	Yes		Yes	
Adjusted R^2	.614		.758	

Note: This table presents the results using the entropy balance approach. This approach assembles a control sample (firms in countries without BGDR) that exhibits covariate balance with the treatment sample (i.e., firms in countries with BGDR), thus mitigating the concern that our results are driven by the underlying difference between the control sample and the treatment sample. We balance the first three moments of the control variables in our main model: the mean, variance, and skewness. Unablated results show that the differences between the treatment sample and control sample are largely reduced after using this approach. See Appendix A for variable definitions. Robust standard errors are clustered at the firm level. The standard errors are reported in parentheses.

*P values of 10%.

**P values of 5%.

***P values of 1%.

TABLE 12 Robustness tests.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Excluding the United States		Excluding Canada		Alternative fixed effect		Alternative Model		Additional Control	
Dep =	*MEF_ISSUE*	*MEF_FREQ*	*MEF_ISSUE*	*MEF_FREQ*	*MEF_ISSUE*	*MEF_FREQ*	*MEF_ISSUE*	*MEF_FREQ*	*MEF_ISSUE*	*MEF_FREQ*
POST	0.055***	0.102***	0.035***	0.232***	0.046***	0.190***	0.308***	0.267***	0.052**	0.192***
	(0.010)	(0.028)	(0.008)	(0.020)	(0.006)	(0.019)	(0.036)	(0.032)	(0.022)	(0.053)
POST_REFORM									0.052**	0.202***
									(0.022)	(0.068)
BOARD_INDEP									0.353***	0.475***
									(0.039)	(0.150)
BOARD_SIZE									−0.321***	−1.545***
									(0.075)	(0.322)
Observation	54,762	54,762	78,925	78,925	80,402	80,402	80,402	80,402	42,470	42,470
Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes
Industry FE	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Adjusted/pseudo R^2	.439	.568	.573	.744	.417	.550	.316	.204	.667	.749

Note: This table presents the results of the robustness tests. Columns (1) and (2) report the main results using the sample that excludes the United States (the largest observations). Columns (3) and (4) report the main results using the sample that excludes Canada. Columns (5) and (6) report the results using industry, country, and year fixed effects. Columns (7) and (8) report the results using the logistic and ordered logistic regression model. Columns (9) and (10) report the results after additionally controlling for the passage of the board independence reforms (*POST_REFORM*) and board features including the percentage of independent directors (*BOARD_INDEP*) and number of directors in a board (*BOARD_SIZE*). See Appendix A for variable definitions. Robust standard errors are clustered at the firm levels. The standard errors are reported in parentheses.

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

***Statistically significant at the 1% level.

firms to change board gender diversity (Fauver et al., 2022). Columns (5) and (6) report the results using industry, country, and year fixed effects. Columns (7) and (8) report the results using the logistic and ordered logistic regression model. Last, prior studies have also found that the extent of voluntary disclosure is related to the firms' board independence (Bae et al., 2021; Larcker et al., 2007) and board size (Fauver et al., 2022). Therefore, in columns (9) and (10), we added two control variables, that is, board size (*BOARD_SIZE*) and board independence (*BOARD_INDEP*), to control for corporate governance and examine whether our main results are driven by underlying governance structures of firms instead of by a gender effect. Furthermore, the effects of BGDRs may be confounded by concurrent reforms in some countries, such as the board independence reforms (Fauver et al., 2017, 2022). Thus, we also control for *POST_REFORM*, an indicator variable equal to one in the year of the board independence reforms and all years after it and zero otherwise. The coefficients on

TABLE 13 The impact of boardroom gender diversity reforms on the quality of MEFs.

Dep =	(1) *MEF_HORIZON*	(2) *MEF_WIDTH*	(3) *MEF_BAD_NEWS*	(4) *MEF_ACCURACY*	(5) *MEF_ITEM*
POST	2.081***	0.006*	0.087**	0.003**	2.248***
	(0.823)	(0.003)	(0.033)	(0.001)	(0.165)
FIRMSIZE	3.639**	0.007***	0.190***	−0.000	0.526***
	(1.573)	(0.002)	(0.030)	(0.000)	(0.067)
ROA	5.407***	−0.001	0.436***	0.013***	0.614***
	(1.954)	(0.005)	(0.107)	(0.001)	(0.151)
BM	2.433	0.003**	−0.084**	0.005***	0.171***
	(1.541)	(0.001)	(0.033)	(0.000)	(0.060)
LEV	5.405	−0.005	−0.026	0.013***	0.158
	(4.479)	(0.004)	(0.091)	(0.001)	(0.157)
ACCRUAL	−13.656**	−0.002	−0.161	−0.006***	0.013
	(5.945)	(0.005)	(0.125)	(0.001)	(0.190)
BIG4	8.503**	−0.002	0.118*	0.000	0.602***
	(3.636)	(0.003)	(0.066)	(0.000)	(0.139)
ANA_COV	0.094	−0.000	0.005	−0.000**	0.008
	(0.158)	(0.000)	(0.003)	(0.000)	(0.007)
BUS_SEG	1.216	−0.002	−0.052	−0.001**	−1.101***
	(2.007)	(0.002)	(0.045)	(0.000)	(0.141)
GEO_SEG	−1.029	0.001	−0.016	−0.000	1.181***
	(2.523)	(0.002)	(0.056)	(0.000)	(0.167)
INSTI_OWN	4.497	−0.960***	−0.123*	−0.002***	−1.199***
	(3.200)	(0.005)	(0.067)	(0.001)	(0.149)
COMPETITION	10.271	−0.013*	−0.577	0.000	1.997*
	(24.408)	(0.007)	(0.370)	(0.004)	(1.193)
PCGDP	0.074***	0.000***	0.002***	0.000***	0.007***
	(0.027)	(0.000)	(0.001)	(0.000)	(0.001)
Constant	38.929***	0.861***	1.653***	0.049***	8.895***
	(4.114)	(0.031)	(0.411)	(0.003)	(1.469)
Observation	23,490	23,490	23,490	23,490	23,490
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	.578	.984	.535	.742	.811

Note: This table presents the results of the influence of the boardroom gender diversity reforms on the quality of MEFs. See Appendix A for the variable definitions. Robust standard errors are clustered at the industry and year levels. Standard errors are reported in parentheses.

*P values of 10%.

**P values of 5%.

***P values of 1%.

POST in Table 12 are significant and positive across all columns (1–10). Overall, our results are robust to alternative samples, models, fixed effects, and the inclusion of additional control variables.

4.11 | The impact of BGDRs on the quality of MEFs

Finally, we examine whether BGDRs affect not only the quantity of MEFs but also their quality. Prior studies suggest that the timeliness, precision, earlier disclosure of bad news, forecast accuracy, and the disaggregation of MEFs also capture the quality of MEFs (W. Li et al., 2019; Tsang et al., 2023). Accordingly, we use *MEF_HORIZON*, *MEF_WIDTH*, *MEF_BAD_NEWS*, *MEF_ACCURACY*, and *MEF_ITEMS* to capture these characteristics. Their detailed definitions are provided in Appendix A. Using these as dependent variables, the results reported in Table 13 show positive and significant coefficients on *POST* in all columns. These results indicate that, after BGDRs, firms tend to issue timelier, more accurate, and more detailed MEFs. This is consistent with our main argument that firms tend to be more transparent after the reforms, potentially due to more effective monitoring by greater gender diversity. These results also indicate that, after the reforms, firms tend to issue detailed MEFs with more bad news disclosure, consistent with our argument that female directors are more conservative and less likely to withhold bad news to mitigate future litigation.

5 | CONCLUSION

Even though the issue of gender inequality is a big hurdle to national development worldwide, there remains a huge debate about whether BGDRs should be enacted. A major reason behind such debate is inconclusive evidence about the effectiveness and value relevance of gender diversity. This study highlights the impact of BGDRs on corporate voluntary disclosure in the form of MEFs. Extent literature offers competing arguments on ways that the reforms may affect the disclosure, which warrants the necessity of further comprehensive evidence to move this field forward.

By showing that firms increase the likelihood and frequency of issuing MEFs after the reforms, we lend support to the positive roles of the reforms on voluntary disclosure. Our inference stands for both governance-based reforms and legislation-based reforms but stronger for the latter. We find stronger results when female directors bring more financial expertise and serve on board committees and when board activity, in terms of board meeting frequency and meeting attendance, improve following BGDRs. We also find more pronounced results for firms whose board directors were all males before the reform and whose gender diversity increases shortly after the reforms. Finally, we find stronger evidence for countries with greater legal enforcement and gender equality.

Overall, our paper provides timely regulatory guidance for countries that hope to make their reforms more effective (e.g., increase legal enforcement or gender equality) and for countries that have not enacted the reforms, such as China and Korea. Our results provide vital policy implications for top management teams and shareholders that increased gender diversity as a response to BGDRs may improve firm value by increasing voluntary disclosure. From the academic perspective, this paper answers the recent calls for further research about gender diversity reforms, extends existing evidence on gender diversity from one country to multiple countries, and provides causal evidence on the effect of BGDRs on voluntary disclosure by taking advantage of the staggered enactment of such reforms. Given the ongoing debate about the reforms, future researchers can extend this study by examining whether and to what extent other aspects of corporate behaviors are also affected by the BGDRs.

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CONFLICT OF INTEREST STATEMENT

There is no conflict of interest with third party(s) or with any other author or publisher.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTES

[1] https://ec.europa.eu/commission/presscorner/detail/en/IP_11_533.

[2] We exclude the observations from Japan because management forecasts in Japan are de facto mandatory (Kato et al., 2009). Kato et al. (2009) noted that "Japan governs imply the so-called Timely Disclosure Rules enforced by Japanese stock exchanges impose more stringent requirements on disclosure practices. These rules originated in 1965 from the 'Kabuto-club', a club of newspapermen at the Tokyo Stock Exchange (TSE)." They find that most Japanese firms issue MEFs. Because our data of MEFs are from IBES, the low MEF issue in Japan is largely due to the selective coverage of IBES of Japanese firms, we exclude Japan from doing our main results again, and our results still hold.

REFERENCES

Abbott, L. J., Parker, S., & Presley, T. J. (2012). Female board presence and the likelihood of financial restatement. *Accounting Horizons*, *26*(4), 607–629. https://doi.org/10.2308/acch-50249

Adams, R. B. (2016). Women on boards: The superheroes of tomorrow? *The Leadership Quarterly*, *27*(3), 371–386. https://doi.org/10.1016/j.leaqua.2015.11.001

Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, *94*(2), 291–309. https://doi.org/10.1016/j.jfineco.2008.10.007

Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role of boards of directors in corporate governance: A conceptual framework and

survey. *Journal of Economic Literature*, *48*(1), 58–107. https://doi.org/10.1257/jel.48.1.58

Adams, R. B., & Kirchmaier, T. (2016). Women on boards in finance and STEM industries. *American Economic Review*, *106*(5), 277–281. https://doi.org/10.1257/aer.p20161034

Aghion, P., Algan, Y., Cahuc, P., & Shleifer, A. (2010). Regulation and distrust. *The Quarterly Journal of Economics*, *125*(3), 1015–1049. https://doi.org/10.1162/qjec.2010.125.3.1015

Agrawal, A., & Chadha, S. (2005). Corporate governance and accounting scandals. *The Journal of Law and Economics*, *48*(2), 371–406.

Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics*, *127*(1), 137–197. https://doi.org/10.1093/qje/qjr049

Ajinkya, B., Bhojraj, S., & Sengupta, P. (2005). The association between outside directors, institutional investors and the properties of management earnings forecasts. *Journal of Accounting Research*, *43*(3), 343–376. https://doi.org/10.1111/j.1475-679x.2005.00174.x

Ajinkya, B. B., & Gift, M. J. (1984). Corporate managers' earnings forecasts and symmetrical adjustments of market expectations. *Journal of Accounting Research*, *22*, 425–444. https://doi.org/10.2307/2490657

Bae, K.-H., El Ghoul, S., Guedhami, O., & Zheng, X. (2021). Board reforms and dividend policy: International evidence. *Journal of Financial and Quantitative Analysis*, *56*, 1296–1320. https://doi.org/10.1017/S0022109020000319

Baginski, S. P., Hassell, J. M., & Kimbrough, M. D. (2002). The effect of legal environment on voluntary disclosure: Evidence from management earnings forecasts issued in US and Canadian markets. *The Accounting Review*, *77*(1), 25–50. https://doi.org/10.2308/accr.2002.77.1.25

Baginski, S. P., & Rakow, K. C. (2012). Management earnings forecast disclosure policy and the cost of equity capital. *Review of Accounting Studies*, *17*, 279–321. https://doi.org/10.1007/s11142-011-9173-4

Bailey, W., Li, H., Mao, C. X., & Zhong, R. (2003). Regulation fair disclosure and earnings information: Market, analyst, and corporate responses. *The Journal of Finance*, *58*(6), 2487–2514. https://doi.org/10.1046/j.1540-6261.2003.00613.x

Baker, A. C., Larcker, D. F., & Wang, C. C. (2022). How much should we trust staggered difference-in-differences estimates? *Journal of Financial Economics*, *144*(2), 370–395. https://doi.org/10.1016/j.jfineco.2022.01.004

Balakrishnan, K., Billings, M. B., Kelly, B., & Ljungqvist, A. (2014). Shaping liquidity: On the causal effects of voluntary disclosure. *The Journal of Finance*, *69*(5), 2237–2278. https://doi.org/10.1111/jofi.12180

Bamber, L. S., Jiang, J., & Wang, I. Y. (2010). What's my style? The influence of top managers on voluntary corporate financial disclosure. *The Accounting Review*, *85*(4), 1131–1162. https://doi.org/10.2308/accr.2010.85.4.1131

Barrios, J. M. (2021). Staggeringly problematic: A primer on staggered DiD for accounting researchers. https://doi.org/10.2139/ssrn.3794859

Barton, J., Hansen, T., & Pownall, G. (2010). Which performance measures do investors around the world value the most and why? *The Accounting Review*, *85*, 753–789. https://doi.org/10.2308/accr.2010.85.3.753

Benlemlih, M., Arif, M., & Nadeem, M. (2023). Institutional ownership and greenhouse gas emissions: A comparative study of the UK and the USA. *British Journal of Management*, *34*(2), 623–647. https://doi.org/10.1111/1467-8551.12613

Bertrand, M., & Mullainathan, S. (2003). Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy*, *111*(5), 1043–1075. https://doi.org/10.1086/376950

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, *50*(2–3), 296–343. https://doi.org/10.1016/j.jacceco.2010.10.003

Billings, M. B., & Cedergren, M. C. (2015). Strategic silence, insider selling and litigation risk. *Journal of Accounting and Economics*, *59*(2–3), 119–142. https://doi.org/10.1016/j.jacceco.2014.12.001

Blacconiere, W. G., & Patten, D. M. (1994). Environmental disclosures, regulatory costs, and changes in firm value. *Journal of Accounting and Economics*, *18*(3), 357–377. https://doi.org/10.1016/0165-4101(94)90026-4

Blake, D. J., & Moschieri, C. (2017). Policy risk, strategic decisions and contagion effects: Firm-specific considerations. *Strategic Management Journal*, *38*(3), 732–750. https://doi.org/10.1002/smj.2509

Botosan, C. A., & Harris, M. S. (2000). Motivations for a change in disclosure frequency and its consequences: An examination of voluntary quarterly segment disclosures. *Journal of Accounting Research*, *38*(2), 329–353. https://doi.org/10.2307/2672936

Brick, I. E., & Chidambaran, N. K. (2010). Board meetings, committee structure, and firm value. *Journal of Corporate Finance*, *16*(4), 533–553. https://doi.org/10.1016/j.jcorpfin.2010.06.003

Byoun, S., Chang, K., & Kim, Y. S. (2016). Does corporate board diversity affect corporate payout policy? *Asia-Pacific Journal of Financial Studies*, *45*(1), 48–101. https://doi.org/10.1111/ajfs.12119

Cao, Y., Myers, L. A., Tsang, A., & Yang, Y. G. (2017). Management forecasts and the cost of equity capital: International evidence. *Review of Accounting Studies*, *22*, 791–838. https://doi.org/10.1007/s11142-017-9391-5

Capezio, A., & Mavisakalyan, A. (2016). Women in the boardroom and fraud: Evidence from Australia. *Australian Journal of Management*, *41*(4), 719–734. https://doi.org/10.1177/0312896215579463

Catalyst. (2018a). Legislative board diversity. Retrieved April 5, 2023, from https://www.catalyst.org/legislative-board-diversity

Catalyst. (2018b). Regulatory board diversity. Retrieved April 5, 2023, from https://www.catalyst.org/regulatory-board-diversity

Cengiz, D., Dube, A., Lindner, A., & Zipperer, B. (2019). The effect of minimum wages on low-wage jobs. *The Quarterly Journal of Economics*, *134*(3), 1405–1454. https://doi.org/10.1093/qje/qjz014

Chen, L., Dong, Y., Ng, J., & Tsang, A. (2019). Cross-listings and voluntary disclosure: International evidence. *Journal of Financial Reporting*, *4*(2), 89–113. https://doi.org/10.2308/jfir-52576

Chen, S., Matsumoto, D., & Rajgopal, S. (2011). Is silence golden? An empirical analysis of firms that stop giving quarterly earnings guidance. *Journal of Accounting and Economics*, *51*(1–2), 134–150. https://doi.org/10.1016/j.jacceco.2010.10.006

Chen, Y., Eshleman, J. D., & Soileau, J. S. (2016). Board gender diversity and internal control weaknesses. *Advances in Accounting*, *33*, 11–19. https://doi.org/10.1016/j.adiac.2016.04.005

Choi, J. H., Kim, J. B., Liu, X., & Simunic, D. A. (2008). Audit pricing, legal liability regimes, and Big 4 premiums: Theory and cross-country evidence. *Contemporary Accounting Research*, *25*(1), 55–99. https://doi.org/10.1506/car.25.1.2

Choi, J. H., Kim, J. B., Liu, X., & Simunic, D. A. (2009). Cross-listing audit fee premiums: Theory and evidence. *The Accounting Review*, *84*(5), 1429–1463. https://doi.org/10.2308/accr.2009.84.5.1429

Chou, H. I., Chung, H., & Yin, X. (2013). Attendance of board meetings and company performance: Evidence from Taiwan. *Journal of Banking & Finance*, *37*(11), 4157–4171. https://doi.org/10.1016/j.jbankfin.2013.07.028

Christensen, D. M. (2016). Corporate accountability reporting and high-profile misconduct. *The Accounting Review*, *91*(2), 377–399. https://doi.org/10.2308/accr-51200

Dai, L., Fu, R., Kang, J. K., & Lee, I. (2016). Corporate governance and the profitability of insider trading. *Journal of Corporate Finance*, *40*, 235–253. https://doi.org/10.1016/j.jcorpfin.2016.08.002

Deloitte. (2017). Women in the boardroom: A global perspective. https://www2.deloitte.com/kr/en/pages/risk/articles/2017/women-in-the-boardroom.html

Deloitte. (2019). Deloitte Global's latest Women in the Boardroom report highlights slow progress for gender diversity. https://www2.deloitte.com/id/en/pages/risk/articles/women-in-the-boardroom-report-highlights-slow-progress-for-gender-diversity-pr.html

Diamond, D. W., & Verrecchia, R. E. (1991). Disclosure, liquidity, and the cost of capital. *The Journal of Finance*, *46*(4), 1325–1359. https://doi.org/10.1111/j.1540-6261.1991.tb04620.x

Eagly, A. H., & Carli, L. L. (2003). The female leadership advantage: An evaluation of the evidence. *The Leadership Quarterly*, *14*(6), 807–834. https://doi.org/10.1016/j.leaqua.2003.09.004

Eckel, C. C., & Füllbrunn, S. C. (2015). Thar SHE blows? Gender, competition, and bubbles in experimental asset markets. *American Economic Review*, *105*(2), 906–920. https://doi.org/10.1257/aer.20130683

Eng, L. L., & Mak, Y. T. (2003). Corporate governance and voluntary disclosure. *Journal of Accounting and Public Policy*, *22*(4), 325–345. https://doi.org/10.1016/S0278-4254(03)00037-1

European Commission. (2012). *Women in economic decision-making in the EU: Progress report*. European Commission. https://op.europa.eu/en/publication-detail/-/publication/8832ea16-e2e6-4095-b1eb-cc72a22e28df

Fama, E. F. (1980). Agency problems and the theory of the firm. *Journal of Political Economy*, *88*(2), 288–307. https://doi.org/10.1086/260866

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, *26*(2), 301–325. https://doi.org/10.1086/467037

Farooq, S., Gan, C., & Nadeem, M. (2023). Boardroom gender diversity and investment inefficiency: New evidence from the United Kingdom. *Corporate Governance: An International Review*, *31*(1), 2–32. https://doi.org/10.1111/corg.12443

Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. *Journal of Financial Economics*, *125*(1), 120–142. https://doi.org/10.1016/j.jfineco.2017.04.010

Fauver, L., Hung, M., Taboada, A. G., & Wang, E. J. (2022). Boardroom gender diversity reforms and institutional monitoring: Global evidence. *Review of Accounting Studies*, 1–44. https://doi.org/10.1007/s11142-022-09710-3

Francis, B., Hasan, I., Park, J. C., & Wu, Q. (2015). Gender differences in financial reporting decision making: Evidence from accounting conservatism. *Contemporary Accounting Research*, *32*(3), 1285–1318. https://doi.org/10.1111/1911-3846.12098

Francoeur, C., Labelle, R., & Sinclair-Desgagné, B. (2008). Gender diversity in corporate governance and top management. *Journal of Business Ethics*, *81*, 83–95. https://doi.org/10.1007/s10551-007-9482-5

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, *40*(1–3), 3–73. https://doi.org/10.1016/j.jacceco.2005.01.002

Guan, Y., Lobo, G. J., Tsang, A., & Xin, X. (2020). Societal trust and management earnings forecasts. *The Accounting Review*, *95*(5), 149–184. https://doi.org/10.2308/tar-2017-0023

Guedhami, O., Pittman, J. A., & Saffar, W. (2014). Auditor choice in politically connected firms. *Journal of Accounting Research*, *52*(1), 107–162. https://doi.org/10.1111/1475-679X.12032

Gul, F. A., Srinidhi, B., & Ng, A. C. (2011). Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics*, *51*(3), 314–338. https://doi.org/10.1016/j.jacceco.2011.01.005

Gull, A. A., Hussain, N., Akbar Khan, S., Nadeem, M., & Mansour Zalata, A. (2022). Walking the talk? A corporate governance perspective on corporate social responsibility decoupling. *British Journal of Management*, *34*(4), 2186–2211. https://doi.org/10.1111/1467-8551.12695

Gyapong, E., Ahmed, A., Ntim, C. G., & Nadeem, M. (2021). Board gender diversity and dividend policy in Australian listed firms: The effect of ownership concentration. *Asia Pacific Journal of Management*, *38*, 603–643. https://doi.org/10.1007/s10490-019-09672-2

Hainmueller, J. (2012). Entropy balancing for causal effects: A multivariate reweighting method to produce balanced samples in observational studies. *Political Analysis*, *20*(1), 25–46. https://doi.org/10.1093/pan/mpr025

Harrison, G. W., List, J. A., & Towe, C. (2007). Naturally occurring preferences and exogenous laboratory experiments: A case study of risk aversion. *Econometrica*, *75*(2), 433–458. https://doi.org/10.1111/j.1468-0262.2006.00753.x

Healy, P. M., Hutton, A. P., & Palepu, K. G. (1999). Stock performance and intermediation changes surrounding sustained increases in disclosure. *Contemporary Accounting Research*, *16*(3), 485–520. https://doi.org/10.1111/j.1911-3846.1999.tb00592.x

Heflin, F., Subramanyam, K. R., & Zhang, Y. (2003). Regulation FD and the financial information environment: Early evidence. *The Accounting Review*, *78*(1), 1–37. https://doi.org/10.2308/accr.2003.78.1.1

Hillman, A. J., Shropshire, C., & Cannella, A. A. Jr. (2007). Organizational predictors of women on corporate boards. *Academy of Management Journal*, *50*(4), 941–952. https://doi.org/10.5465/amj.2007.26279222

Hirst, D. E., Koonce, L., & Venkataraman, S. (2008). Management earnings forecasts: A review and framework. *Accounting Horizons*, *22*(3), 315–338. https://doi.org/10.2308/acch.2008.22.3.315

Hope, O. K., Kang, T., & Kim, J. W. (2013). Voluntary disclosure practices by foreign firms cross-listed in the United States. *Journal of Contemporary Accounting and Economics*, *9*(1), 50–66. https://doi.org/10.1016/j.jcae.2013.01.003

Houston, J. F., Lin, C., Liu, S., & Wei, L. (2019). Litigation risk and voluntary disclosure: Evidence from legal changes. *The Accounting Review*, *94*(5), 247–272. https://doi.org/10.2308/accr-52355

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, *108*(3), 822–839. https://doi.org/10.1016/j.jfineco.2012.12.005

Hui, K. W., Matsunaga, S., & Morse, D. (2009). The impact of conservatism on management earnings forecasts. *Journal of Accounting and Economics*, *47*(3), 192–207. https://doi.org/10.1016/j.jacceco.2009.01.001

Johnson, M. F., Kasznik, R., & Nelson, K. K. (2001). The impact of securities litigation reform on the disclosure of forward-looking information by high technology firms. *Journal of Accounting Research*, *39*(2), 297–327. https://doi.org/10.1111/1475-679X.00014

Karamanou, I., & Vafeas, N. (2005). The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis. *Journal of Accounting Research*, *43*(3), 453–486. https://doi.org/10.1111/j.1475-679X.2005.00177.x

Kasznik, R., & Lev, B. (1995). To warn or not to warn: Management disclosures in the face of an earnings surprise. *The Accounting Review*, 113–134.

Kato, K., Skinner, D. J., & Kunimura, M. (2009). Management forecasts in Japan: An empirical study of forecasts that are effectively mandated. *The Accounting Review*, *84*(5), 1575–1606. https://doi.org/10.2308/accr.2009.84.5.1575

Kim, I., & Skinner, D. J. (2012). Measuring securities litigation risk. *Journal of Accounting and Economics*, *53*(1–2), 290–310. https://doi.org/10.1016/j.jacceco.2011.09.005

Kim, K., Pandit, S., & Wasley, C. E. (2016). Macroeconomic uncertainty and management earnings forecasts. *Accounting Horizons*, *30*(1), 157–172. https://doi.org/10.2308/acch-51311

King, R., Pownall, G., & Waymire, G. (1990). Expectations adjustment via timely management forecasts: Review, synthesis, and suggestions for future research. *Journal of Accounting Literature*, *9*(1), 113–144.

Klettner, A., Clarke, T., & Boersma, M. (2016). Strategic and regulatory approaches to increasing women in leadership: Multilevel targets and mandatory quotas as levers for cultural change. *Journal of Business Ethics*, *133*, 395–419. https://doi.org/10.1007/s10551-014-2069-z

Kolev, K. D., Wangrow, D. B., Barker, V. L. III, & Schepker, D. J. (2019). Board committees in corporate governance: A cross-disciplinary

review and agenda for the future. *Journal of Management Studies*, *56*(6), 1138–1193. https://doi.org/10.1111/joms.12444

Konrad, A. M., Kramer, V., & Erkut, S. (2008). The impact of three or more women on corporate boards. *Organizational Dynamics*, *37*(2), 145–164. https://doi.org/10.1016/j.orgdyn.2008.02.005

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, *52*(3), 1131–1150. https://doi.org/10.1111/j.1540-6261.1997.tb02727.x

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy*, *106*(6), 1113–1155. https://doi.org/10.1086/250042

Labelle, R., Francoeur, C., & Lakhal, F. (2015). To regulate or not to regulate? Early evidence on the means used around the world to promote gender diversity in the boardroom. *Gender, Work and Organization*, *22*(4), 339–363. https://doi.org/10.1111/gwao.12091

Lang, M., & Lundholm, R. (1993). Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research*, *31*(2), 246–271. https://doi.org/10.2307/2491273

Lang, M. H., & Lundholm, R. J. (1996). Corporate disclosure policy and analyst behavior. *The Accounting Review*, 467–492.

Larcker, D. F., Richardson, S. A., & Tuna, I. (2007). Corporate governance, accounting outcomes, and organizational performance. *The Accounting Review*, *82*(4), 963–1008. https://doi.org/10.2308/accr.2007.82.4.963

Leuz, C., & Verrecchia, R. E. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research*, *38*, 91–124. https://doi.org/10.2307/2672910

Levi, M., Li, K., & Zhang, F. (2014). Director gender and mergers and acquisitions. *Journal of Corporate Finance*, *28*, 185–200. https://doi.org/10.1016/j.jcorpfin.2013.11.005

Li, W., Ng, J., Tsang, A., & Urcan, O. (2019). Country-level institutions and management earnings forecasts. *Journal of International Business Studies*, *50*, 48–82. https://doi.org/10.1057/s41267-018-0190-4

Li, X., & Yang, H. I. (2016). Mandatory financial reporting and voluntary disclosure: The effect of mandatory IFRS adoption on management forecasts. *The Accounting Review*, *91*(3), 933–953. https://doi.org/10.2308/accr-51296

Lobo, G. J., Song, M., & Stanford, M. (2012). Accruals quality and analyst coverage. *Journal of Banking & Finance*, *36*(2), 497–508. https://doi.org/10.1016/j.jbankfin.2011.08.006

Lys, T., Naughton, J. P., & Wang, C. (2015). Signaling through corporate accountability reporting. *Journal of Accounting and Economics*, *60*(1), 56–72. https://doi.org/10.1016/j.jacceco.2015.03.001

Mangena, M., & Pike, R. (2005). The effect of audit committee shareholding, financial expertise and size on interim financial disclosures. *Accounting and Business Research*, *35*(4), 327–349. https://doi.org/10.1080/00014788.2005.9729998

Matsa, D. A., & Miller, A. R. (2013). A female style in corporate leadership? Evidence from quotas. *Applied Economics*, *5*(3), 136–169.

Matsumoto, D. A. (2002). Management's incentives to avoid negative earnings surprises. *The Accounting Review*, *77*(3), 483–514. https://doi.org/10.2308/accr.2002.77.3.483

Mensi-Klarbach, H., & Seierstad, C. (2020). Gender quotas on corporate boards: Similarities and differences in quota scenarios. *European Management Review*, *17*(3), 615–631. https://doi.org/10.1111/emre.12374

Nadeem, M. (2020). Does board gender diversity influence voluntary disclosure of intellectual capital in initial public offering prospectuses? Evidence from China. *Corporate Governance: An International Review*, *28*(2), 100–118. https://doi.org/10.1111/corg.12304

Nadeem, M. (2022). Board gender diversity and managerial obfuscation: Evidence from the readability of narrative disclosure in 10-K reports. *Journal of Business Ethics*, *179*(1), 153–177. https://doi.org/10.1007/s10551-021-04830-3

Patten, D. M., & Trompeter, G. (2003). Corporate responses to political costs: An examination of the relation between environmental disclosure and earnings management. *Journal of Accounting and Public Policy*, *22*(1), 83–94. https://doi.org/10.1016/S0278-4254(02)00087-X

Peni, E., & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance*, *36*(7), 629–645. https://doi.org/10.1108/03074351011050343

Poletti-Hughes, J., & Dimungu-Hewage, D. (2023). The effectiveness of gender diversity reforms and the impact of a familial culture: A spillover effect on board independence. *British Journal of Management.*, *34*(3), 1316–1339. https://doi.org/10.1111/1467-8551.12660

Post, C., & Byron, K. (2015). Women on boards and firm financial performance: A meta-analysis. *Academy of Management Journal*, *58*(5), 1546–1571. https://doi.org/10.5465/amj.2013.0319

Rogers, J. L., & Van Buskirk, A. (2009). Shareholder litigation and changes in disclosure behavior. *Journal of Accounting and Economics*, *47*(1–2), 136–156. https://doi.org/10.1016/j.jacceco.2008.04.003

Rogers, J. L., Van Buskirk, A., & Zechman, S. L. (2011). Disclosure tone and shareholder litigation. *The Accounting Review*, *86*(6), 2155–2183. https://doi.org/10.2308/accr-10137

Sapienza, P., Zingales, L., & Maestripieri, D. (2009). Gender differences in financial risk aversion and career choices are affected by testosterone. *Proceedings of the National Academy of Sciences*, *106*(36), 15268–15273. https://doi.org/10.1073/pnas.0907352106

Skinner, D. J. (1997). Earnings disclosures and stockholder lawsuits. *Journal of Accounting and Economics*, *23*(3), 249–282. https://doi.org/10.1016/S0165-4101(97)00010-4

Smith, N. (2014). Quota regulations of gender composition on boards of directors. *CESifo DICE Report*, *12*(2), 42–48.

Srinidhi, B. I. N., Gul, F. A., & Tsui, J. (2011). Female directors and earnings quality. *Contemporary Accounting Research*, *28*(5), 1610–1644. https://doi.org/10.1111/j.1911-3846.2011.01071.x

Stulz, R. M. (2005). The limits of financial globalization. *The Journal of Finance*, *60*(4), 1595–1638. https://doi.org/10.1111/j.1540-6261.2005.00775.x

Toffel, M. W., & Short, J. L. (2011). Coming clean and cleaning up: Does voluntary self-reporting indicate effective self-policing? *The Journal of Law and Economics*, *54*(3), 609–649. https://doi.org/10.1086/658494

Tsang, A., Xiang, Y., & Yu, M. (2023). Cross-border regulatory enforcement and corporate voluntary disclosure. *Journal of Business Finance & Accounting*, *50*(3–4), 482–523. https://doi.org/10.1111/jbfa.12647

Tsang, A., Xie, F., & Xin, X. (2019). Foreign institutional investors and corporate voluntary disclosure around the world. *The Accounting Review*, *94*(5), 319–348. https://doi.org/10.2308/accr-52353

Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of Financial Economics*, *53*(1), 113–142. https://doi.org/10.1016/S0304-405X(99)00018-5

Wang, I. Y. (2007). Private earnings guidance and its implications for disclosure regulation. *The Accounting Review*, *82*(5), 1299–1332. https://doi.org/10.2308/accr.2007.82.5.1299

Watson, J., & McNaughton, M. (2007). Gender differences in risk aversion and expected retirement benefits. *Financial Analysts Journal*, *63*(4), 52–62. https://doi.org/10.2469/faj.v63.n4.4749

Wiedman, C. (2000). Discussion of "Voluntary disclosure and equity offerings: Reducing information asymmetry or hyping the stock?". *Contemporary Accounting Research*, *17*(4), 663–669. https://doi.org/10.1506/DWU8-P832-UTX1-48AD

Ye, D., Deng, J., Liu, Y., Szewczyk, S. H., & Chen, X. (2019). Does board gender diversity increase dividend payouts? Analysis of global evidence. *Journal of Corporate Finance*, *58*, 1–26. https://doi.org/10.1016/j.jcorpfin.2019.04.002

Zalata, A. M., Ntim, C. G., Choudhry, T., Hassanein, A., & Elzahar, H. (2019). Female directors and managerial opportunism: Monitoring versus advisory female directors. *The Leadership Quarterly*, *30*(5), 101309. https://doi.org/10.1016/j.leaqua.2019.101309

Zaman, R., Asiaei, K., Nadeem, M., Malik, I., & Arif, M. (2023). Board demographic, structural diversity, and eco-innovation: International evidence. *Corporate Governance: An International Review*. https://doi.org/10.1111/corg.12545

Zaman, R., Nadeem, M., & Carvajal, M. (2021). Corporate governance and corporate social responsibility synergies: Evidence from New Zealand. *Meditari Accountancy Research*, *29*(1), 135–160. https://doi.org/10.1108/MEDAR-12-2019-0649

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APPENDIX A: VARIABLE MEASUREMENT

Variables	Measurement
Variable of interest	
MEF_ISSUE	An indicator variable equal to one if the firm issued a forecast in year *t* and zero otherwise.
MEF_FREQ	The total number of MEFs issued by a firm during year *t*.
POST	An indicator variable equal to one in the year of the boardroom gender diversity reform and all years after it and zero otherwise.
Control variables	
FIRMSIZE	The natural logarithm of total assets in year $t-1$.
ROA	The income before extraordinary items divided by total assets in year $t-1$.
BM	The year-end ratio of the book value of equity to the market value of equity in year $t-1$.
LEV	The year-end ratio of the sum of current liabilities and long-term debt to total assets in year $t-1$.
ACCRUAL	The value of the residuals estimated using the modified Jones model in year $t-1$.
BIG4	An indicator variable equals to one if the firm's auditor in year $t-1$ is a Big N audit firm and zero otherwise.
ANA_COV	The natural logarithm of one plus the number of analysts covering firm *i* in year $t-1$.
BUS_SEG	The number of business segments in year $t-1$.
GEO_SEG	The number of geographic segments in year $t-1$.

(Continues)

Variables	Measurement
INSTI_OWN	The percentage of shares owned by institutional investors in year $t-1$.
COMPETITION	A measure of competition defined as Herfindahl index $\times(-1)$, where the Herfindahl index is calculated as the sum of the squares of the fractional market shares of firms in each two-digit Standard Industrial Classification (SIC) industry for each country in year $t-1$.
PCGDP	GDP per capita in thousands of US dollars from the IMF World Economic Outlook database in year $t-1$.
Variables in additional tests	
POST_FEMALE_FIN_INCR (DECR)	An indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's female directors have more (less) financial expertise within 3 years after the reforms and zero otherwise. Directors with financial expertise are defined as those with a CPA, CFA, or experience in corporate financial management such as CFO, treasurer, controller, or vice president of finance (Agrawal & Chadha, 2005).
POST_FEMALE_COMM_INCR (DECR)	An indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's female directors sit on more committees on average within 3 years after the reforms and zero otherwise.
POST_BOARD_MEET_INCR (DECR)	An indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's number of board meetings increases (decreases) within 3 years after the reforms and zero otherwise. The board meeting data are from ASSET4 (now Refinitiv).
POST_BOARD_ATTEN_INCR (DECR)	An indicator variable that equals one in the year of the BGDRs and all years after it, where the firm's average of board meeting attendance (not) increases within 3 years after the reforms and zero otherwise. The board attendance data are from ASSET4 (now Refinitiv).
POST_ALL_MALE_YES(NO)	An indicator variable equal to one in the year of the boardroom gender diversity reform and all years after it, where the firm's board directors are (not) all females within 3 years prior to the reform and zero otherwise.
POST_INCR_FEMALE_YES (NO)	An indicator variable equal to one in the year of the boardroom gender diversity reform and all years after it, where the firms (do not) increase the percentage of female directors within 3 years after the reform and zero otherwise.
POST_LARGE(SMALL) _ENFORCE	An indicator variable equal to one in the year of the boardroom gender diversity reforms and all years after them, where the country's *LEG_ENF* is larger (smaller) than the sample median and zero otherwise.
POST_LARGE(SMALL) _GEND_EQUAL	An indicator variable equal to one in the year of the boardroom gender diversity reforms and all years after them, where the country's gender equality is larger (smaller) than the sample median and zero otherwise.
BOARD_SIZE	The total number of directors on the board in year $t-1$.
BOARD_INDEP	The percentage of independent directors on the board in year $t-1$.
POST_REFORM	An indicator variable equal to one in the year of the board independence reform and all years after it and zero otherwise.
MEF_HORIZON	The number of days between the release of a forecast and the earnings realization date. A larger value indicates that MEFs are timelier and issued farther in advance of the actual earnings announcement.
MEF_WIDTH	The upper bound minus the lower bound of range MEFs, scaled by the stock price three trading days before the MEF date; it is 0 for point MEFs. A larger value indicates less precise MEFs.
MEF_BAD_NEWS	The number of bad news MEF in year *t*. Bad news MEFs are those whose midpoint value is smaller than the most recent consensus estimate of analysts' earnings forecasts.
MEF_ACCURACY	The reverse value of the absolute difference between actual earnings and the midpoint of MEFs. A larger value indicates more accurate forecasts, suggesting that actual earnings are closer to the midpoint of MEFs.
MEF_ITEMS	The number of unique performance measures discussed in each management forecast, as a measure of forecast disaggregation. Specifically, we follow Barton et al. (2010) and identify 10 performance items possibly included in a forecast: (1) sales, (2) EBITDA, (3) operating income, (4) income before taxes, (5) income before extraordinary items and discontinued operations, (6) net income, (7) capital expenditures, (8) operating cash flow, (9) expenses, and (10) other balance sheet items. A higher score indicates more detailed and disaggregated earnings forecasts.
POST_MORE(LESS)_MEF	An indicator variable equal to one in the year of the boardroom gender diversity reform and all years after it, where the firms (do not) increase the number of MEFs within 3 years after the reforms and zero otherwise.