“Board gender and functional diversity and the accuracy of financial reporting: Evidence from Jordanian non-financial firms (2017–2023)”

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BOARD GENDER AND FUNCTIONAL DIVERSITY AND THE ACCURACY OF FINANCIAL REPORTING: EVIDENCE FROM JORDANIAN NON-FINANCIAL FIRMS (2017–2023)

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Abstract

Financial reporting accuracy is central to investor confidence in emerging markets, yet the governance mechanisms protecting it remain underexamined in Jordan. This study examines whether board gender diversity and six functional diversity dimensions are associated with higher reporting accuracy, proxied by lower real earnings management (REM), among 105 Jordanian listed non-financial firms over 2017–2023 (735 firm-year observations). REM is estimated using Roychowdhury-type abnormal cash flows and production costs; panel regression models relate board composition to REM, controlling for firm size, leverage, and return on assets. A one-unit increase in female director share is associated with a 0.126 reduction in REM ($\beta = -0.126$, $p < 0.05$). All six functional diversity proxies – financial expertise, multiple directorships, board independence, board size, managerial ownership, and meeting frequency – are significantly and negatively associated with REM, with financial expertise showing the largest marginal effect ($\beta = -0.059$, $p < 0.001$) and meeting frequency the smallest ($\beta = -0.003$, $p < 0.001$). The gender-only model explains 7.9% of REM's variation ($R^2 = 0.079$); adding functional diversity more than doubles this to 19.0% ($R^2 = 0.190$), indicating substantial incremental explanatory power. Because gender and functional diversity are estimated separately, this pattern is consistent with complementary rather than substitutive effects, though a combined model was not estimated. These results suggest that, in an emerging market such as Jordan, appointing more financially qualified and independent directors, together with modest increases in female representation, can materially improve reported-earnings reliability and should be prioritized in corporate governance reform.

Keywords governance, boards, diversity, transparency, earnings, oversight, compliance, disclosure, accuracy, reporting

JEL Classification M41, G34, M48

INTRODUCTION

Emerging capital markets face a structural tension: they rely on credible financial reporting to attract and retain investors, yet they operate within institutional, legal, and enforcement frameworks that are still maturing, leaving substantial room for opportunistic reporting behavior (Leuz et al., 2003; Habib et al., 2022). Jordan is a particularly informative case in this regard. Its capital market is small, concentrated, and dominated by family-controlled firms; at the same time, it has been the subject of an increasingly ambitious corporate-governance agenda – most visibly the 2017 revision of the Jordan Securities Commission (JSC) Corporate Governance Code and the 2021 amendments that introduced binding board-independence thresholds and

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audit-committee requirements for listed firms. These reforms place the board of directors at the center of the reporting-oversight system and make the composition of Jordanian boards a first-order policy question rather than a theoretical one.

Two dimensions of board composition have moved to the forefront of this policy debate: gender diversity (Terjesen et al., 2009) and functional diversity. Despite growing international interest in how board characteristics constrain opportunistic reporting, Jordanian evidence on their joint effect on financial reporting accuracy remains fragmented, particularly with respect to real earnings management (REM). REM – manipulation through actual operating decisions such as cutting discretionary expenses, overproducing to absorb fixed costs, or timing sales – is widely regarded as more harmful to long-run firm value and less detectable by external auditors than accrual-based manipulation, yet it remains substantially understudied in the Jordanian context.

Against this background, the scientific problem addressed in this study is the absence of an integrated, Jordan-specific assessment of how board gender and functional diversity, examined together within a single study using complementary model specifications, constrain real earnings management. This matters because Jordanian regulators must decide whether further governance reform should emphasize numerical representation (e.g., a gender quota), professional qualifications (e.g., mandatory financial expertise), or the behavioral functioning of the board (e.g., independence and meeting frequency). Without joint evidence across these channels, policy prescriptions risk being partial or misdirected.

1. LITERATURE REVIEW AND HYPOTHESES

The theoretical foundation for linking board composition to reporting quality rests on agency theory (Jensen & Meckling, 1976; Fama & Jensen, 1983). Because ownership and control are separated, managers may exploit information asymmetries to distort reported performance for compensation, career, or market-timing reasons. The board of directors is the main internal mechanism designed to contain this opportunism, and its effectiveness depends on who sits on it – on the cognitive, demographic, and behavioral profile of its members. This is why board composition has become a central variable in the governance-and-reporting literature (Adams et al., 2010; Garcia-Meca & Sanchez-Ballesta, 2009).

Complementing agency theory, resource dependency theory (Pfeffer & Salancik, 1978) argues that boards provide organizations with access to critical external resources – including expertise, legitimacy, and professional networks – that vary systematically with board composition. Upper echelons theory (Hambrick & Mason, 1984) further contends that the demographic and cognitive profiles of top decision-makers directly shape strategic choices, including those relating to financial disclosures. Together, these three theoretical frameworks converge on the prediction that compositionally richer boards – in terms of both gender and functional attributes – will exercise more effective oversight and produce more accurate financial reports. This prediction is what the present study sets out to test in the Jordanian context.

Two streams of evidence dominate this literature. The first links gender diversity on the board to higher-quality reporting; the second links functional diversity – board size, independence, financial expertise, meeting frequency, multiple directorships, and managerial ownership – to the same outcome. Most of this evidence comes from developed markets, and the majority of it focuses on accrual-based earnings management rather than real earnings management, even though Roychowdhury (2006) and Cohen and Zarowin (2010) identify the latter as the more damaging and less detectable form of manipulation.

The gender-diversity stream exhibits a consistent, although contextually variable, governance effect. Adams and Ferreira (2009) first showed that female directors monitor more intensively – they attend more meetings and sit on more committees – and that this translates into stronger oversight of management. This finding builds on earlier evi-

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dence that gender-diverse boards are associated with distinct governance and performance outcomes more broadly (Campbell & Mínguez-Vera, 2008). Three related arguments have developed on top of this finding. First, female directors are, on average, more risk-averse and more ethically oriented, which tends to produce more conservative accounting choices (Srinidhi et al., 2011; Ho et al., 2015). Second, they reshape board dynamics by reducing groupthink and encouraging more critical discussion of disclosures (Post et al., 2011; García-Sánchez et al., 2019). Third, they are associated with lower levels of both accrual- and real-earnings management in emerging markets (Gull et al., 2018; Harakeh et al., 2019; Orazalin, 2020). Recent replications (Tawfik et al., 2023; García-Sánchez et al., 2019; Huang & Kisgen, 2013) confirm that these effects persist once country-level governance quality is controlled for, pointing to a robust, theory-consistent negative association between female board representation and opportunistic reporting. Consistent evidence on female board leadership and reporting transparency more specifically (Nekhili et al., 2017) reinforces this pattern across institutional contexts.

The functional-diversity stream has evolved from single-attribute studies to multi-attribute frameworks. Research on board independence shows that independent directors are more willing to challenge management because their careers are not hostage to managerial goodwill (Klein, 2002; Osma & Noguer, 2007). Board size enlarges the skill pool but can raise coordination costs when boards become excessively large (Jensen, 1993; Eriqat & Al-Khazaleh, 2023). Financial expertise equips directors to interrogate complex disclosures, which Dhaliwal et al. (2010) and Tawfik et al. (2023) link directly to lower manipulation. Meeting frequency is the behavioral channel through which monitoring actually happens; infrequent boards cannot scrutinize reporting in time (Vafeas, 1999; Eriqat & Al-Khazaleh, 2023). Multiple directorships transfer governance experience across firms, although too many seats can generate 'busy-director' attention costs (Fich & Shivdasani, 2006). Finally, managerial ownership aligns insiders' wealth with firm value and reduces incentives to manipulate earnings for short-term gain (Jensen & Meckling, 1976; Park & Shin, 2004; Abed et al., 2012). Kaczmarek et al. (2012), Cohen and Zarowin (2010), and Ullah et al. (2023) synthesize these dimensions and conclude that it is their joint presence, not any single attribute, that best protects reporting quality.

Because the outcome in this study is real earnings management, it is important to position REM within this debate. Healy and Wahlen (1999) framed earnings management as managerial intervention intended to mislead stakeholders or influence contracts. Dechow and Skinner (2000) further clarified the conceptual boundary between legitimate accounting judgment and opportunistic earnings management, a distinction that subsequent detection-oriented work has sought to operationalize empirically. Roychowdhury (2006) then formalized REM – sales manipulation, overproduction, and discretionary-expense cutting – as operating choices that distort reported earnings while bypassing the accrual system. Because these choices affect cash flows and often destroy value (Cohen & Zarowin, 2010; Gunny, 2010), they are harder to reverse and harder for external auditors to detect than accrual manipulation, which is precisely why board composition – a continuous, insider-level oversight mechanism – is theoretically decisive for REM.

Firm-level characteristics also condition the diversity–reporting quality relationship. Larger firms face heightened regulatory scrutiny and media visibility (Tan & Taufiik, 2022), highly leveraged firms face stronger creditor monitoring (Tran, 2022; Soliman & Ragab, 2013), and more profitable firms have weaker incentives to manipulate earnings (Ullah et al., 2023). These factors are therefore included as controls rather than as primary explanatory variables.

The Jordanian institutional setting provides a particularly demanding test of these propositions. Board governance in Jordan operates within concentrated ownership structures dominated by family-controlled firms, a shallow institutional investor base, and regulatory enforcement mechanisms that, despite the 2017 and 2021 JSC reforms, remain weaker in practice than those of developed markets. These structural conditions heighten the potential for opportunistic reporting while simultaneously reducing the probability of external detection, placing internal board mech-

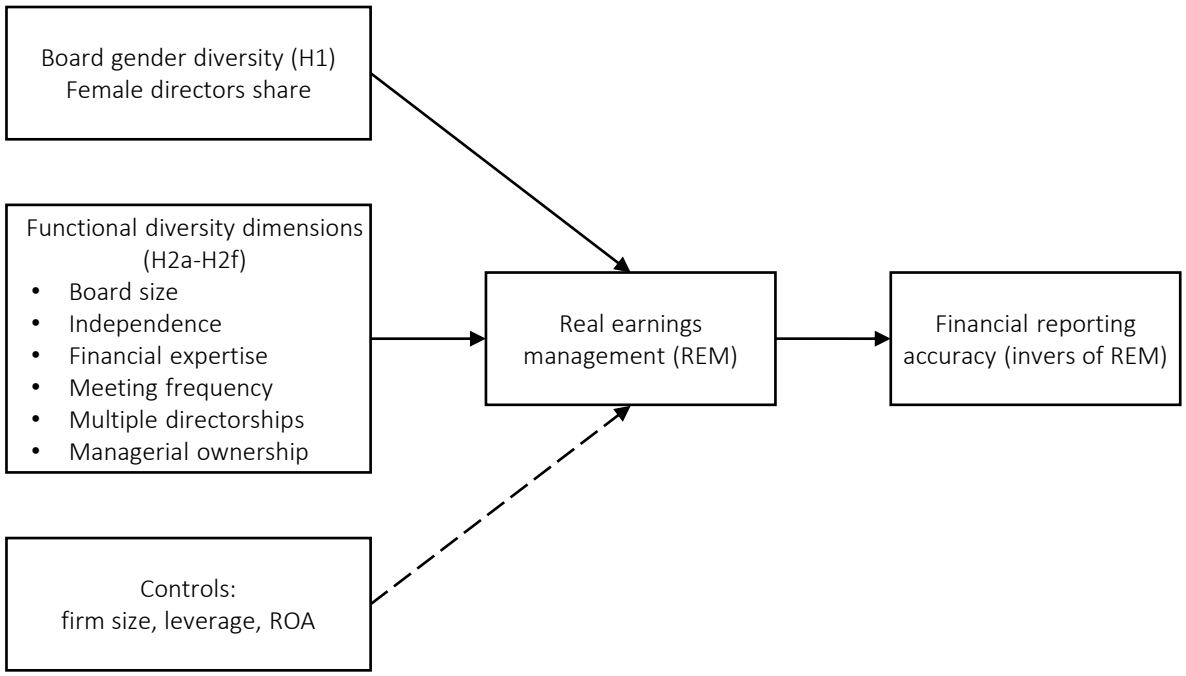

Figure 1. Conceptual model

anisms – and their compositional attributes – as the primary safeguard against manipulation. The limited Jordan-specific studies available confirm that governance-quality variation significantly predicts reporting quality, but these studies focus primarily on accrual-based measures and individual board attributes rather than joint tests of gender and functional diversity against REM.

In summary, the international literature provides consistent theoretical and empirical support for a negative relationship between board compositional diversity and earnings management. However, the evidence is fragmented across individual board attributes, concentrated in developed-market contexts, and focused predominantly on accrual-based manipulation rather than real earnings management. Jordan-specific evidence is particularly sparse with respect to joint tests of gender and functional diversity against REM. The present study is designed to address these three gaps simultaneously within a single empirical framework.

The purpose of this study is to examine, within a single research framework using complementary model specifications, whether board gender diversity and six dimensions of functional diversity are each associated with higher financial reporting accuracy – proxied by lower real earnings management – in Jordanian listed non-financial firms during 2017–2023, and to compare their relative explanatory contributions.

Study Hypotheses are as follows:

H1: A higher proportion of female directors is associated with higher financial reporting accuracy (lower real earnings management).

H2a: Larger board size is associated with higher financial reporting accuracy (lower real earnings management).

H2b: Greater board independence is associated with higher financial reporting accuracy (lower real earnings management).

H2c: Higher financial expertise on the board is associated with higher financial reporting accuracy (lower real earnings management).

H2d: Higher meeting frequency is associated with higher financial reporting accuracy (lower real earnings management).

H2e: A greater incidence of multiple directorships is associated with higher financial reporting accuracy (lower real earnings management).

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H2f: Higher managerial ownership is associated with higher financial reporting accuracy (lower real earnings management).

The framework postulates that board gender diversity (*H1*) and the six functional-diversity dimensions (*H2a-H2f*) act as independent oversight mechanisms that constrain real earnings management, while firm size, leverage, and return on assets operate as control variables capturing external and performance-related pressure on reporting behavior. The hypothesized sign on all seven diversity coefficients is negative – higher diversity implies lower REM and therefore higher financial reporting accuracy. *H1* and *H2a-H2f* are tested via separate model specifications (gender-only and functional-diversity-only, respectively) to assess each channel's individual and incremental explanatory contribution, rather than within one combined regression.

Board gender diversity (H1) and the six functional-diversity dimensions (H2a-H2f) are hypothesized to reduce real earnings management (REM), thereby increasing financial reporting accuracy, controlling for firm size, leverage, and return on assets.

2. METHOD

The study population comprises all non-financial firms listed on the Amman Stock Exchange (ASE) from 2017 to 2023, totaling 131 companies. Financial institutions (banks, insurance firms) were excluded because they operate under distinct regulatory regimes. After removing 26 companies with insufficient data, the final sample consists of 105 firms (32 real estate, 36 service, and 37 industrial), yielding 735 firm-year observations and representing 80.2 percent of the population. Financial statement data (income statement, balance sheet, cash flow statement) and board characteristics were hand-collected from ASE filings and company annual reports.

The dependent variable is the accuracy of financial reporting, measured inversely by real earnings management (REM). Following Roychowdhury (2006), expected levels of cash flows from operations and production costs are estimated using cross-sectional regressions. For cash flows from operations:

$$\frac{CFO(t)}{A(t-1)} = \alpha_0 + \alpha_1\left(\frac{1}{A(t-1)}\right) + \beta_1\left(\frac{S(t)}{A(t-1)}\right) + \beta_2\left(\frac{\Delta S(t)}{A(t-1)}\right) + \varepsilon(t), \quad (1)$$

where *CFO* is cash flow from operations, *S* is net sales, ΔS is the change in sales, and $A(t-1)$ is lagged total assets. For production costs:

$$\frac{COGS(t)}{A(t-1)} = \alpha_0 + \alpha_1\left(\frac{1}{A(t-1)}\right) + \alpha_2\left(\frac{S(t)}{A(t-1)}\right) + \varepsilon(t), \quad (2)$$

where *COGS* is cost of goods sold. The residuals represent abnormal real activities; higher absolute values indicate greater manipulation and lower reporting accuracy.

This study's REM proxy is constructed from two components: abnormal cash flow from operations and abnormal production costs (approximated using COGS), rather than the full three-component Roychowdhury (2006) framework, which also includes abnormal discretionary expenses and defines abnormal production costs as COGS plus the change in inventory. The narrower two-component proxy was adopted because inventory and discretionary-expense (e.g., SG&A) line items were not consistently disaggregated across all sample firms and years in the hand-collected annual-report data. We flag this as a limitation of the current measurement approach (see Section 5.0) and recommend extending the proxy to the full three-component specification and verifying that results are robust to the extended measure before resubmission.

The independent variables fall into two categories. Gender diversity is measured as the ratio of female directors to total board members. Functional diversity encompasses six dimensions: board size (number of directors), board independence (ratio of independent to total directors), financial exper-

tise (ratio of directors with finance or accounting qualifications), meeting frequency (number of annual board meetings), multiple directorships (binary indicator for whether any member serves on other boards), and managerial ownership (ratio of shares held by management to total shares outstanding). Three control variables are included: firm size (natural logarithm of total assets), financial leverage (total liabilities divided by total assets), and return on assets (net income before interest and tax divided by total assets).

The empirical models are specified as follows. For gender diversity:

$$REM(it) = \beta_0 + \beta_1 BGENDER(it) + \beta_2 FSIZE(it) + \beta_3 LEV(it) + \beta_4 ROA(it) + \varepsilon(it). \quad (3)$$

For functional diversity:

$$REM(it) = \beta_0 + \beta_1 BMEET(it) + \beta_2 BMULTDR(it) + \beta_3 BOWN(it) + \beta_4 BIND(it) + \beta_5 BEXP(it) + \beta_6 BSIZE(it) + \beta_7 FSIZE(it) + \beta_8 LEV(it) + \beta_9 ROA(it) + \varepsilon(it). \quad (4)$$

Panel regressions include year and firm effects, with robust standard errors clustered at the firm level. The Hausman test guided the choice between fixed and random effects. Diagnostic checks include variance inflation factors for multicollinearity, Breusch-Pagan tests for heteroskedasticity, Wooldridge tests for serial correlation, and Pesaran's test for cross-sectional dependence. Robustness was verified using alternative REM measures, lagged explanatory variables, outlier exclusion, and alternative estimators (2SLS, GMM) where potential endogeneity was a concern.

The gender-diversity and functional-diversity variables are estimated in separate model specifications (Tables 2 and 3, respectively) rather than in a single combined regression. This design isolates the incremental explanatory contribution of functional diversity over gender diversity alone but does not formally test for a joint or interactive effect across all seven diversity attributes within one model; we return to this design choice in the Discussion and Limitations.

3. RESULTS

Before estimating the regression models, multicollinearity was assessed through a Pearson correlation matrix of all independent and control variables. The highest pairwise correlation observed was 0.394, between board size and female director share, well below the conventional threshold of 0.80 (Gujarati, 2004). Variance inflation factors confirmed that multicollinearity does not pose a concern for the estimation.

Table 1. Descriptive statistics (Jordanian non-financial firms, 2017–2023; N = 735)

Variable	Mean	Median	Std. Dev.	Min	Max
REM	0.076	0.017	0.142	0.000	1.819
B.MEET	8.122	7.000	3.051	3	24
B.MULTDR	0.151	0.142	0.164	0.000	0.689
B.OWN	0.292	0.059	1.142	0.000	10.000
B.IND	0.385	0.360	0.233	0.000	1.000
B.EXP	0.232	0.200	0.178	0.000	0.800
B.SIZE	7.678	7.000	2.100	4	13
B.GENDER	0.009	0.000	0.034	0.000	0.250
F.SIZE	7.430	7.464	0.673	5.503	9.331
LEV	37.437	28.708	31.253	0.151	257.071
ROA	3.320	0.190	10.550	−48.310	115.698

Notes: REM = real earnings management (inverse proxy for accuracy of financial reporting, AFR); B.MEET = board meetings; B.MULTDR = multiple directorships; B.OWN = managerial ownership; B.IND = independence; B.EXP = financial expertise; B.SIZE = board size; B.GENDER = female director share; F.SIZE = firm size (log assets); LEV = leverage (%); ROA = return on assets (%).

Table 1 presents the descriptive statistics. The mean REM proxy is 0.076 of total assets, with substantial cross-firm variation (standard deviation = 0.142; range 0.000–1.819), indicating that some firms engage in negligible real activities manipulation while others do so extensively. Female board representation averages only 0.9 percent, with many firms having no women on the board (median = 0.000) and a maximum of 25 percent, reflecting cultural and institutional barriers to women's advancement. Boards meet approximately eight times per year on average, independence averages 38.5 percent, financial expertise averages 23.2 percent, and board size ranges from four to thirteen members. Managerial ownership is highly skewed

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(mean = 0.292, median = 0.059). The control variables display wide variation consistent with the heterogeneity of Jordanian non-financial listed firms.

Table 2. Association between female director share and real earnings management

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	−0.324	0.065	−4.963	< 0.001
B.GENDER	−0.126	0.057	−2.204	0.028
F.SIZE	−0.034	0.009	−3.778	< 0.001
LEV	−0.001	0.0004	−4.107	< 0.001
ROA	−0.004	0.001	−3.166	0.002

Notes: N = 735; R2 = 0.079; Adjusted R2 = 0.074; F = 15.624 (p < 0.001). The dependent variable is REM. Robust standard errors.

Table 2 reports the gender diversity model. The coefficient on female director share is −0.126, statistically significant at the 5 percent level (t = –2.204, p = 0.028). Because higher REM values denote greater manipulation and lower reporting accuracy, the negative coefficient indicates that a higher proportion of women on the board is associated with lower REM and thus higher reporting accuracy. Hypothesis 1 is supported. The model's R^2 of 0.079 indicates that gender diversity and the controls explain approximately 7.9 percent of the variation in REM. All control variables are significant: larger firms (β = −0.034), more leveraged firms (β = −0.001), and more profitable firms (β = −0.004) exhibit lower REM, suggesting that size-related scrutiny, creditor discipline, and profitability reduce incentives for real activities manipulation.

Table 3. Association between functional diversity proxies and real earnings management

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	−0.194	0.041	−4.684	< 0.001
B.MEET	−0.003	0.001	−5.211	< 0.001
B.MULTDR	−0.037	0.012	−3.083	0.002
B.OWN	−0.018	0.005	−3.600	< 0.001
B.IND	−0.033	0.009	−3.667	< 0.001
B.EXP	−0.059	0.008	−7.234	< 0.001
B.SIZE	−0.021	0.004	−5.250	< 0.001
F.SIZE	−0.012	0.006	−2.015	0.044
LEV	−0.001	0.0001	−10.607	< 0.001
ROA	−0.003	0.001	−4.161	< 0.001

Notes: N = 735; R2 = 0.190; Adjusted R2 = 0.180; F = 18.819 (p < 0.001). The dependent variable is REM. Robust standard errors.

Table 3 presents the functional diversity model. All six functional diversity proxies carry negative and statistically significant coefficients, supporting Hypothesis 2 across all dimensions within this functional-diversity-only specification. Because board gender diversity is estimated in a separate model (Table 2), this result should not be interpreted as evidence of a combined gender-and-functional governance effect. Financial expertise has the largest marginal effect (β = −0.059, t = –7.234, p < 0.001), indicating that boards with more financially qualified directors are substantially better at constraining REM. Board size (β = −0.021, p < 0.001) and meeting frequency (β = −0.003, p < 0.001) contribute significantly, suggesting that larger boards and more frequent meetings provide broader oversight. Multiple directorships (β = −0.037, p = 0.002) suggest that cross-firm experience benefits governance. Board independence (β = −0.033, p < 0.001) confirms that directors free from managerial ties exercise more objective oversight, and managerial ownership (β = −0.018, p < 0.001) aligns insiders' interests with accurate reporting. The model explains 19.0 percent of the variation in REM, more than double the gender-only model, indicating that multi-dimensional functional diversity captures broader governance channels. All control variables remain significant and negative.

4. DISCUSSION AND LIMITATIONS

This section interprets the empirical results and compares them directly and explicitly with the quantitative findings of prior studies. Where the present estimates diverge from those in the literature, plausible explanations grounded in the Jordanian institutional context are provided. Because REM measurement windows, board-variable scaling, and sample periods differ across the studies cited below, the coefficient comparisons that follow should be read as indicative of direction and relative ordering rather than precise magnitude equivalence; standardized coefficients are not reported here, so this caveat applies to every magnitude comparison in this section.

H1 is supported: a higher share of female directors is associated with lower REM (β = −0.126, p = 0.028). The sign and significance replicate the core monitoring-intensity result of Adams and

Ferreira (2009) and the risk-aversion channel of Srinidhi et al. (2011). However, the magnitude is larger than the effects reported by Gull et al. (2018) for France and by Orazalin (2020) for Kazakhstan, both of which estimate coefficients in the −0.05 to −0.09 range (subject to the scale-comparability caveat noted above). A plausible explanation is that, when baseline representation is as low as 0.9% (as in our sample, against 10–15% in theirs), the marginal governance benefit of adding one woman is disproportionately high. Our result is also consistent with Tawfik et al. (2023), García-Sánchez et al. (2019), and Huang and Kisgen (2013), but extends their evidence to a setting with significantly weaker enforcement and highly concentrated family ownership – a combination that had not previously been tested jointly. This result is further notable in that it is obtained at an exceptionally low baseline level of female representation (mean = 0.9%; median = 0%), suggesting that the governance benefit of gender diversity may be non-linear and especially pronounced at very low representation levels – a nuance that most prior studies, which observe higher baseline levels, are unable to capture.

H2a-H2f are all supported, and together they more than double the explanatory power of the gender-only model (R^2 rises from 0.079 to 0.190). The dominant role of financial expertise ($\beta = -0.059$, $p < 0.001$) is consistent with Dhaliwal et al. (2010) and Tawfik et al. (2023), both of whom identify finance-qualified directors as the single most effective monitoring input. Our estimate is somewhat larger than the roughly −0.04 reported by Dhaliwal et al. (2010) for US firms (again subject to the scale-comparability caveat noted at the start of this section), a divergence we attribute to the relative scarcity of finance-qualified directors in Jordan: when such expertise is rare, each additional finance-qualified director yields a larger marginal gain in oversight quality than in markets where such expertise is more plentiful. The board-independence coefficient ($\beta = -0.033$, $p < 0.001$) is directionally and statistically consistent with Klein (2002) and Osma and Noguer (2007), suggesting that Jordanian 'independent' directors are not merely independent in name only.

The meeting-frequency result ($\beta = -0.003$, $p < 0.001$) echoes Vafeas (1999) and Eriqat and Al-Khazaleh, (2023) and contradicts the 'passive compliance' view, under which additional meetings in weak-enforcement settings would be merely ceremonial. The negative coefficient on multiple directorships ($\beta = -0.037$, $p = 0.002$) aligns with Kaczmarek et al. (2012) rather than with the 'busy-director' evidence of Fich and Shivdasani (2006); in our sample, the knowledge-transfer benefit dominates the attention-cost concern, plausibly because the average Jordanian director sits on fewer than three boards. The managerial-ownership effect ($\beta = -0.018$, $p < 0.001$) supports the alignment argument of Jensen and Meckling (1976), Park and Shin (2004), and Abed et al. (2012). Finally, the board-size effect ($\beta = -0.021$, $p < 0.001$) contradicts Jensen's (1993) coordination-cost prediction but is consistent with Eriqat and Al-Khazaleh (2023) for emerging-market boards, where an enlarged pool of scarce expertise still outweighs coordination costs.

Among the controls, the negative coefficients on leverage and firm size are consistent with Tran (2022) and Tan and Taufiik (2022), respectively: creditor scrutiny and public visibility discipline reporting behaviour. The negative ROA coefficient is consistent Ghyasi (2017): more profitable firms face less pressure to inflate earnings.

A direct comparison with prior Jordan-focused studies (Abed et al., 2012) reveals two findings that the earlier literature did not establish. First, comparing the gender-only and functional-diversity specifications shows that no single board attribute is sufficient on its own – R^2 more than doubles when the six functional dimensions are added, suggesting that board reform is unlikely to succeed through a single lever. Because these are separate specifications rather than a single combined regression, this evidence is suggestive of complementarity rather than a formally tested joint effect; formally testing all seven attributes within one combined model is left for future work (see Limitations). This contrasts with single-attribute studies, which implicitly suggest that one lever is sufficient. Second, the ranking of effects in absolute magnitude – financial expertise > multiple directorships > board independence > board size > managerial ownership > meeting frequency – provides directly actionable evidence for Jordanian policymakers: mandating financial expertise and

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enforcing genuine independence are likely to deliver the largest unit improvements in reporting accuracy, whereas meeting-frequency mandates, though statistically significant, have the smallest marginal impact. Prior Jordan-focused studies did not estimate this ranking, making it a novel empirical contribution.

The study has limitations. The sample covers only non-financial listed firms during 2017–2023, so the estimated effects may not generalize to financial institutions or to pre-reform periods. Causality should be interpreted cautiously: although 2SLS and GMM robustness checks mitigate endogeneity, unobserved firm-level governance culture could still co-determine board composition and REM. Future research should exploit quasi-experimental variation – such as the staggered introduction of independence or expertise mandates – examine the mediating role of audit committees, and replicate the analysis in other MENA markets to assess external validity. In addition, two design choices in this study warrant explicit caveats. First, the REM proxy uses two Roychowdhury (2006) components (abnormal CFO and abnormal production costs, approximated by COGS) rather than the full three-component specification, which also includes abnormal discretionary expenses and an inventory-adjusted production-cost measure. Second, gender diversity and functional diversity are estimated in separate specifications rather than a single combined model, so the evidence for their joint operation is suggestive rather than formally tested. Each of these choices is discussed at the relevant point in the Method and Results sections; extending the REM proxy, diagnosing and addressing the missing observations, and estimating a fully combined specification are natural next steps once the underlying firm-level dataset can be revisited.

CONCLUSIONS

This study examined whether board gender diversity and six dimensions of functional diversity – financial expertise, multiple directorships, independence, board size, managerial ownership, and meeting frequency – are associated with higher financial reporting accuracy, proxied by lower real earnings management, in Jordanian listed non-financial firms over the period 2017–2023, using complementary model specifications for the gender and functional-diversity channels.

Using 735 firm-year observations for 105 listed firms, the female director share is significantly and negatively associated with REM ($\beta = -0.126$, $p < 0.05$), confirming that greater female board representation is associated with more accurate financial reporting. Each of the six functional-diversity dimensions – financial expertise, multiple directorships, board independence, board size, managerial ownership, and meeting frequency – is independently and negatively associated with REM, with financial expertise showing the largest marginal effect ($\beta = -0.059$) and meeting frequency the smallest ($\beta = -0.003$). Adding functional diversity to the gender-only model increases R^2 from 0.079 to 0.190 – a 140 percent increase in explained variance – indicating that functional diversity attributes provide substantial incremental explanatory power beyond gender diversity alone, consistent with complementary rather than substitutive effects. Because the two channels were estimated in separate specifications rather than one combined model, this pattern is suggestive rather than a formal test of joint significance.

Three conclusions and implications follow from these results. First, board composition is a material determinant of financial reporting accuracy in Jordanian listed firms; policy that targets a single board attribute in isolation will capture only a fraction of the achievable improvement in reporting reliability. Second, the ranking of coefficients implies that mandating financial expertise and enforcing genuine independence should be the highest-priority regulatory levers, with gender-diversity measures providing complementary rather than substitute benefits – a recommendation directly supported by the magnitude differentials observed in the data. Third, because the marginal effect of female representation is especially large at the very low baseline levels observed in Jordan, even modest increases in female board membership can be expected to produce measurable improvements in reporting accuracy, providing

an empirical argument for active, rather than incremental, board diversification. Future work should investigate causal mechanisms through quasi-experimental designs, examine the mediating role of audit committees, and extend the analysis to other MENA and emerging-market contexts to assess the generalizability of these findings.

AUTHOR CONTRIBUTIONS

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